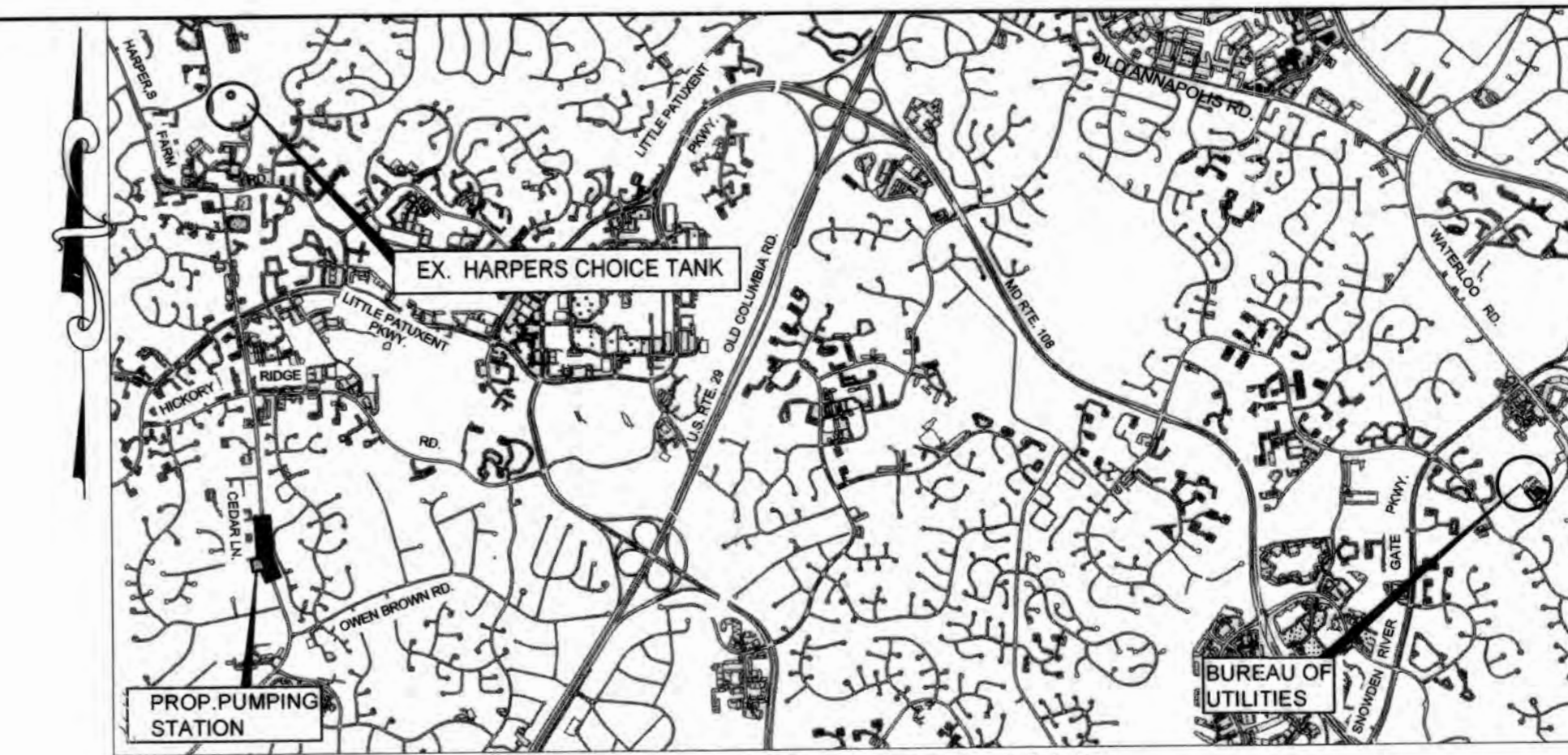


GENERAL NOTES

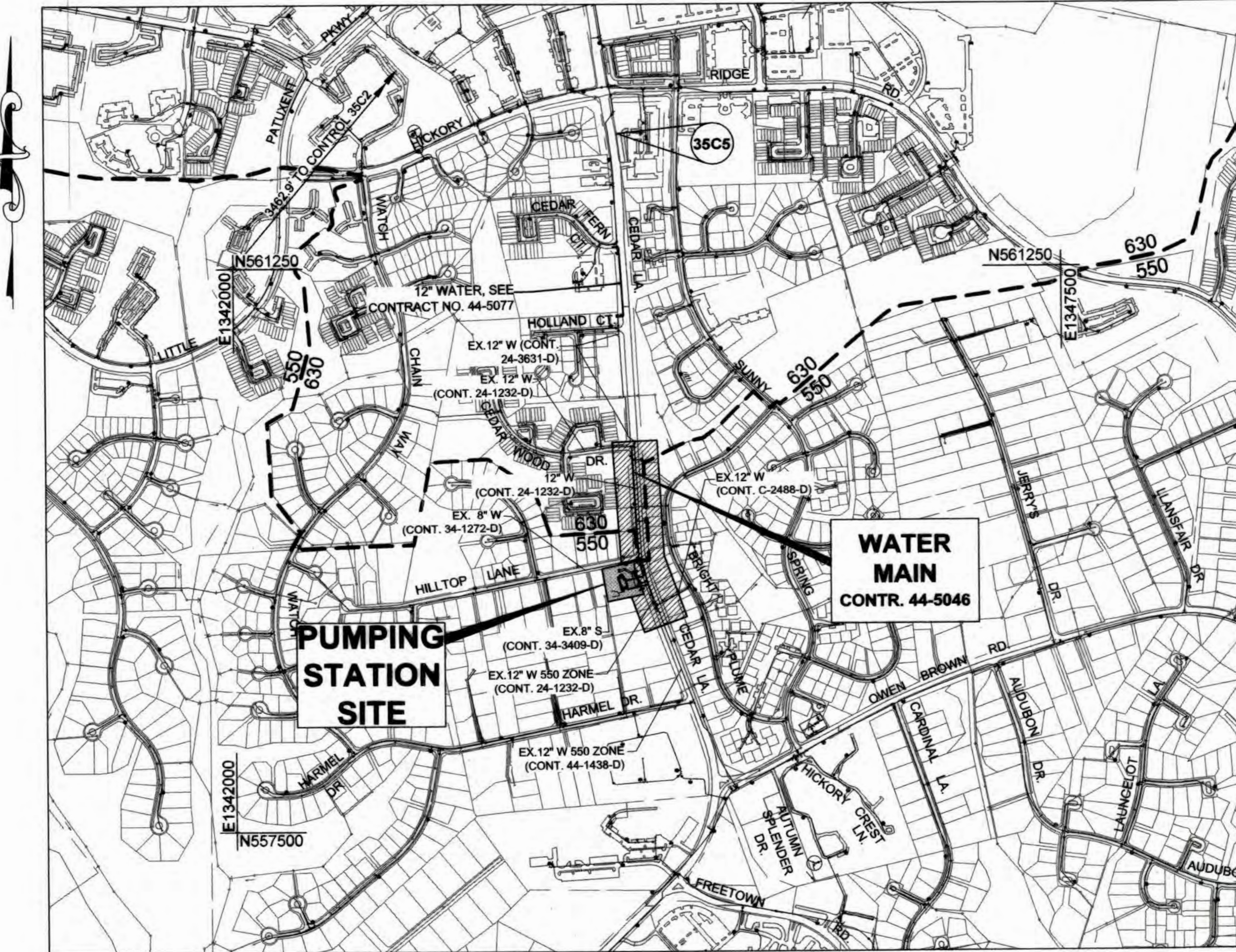
CEDAR LANE WATER PUMPING STATION CAPITAL PROJECT NO. W-8328 CONTRACT NO. 44-5036 HOWARD COUNTY, MARYLAND CONFORMED DRAWINGS



LOCATION MAP
SCALE: 1"=3000'

WATER MAIN NOTES (CONTINUED)

11. ALL CHANGES IN HORIZONTAL OR VERTICAL DIRECTION OF PVC WATER PIPE SHALL BE MADE WITH MECHANICAL JOINT DUCTILE IRON (AWWA C153) STANDARD (1/4, 1/8, 1/16, 1/32, 1/64) BENDS OR MECHANICAL JOINT, FULL BODY, SOLID SLEEVES MEETING AWWA C110. NO BENDING OF THE PIPE OR DEFLECTING OF PVC PIPE JOINTS IS PERMITTED. WHERE SOLID SLEEVES ARE PERMITTED, THE CONTRACTOR SHALL PROVIDE ONE FULL PIPE LENGTH (20-FOOT LONG) ON EITHER SIDE OF THE SOLID SLEEVE. THE CONTRACTOR SHALL USE A VIBRATORY PLATE COMPACTOR OR OTHER APPROVED MEANS TO THOROUGHLY COMPACT THE #57 STONE ON BOTH SIDES OF THE SOLID SLEEVE.
12. RESTRAINING JOINTS AT MECHANICAL JOINT SOLID SLEEVES SHALL BE ACHIEVED BY USING EBBA IRON SERIES 2000PV OR APPROVED EQUAL.
13. WHEN THE WATER MAIN IS UNDER A UTILITY, THE WATER MAIN PIPE SEGMENT SHALL BE CENTERED AT THE CROSSING.
14. IN COMPLIANCE WITH COMAR 09.20.01.03 AND THE SAFE DRINKING WATER ACT (SECTION 1417(a)(4)(B)), MATERIALS THAT COME IN CONTACT WITH WATER INTENDED FOR USE IN PUBLIC WATER SUPPLY SHALL COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT, WHICH WENT INTO EFFECT IN MARYLAND IN JANUARY 2012.
15. IN ACCORDANCE WITH CODE OF MARYLAND REGULATIONS (COMAR) 26.04.01.33, DIRECT AND INDIRECT ADDITIVES, SUPPLIERS OF WATER SHALL ONLY USE PRODUCTS (ANY MATERIALS THAT COME IN CONTACT WITH WATER INTENDED FOR USE IN PUBLIC WATER SUPPLY) THAT MEET THE APPLICABLE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) / NSF STANDARDS FOR DIRECT OR INDIRECT DRINKING WATER ADDITIVES. THE PRODUCTS CAN ALSO BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY THE ANSI FOR SUCH TESTING (I.E. INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS RESEARCH AND TESTING, ONTARIO CA, UNDERWRITERS LABORATORY, NORTHBROOK IL, AND WATER QUALITY ASSOCIATION, LISLE IL).
16. AFTER DISINFECTION, SAMPLES MUST BE COLLECTED BY A STATE-CERTIFIED SAMPLER AND ANALYZED AT A STATE-CERTIFIED LABORATORY. THE SAMPLE RESULTS MUST BE SUBMITTED TO MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER SUPPLY PROGRAM FOR REVIEW.
17. THE PUMPING STATION SUCTION WATER MAIN SHOWN ON DRAWING NO. C-101 SHALL BE TESTED AT THE TEST PRESSURE FOR THE 550 ZONE AS SHOWN ON THIS SHEET. THE PUMPING STATION DISCHARGE WATER MAIN SHOWN ON DRAWINGS C-101 SHALL BE TESTED AT THE TEST PRESSURE FOR THE 630 ZONE AS SHOWN ON THIS SHEET.



VICINITY MAP
SCALE: 1"=600'

WATER MAIN NOTES

1. ALL WATER MAINS SHALL BE D.I.P. CLASS 54 UNLESS OTHERWISE NOTED.
2. TOPS OF WATER MAIN SHALL HAVE A MINIMUM OF 4'-0" OF COVER UNLESS OTHERWISE NOTED.
3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
5. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD DETAIL AND SPECIFICATIONS.
6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
7. TRACER WIRES AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
8. FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATION TEST REQUIREMENTS NOTED IN SECTION 5.1 OF THE AWWA STANDARD C900 FOR PVC PRESSURE PIPE SHALL BE SUBMITTED WITH THE PIPE MATERIAL CERTIFICATIONS OR SHOP DRAWINGS PRIOR TO APPROVAL OF THE MATERIAL FOR USE. THE TEST RECORDS SHALL BE FOR THE PIPE TO BE INSTALLED UNDER THIS CONTRACT. ALL PVC PIPE SHALL CONTAIN MARKINGS TO ALLOW CROSS REFERENCING OF THE PIPE SUPPLIED TO THE TEST RECORDS RECEIVED.
9. UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS SACRIFICIAL ANODES SHALL BE INSTALLED ON ALL VALVES AND METALLIC FITTINGS USED WITH PVC WATER MAINS IN ACCORDANCE WITH VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. SEVENTEEN (17) POUND MAGNESIUM ANODES SHALL BE INSTALLED ON ALL VALVES AND DUCTILE IRON FITTINGS INCLUDING RESTRAINTS AND HARNESSSES. TWELVE (12) POUND ZINC ANODES SHALL BE INSTALLED ON ALL STAINLESS STEEL FITTINGS AND SADDLES USED WITH PVC MAINS. ALL "TEES" USED WITH PVC MAINS SHALL BE DUCTILE IRON.
10. PROPER ASSEMBLY OF GASKETED PVC PIPE JOINTS: THE MANUFACTURER'S INSERTION LINE OF GASKETED PVC PIPE JOINTS INDICATES THE MAXIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. AFTER ASSEMBLY OF THE JOINT, THE INSERTION LINE SHALL REMAIN VISIBLE. DUAL INSERTION LINES ON GASKETED PVC PIPE INDICATE THE MAXIMUM AND MINIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. THE CONTRACTOR SHALL NOT OVER INSERT OR OVER HOME THE SPIGOT INTO THE BELL OF PVC PIPE.

TYPE OF BUILDING:	COMMERCIAL
NUMBER OF PARCELS:	N/A
NUMBER OF WATER HOUSE CONNECTIONS:	N/A
PRESSURE ZONE:	550, 630
TEST GRADIENT:	780 (550 ZONE) 860 (630 ZONE)
TEST PRESSURE:	166 psi (550 ZONE) 201 psi (630 ZONE)
DRAINAGE AREA:	MIDDLE PATUXENT

CONTROL NOTE
THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON ARE BASED ON GPS OBSERVATIONS FROM HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS.
NAD 1983 / 2011 (HORIZONTAL)
NAVD 1988 (VERTICAL)
35C2 N 563920.82 E 1344204.19 ELEV. 463.41
35C5 N 562148.44 E 1344554.49 ELEV. 451.54

OWNER'S/DEVELOPER'S CERTIFICATION
"I/WE CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (NDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO THE BEGINNING OF THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."
Kerri Dismore 12/26/2018
OWNERS / DEVELOPERS SIGNATURE DATE
Kerri Dismore, Project Manager
PRINTED NAME & TITLE

DESIGN CERTIFICATION
"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
Lars Peterson 12/18/2018
DESIGNERS SIGNATURE DATE
LARS PETERSON
PRINTED NAME M.D. REGISTRATION NO. 33984 (P.E., R.L.S. OR R.L.A. (CIRCLE ONE))

PURPOSE STATEMENT:
CONTRACT NO. 44-5036 WILL PROVIDE A NEW WATER PUMPING STATION TO SERVE THE 630 WEST WATER ZONE WHICH WILL PROVIDE BACKUP WATER SUPPLY TO STRENGTHEN THE 630 WEST WATER ZONE. ALSO INCLUDED ARE ASSOCIATED COMMUNICATIONS UPGRADES AT THE HARPERS CHOICE ELEVATED WATER TANK. SEE CONTRACT 44-5046 FOR THE ASSOCIATED SUCTION AND DISCHARGE WATER MAIN EXTENSIONS.

QUANTITIES

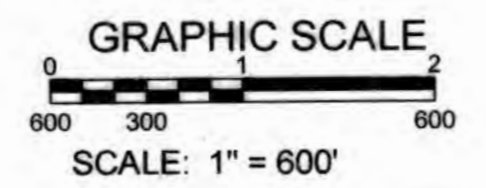
ITEM	UNIT	ESTIMATE	AS-BUILT	MANUFACTURER
16" CLASS C-900 DR14 PVC	L.F.	187	187	NAPCO
8" CLASS C-900 DR14 PVC	L.F.	280	280	NAPCO
6" CLASS C-900 DR14 PVC	L.F.	20	20	NAPCO
4" SCHEDULE 80 PVC	L.F.	68	68	IPEX
8" VALVE	EA	1	1	KENNEDY VALVE
FIRE HYDRANT	EA	2	2	MUELLER

NAME OF UTILITY CONTRACTOR: _____
CHECKBOX _____
AS-BUILT DATE _____
SURVEY AND DRAFTING DIVISION

AS-BUILT CERTIFICATION

I HEREBY CERTIFY, BY MY SEAL, THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN AND SPECIFICATIONS MEET THE APPROVED PLANS AND SPECIFICATIONS.
Lars Peterson
DESIGN PROFESSIONAL SIGNATURE
DATE: 9/1/21 MD P.E. LICENSE 33984
LARS PETERSON
PROFESSIONAL ENGINEER

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. 33984, Expiration Date 01/15/2019.



KCI TECHNOLOGIES PROJECT No.: 131601306.01

User: kevin.johnson
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Date: 10/18/2018 8:57am

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John G. ... 12-28-18
DIRECTOR OF PUBLIC WORKS DATE

Thomas E. ... 12/28/18
CHIEF, BUREAU OF UTILITIES DATE

... 12/28/18
CHIEF, UTILITY DESIGN DIVISION DATE

KCI TECHNOLOGIES

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

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Sparks, MD 21152
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www.kci.com

STATE OF MARYLAND
LARS PETERSON
PROFESSIONAL ENGINEER
NO. 33984
12/2018

DES:	KFJ		
DRN:	KFJ		
CHK:	GW/LP		
DATE:	DEC 2018		
AG:	1	AS-BUILT	9/2021
BY:	NO.	REVISION	DATE

TITLE SHEET

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. G-001
SCALE AS SHOWN
SHEET 1 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

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SHEET NO.	DRAWING NO.	DESCRIPTION
1	G-001	TITLE SHEET
2	G-002	INDEX OF SHEETS, SUGGESTED SEQUENCE OF CONSTRUCTION & LEGEND
3	C-101	PUMPING STATION SITE PLAN
4	CP-001	CATHODIC PROTECTION PLAN
5	A-001	PUMPING STATION LEGEND & ABBREVIATIONS
6	A-002	PUMPING STATION LIFE SAFETY PLAN
7	A1-101	PUMPING STATION LOWER LEVEL PLAN
8	A1-102	PUMPING STATION FIRST FLOOR PLAN
9	A1-103	PUMPING STATION INTERMEDIATE FLOOR PLAN
10	A1-104	PUMPING STATION ROOF PLAN
11	A1-201	PUMPING STATION NORTH & EAST ELEVATIONS
12	A1-202	PUMPING STATION SOUTH & WEST ELEVATIONS
13	A1-301	PUMPING STATION BUILDING SECTIONS
14	A1-302	PUMPING STATION BUILDING SECTIONS
15	A1-303	PUMPING STATION BUILDING SECTIONS WALL SECTIONS
16	A1-304	PUMPING STATION DETAILS
17	A1-305	PUMPING STATION WALL SECTIONS
18	A1-501	PUMPING STATION DETAILS
19	A1-601	PUMPING STATION DOOR SCHEDULE & DETAILS
20	A1-602	PUMPING STATION SCHEDULE & DETAILS
21	S1-001	GENERAL STRUCTURAL NOTES
22	S1-002	GENERAL STRUCTURAL NOTES
23	S1-101	PUMPING STATION LOWER LEVEL PLAN
24	S1-102	PUMPING STATION FIRST FLOOR PLAN
25	S1-103	PUMPING STATION CRANE PLAN
26	S1-104	PUMPING STATION CEILING PLAN
27	S1-105	PUMPING STATION ROOF PLAN
28	S1-201	MOMENT FRAME SECTION AND DETAILS
29	S1-202	ROOF TRUSS ELEVATIONS, LOADING AND NOTES
30	S1-301	SECTIONS
31	S1-302	SECTIONS
32	S1-303	SECTIONS
33	S1-304	SECTIONS
34	S1-305	SECTIONS
35	S1-306	SECTIONS
36	S1-401	PARTIAL CONTROL ROOM CEILING FAN
37	S1-402	PARTIAL FUEL TANK FOUNDATION PLAN AND SECTIONS
38	S1-501	TYPICAL DETAILS
39	S1-502	TYPICAL DETAILS
40	M-001	PROCESS GENERAL NOTES, ABBREVIATIONS AND LEGEND
41	M1-101	PUMPING STATION LOWER LEVEL
42	M1-102	PUMPING STATION FIRST FLOOR
43	M1-103	CEILING PLAN
44	M1-301	PUMPING STATION SECTIONS
45	M1-302	PUMPING STATION SECTIONS
46	M1-401	ENLARGED VIEWS
47	M1-501	PROCESS DETAILS
48	M1-502	HVAC DETAILS
49	M1-503	HVAC DETAILS
50	M1-504	PLUMBING DETAILS
51	M1-505	SUPPORT DETAILS
52	M1-506	PIPE SUPPORT DETAILS
53	M1-601	PROCESS SCHEMATICS
54	M1-602	SCHEMATICS
55	M1-701	MECHANICAL SCHEDULES
56	M1-901	PUMPING STATION 3D VIEWS

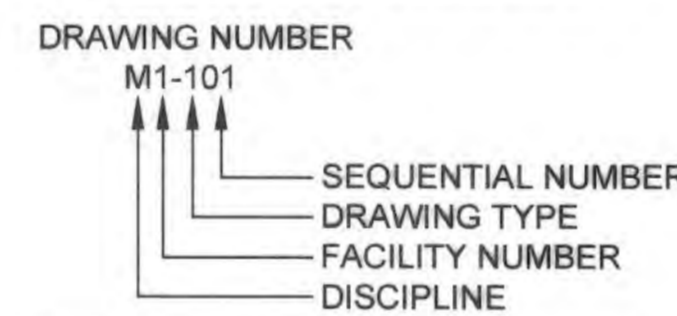
INDEX OF SHEETS (CONTINUED)		
SHEET NO.	DRAWING NO.	DESCRIPTION
57	E-001	ELECTRICAL LEGEND AND GENERAL NOTES
58	E1-101	ELECTRICAL SITE PLAN
59	E1-102	POWER PLAN - LOWER LEVEL
60	E1-103	POWER PLAN - FIRST FLOOR
61	E1-104	LIGHTING PLAN - LOWER LEVEL
62	E1-105	LIGHTING PLAN - FIRST FLOOR
63	E1-501	ELECTRICAL DETAILS I
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70	I-601	COMMUNICATIONS DIAGRAM
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73	I1-603	GENERATOR SYSTEM P&ID AND RISER DIAGRAM
74	I1-604	METERING PUMP CONTROLS
75	I1-605	PUMP CONTROL PANEL ECD AND ELEVATION
76	I1-606	PUMP CONTROL ECD SHEET 1
77	I1-607	PUMP CONTROL ECD SHEET 2
78	I1-608	VENTILATION CONTROL ECDS
79	I1-609	VENTILATION PANEL DETAILS
80	I2-101	HARPER'S CHOICE ELEVATED TANK MODIFICATIONS
81	I2-601	HARPER'S CHOICE ELEVATED TANK P&ID AND RISER DIAGRAM

SUGGESTED SEQUENCE OF CONSTRUCTION

THE FOLLOWING SEQUENCE OF CONSTRUCTION IS NOT A COMPLETE LIST OF TASKS OR WORK REQUIRED TO COMPLETE THE CONTRACT REQUIREMENTS. THE SEQUENCE OF CONSTRUCTION MAY BE MODIFIED OR REVISED AT THE REQUEST OF THE CONTRACTOR WITH THE APPROVAL OF THE COUNTY PRIOR TO THE START OF CONSTRUCTION.

1. PREPARE THE SITE AND PERFORM CONSTRUCTION STAKE OUT.
2. INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON SDP-18-046 DRAWINGS. THE CONTRACTOR SHALL FOLLOW THE SEQUENCE OF CONSTRUCTION FOR SEDIMENT CONTROLS AS SHOWN ON THE APPROVED SDP-18-046.
3. CONSTRUCT WORK SHOWN.
4. OBTAIN NECESSARY BUILDING AND TRADE PERMITS.
5. PERFORM REQUIRED SYSTEMS TESTING AND STARTUP.
6. PERFORM REQUIRED WATER PIPING SYSTEM DISINFECTION PER VOLUME IV AND LATEST AWWA REQUIREMENTS. SAMPLING AND TESTING SHALL BE IN ACCORDANCE WITH VOLUME IV.
7. COORDINATE WITH HOWARD COUNTY FOR THE OPENING OF ALL VALVES INSTALLED UNDER CONTRACT NO. 44-5046.
8. UPON COMPLETION OF WORK, REMOVE EROSION AND SEDIMENT CONTROL DEVICES.

ANNOTATION LEGEND



DISCIPLINE	
DISCIPLINE	CODE
GENERAL	G
CIVIL	C
ARCHITECTURAL	A
STRUCTURAL	S
MECHANICAL	M
ELECTRICAL	E
INSTRUMENTATION	I

FACILITY

NO.	DESCRIPTION
1	CEDAR LANE PUMPING STATION
2	HARPER'S CHOICE WATER TANK
3	BUREAU OF UTILITIES

DRAWING TYPE

TYPE NO.	DESCRIPTION
0	GENERAL (SYMBOLS LEGEND, NOTES, ETC.)
1	PLANS
2	ELEVATIONS
3	SECTIONS
4	LARGE SCALE VIEWS (ENLARGED PLANS, ETC.)
5	DETAILS
6	DIAGRAMS
7	SCHEDULES
8	USER DEFINED
9	3D VIEWS

LEGEND

EXISTING	PROPOSED
DECIDUOUS TREE	WATER MAIN
CONIFEROUS TREE	FIRE HYDRANT
EXISTING FIRE HYDRANT	VALVE
EXISTING VALVE	CONTINUITY TEST STATION
W EXISTING WATER MAIN	TEST PIT (COMPLETED)
S EXISTING SEWER MAIN	SOIL BORING (SEE GEOTECHNICAL REPORT)
G EXISTING GAS MAIN	STORM DRAIN
UE EXISTING UNDERGROUND ELECTRIC	
OE EXISTING OVERHEAD ELECTRIC	
OH EXISTING OVERHEAD WIRE	
FO EXISTING FIBER OPTIC	
UT EXISTING UNDERGROUND TELECOMMUNICATIONS	
EXISTING SEWER EASEMENT	
PROPERTY BOUNDARY/RIGHT OF WAY	
630 EXISTING PRESSURE ZONE	
550 GUARDRAIL	
TREELINE	
TRAVERSE POINT	

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. 33984, Expiration Date 01/15/2019.

AS-BUILT
DATE 9/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James E. Buller 12/28/18
CHIEF, BUREAU OF ENGINEERING DATE

Thomas J. ... 12-28-18
CHIEF, UTILITY DESIGN DIVISION DATE

... 12-28-18
CHIEF, BUREAU OF UTILITIES DATE

KCI TECHNOLOGIES

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STATE OF MARYLAND
LARRY A. PETERSON
PROFESSIONAL ENGINEER
NO. 33984

DES:	KFJ				
DRN:	KFJ				
CHK:	GW/LP				
DATE:	DEC 2018	BY:	NO.	REVISION:	DATE

**INDEX OF SHEETS,
SUGGESTED SEQUENCE OF
CONSTRUCTION & LEGEND**

**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

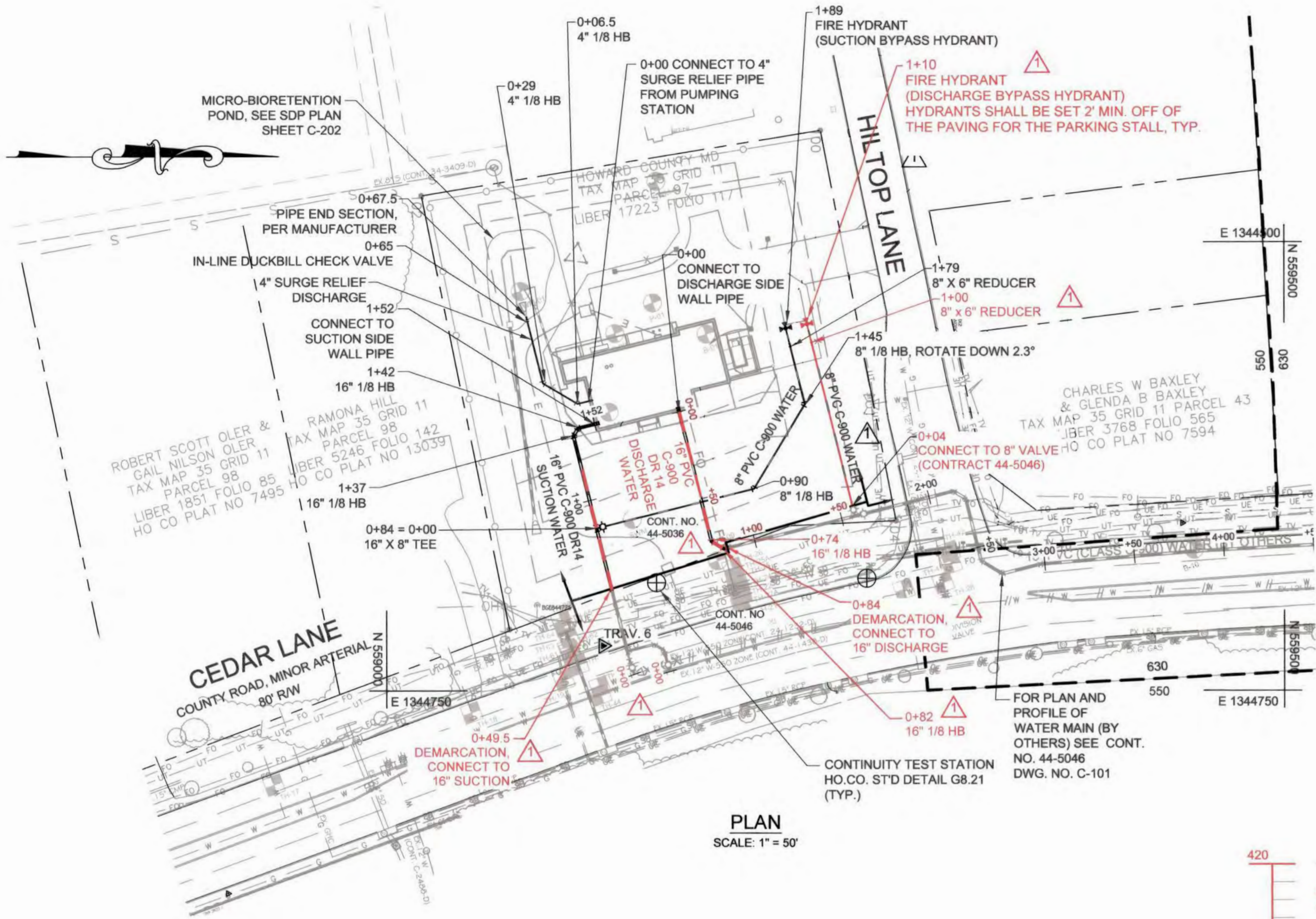
DRAWING NO.
G-002

SCALE
AS SHOWN

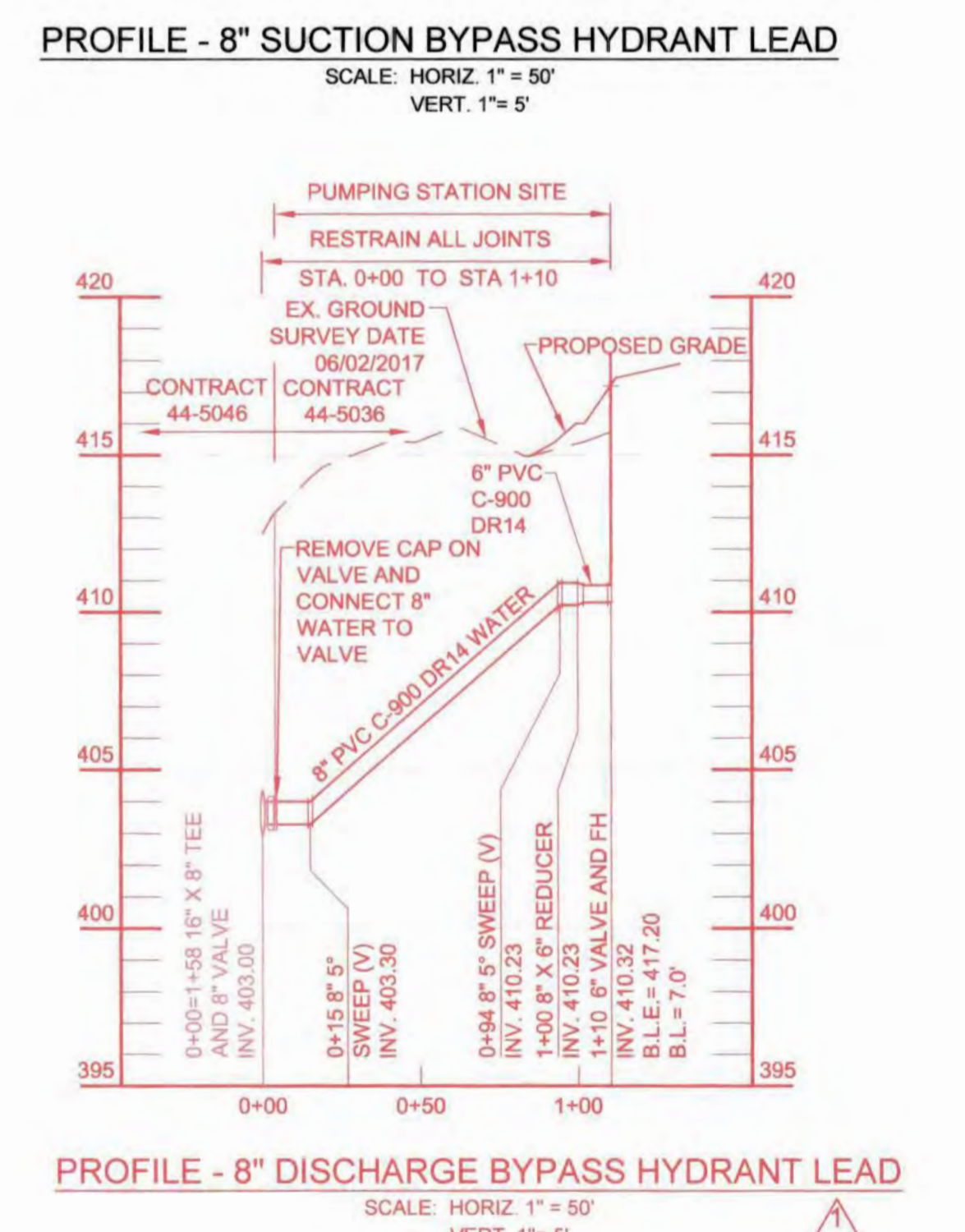
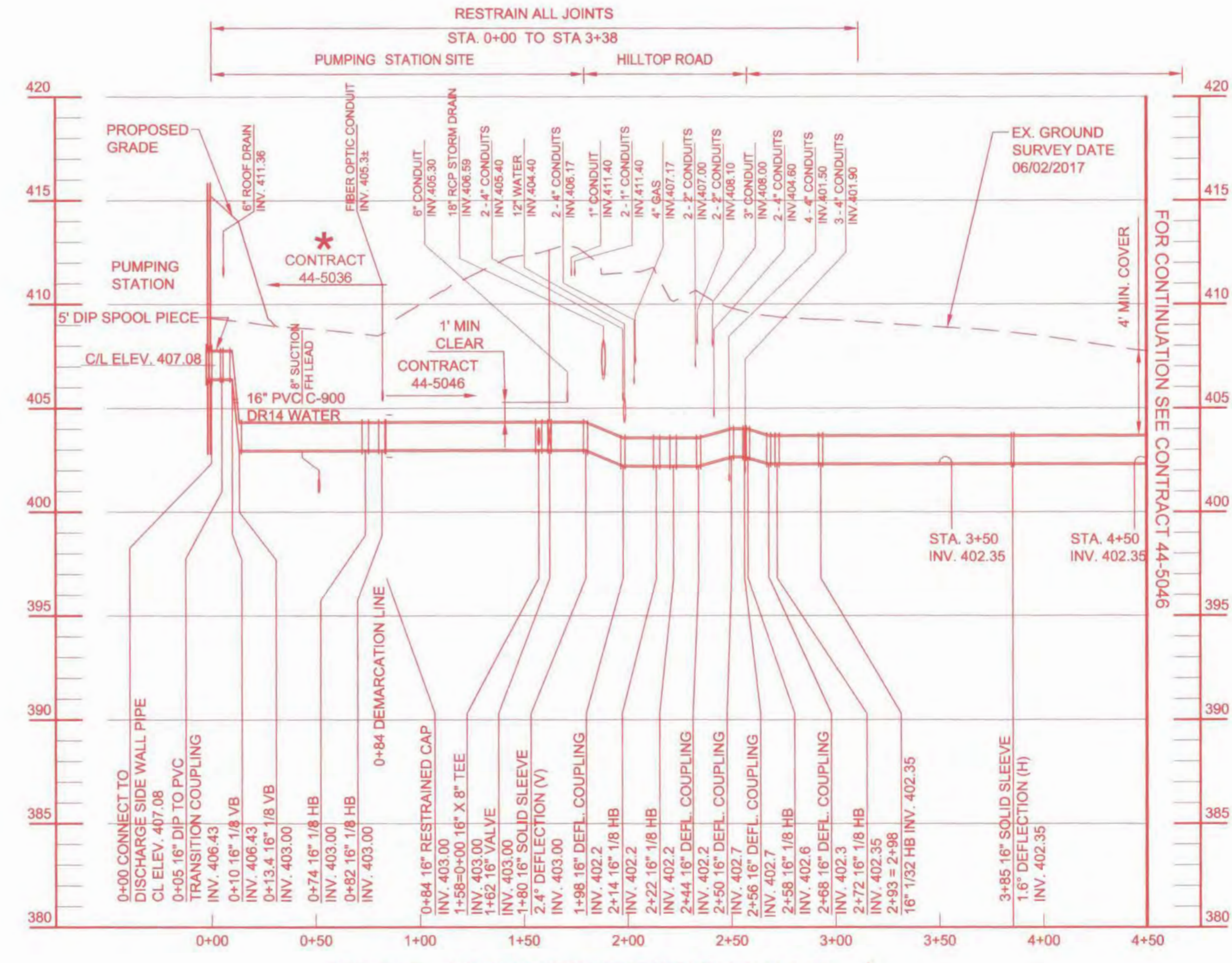
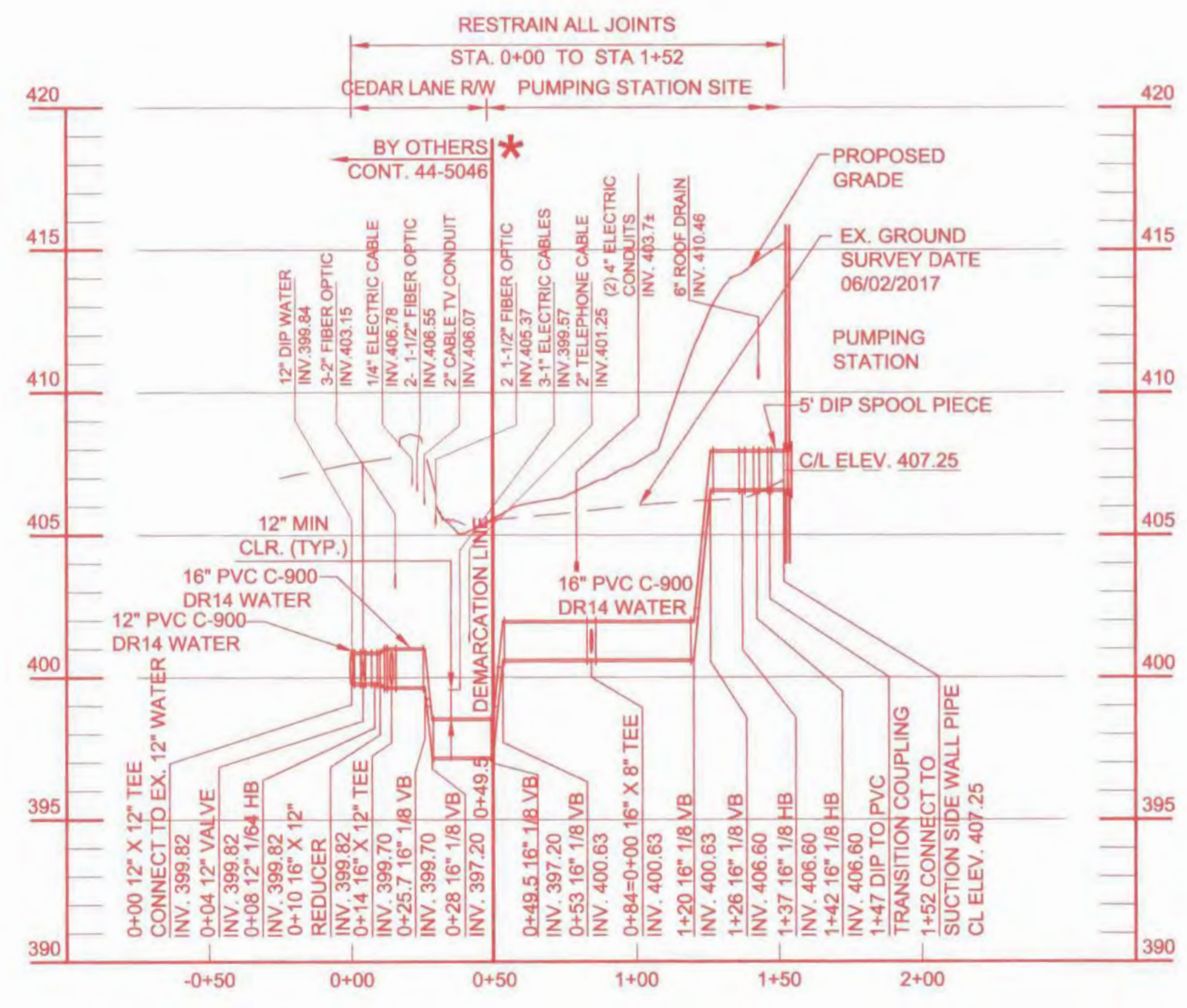
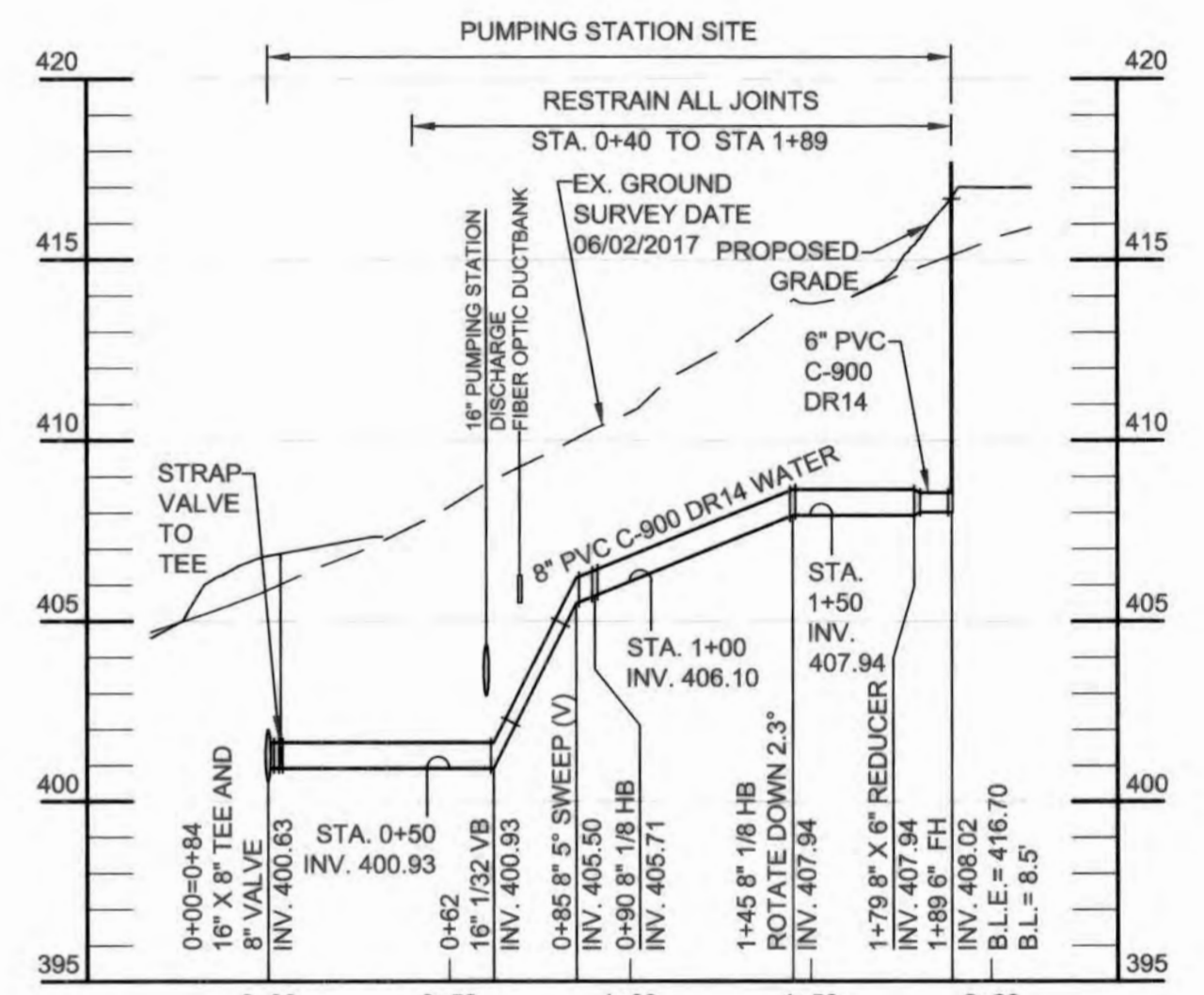
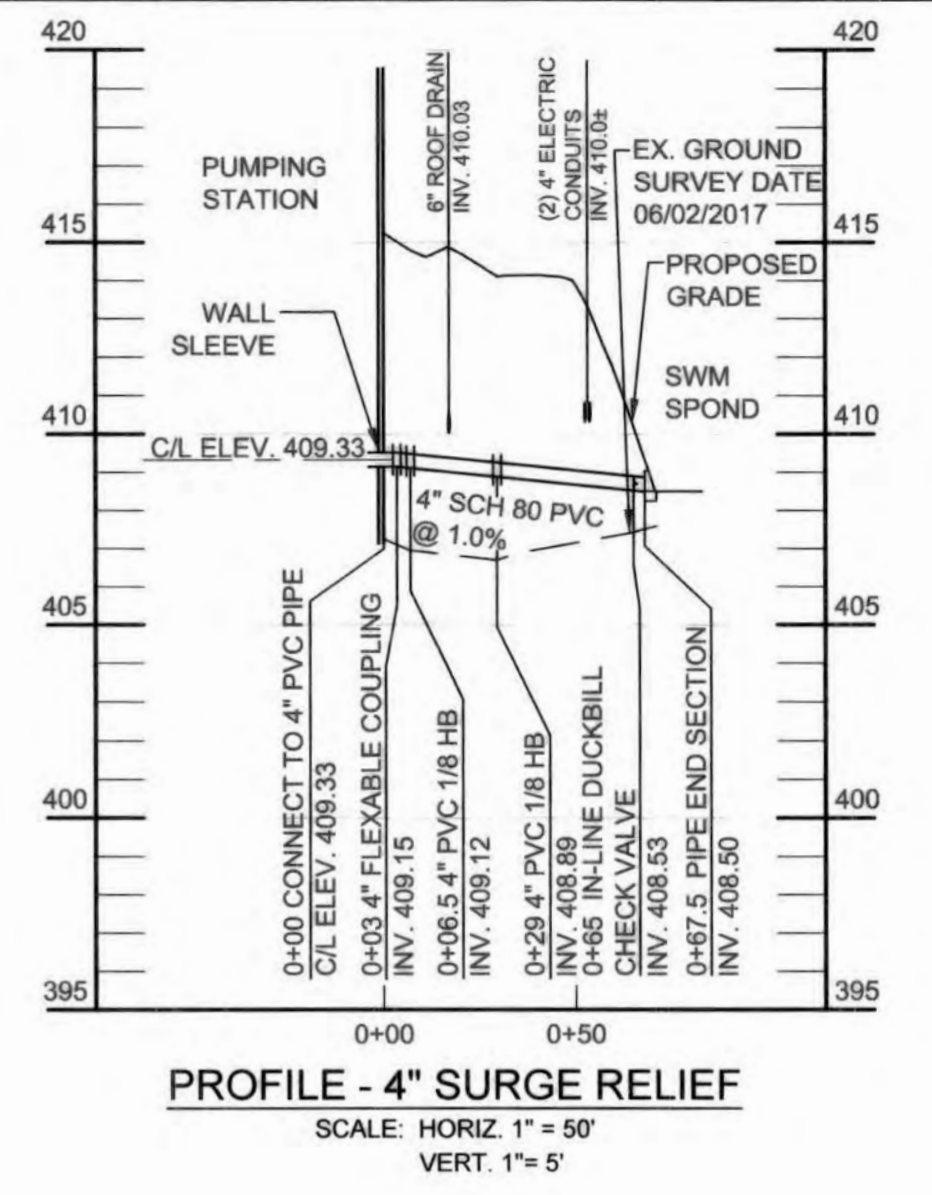
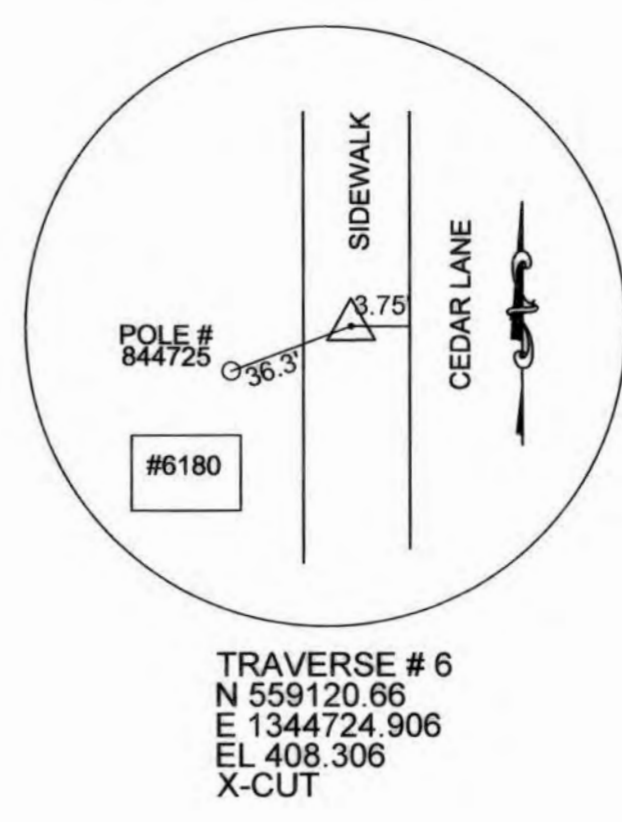
SHEET
2 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

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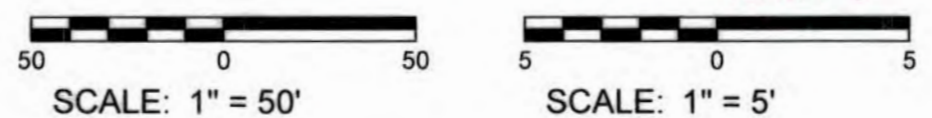


WATER MAIN STAKE-OUT SCHEDULE			
STATION	DESCRIPTION	NORTHING	EASTING
PUMPING STATION SUCTION PIPE			
0+49.5	DEMARCATION, SUCTION PIPE	559125.33	1344692.96
0+84=0+00	16" X 8" TEE	559116.97	1344659.40
1+37	16" 1/8 HB	559104.15	1344607.98
1+42	16" 1/8 HB	559106.72	1344603.69
1+52	CONNECT TO WALL PIPE	559115.98	1344601.38
PUMPING STATION DISCHARGE PIPE			
0+84	DEMARCATION, SUCTION PIPE	559189.73	1344670.32
0+82	16" 1/8 HB	559187.85	1344670.78
0+74	16" 1/8 HB	559187.85	1344666.66
0+00	CONNECT TO WALL PIPE	559163.03	1344594.59
SUCTION BYPASS HYDRANT PIPE			
0+90	8" 1/8 HB	559204.65	1344637.54
1+45	8" 1/8 HB	559233.03	1344590.32
1+79	8" X 6" REDUCER	559224.98	1344558.04
1+89	FIRE HYDRANT	559222.45	1344547.88
DISCHARGE BYPASS HYDRANT PIPE			
0+04	CONNECT TO EX. VALVE (CONTRACT 44-5046)	559259.52	1344647.02
1+00	8" X 6" REDUCER	559236.74	1344555.65
1+10	FIRE HYDRANT	559234.21	1344545.48
PUMPING STATION SURGE RELIEF PIPE			
0+00	CONNECT TO PIPE AT WALL	559112.78	1344588.53
0+06.5	4" 1/8 HB	559106.48	1344590.10
0+29	4" 1/8 HB	559087.16	1344578.49
0+67.5	4" PIPE END SECTION	559077.88	1344541.24



* THE CONTRACTOR SHALL REMOVE THE TEMPORARY CAP AND BUTTRISS AND FLUSH THE WATER MAIN CONSTRUCTED UNDER CONTRACT NO. 44-5046 PRIOR TO MAKING THE CONNECTION.

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or ed by me, and that I am a duly licensed professional engineer under the laws State Of Maryland, License No. 33984, Expiration Date 01/15/2019.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature]
Date: 12-21-18

Chief, Bureau of Utilities: [Signature]

KCI TECHNOLOGIES

Engineers, Planners, Scientists, Construction Managers

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STATE OF MARYLAND
PROFESSIONAL ENGINEER

[Signature]

DES:	KFJ
DRN:	KFJ
CHK:	GW/LP
DATE:	DEC 2018
AG:	1
NO.:	AS-BUILTS
REVISION:	8/2021
DATE:	8/2021

PUMPING STATION SITE PLAN

600' SCALE MAP NO. 35
BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE
WATER PUMPING STATION

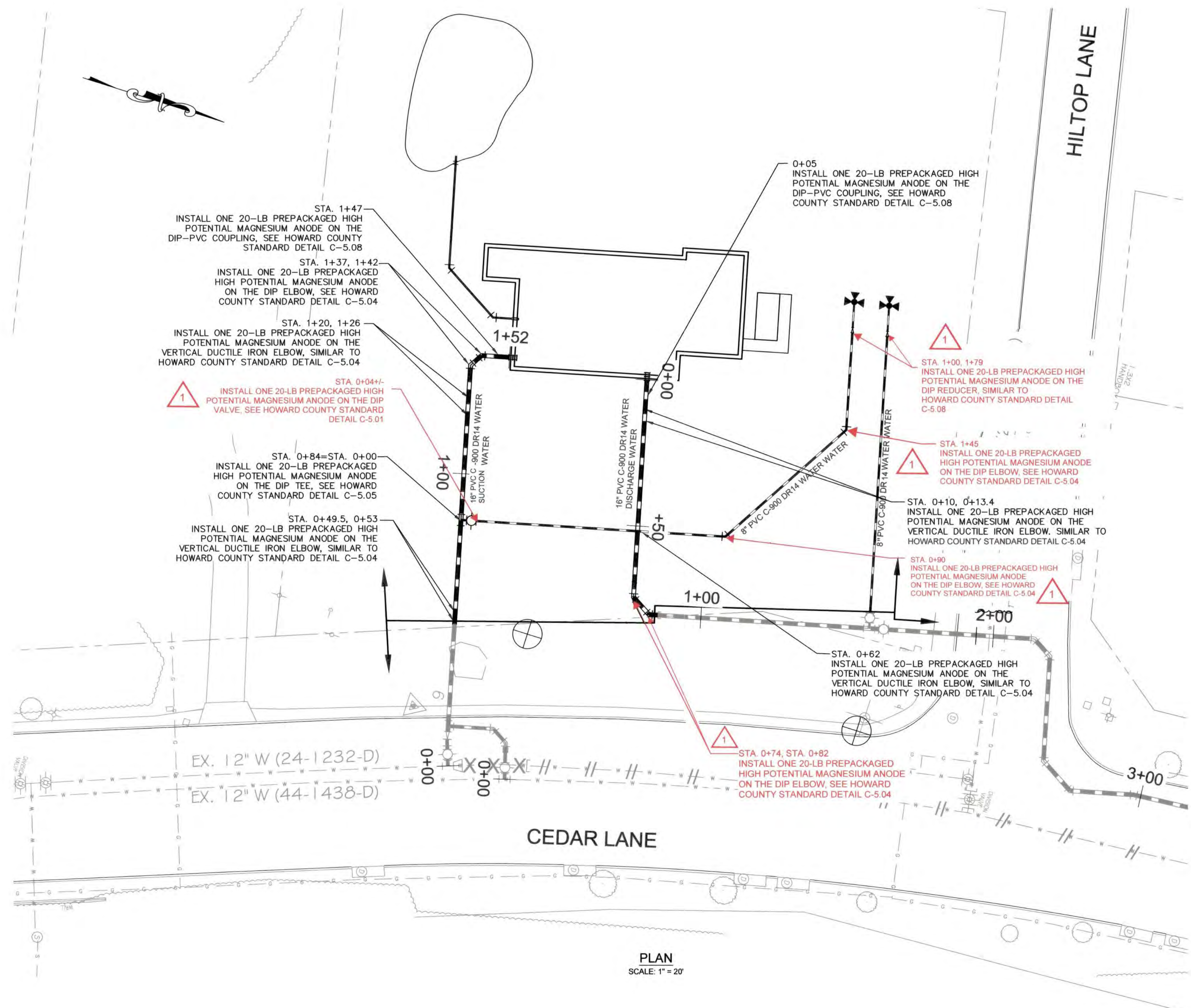
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING NO. C-101
SCALE AS SHOWN
SHEET 3 OF 81

KCI TECHNOLOGIES PROJECT NO.: 131601306.01

Dec 15, 2018 - 8:11am User: kwh, jodson M:\2016\131601306.01\Drawings\Visual Corrosion\13160130601-C-CP Design.dwg



STA. 1+47
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP-PVC COUPLING, SEE HOWARD COUNTY STANDARD DETAIL C-5.08

STA. 1+37, 1+42
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP ELBOW, SEE HOWARD COUNTY STANDARD DETAIL C-5.04

STA. 1+20, 1+26
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE VERTICAL DUCTILE IRON ELBOW, SIMILAR TO HOWARD COUNTY STANDARD DETAIL C-5.04

1
STA. 0+04+/-
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP VALVE, SEE HOWARD COUNTY STANDARD DETAIL C-5.01

STA. 0+84=STA. 0+00
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP TEE, SEE HOWARD COUNTY STANDARD DETAIL C-5.05

STA. 0+49.5, 0+53
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE VERTICAL DUCTILE IRON ELBOW, SIMILAR TO HOWARD COUNTY STANDARD DETAIL C-5.04

0+05
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP-PVC COUPLING, SEE HOWARD COUNTY STANDARD DETAIL C-5.08

1
STA. 1+00, 1+79
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP REDUCER, SIMILAR TO HOWARD COUNTY STANDARD DETAIL C-5.08

1
STA. 1+45
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP ELBOW, SEE HOWARD COUNTY STANDARD DETAIL C-5.04

STA. 0+10, 0+13.4
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE VERTICAL DUCTILE IRON ELBOW, SIMILAR TO HOWARD COUNTY STANDARD DETAIL C-5.04

1
STA. 0+90
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP ELBOW, SEE HOWARD COUNTY STANDARD DETAIL C-5.04

STA. 0+62
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE VERTICAL DUCTILE IRON ELBOW, SIMILAR TO HOWARD COUNTY STANDARD DETAIL C-5.04

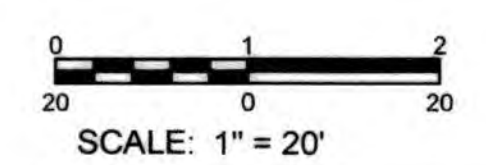
1
STA. 0+74, STA. 0+82
INSTALL ONE 20-LB PREPACKAGED HIGH POTENTIAL MAGNESIUM ANODE ON THE DIP ELBOW, SEE HOWARD COUNTY STANDARD DETAIL C-5.04

NOTES:

1. ALL NEW DUCTILE IRON AND STEEL FITTINGS, VALVES, COUPLINGS, TAPPING SLEEVES, REDUCERS, AND FIRE HYDRANT PIPE ALONG THE PVC WATER MAIN ARE TO BE PROVIDED WITH CORROSION PROTECTION, SEE HOWARD COUNTY STANDARD DETAIL C-5.01 THROUGH C-5.15.
2. FOR THERMITE WELD TO CONNECTOR PLATE, SEE HOWARD COUNTY STANDARD DETAIL C-5.13.
3. FOR HORIZONTAL THERMITE WELDS TO DUCTILE IRON PIPE, SEE HOWARD COUNTY STANDARD DETAIL C-3.04. FOR VERTICAL THERMITE WELDS TO DUCTILE IRON PIPE, SEE HOWARD COUNTY STANDARD DETAIL C-3.05.
4. FOR PLACEMENT OF ANODES, SEE HOWARD COUNTY STANDARD DETAIL C-5.14 AND C-5.15.
5. DO NOT MAKE THERMITE WELDS TO PVP PIPE.
6. POLYETHYLENE ENCASMENT SHALL NOT BE INSTALLED ON NEW DUCTILE IRON WATER PIPING.
7. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS OF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE HOWARD COUNTY STANDARD DETAILS C-4.06.
8. INSTALL ONE 12-LB PREPACKAGED ZINC ANODE ON ALL RESTRAINING HARNESSSES, SEE HOWARD COUNTY STANDARD DETAIL C-5.10.

PLAN
SCALE: 1" = 20'

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/28/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12-28-18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/28/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/28/18
CHIEF, UTILITY DESIGN DIVISION DATE

RUSSELL CORROSION CONSULTANTS, LLC
7130 Minstrel Way, Suite 230
Columbia, MD 21046-4481
www.RussellCorrosion.com



DES: YZ				
DRN: AMT				
CHK: DD				
DATE: DEC. 2018	AG	1	AS-BUILTS	8/2021
	BY	NO.	REVISION	DATE

CATHODIC PROTECTION PLAN

AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING NO. CP-001
SCALE AS SHOWN
SHEET 4 OF 81

DETAIL SYMBOLS

DETAIL DRAWING NUMBER, SHEET NUMBER WHERE SECTION IS DRAWN, ELEVATION SYMBOL, INTERIOR ELEVATION INDICATOR WITH MULTIPLE VIEWS, ROOM NAME & NUMBER, CONSTRUCTION NOTE, DETAIL SYMBOL, DOOR SYMBOL, WALL TYPE SYMBOL, WINDOW, CURTAIN WALL & LOUVER SYMBOL, EQUIPMENT SYMBOL, KEY NOTE INDICATOR, REVISION SYMBOL, COLUMN BUBBLE, FLOOR LEVEL ELEV. 00.00, PLAN NORTH, NORTH ARROW, ACTUAL NORTH, DRAWING NAME, SCALE: 1/8" = 1'-0"

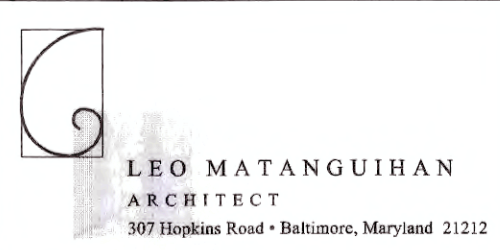
ABBREVIATIONS

Table listing abbreviations for architectural materials and components, including AFF (above finish floor), AT (acoustical tile), AC (air conditioning), etc., up to MAS (masonry).

MATERIALS

(ARCHITECTURAL AND STRUCTURAL DRAWINGS) showing material patterns for EARTH, CAST STONE OR PRECAST CONCRETE, WOOD FRAMING AND FURRING, GRAVEL OR CRUSHED STONE, CONCRETE MASONRY UNIT, STEEL, WOOD - CONTINUOUS BLOCKING AND SHIMS, PLYWOOD (SMALL SCALE), INSULATION - RIGID, INSULATION - BATT, ALUMINUM, GLASS, WOOD, FINISHED, PLYWOOD, METAL.

KCI TECHNOLOGIES PROJECT No.: 131601306.01



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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Includes signatures for Director of Public Works, Chief, Bureau of Engineering, and Chief, Utility Design Division.

KCI TECHNOLOGIES logo and address: 936 Ragwood Road, Sparks, MD 21152. Phone: (410) 316-7800. Fax: (410) 316-7817. Website: www.kci.com

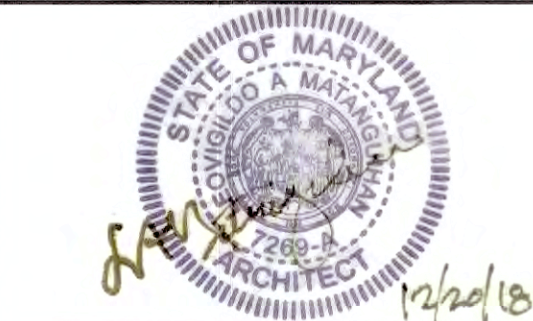


Table with columns: DES, DRN, CHK, DATE, BY, NO., REVISION. Includes entries for LM, LP, and a date of DEC 2018.

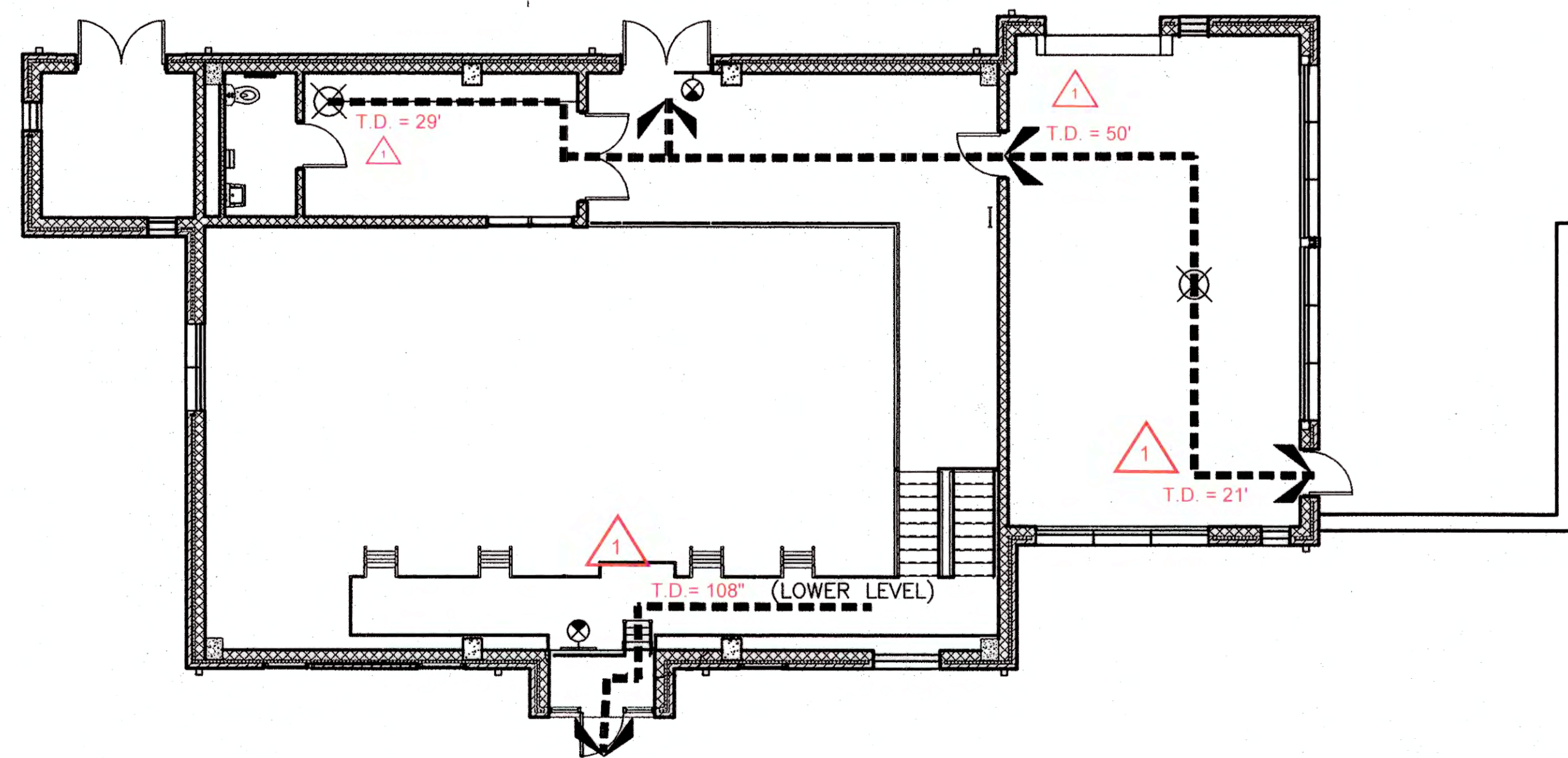
PUMPING STATION LEGEND & ABBREVIATIONS. Includes scale information: 600' SCALE MAP NO. 35, BLOCK NO. 17.11.

CEDAR LANE WATER PUMPING STATION. CAPITAL PROJECT No. W-8328. CONTRACT No. 44-5036. ELECTION DISTRICT NO. 5. HOWARD COUNTY, MARYLAND.

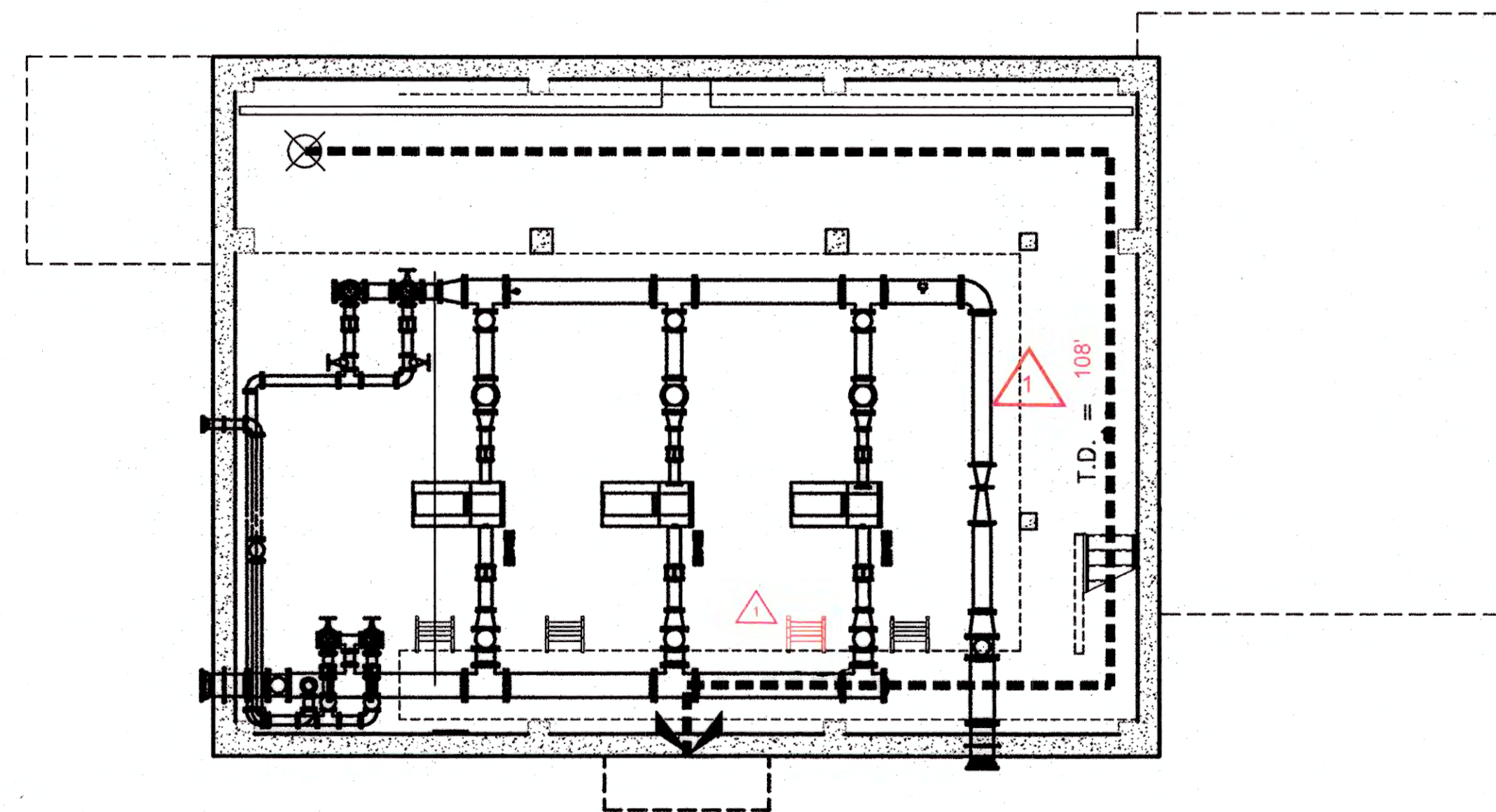
AS-BUILT DATE 9/2021

DRAWING NO. A-001. SCALE AS SHOWN. SHEET 5 OF 81.

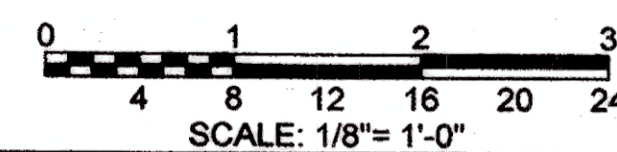
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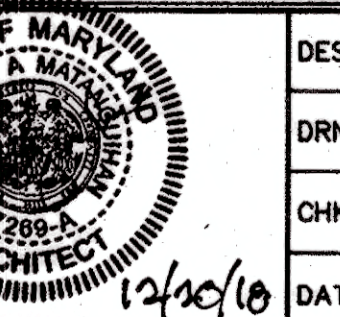
1 LIFE SAFETY- FIRST FLOOR
SCALE: 1/8" = 1'-0"



2 LIFE SAFETY- LOWER LEVEL
SCALE: 1/8" = 1'-0"



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APPLICABLE CODE: INTERNATIONAL BUILDING CODE 2018 WITH HOWARD COUNTY AMENDMENTS																		
CODE DATA	PROPOSED	PERMISSIBLE	REMARKS															
PUMP HOUSE BUILDING	THE PROPOSED BUILDING IS A SINGLE STOREY STRUCTURE WITH AN OPEN FLOOR PLAN THAT HOUSES THE MECHANICAL EQUIPMENT. THE BUILDING HAS A GRADE LEVEL AND LOWER LEVEL. THE STRUCTURE IS MASONRY BEARING WALLS WITH PRECAST CONCRETE CEILING PLANKS WITH SLOPED SHINGLED ROOF AND INTERIOR CMU PARTITIONS.																	
1. USE GROUP	F2, LOW HAZARD OCCUPANCY.	GROUP F2 AS PER IBC 306.3	IN COMPLIANCE															
2. AUTOMATIC SPRINKLER SYSTEM	PROPOSED BUILDING IS NOT SPRINKLERED.		IN COMPLIANCE															
3. TYPE OF CONSTRUCTION	TYPE II-B NON COMBUSTIBLE, UNPROTECTED NON-COMBUSTIBLE CONCRETE STRUCTURE WITH BEARING AND NON-LOAD BEARING CONCRETE/MASONRY PARTITIONS.	TYPE II-B, AS PER IBC CHAPTER 6, TABLE - 601	IN COMPLIANCE															
4. HEIGHT AND AREA CALCULATIONS	THE BUILDING IS SINGLE STORY WITH FLOOR AREA, NUMBER OF FLOORS AND BUILDING HEIGHT: LOWER LEVEL: 2,460 SF; WALKWAY: 189 SF FIRST FLOOR: 1,642 SF NUMBER OF FLOORS = 1 PLUS LOWER LEVEL (ONE ROOM) BUILDING HEIGHT = 30'-2" TOP ROOF RIDGE (ABOVE GRADE)	THE ALLOWABLE HEIGHT, BUILDING AREA AND NUMBER OF FLOORS AS PER TABLE 5034.3, 504.4 & 506.2 ALLOWABLE GORSS AREA : 18,000 SF NUMBER OF FLOORS : 3 HEIGHT : 55'	IN COMPLIANCE															
5. FIRE RESISTANCE RATING OF BUILDING ELEMENTS	EXTERIOR WALL= LOAD BEARING CMU BACKING WITH BRICK FASCIA NONBEARING INTERIOR WALLS = CMU, NON-COMBUSTIBLE FLOORS = NON-COMBUSTIBLE STRUCTURAL SLAB ROOF CONSTRUCTION =CONCRETE ROOF PLANKS CEILING WITH LIGHT GAUGE STEEL FRAMING ROOF FRAMING (0 HOUR RATED)	AS PER TABLE 601 AND 602 - ALL EXTERIOR/ INTERIOR WALLS, FLOOR AND ROOF CONSTRUCTIONS ARE REQUIRED TO HAVE 0 HRS FIRE RATING.	IN COMPLIANCE															
6. OCCUPANCY LOAD	<p>EXPECTED OCCUPANT LOAD: (IBC: TABLE 1004.1.2) (NFPA101: 7.3, TABLE 7.3.1.2)</p> <table border="0"> <tr> <td>LOCATION</td> <td>FLOOR AREA/S.F.</td> <td>PER PERSON=OCCUPANT LOAD+OTHER LOAD</td> <td>=</td> <td>TOTAL LOAD</td> </tr> <tr> <td>EQUIPMENT ROOM</td> <td>4,291 SF /300=</td> <td>15 + 0</td> <td>=</td> <td>15</td> </tr> <tr> <td>TOTAL OCCUPANT LOAD</td> <td></td> <td></td> <td>=</td> <td>15</td> </tr> </table> <p>(NOTE: NFPA ALLOWS USE OF ACTUAL OCCUPANT LOAD FOR "SPECIAL PURPOSE INDUSTRIAL" IN CALCULATING OCCUPANT LOAD, BUT IBC IS MORE STRINGENT AT 300 SF PER PERSON AND IS USED IN DETERMINING EGRESS CAPACITIES.)</p>			LOCATION	FLOOR AREA/S.F.	PER PERSON=OCCUPANT LOAD+OTHER LOAD	=	TOTAL LOAD	EQUIPMENT ROOM	4,291 SF /300=	15 + 0	=	15	TOTAL OCCUPANT LOAD			=	15
LOCATION	FLOOR AREA/S.F.	PER PERSON=OCCUPANT LOAD+OTHER LOAD	=	TOTAL LOAD														
EQUIPMENT ROOM	4,291 SF /300=	15 + 0	=	15														
TOTAL OCCUPANT LOAD			=	15														
7. EGRESS COMPONENT WIDTH - DOORS.	PROPOSED MINIMUM DOOR WIDTH = 32".	AS PER SECTION 1005.2: CALCULATED MINIMUM DOOR WIDTH USING OCCUPANCY LOAD IS LESS THAN THE REQUIRED MINIMUM WIDTH OF 32". THEREFORE, MIN DOOR WIDTHS ARE PROPOSED TO BE MORE THAN 32".	IN COMPLIANCE															
8. NO. OF EXITS	<table border="1"> <thead> <tr> <th>SPACE NAMES</th> <th>MIN. REQ'D</th> <th>NO. PROV'D</th> <th>IBC REFERENCE</th> </tr> </thead> <tbody> <tr> <td>LOWER LEVEL PUMP</td> <td>2</td> <td>2</td> <td>IBC:TABLE 1006.2.2.2</td> </tr> <tr> <td>UPPER LEVEL PUMP</td> <td>1</td> <td>1</td> <td>IBC:TABLE 1006.3.2(2)</td> </tr> </tbody> </table>	SPACE NAMES	MIN. REQ'D	NO. PROV'D	IBC REFERENCE	LOWER LEVEL PUMP	2	2	IBC:TABLE 1006.2.2.2	UPPER LEVEL PUMP	1	1	IBC:TABLE 1006.3.2(2)	SECTION 1006.2.2.2 LOWER LEVEL PUMP ROOM EGRESS DISTANCE IS LESS THAN 150' AND ONE EXIT WITH ALTERNATING STAIR IS PERMITTED. EGRESS DISTANCE IN UPPER LEVEL PUMP ROOM IS LESS THAN 49 OCCUPANTS AND 75' EGRESS TRAVEL DISTANCE PER TABLE 1006.3.2(2), THEREFORE, ONE EXIT IS ALLOWED	IN COMPLIANCE			
SPACE NAMES	MIN. REQ'D	NO. PROV'D	IBC REFERENCE															
LOWER LEVEL PUMP	2	2	IBC:TABLE 1006.2.2.2															
UPPER LEVEL PUMP	1	1	IBC:TABLE 1006.3.2(2)															
9. LENGTH OF EXIT ACCESS	THE MAXIMUM EXIT TRAVEL DISTANCE IS 142'-0" IN THE LOWER PUMP ROOM LEVEL.	PERMISSIBLE MAXIMUM COMMON PATH AND EXIT TRAVEL DISTANCE ARE AS PER TABLES 1006.2.1 & 1017.2 FOR OCCUPANCY GROUP F2 ARE: COMMON PATH OF TRAVEL < 75 FT (NON-SPRINKLERED) EXIT TRAVEL DISTANCE < 300 FT (NON-SPRINKLERED)	IN COMPLIANCE															

LEGEND

- ⊗ REMOTE POINT
- APPROXIMATE PATH OF TRAVEL
- C.P.T COMMON PATH OF TRAVEL
- T.D TRAVEL DISTANCE
- ⊗ EXIT SIGN

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] DIRECTOR OF PUBLIC WORKS
[Signature] CHIEF, BUREAU OF ENGINEERING
[Signature] CHIEF, BUREAU OF UTILITIES
[Signature] CHIEF, UTILITY DESIGN DIVISION

KCI TECHNOLOGIES
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www.kci.com

DES: LM
DRN: LM
CHK: LP
DATE: DEC 2018

BY	NO.	REVISION	DATE
AG	1	AS-BUILT	8/2021

PUMPING STATION
LIFE SAFETY PLAN

60' SCALE MAP NO. 35 BLOCK NO. 17.11

**CEDAR LANE
WATER PUMPING STATION**

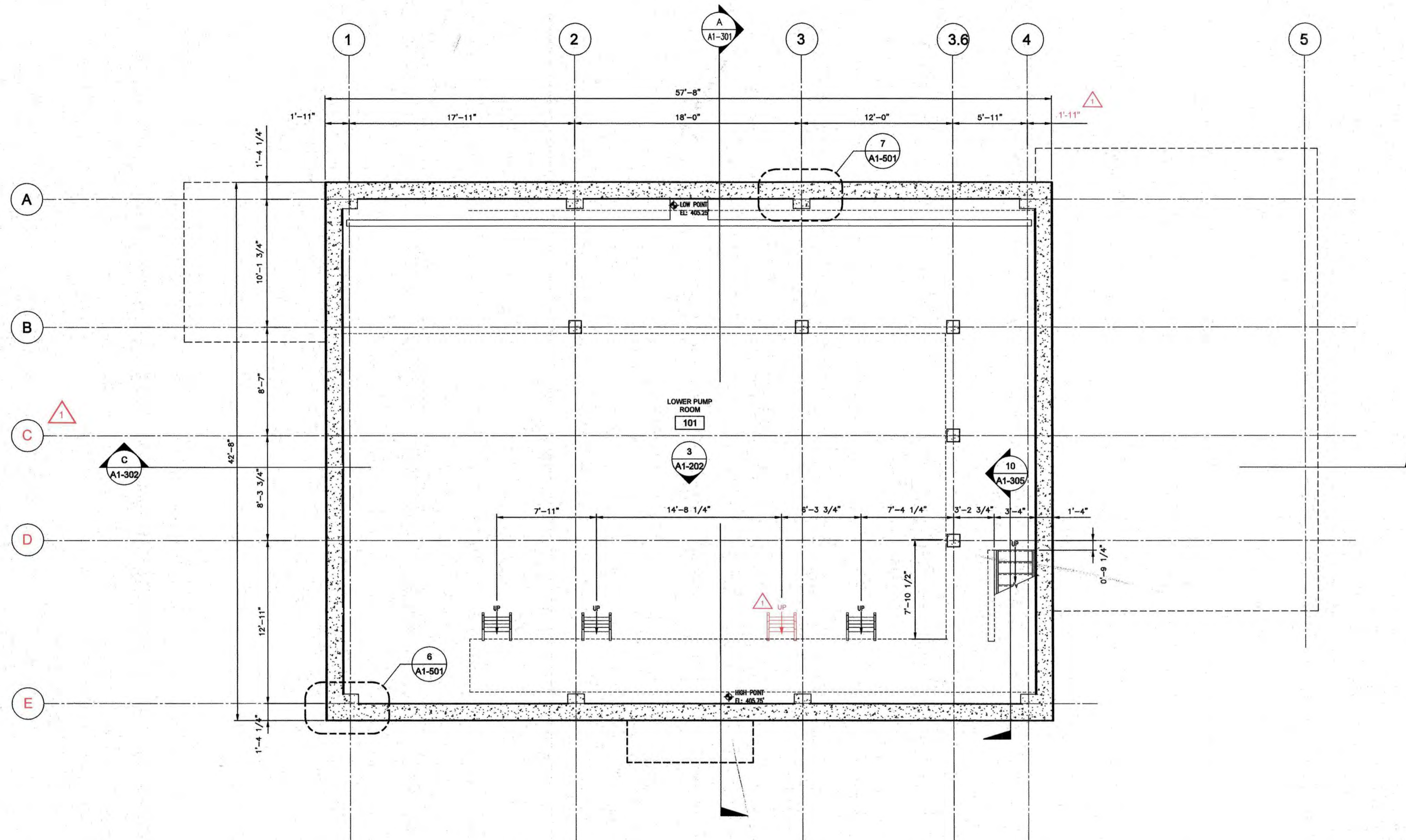
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

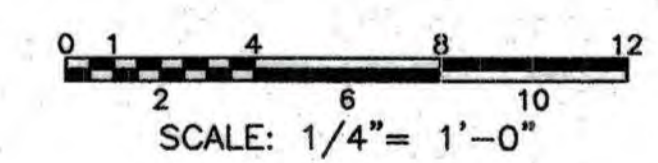
AS-BUILT REPLACEMENT SHEET 9/2021 DRAWING NO. A-002

SCALE AS SHOWN
SHEET 6 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01



1 LOWER LEVEL PLAN
SCALE: 1/4" = 1'-0"



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LEO MATANGUIHAN
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3072 Lakeside Road • Baltimore, Maryland 21212

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
DIRECTOR OF PUBLIC WORKS
DATE: 12-20-11
CHIEF, BUREAU OF UTILITIES

[Signature]
CHIEF, BUREAU OF ENGINEERING
DATE: *[Signature]*
CHIEF, UTILITY DESIGN DIVISION

KCI TECHNOLOGIES

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Sparks, MD 21152
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DRN:	LM				
CHK:	LP				
AG:	1	AS-BUILT	8/2021		
BY:	NO.				
DATE:	DEC 2018				

PUMPING STATION
LOWER LEVEL PLAN

DATE: 600' SCALE MAP NO. 35 BLOCK NO. 17, 11

**CEDAR LANE
WATER PUMPING STATION**

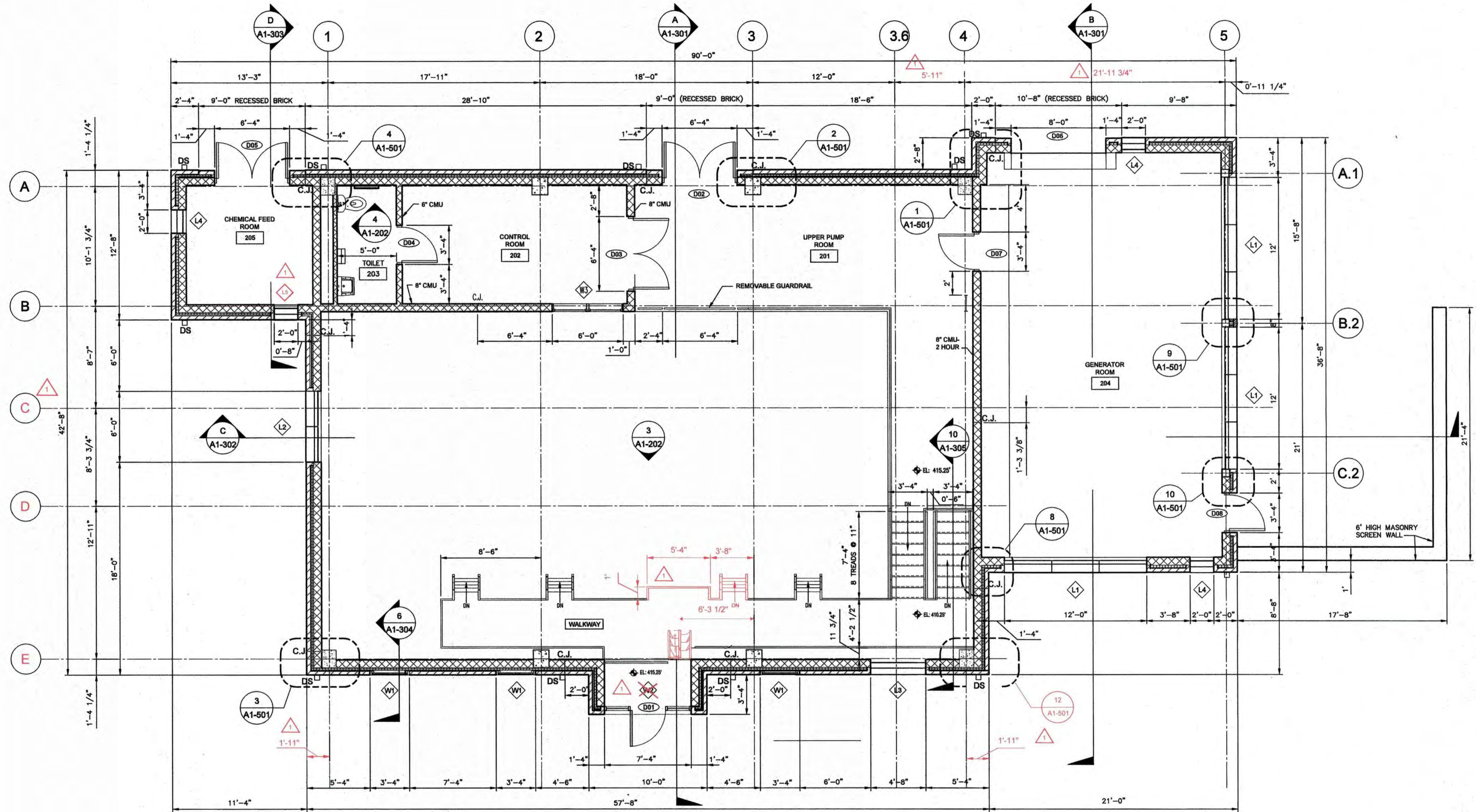
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

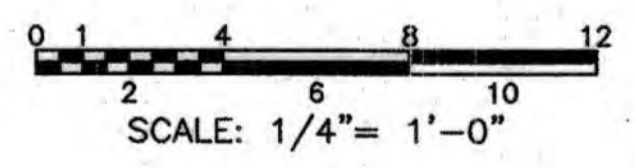
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SCALE AS SHOWN
SHEET 7 of 81

AS-BUILT REPLACEMENT SHEET 9/2021

KCI TECHNOLOGIES PROJECT NO.: 131601306.01



1 FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"



LEO MATANGUIHAN
ARCHITECT
200 Hopkins Road • Baltimore, Maryland 21212

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. ...
DIRECTOR OF PUBLIC WORKS DATE 12-28-11

Ronald B. ...
CHIEF, BUREAU OF ENGINEERING DATE

...
CHIEF, BUREAU OF UTILITIES DATE

...
CHIEF, UTILITY DESIGN DIVISION DATE

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CHK:	
DATE:	DEC 2018
BY:	AG
NO.:	1
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION
FIRST FLOOR PLAN

600' SCALE MAP NO. 35
BLOCK NO. 17.11

CEDAR LANE
WATER PUMPING STATION

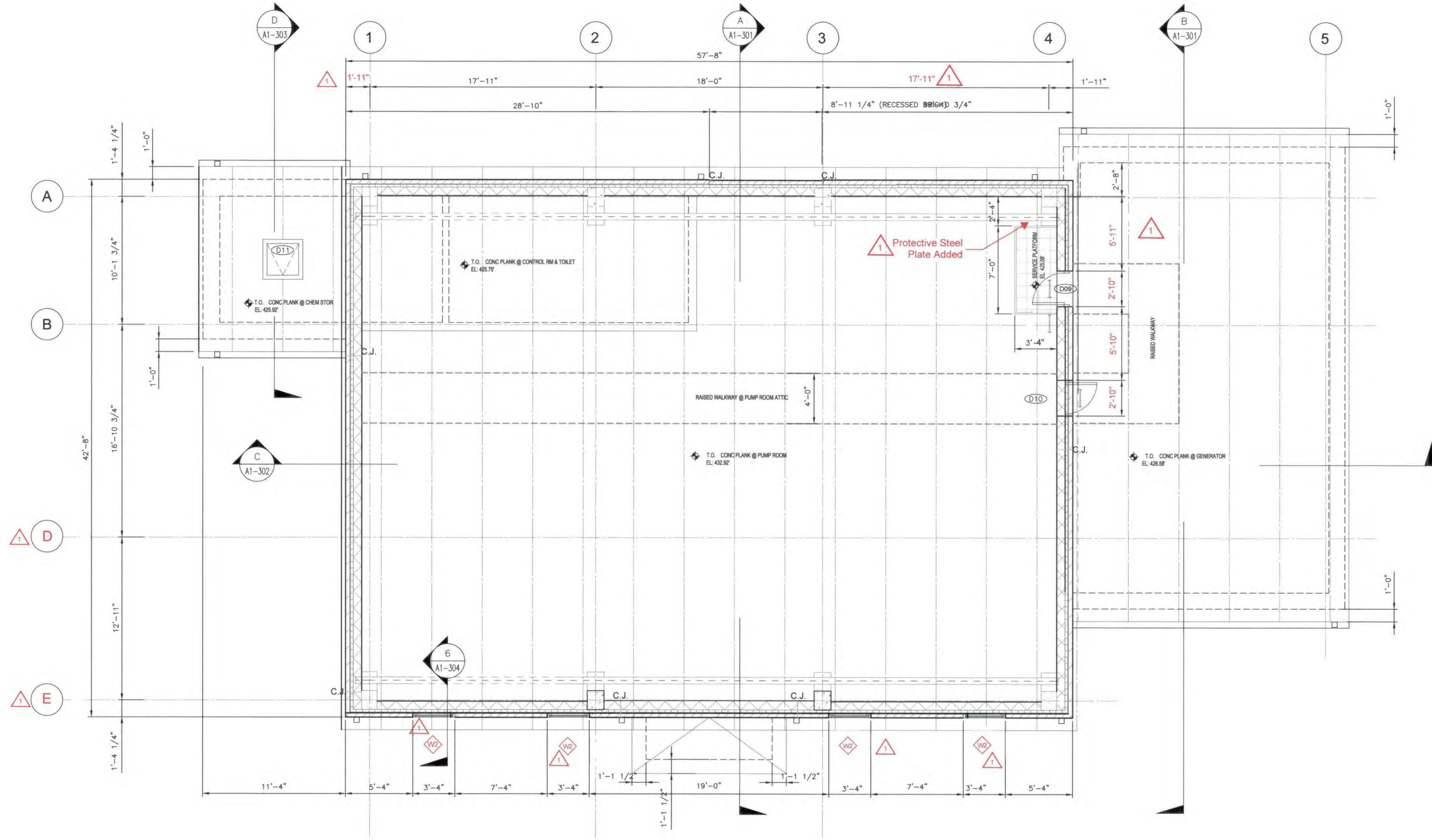
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CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

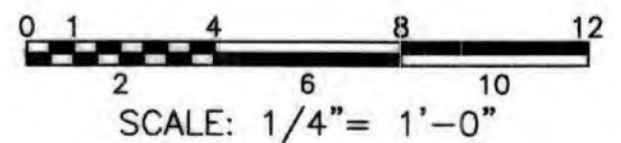
AS-BUILT REPLACEMENT SHEET 9/2021

DRAWING NO. A1-102
SCALE AS SHOWN
SHEET 8 OF 81

KCI TECHNOLOGIES PROJECT No.: 131801306.01



1 INTERMEDIATE LEVEL PLAN
SCALE: 1/4" = 1'-0"



LEO MATANGUIHAN
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3077 Hopewell Road • Baltimore, Maryland 21212

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/20/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12-20-18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/20/18
CHIEF, UTILITY DESIGN DIVISION DATE

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ENGINEERS
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DES:					
DRN:					
CHK:					
DATE: DEC 2018	AG	1	AS-BUILT	8/2021	
BY	NO.	REVISION	DATE	600' SCALE MAP NO. 35	BLOCK NO. 17, 11

**PUMPING STATION
INTERMEDIATE FLOOR PLAN**

**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

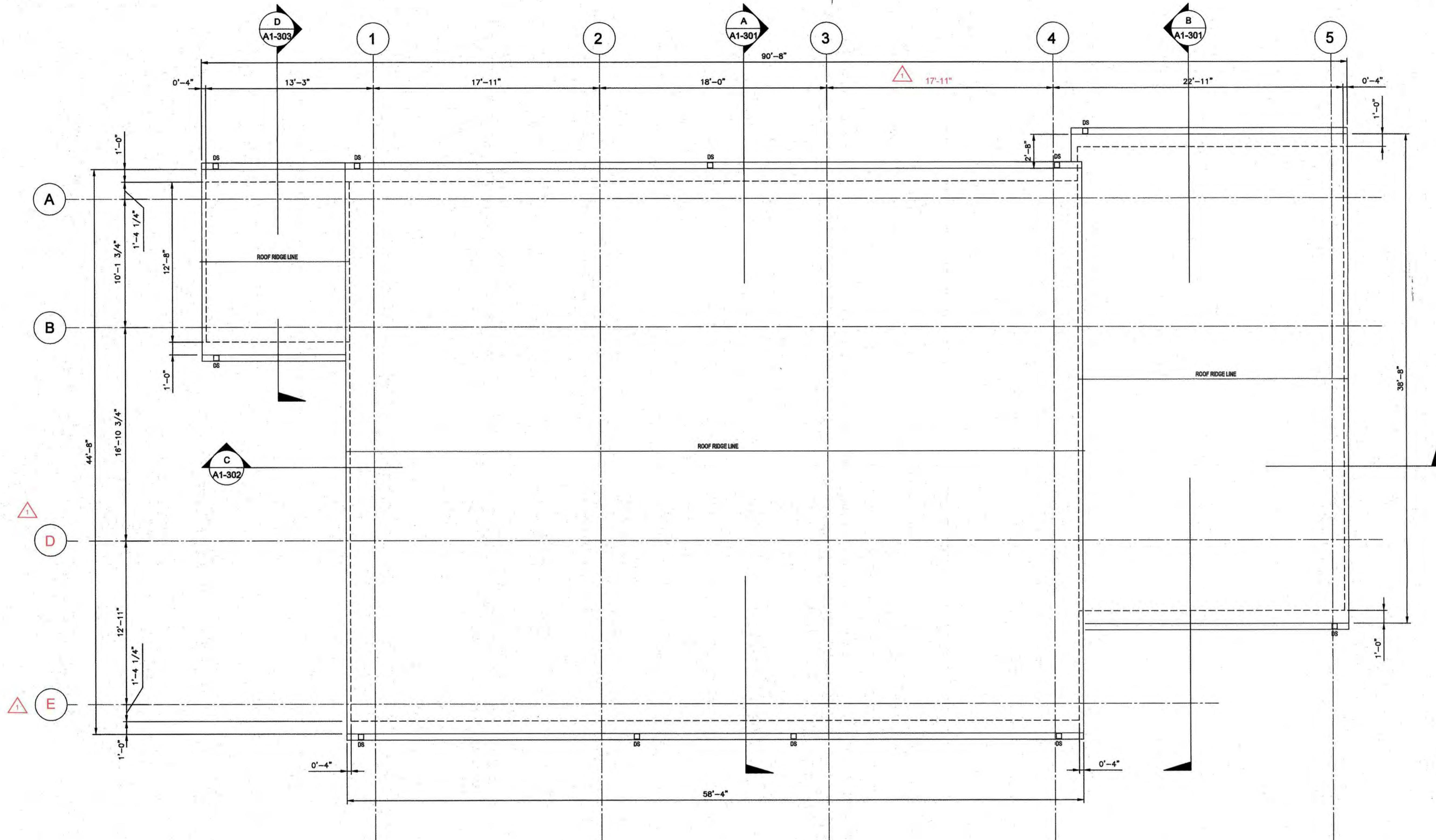
AS-BUILT REPLACEMENT SHEET 9/2021

DRAWING NO.
A1-103

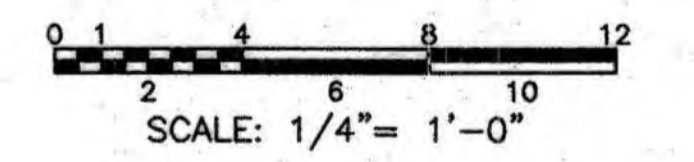
SCALE
AS SHOWN

SHEET
9 of 81

KCI TECHNOLOGIES PROJECT No.: 131601308.01



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



LEO MATANGUIHAN
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3071 Annapolis Road • Baltimore, Maryland 21222

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
DIRECTOR OF PUBLIC WORKS DATE 12-16-18

[Signature]
CHIEF, BUREAU OF UTILITIES DATE

[Signature]
CHIEF, BUREAU OF ENGINEERING DATE

[Signature]
CHIEF, UTILITY DESIGN DIVISION DATE

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DES:	
DRN:	
CHK:	
DATE: DEC 2018	
BY	AG 1
NO.	AS-BUILT
REVISION	9/2021

PUMPING STATION
ROOF PLAN

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

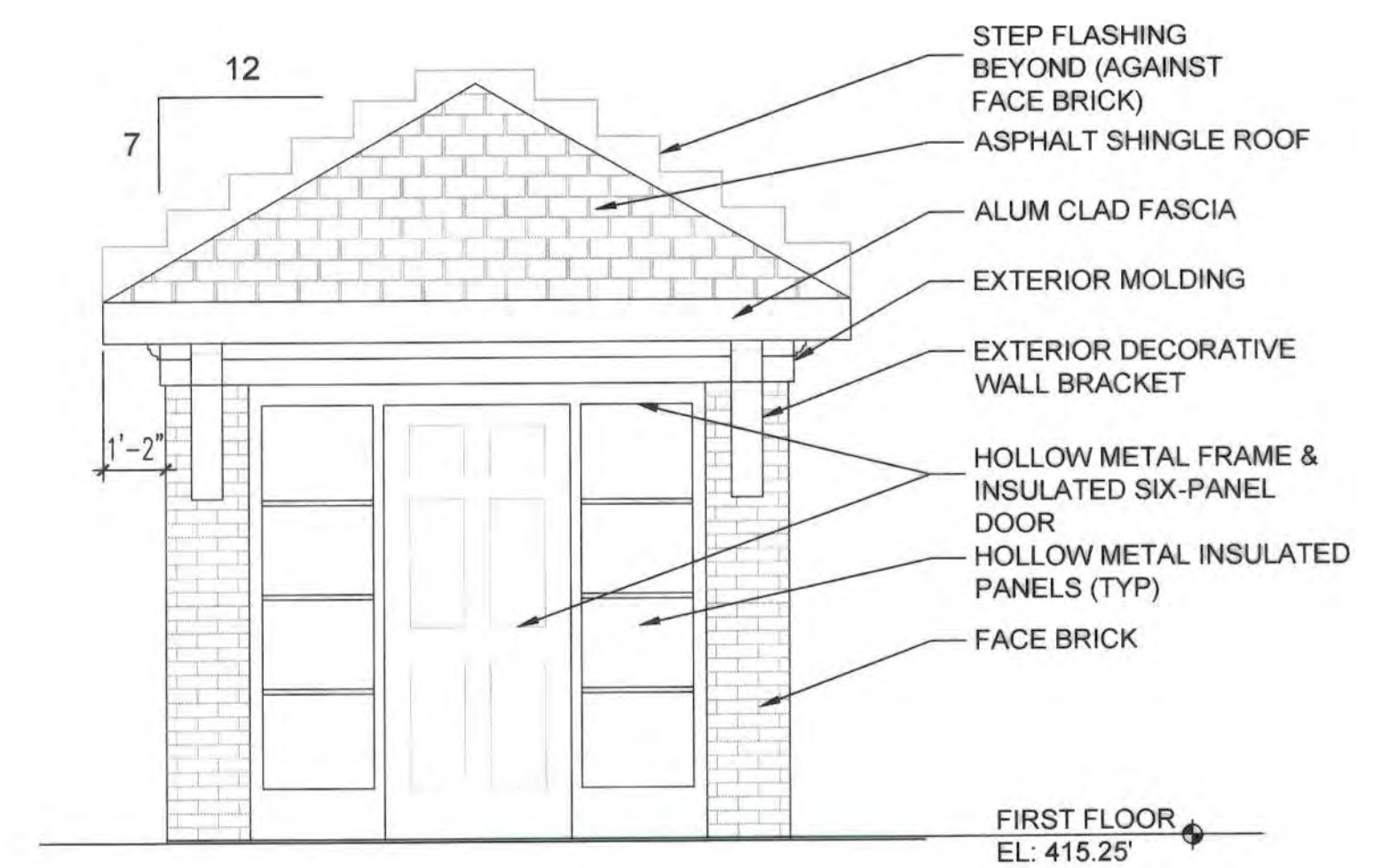
CEDAR LANE
WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. A1-104
SCALE AS SHOWN
SHEET 10 of 81

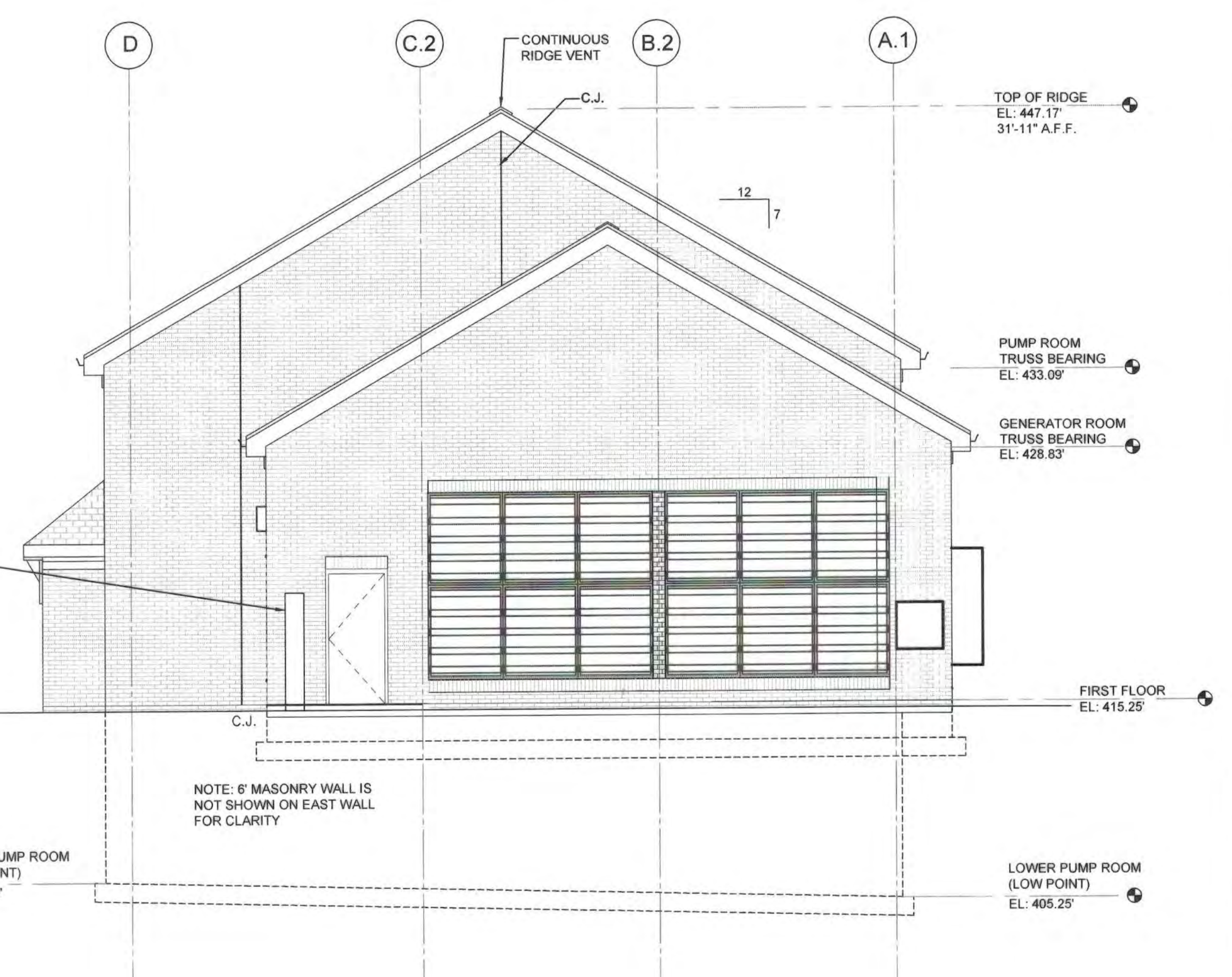
KCI TECHNOLOGIES PROJECT No.: 131601306.01



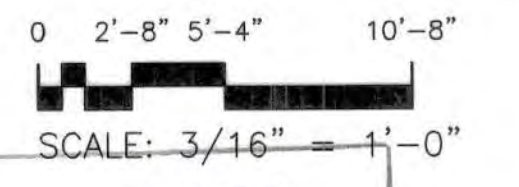
3 ENLARGED ELEVATION
SCALE: 3/8" = 1'-0"



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



2 NORTH ELEVATION
SCALE: 3/16" = 1'-0"



AS-BUILT
DATE 9/2021

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. 7269, Expiration Date 08/14/2020.

LEO MATANGUIHAN
ARCHITECT
507 Hopkins Road • Baltimore, Maryland 21212

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Butler 12/25/11
DIRECTOR OF PUBLIC WORKS DATE

Thomas P. Butler 12/25/11
CHIEF, BUREAU OF ENGINEERING DATE

Thomas P. Butler 12/25/11
CHIEF, BUREAU OF UTILITIES DATE

Thomas P. Butler 12/25/11
CHIEF, UTILITY DESIGN DIVISION DATE

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Sparks, MD 21152
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Fax: (410) 316-7817
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DES:					
DRN:					
CHK:					
DATE: DEC 2018	BY	NO.	REVISION	DATE	

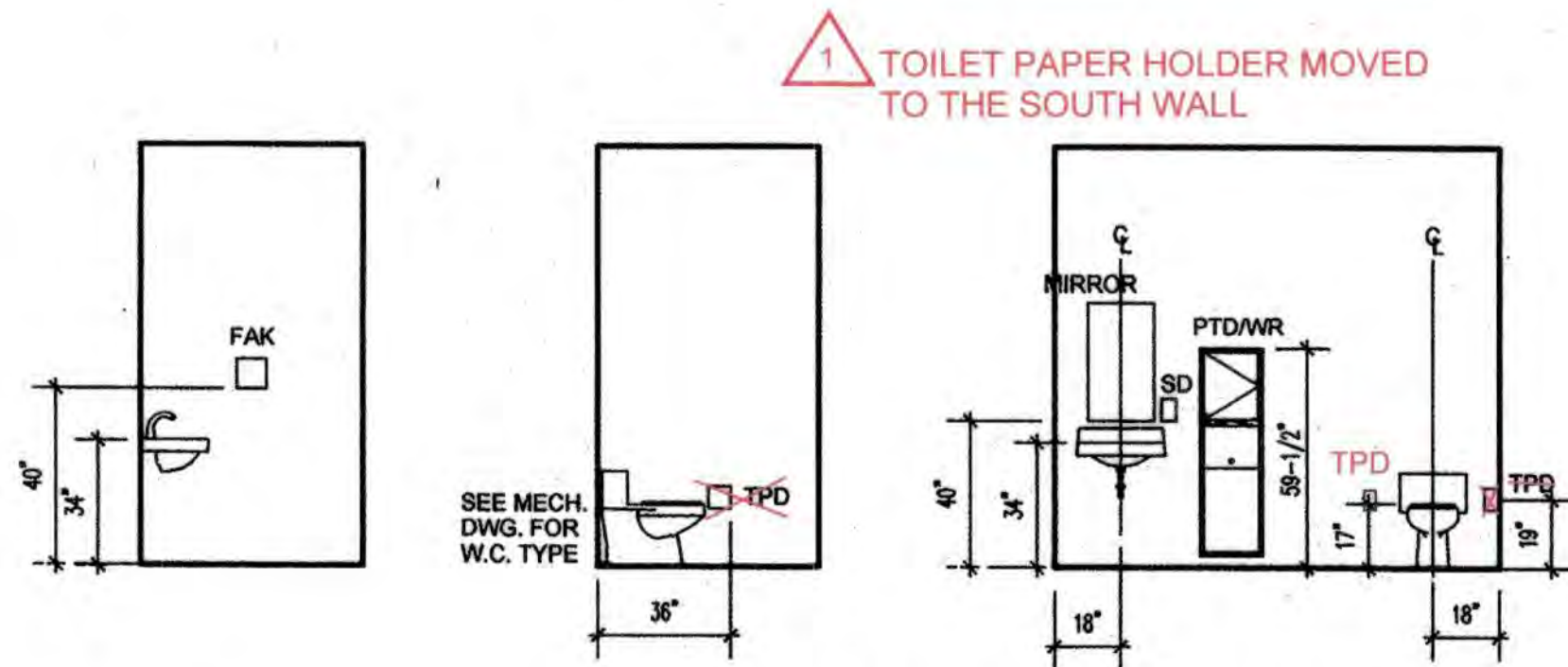
PUMPING STATION
NORTH & EAST ELEVATIONS

600' SCALE MAP NO. 35 BLOCK NO. 17, 11

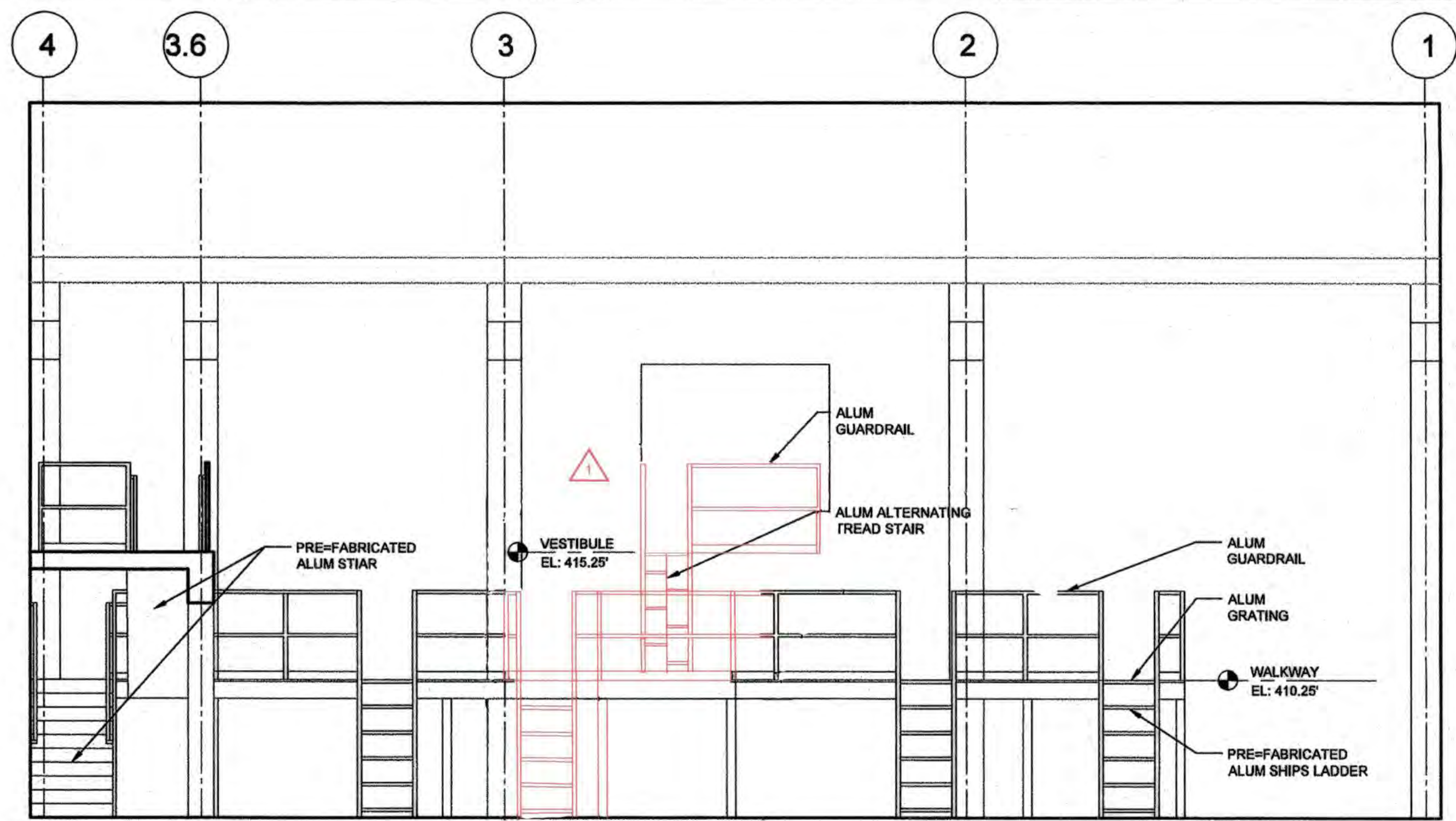
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. A1-201
SCALE AS SHOWN
SHEET 11 of 81

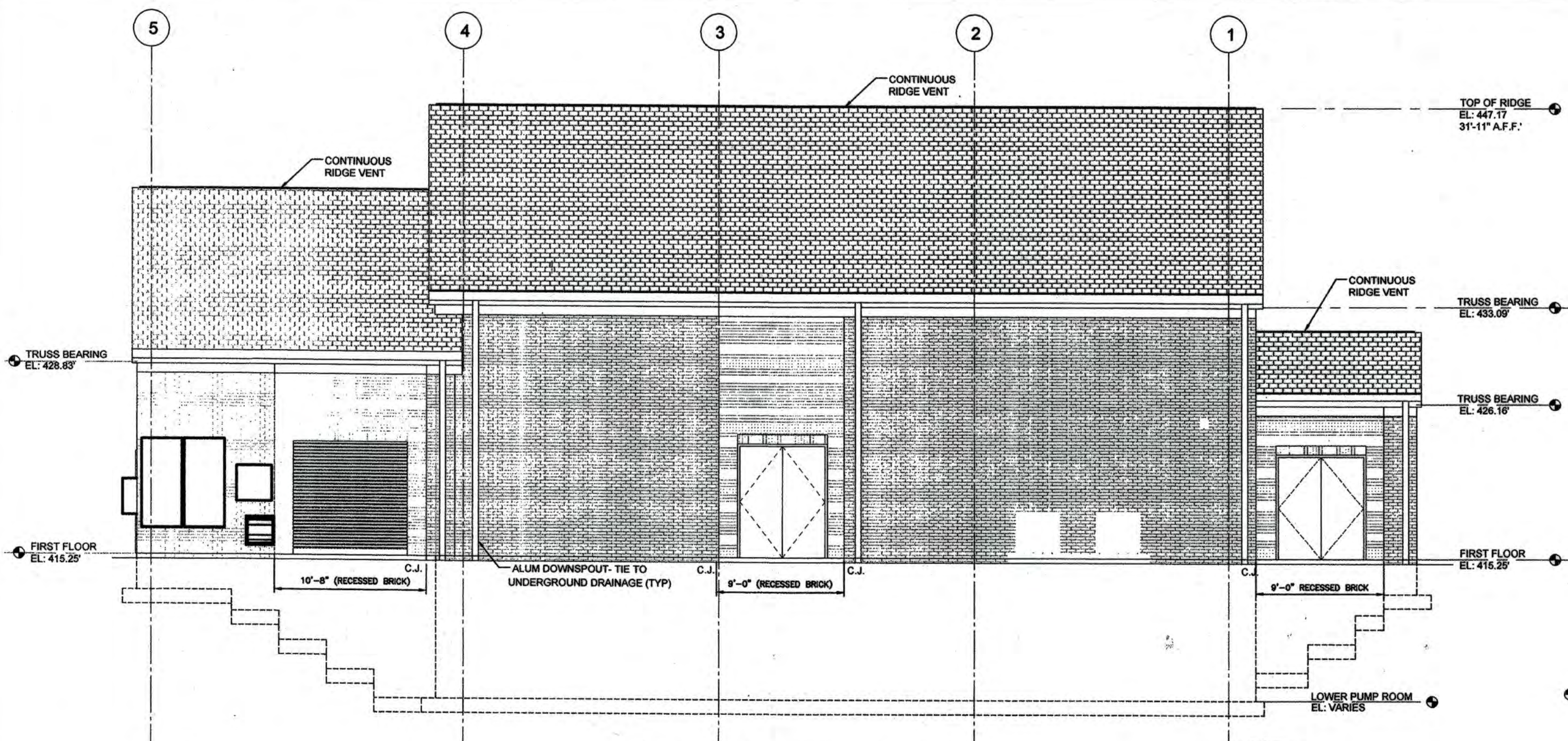
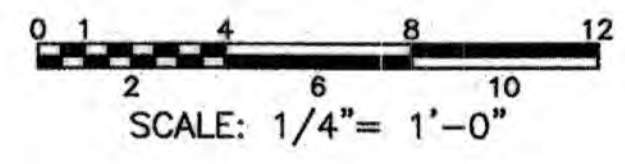
KCI TECHNOLOGIES PROJECT No.: 131601306.01



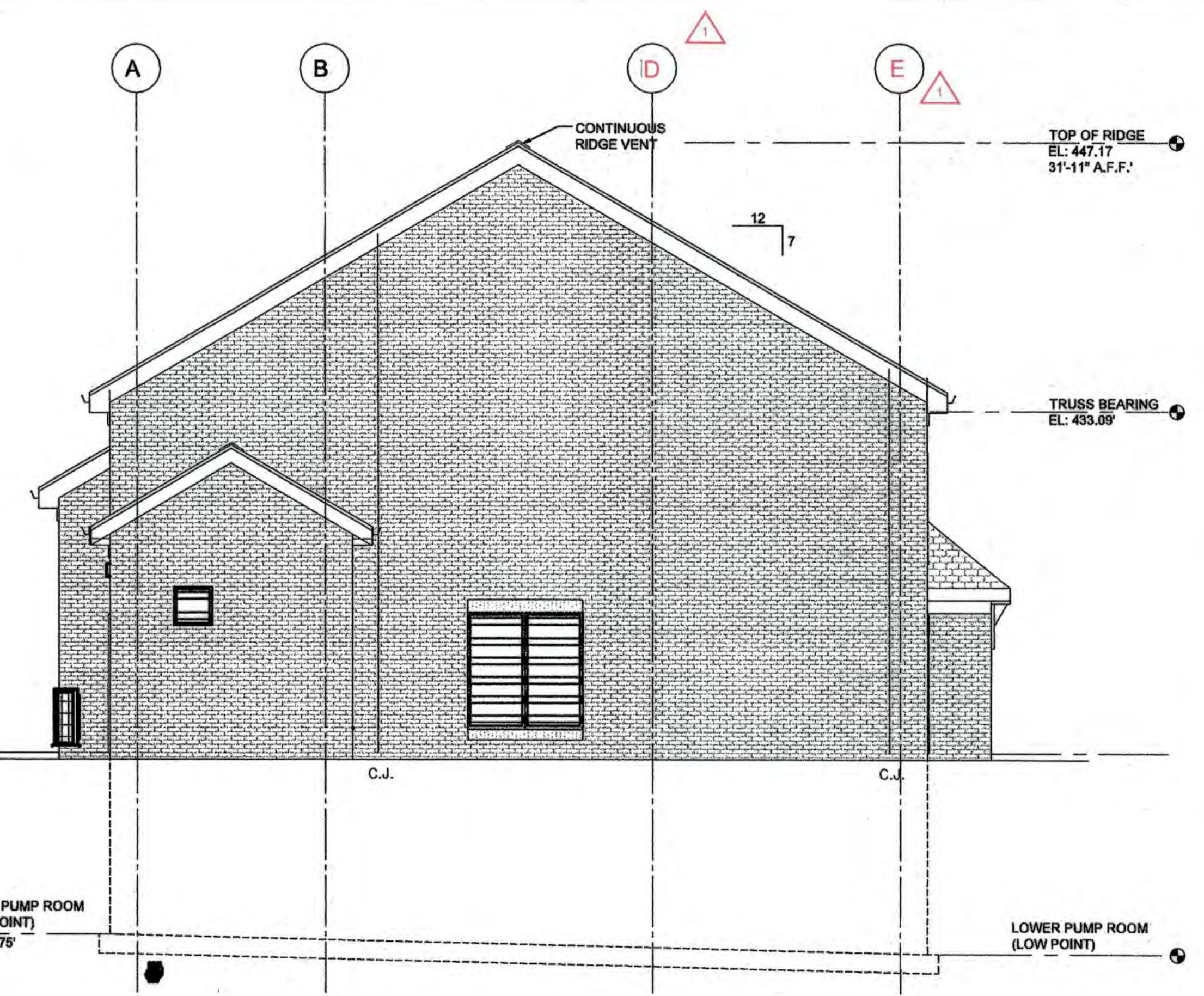
4 TOILET ROOM ELEVATIONS
SCALE: 1/4" = 1'-0"



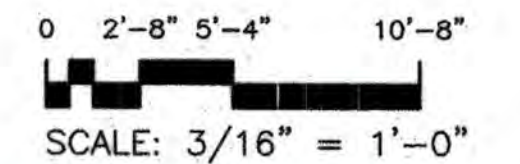
3 INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



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



2 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/26/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12-26-18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

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CHK:	
DATE: DEC 2018	
AG:	1
BY:	NO.
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION
SOUTH & WEST ELEVATIONS

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

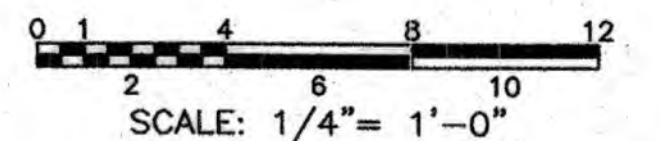
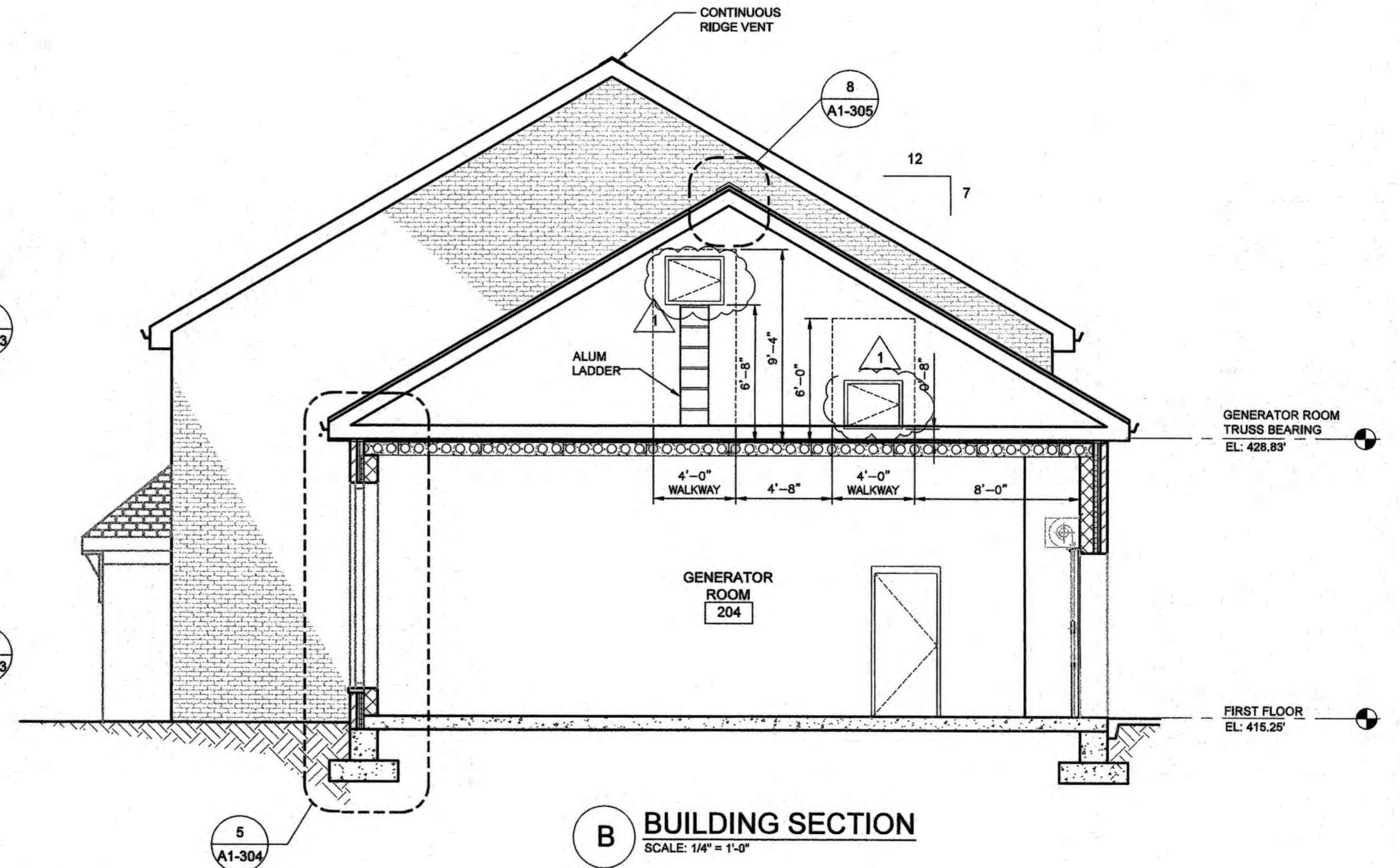
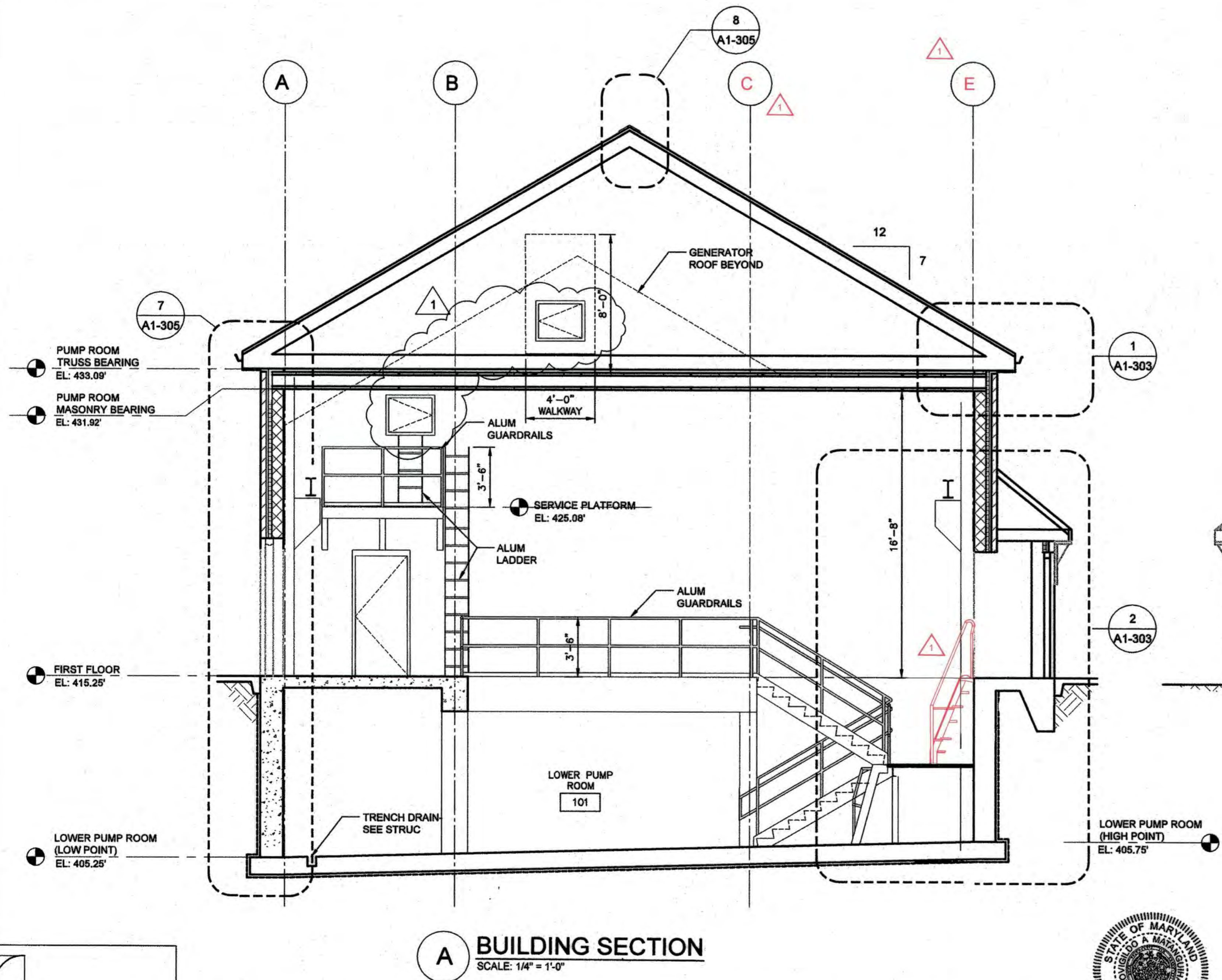
**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. A1-202
SCALE AS SHOWN
SHEET 12 OF 81

KCI TECHNOLOGIES PROJECT No.: 131801306.01



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LEO MATANGUIHAN
ARCHITECT
307 Hopkins Road • Beltsville, Maryland 21122

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. G. ... DIRECTOR OF PUBLIC WORKS DATE 12-20-18
... CHIEF, BUREAU OF UTILITIES DATE

... CHIEF, BUREAU OF ENGINEERING DATE
... CHIEF, UTILITY DESIGN DIVISION DATE

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CHK:	
DATE: DEC 2018	
BY	NO.
AG 1	
AS-BUILT	
8/2021	

PUMPING STATION
BUILDING SECTIONS

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

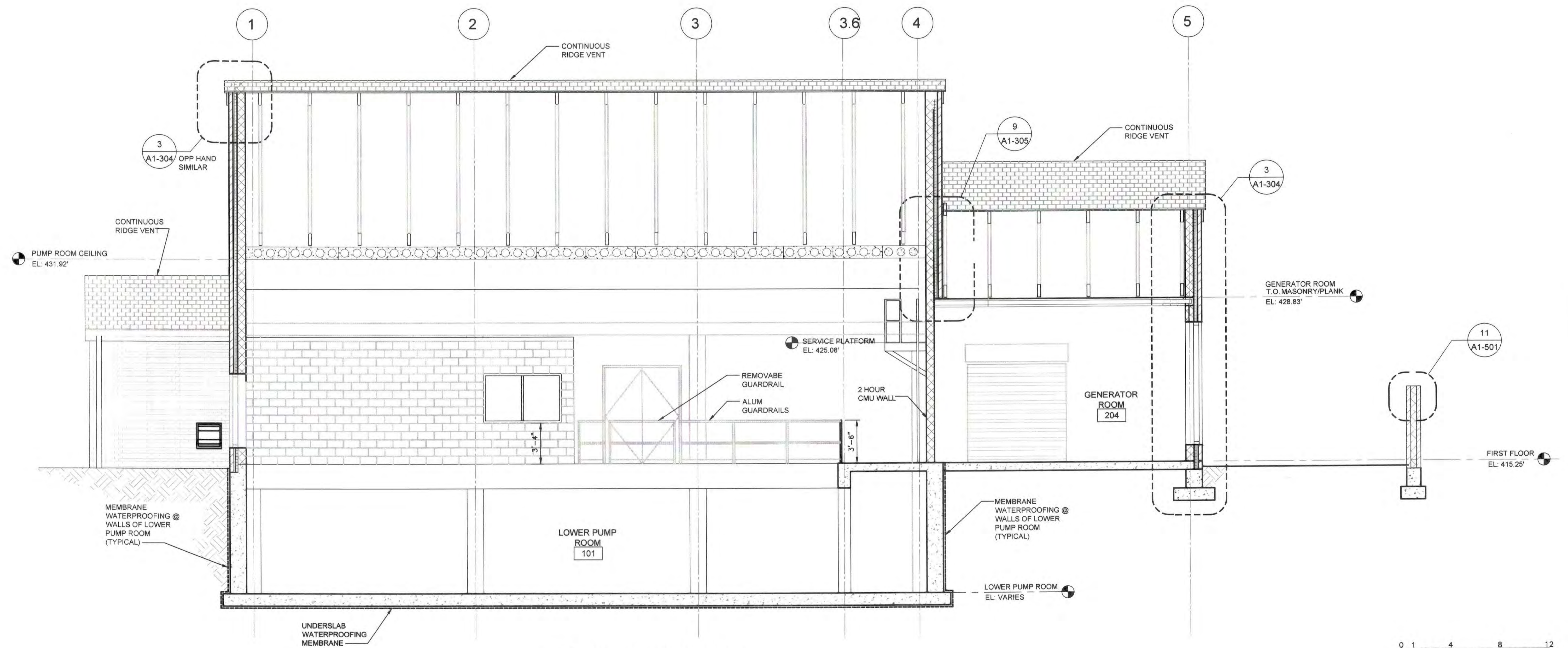
**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. A1-301
SCALE AS SHOWN
SHEET 13 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01



C BUILDING SECTION
SCALE: 1/4" = 1'-0"

AS-BUILT
DATE 9/2021

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LEO MATANGUIHAN
ARCHITECT
307 Hopkins Road • Baltimore, Maryland 21212

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jan G. Van 12/20/18
DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF UTILITIES DATE

Thomas P. Suttler 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, UTILITY DESIGN DIVISION DATE

KCI TECHNOLOGIES
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STATE OF MARYLAND
ARCHITECT
12/20/18

DES:					
DRN:					
CHK:					
DATE: DEC 2018	BY	NO.	REVISION	DATE	

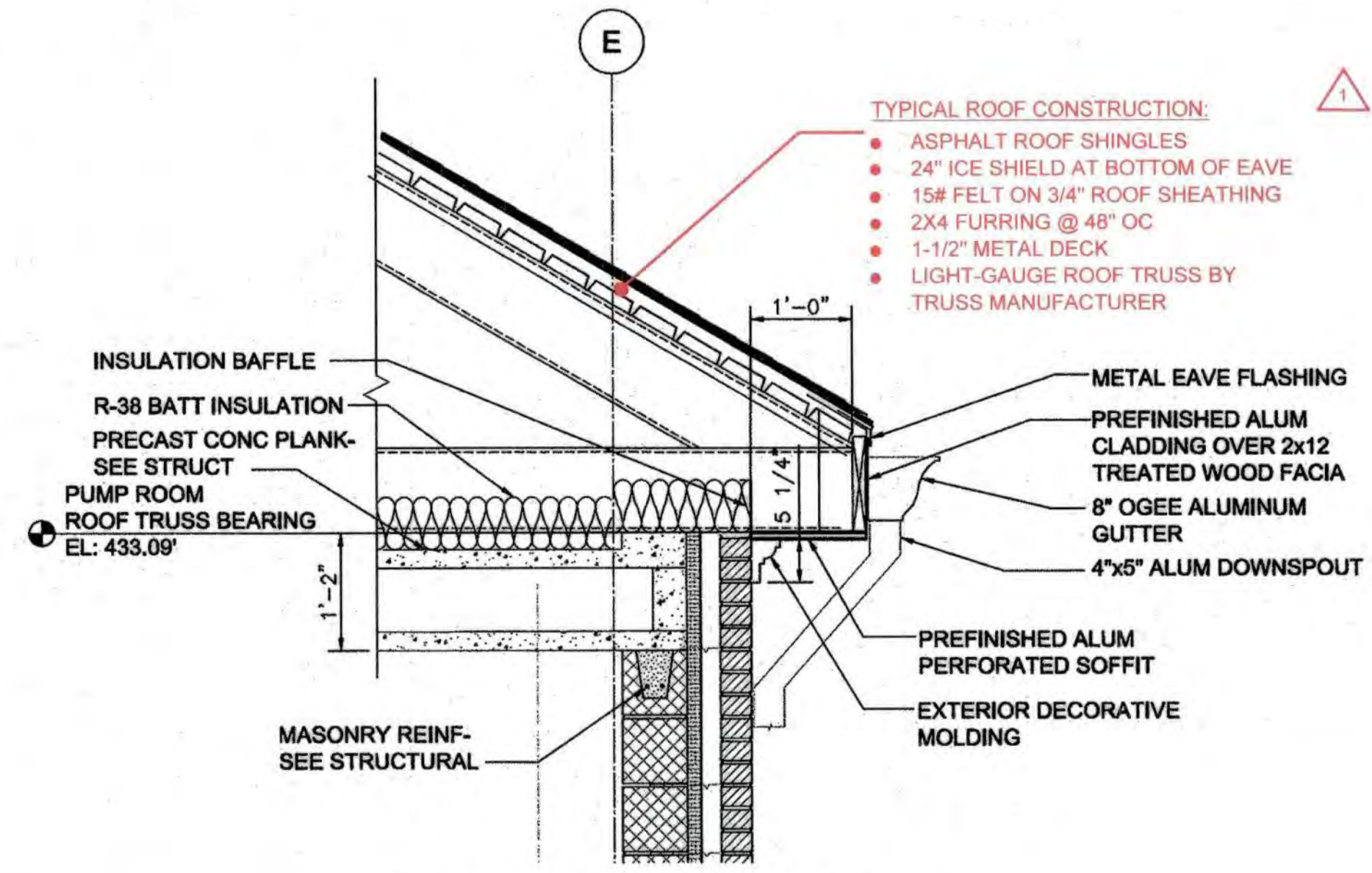
PUMPING STATION
BUILDING SECTIONS

800' SCALE MAP NO. 35 BLOCK NO. 17.11

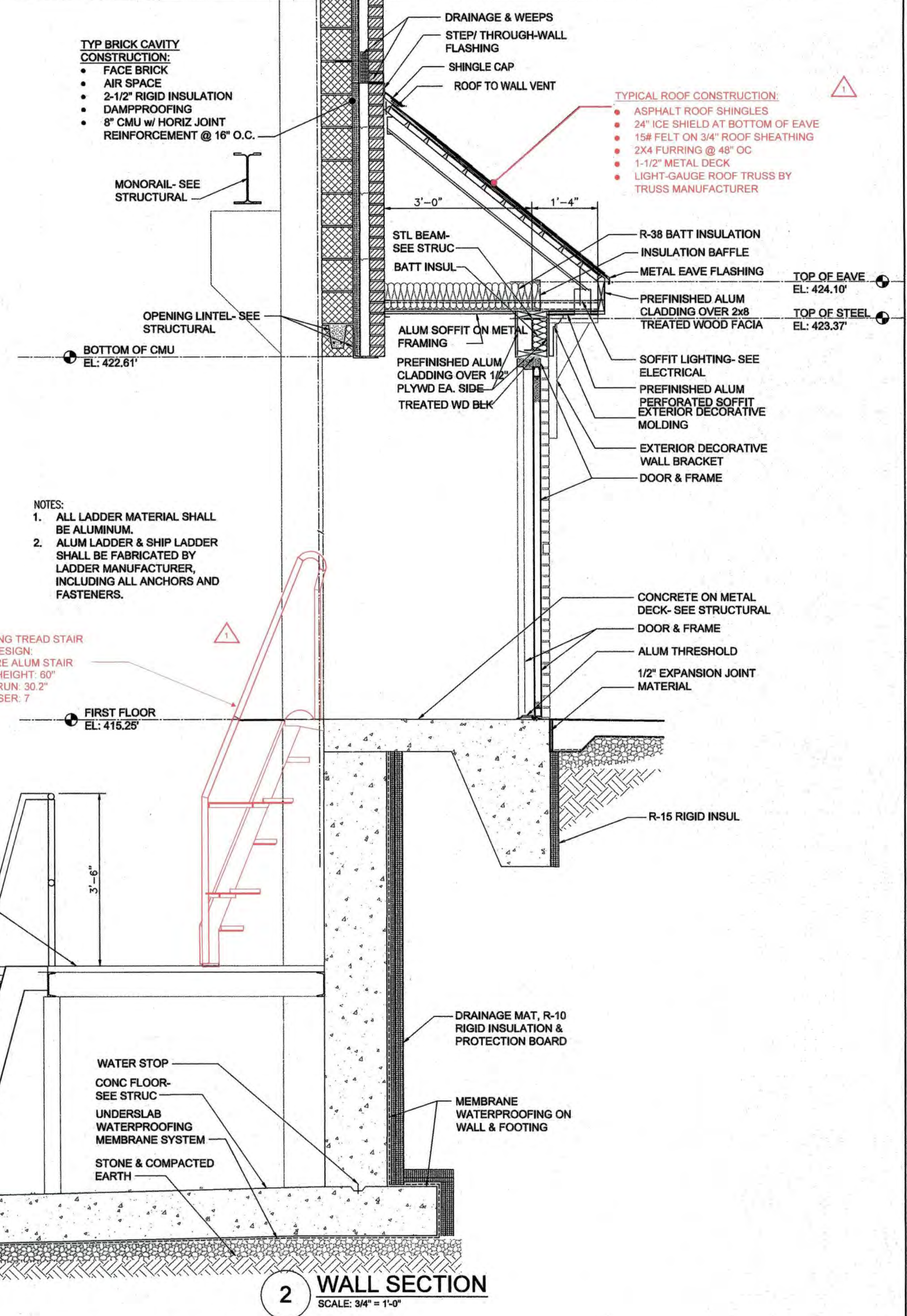
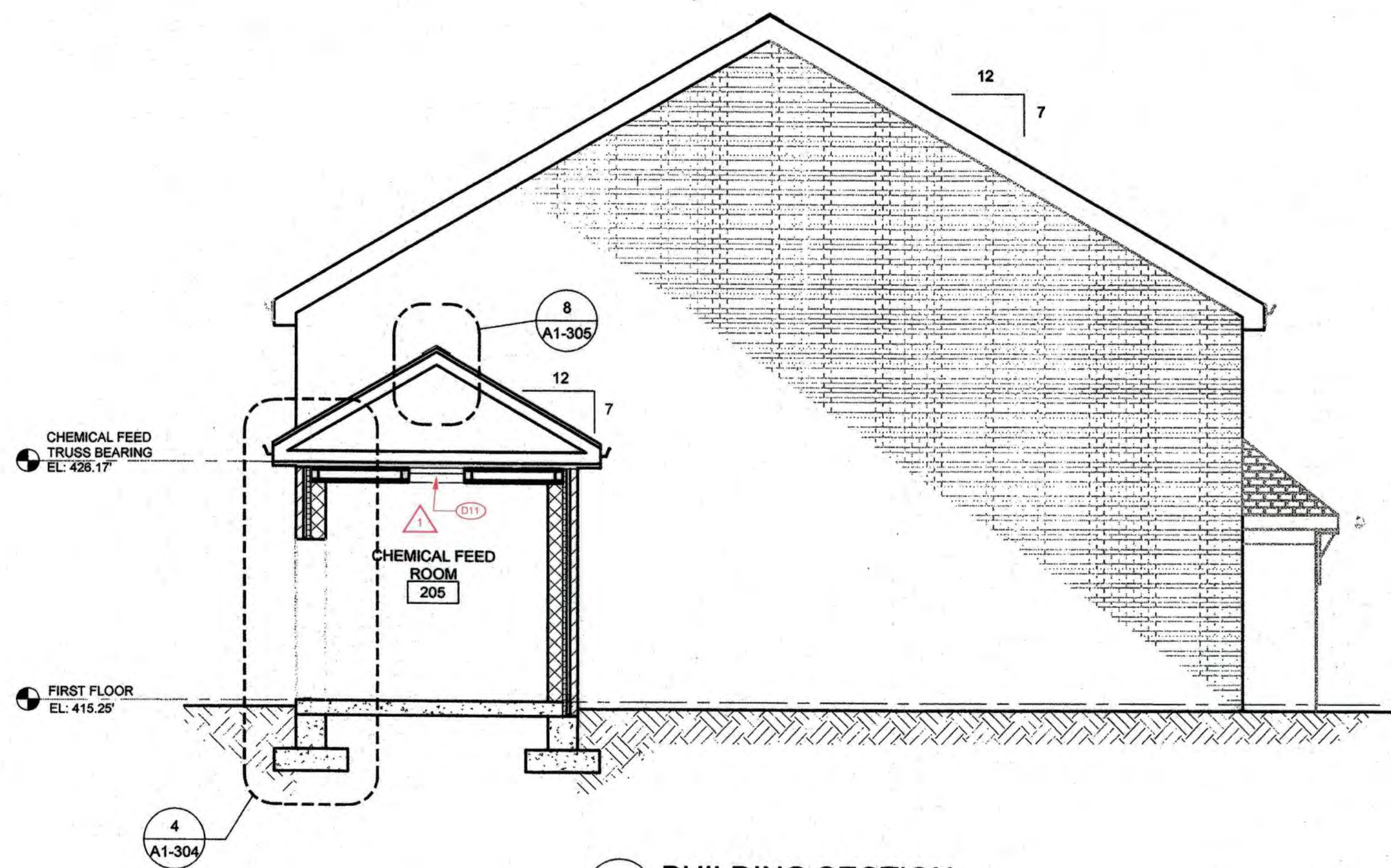
**CEDAR LANE
WATER PUMPING STATION**
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING NO.
A1-302
SCALE
AS SHOWN
SHEET
14 of 81

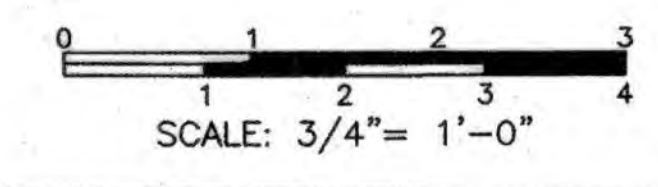
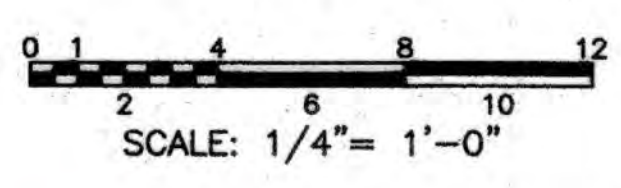
KCI TECHNOLOGIES PROJECT No.: 131601306.01



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



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



LEO MATANGUIHAN
ARCHITECT
302 Hillside Road • Baltimore, Maryland 21212

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 12-21-11

Chief, Bureau of Utilities: *[Signature]* DATE: *[Signature]*

Chief, Bureau of Engineering: *[Signature]* DATE: *[Signature]*

Chief, Utility Design Division: *[Signature]* DATE: *[Signature]*

KCI TECHNOLOGIES

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AG:	1
BY:	NO.
DATE:	DEC 2018
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION
BUILDING SECTIONS
WALL SECTIONS

600' SCALE MAP NO. 35 BLOCK NO. 17.11

CEDAR LANE WATER PUMPING STATION

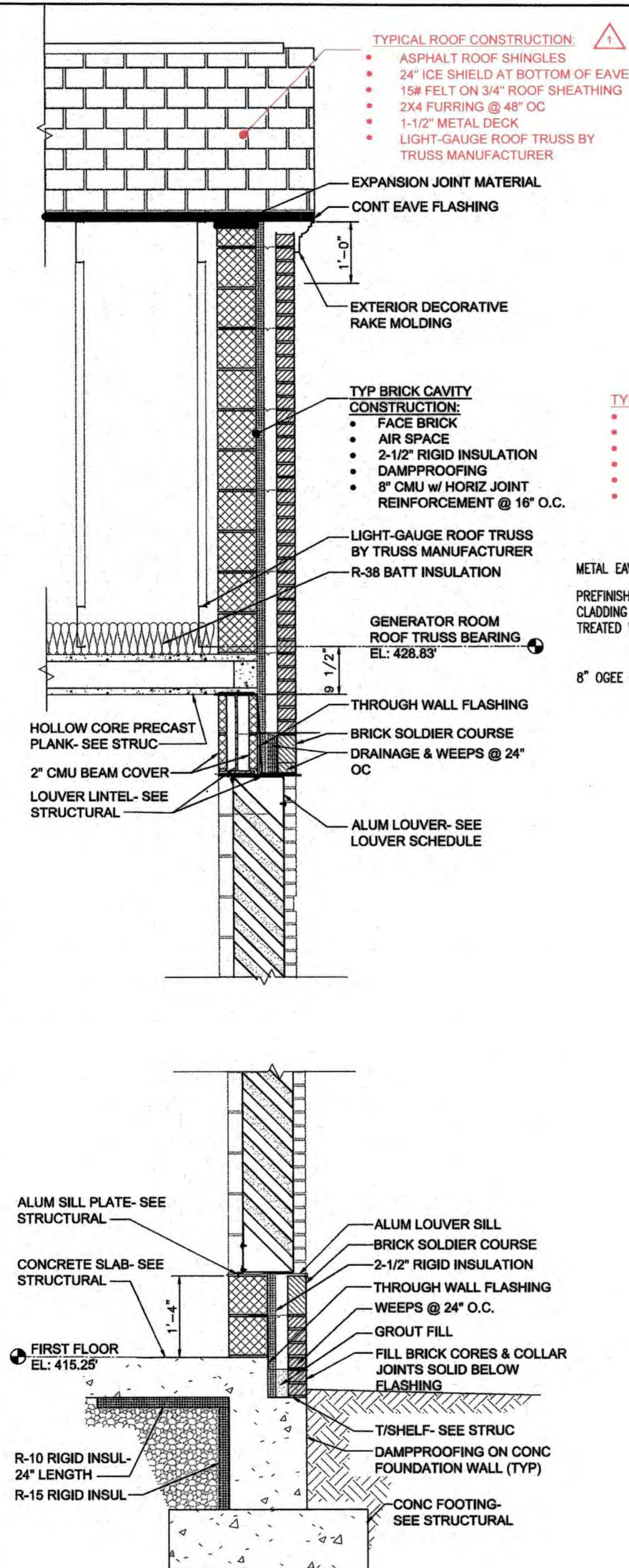
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

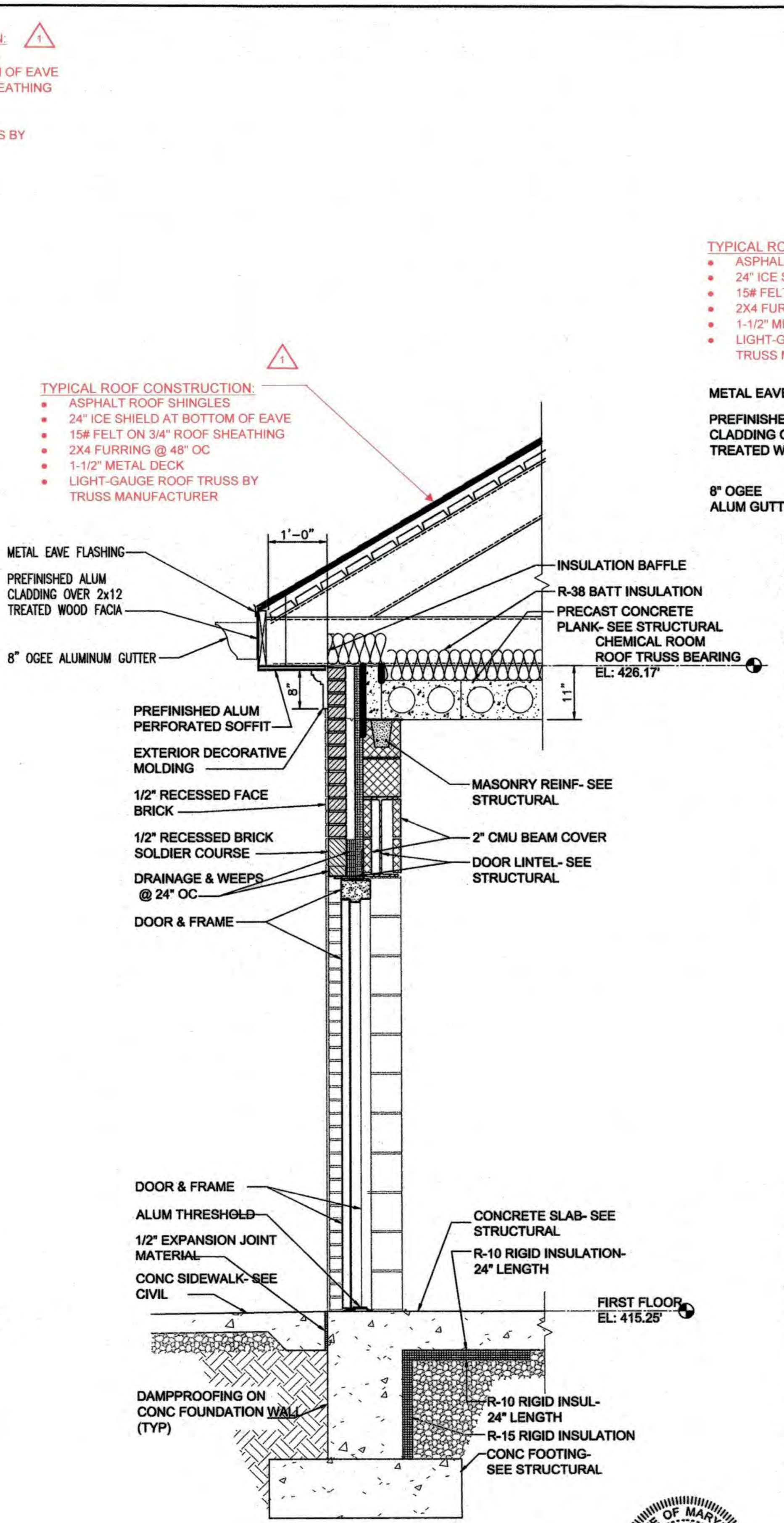
AS-BUILT REPLACEMENT SHEET 9/2021

DRAWING NO. A1-303
SCALE AS SHOWN
SHEET 15 OF 81

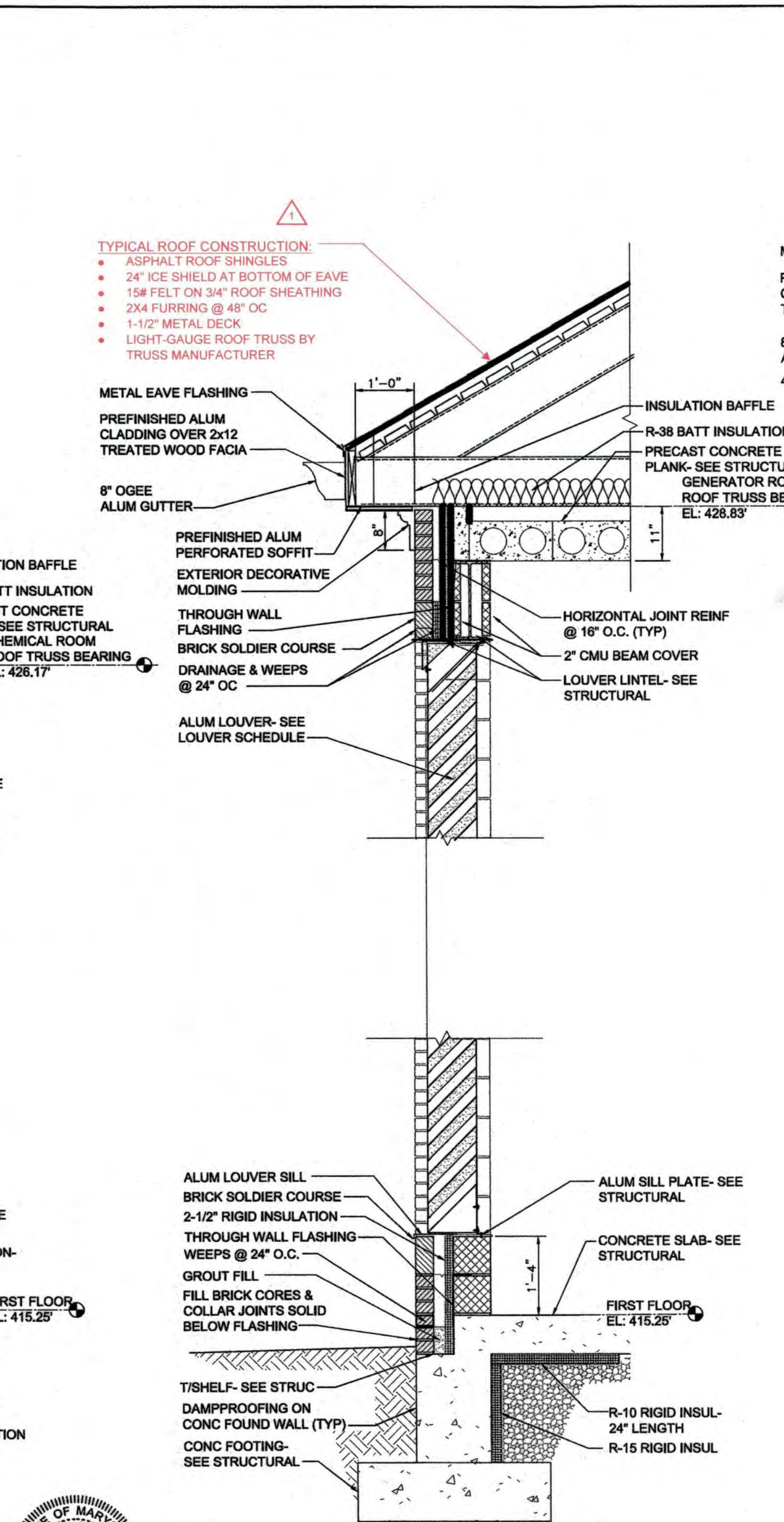
KCI TECHNOLOGIES PROJECT No.: 131601306.01



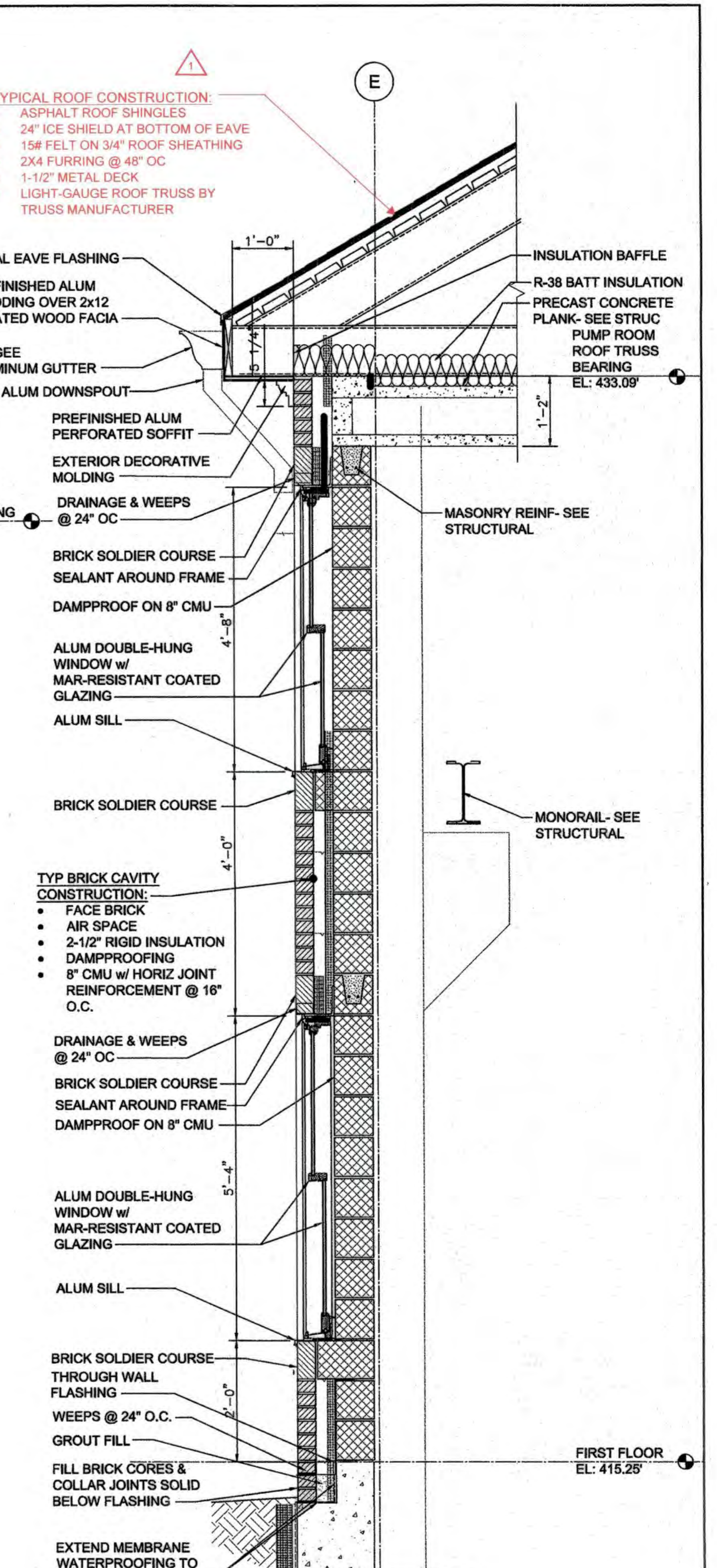
3 WALL SECTION SCALE: 3/4" = 1'-0"



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



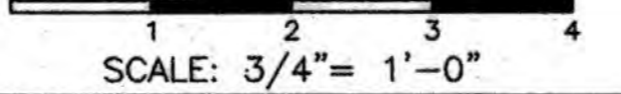
5 WALL SECTION SCALE: 3/4" = 1'-0"



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



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LEO MATANGUIHAN ARCHITECT 307 Hopkins Road • Baltimore, Maryland 21132

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jay V. White
DIRECTOR OF PUBLIC WORKS DATE 12-26-11
CHIEF, BUREAU OF UTILITIES DATE

Thomas E. Butler
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
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DATE: DEC 2018

AG	NO.	AS-BUILT	REVISION	DATE
AG	1	AS-BUILT		9/2021

PUMPING STATION
DETAILS

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE
WATER PUMPING STATION

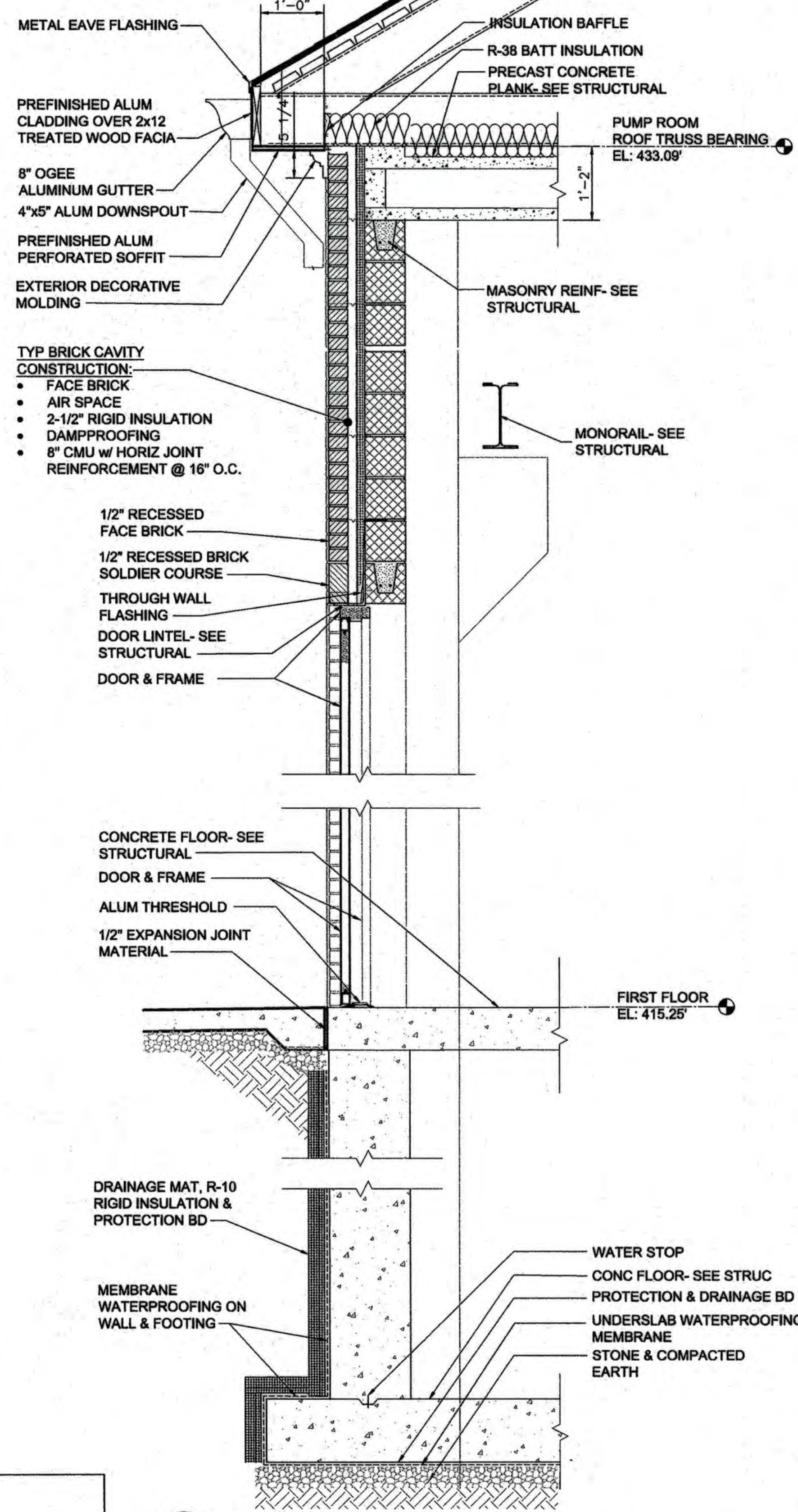
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

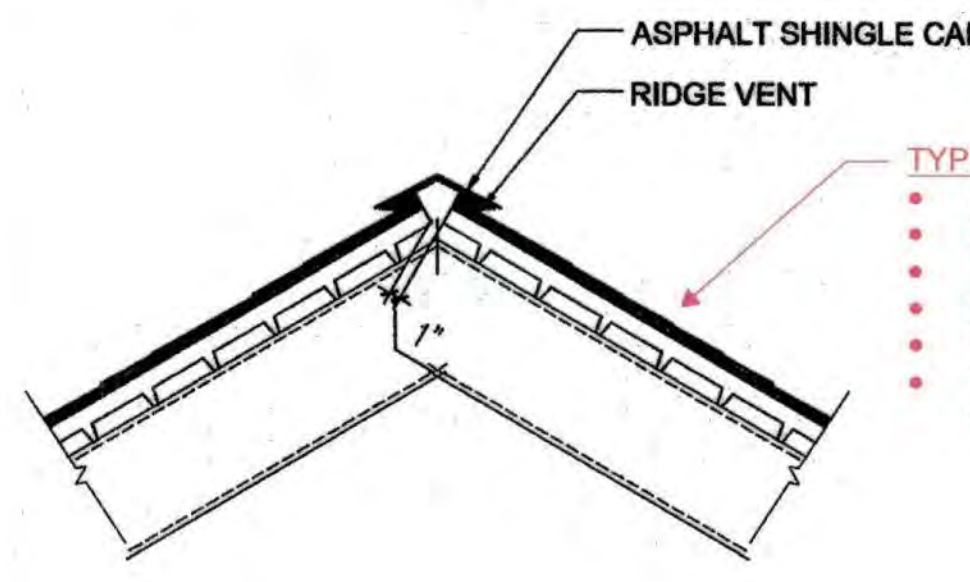
DRAWING NO. A1-304
SCALE AS SHOWN
SHEET 16 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

- TYPICAL ROOF CONSTRUCTION:**
- ASPHALT ROOF SHINGLES
 - 24" ICE SHIELD AT BOTTOM OF EAVE
 - 15# FELT ON 3/4" ROOF SHEATHING
 - 2X4 FURRING @ 48" OC
 - 1-1/2" METAL DECK
 - LIGHT-GAUGE ROOF TRUSS BY TRUSS MANUFACTURER

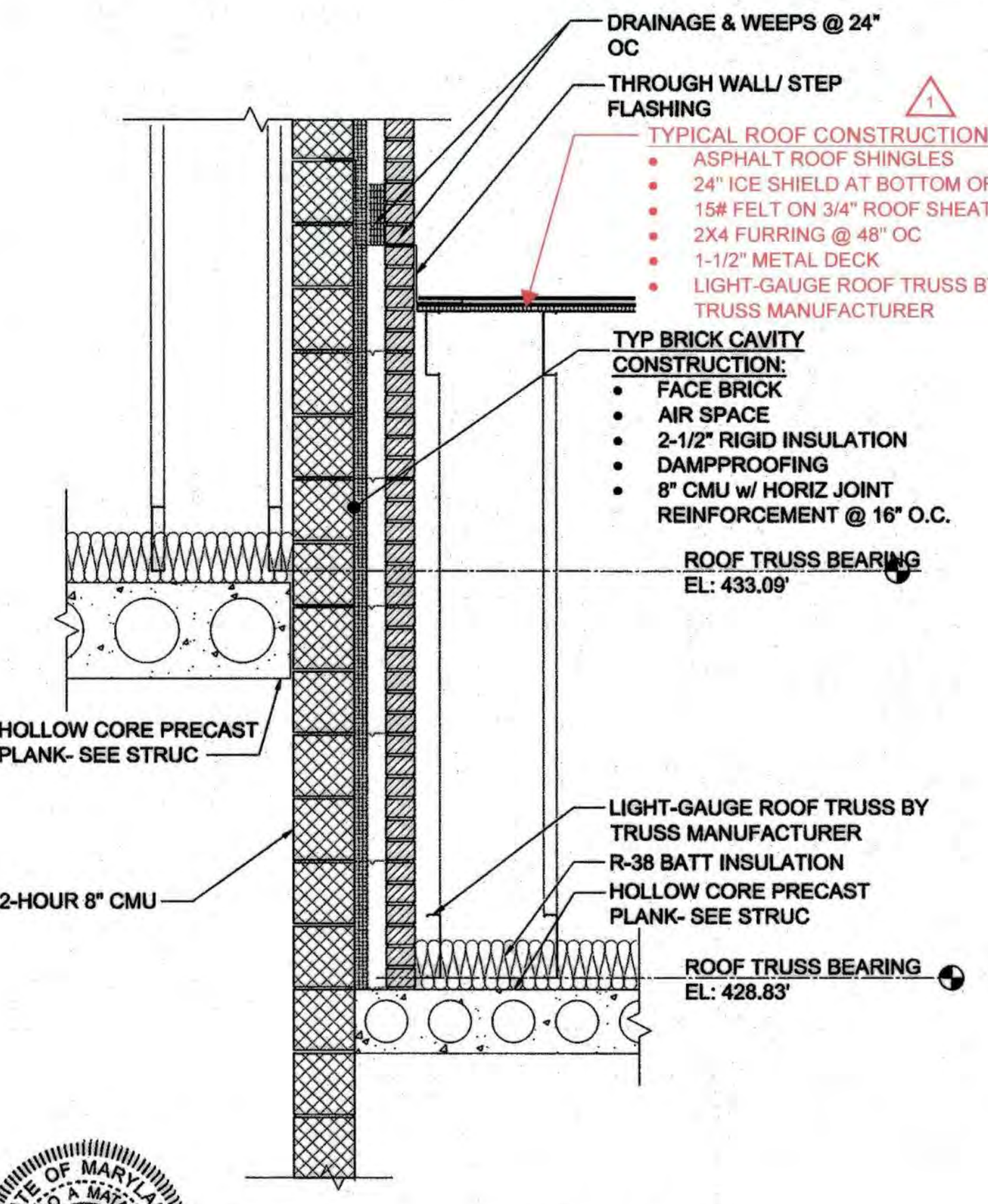


7 WALL SECTION
SCALE: 3/4" = 1'-0"

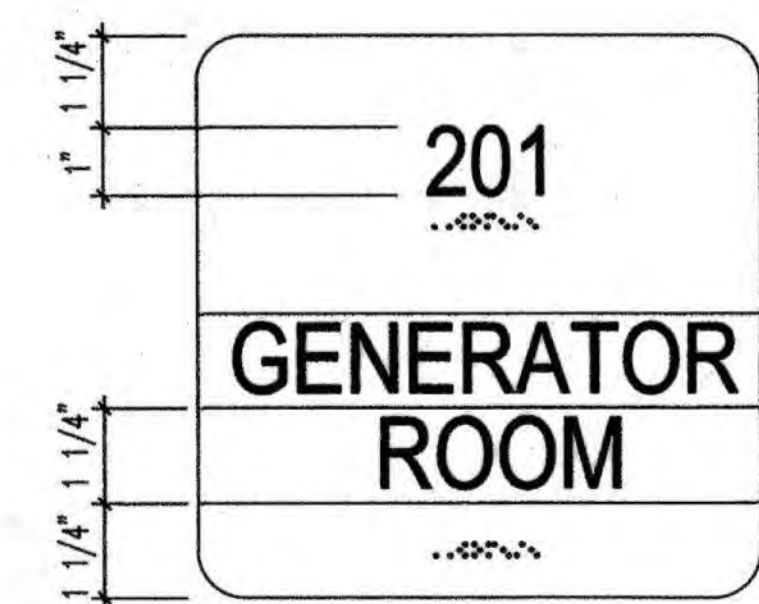


8 ROOF RIDGE DETAIL
SCALE: 3/4" = 1'-0"

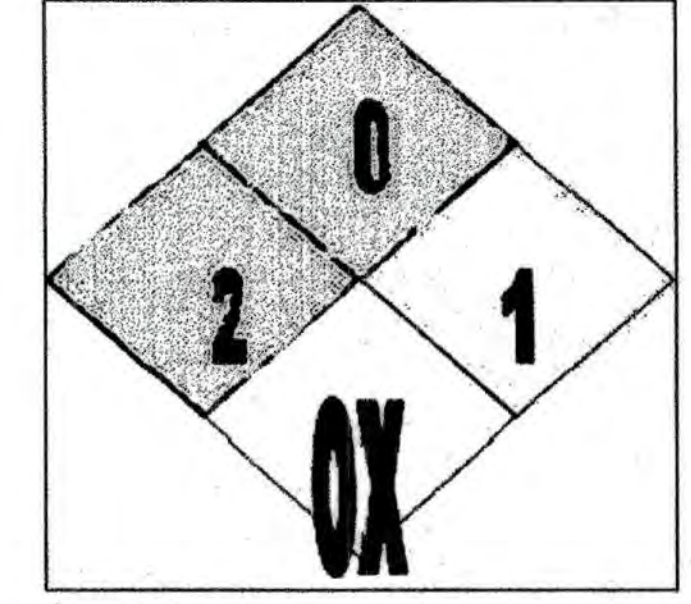
- TYPICAL ROOF CONSTRUCTION:**
- ASPHALT ROOF SHINGLES
 - 24" ICE SHIELD AT BOTTOM OF EAVE
 - 15# FELT ON 3/4" ROOF SHEATHING
 - 2X4 FURRING @ 48" OC
 - 1-1/2" METAL DECK
 - LIGHT-GAUGE ROOF TRUSS BY TRUSS MANUFACTURER



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



SIZE: 6" W x 7" H
FONT SIZE: 1" HIGH
FONT STYLE: STANDARD BOLD
FONT COLOR: BY OWNER
BACKGROUND: BY OWNER
RAISED GRADE 2 BRILLE
MATERIAL: ALUMINUM
(SEE ROOM SCHEDULE FOR TEXT)

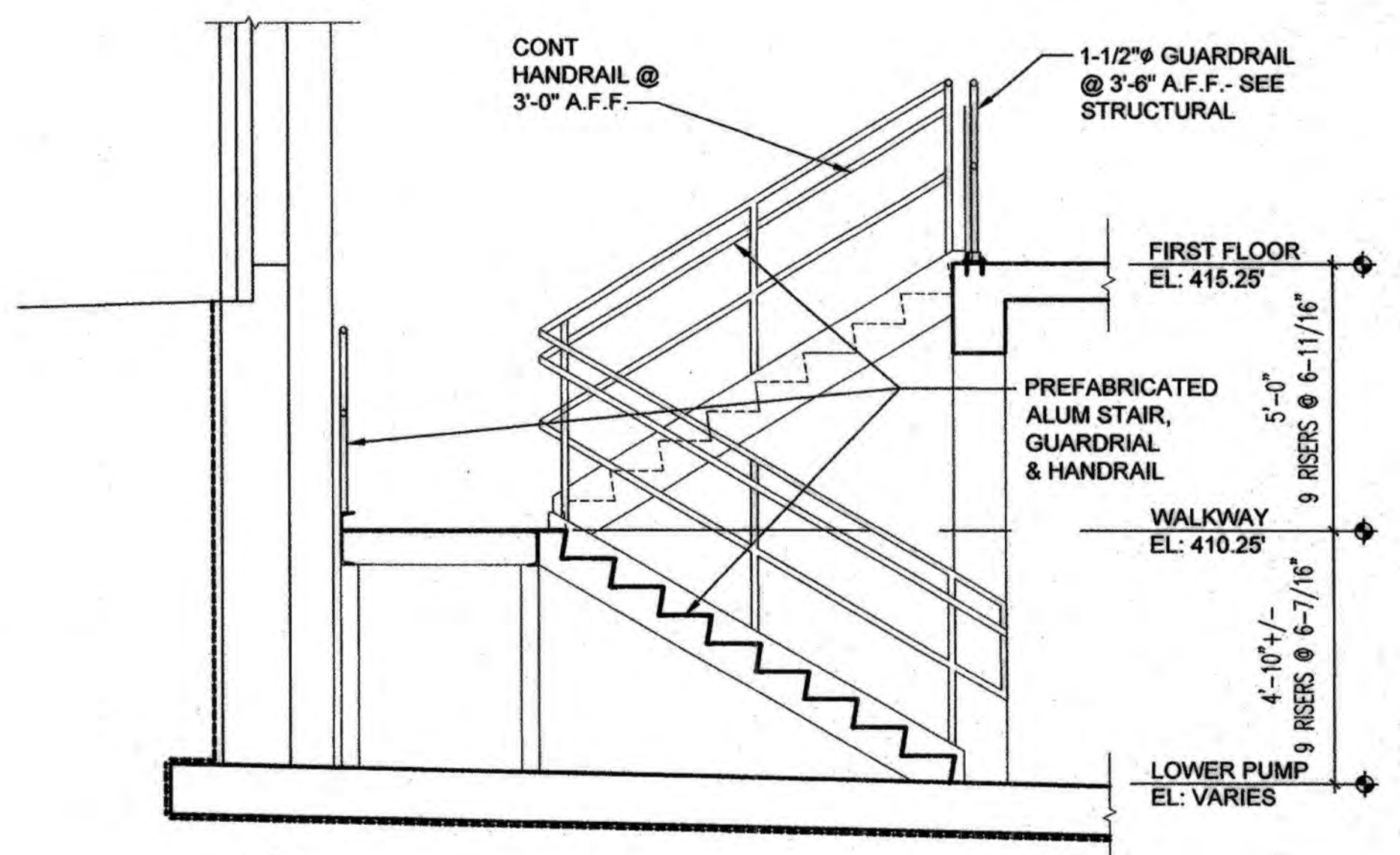


SIZE: 9" DIAMOND
FONT COLOR: BLACK
BACKGROUND: GREY
COLORS: RED, WHITE, BLUE & YELLOW
MATERIAL: ALUMINUM
LOCATION: CHEMICAL STORAGE ROOM DOOR
MOUNTING HEIGHT: 6" TOP



SIZE: 14" W x 10-1/2" H
FONT COLOR: BLACK & YELLOW
BACKGROUND: YELLOW
MATERIAL: ALUMINUM
LOCATION: GENERATOR ROOM DOOR
MOUNTING HEIGHT: 6" TOP

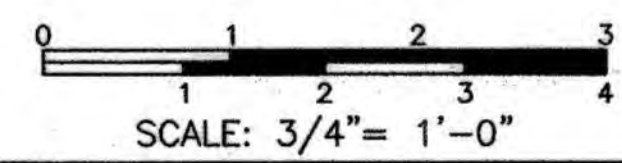
11 SIGNAGE
SCALE: NTS



10 STAIR SECTION
SCALE: 3/8" = 1'-0"

LEO MATANGUIHAN
ARCHITECT
307 Hopkins Road • Baltimore, Maryland 21232

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. 7269 - Expiration Date 09/14/2020.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jan 7, 2018
DIRECTOR OF PUBLIC WORKS DATE

Monica E. Butler
CHIEF, BUREAU OF ENGINEERING DATE

12-28-14
CHIEF, BUREAU OF UTILITIES DATE

12/20/18
CHIEF, UTILITY DESIGN DIVISION DATE

KCI TECHNOLOGIES
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CONSTRUCTION MANAGERS

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Fax: (410) 316-7817
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STATE OF MARYLAND
ARCHITECT
7269-A
12/20/18

DES:					
DRN:					
CHK:					
DATE: DEC 2018	AG 1	AS-BUILT	8/2021		
BY NO.		REVISION			

PUMPING STATION
WALL SECTIONS

600' SCALE MAP NO. 35 BLOCK NO. 17, 11

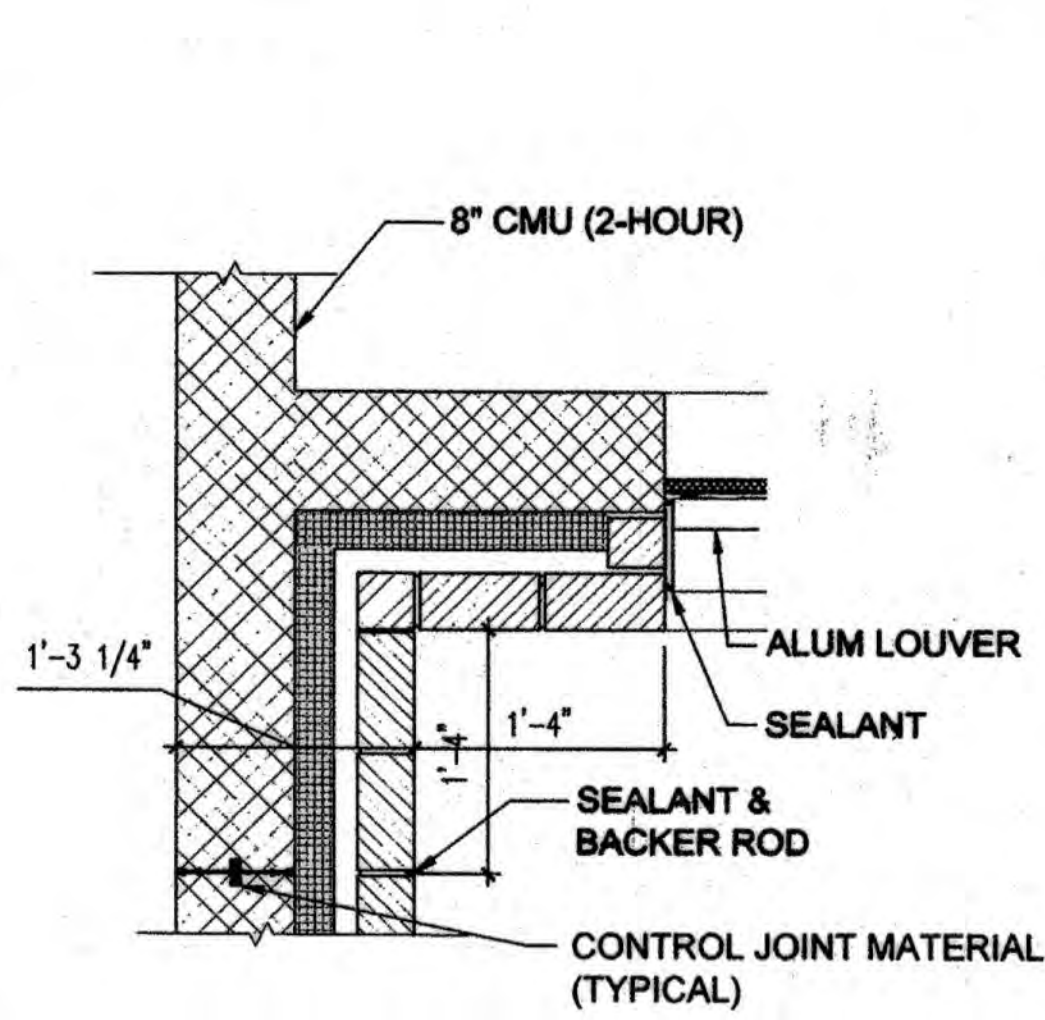
AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

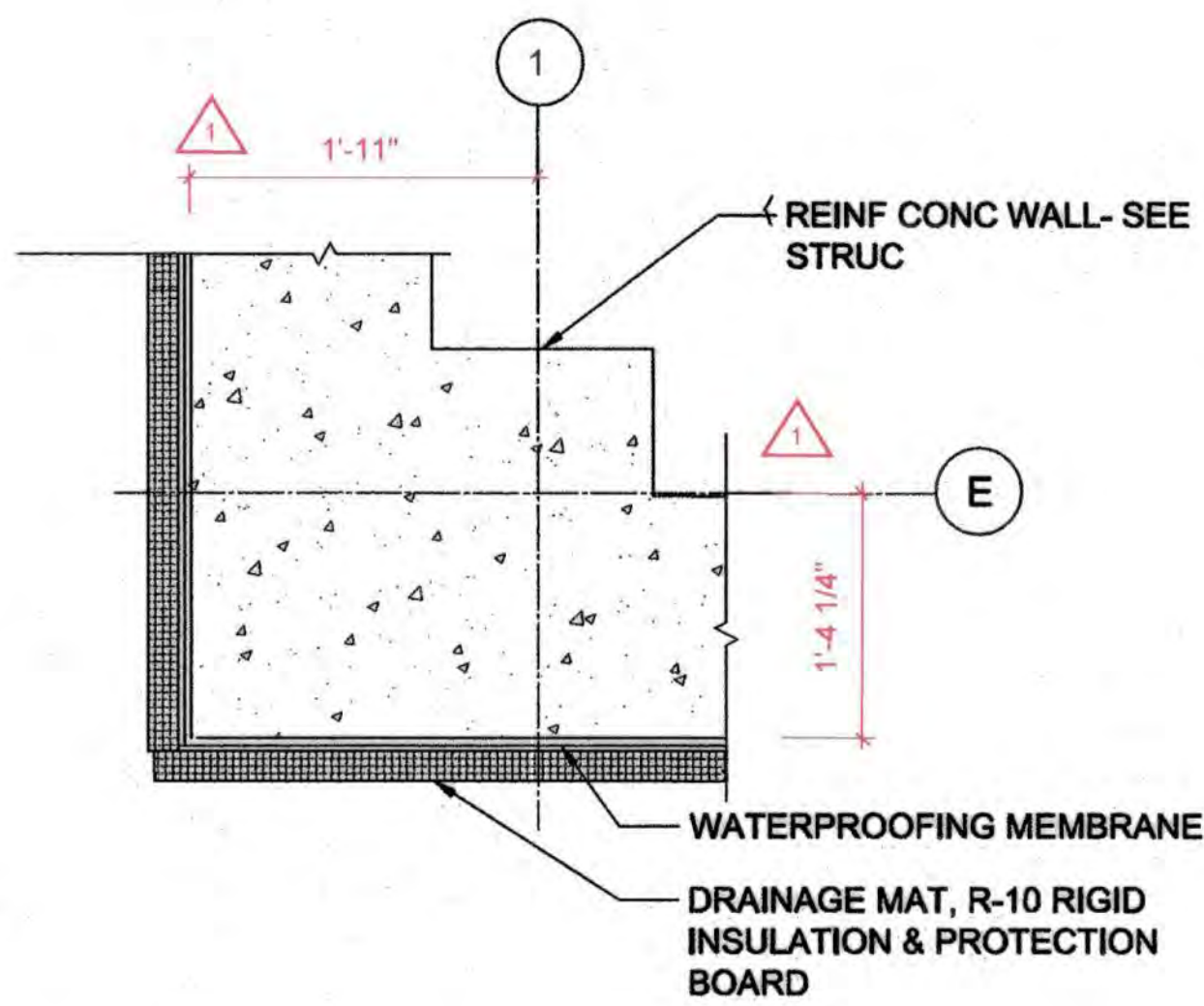
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. A1-305
SCALE AS SHOWN
SHEET 17 of 81

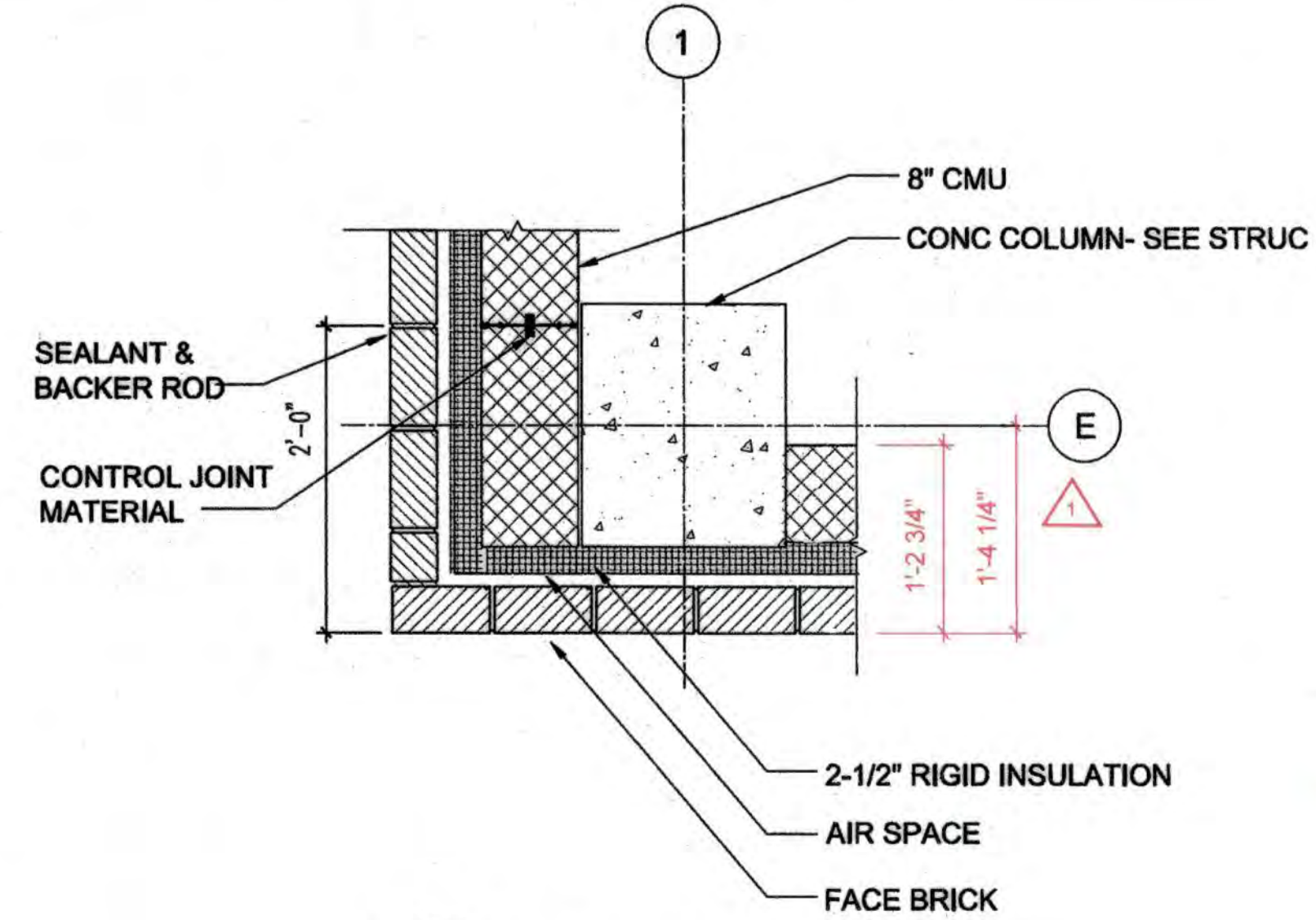
KCI TECHNOLOGIES PROJECT No.: 131601306.01



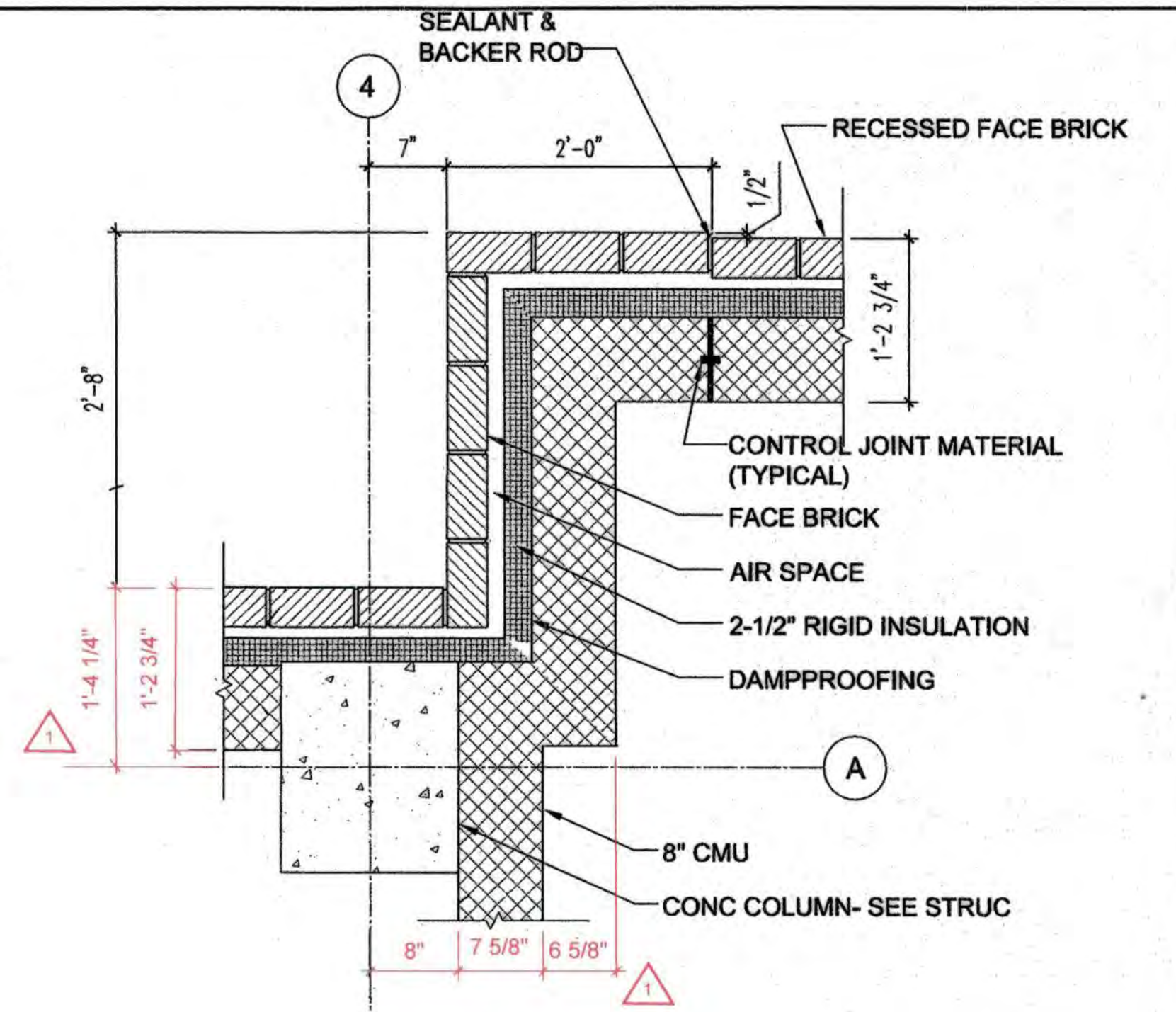
8 PLAN DETAIL
SCALE: 1" = 1'-0"



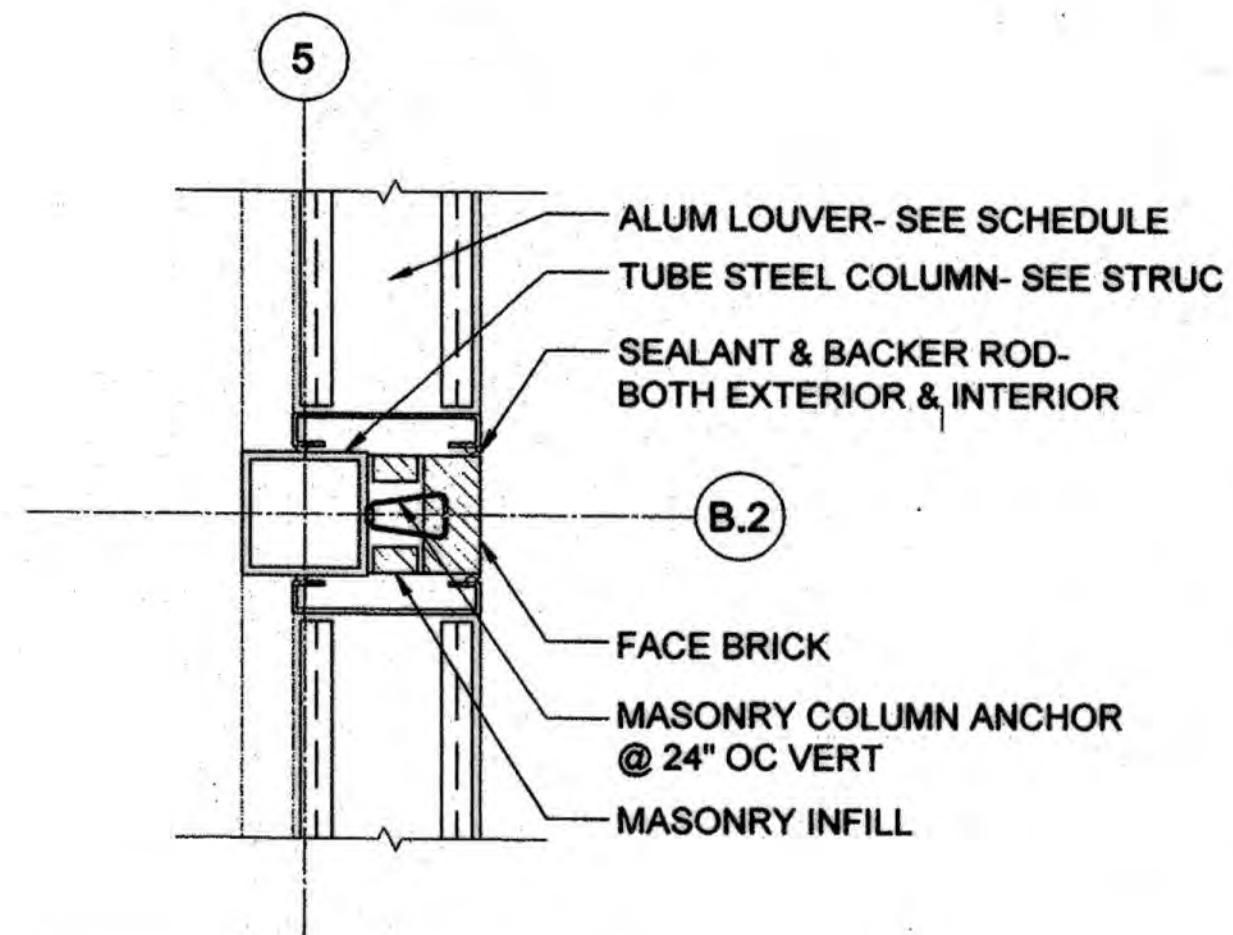
6 PLAN DETAIL
SCALE: 1" = 1'-0"



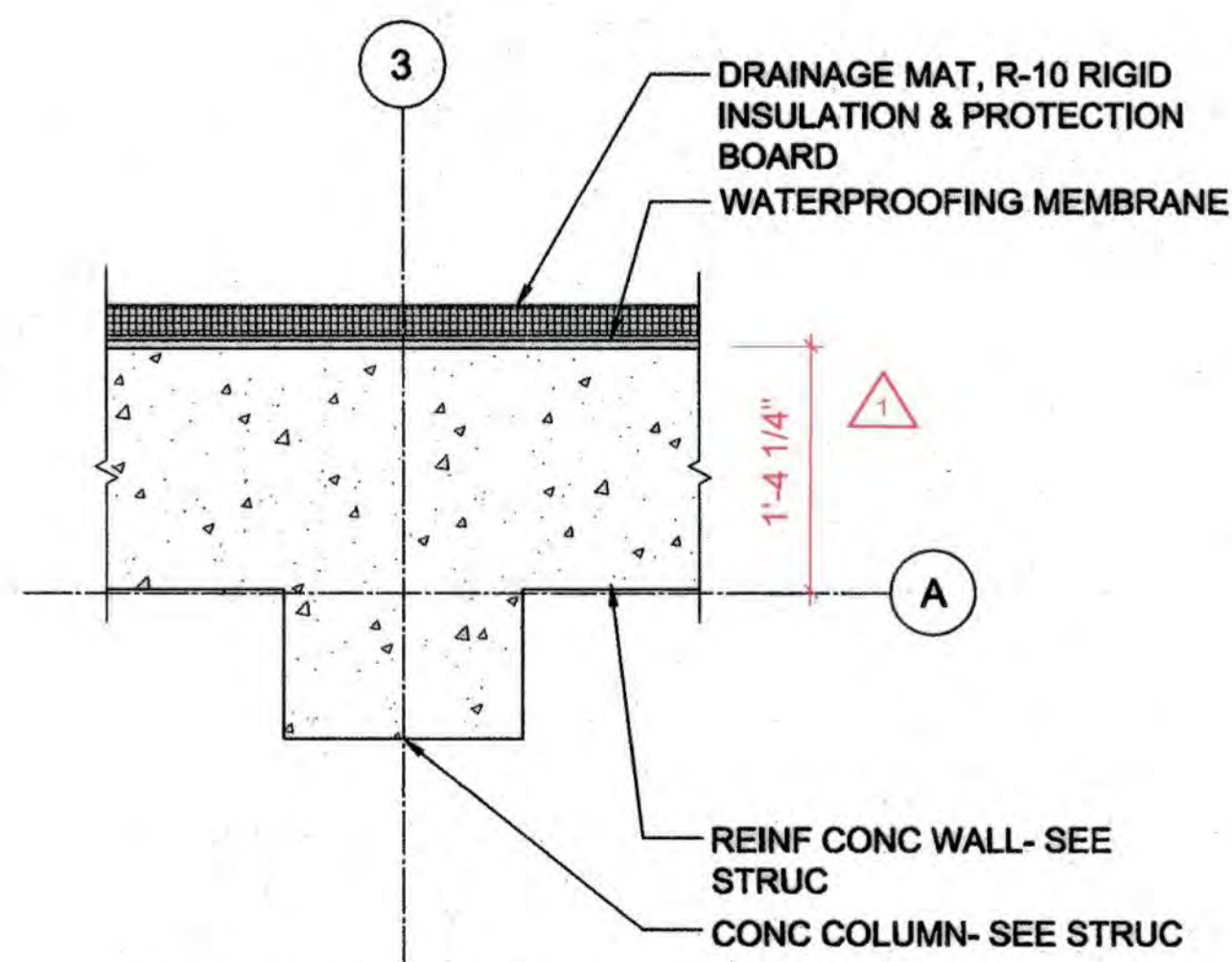
3 PLAN DETAIL
SCALE: 1" = 1'-0"



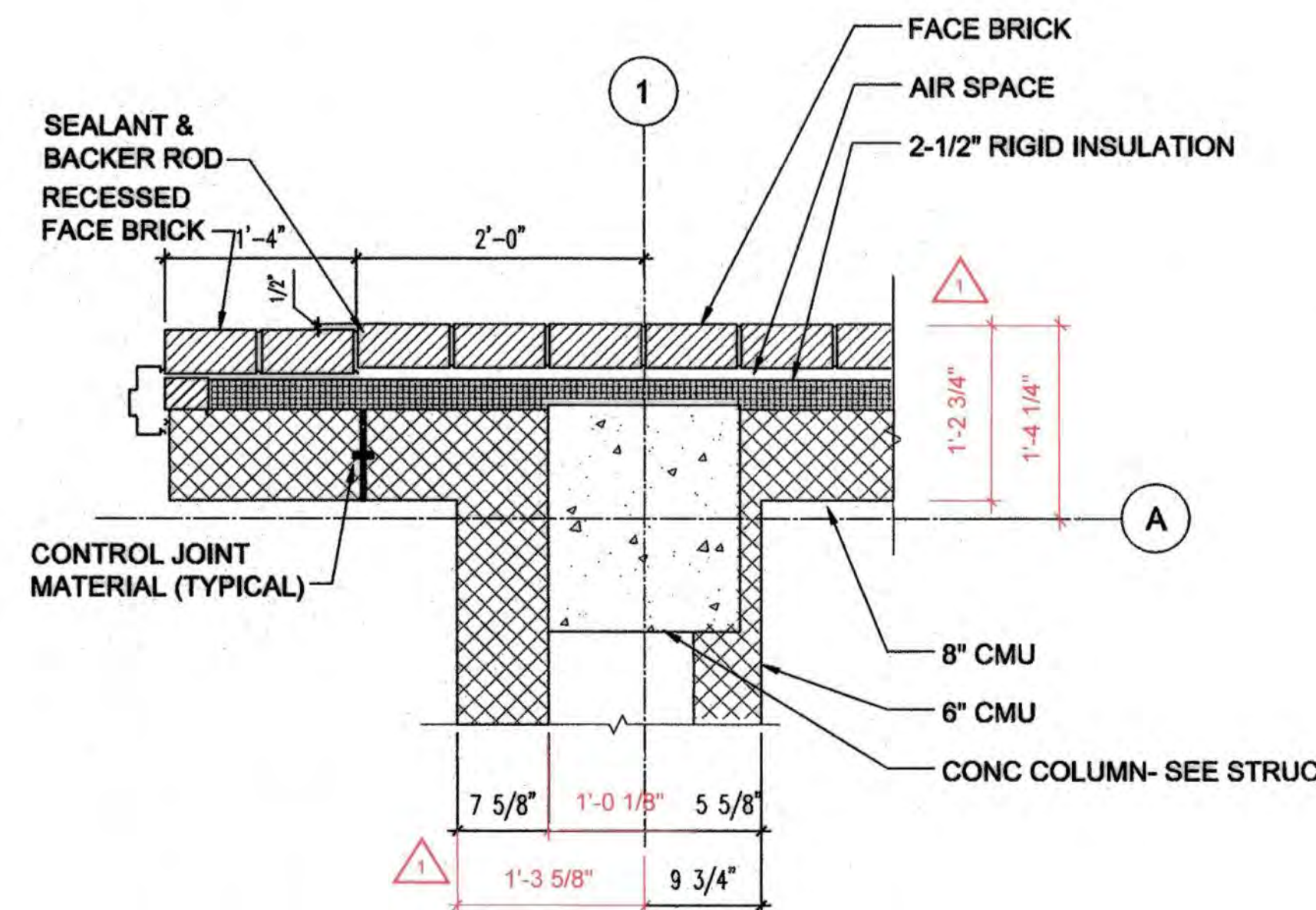
1 PLAN DETAIL
SCALE: 1" = 1'-0"



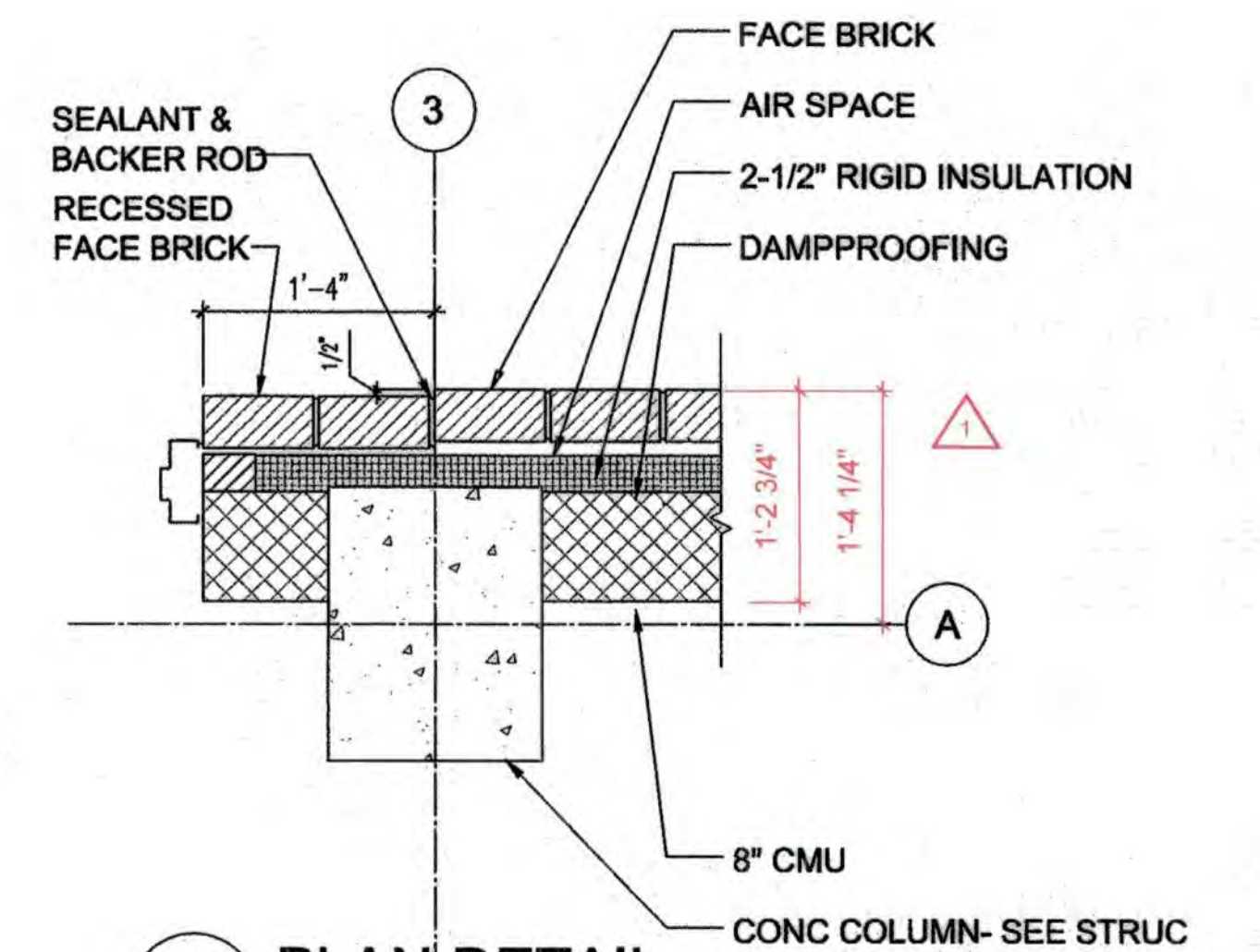
9 PLAN DETAIL
SCALE: 1" = 1'-0"



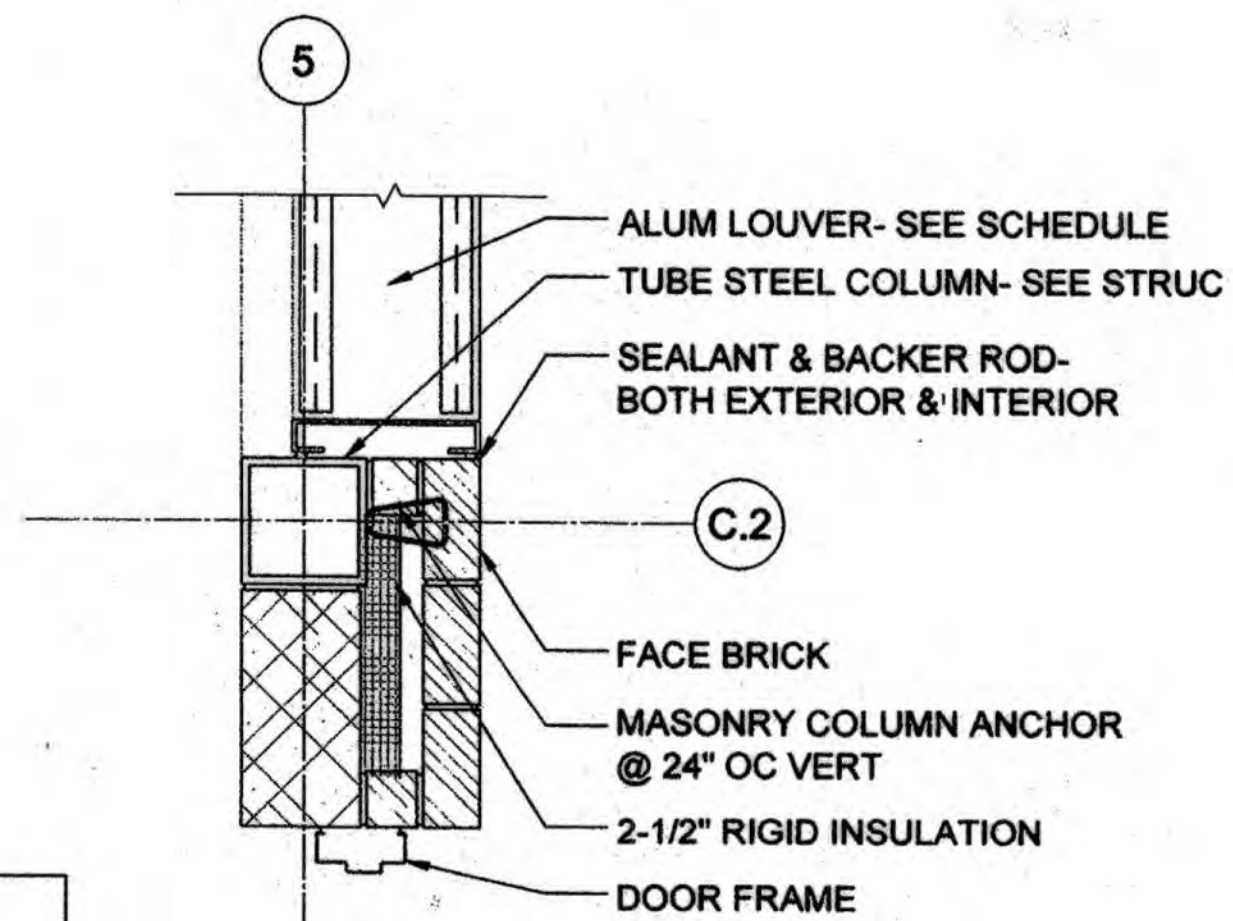
7 PLAN DETAIL
SCALE: 1" = 1'-0"



4 PLAN DETAIL
SCALE: 1" = 1'-0"



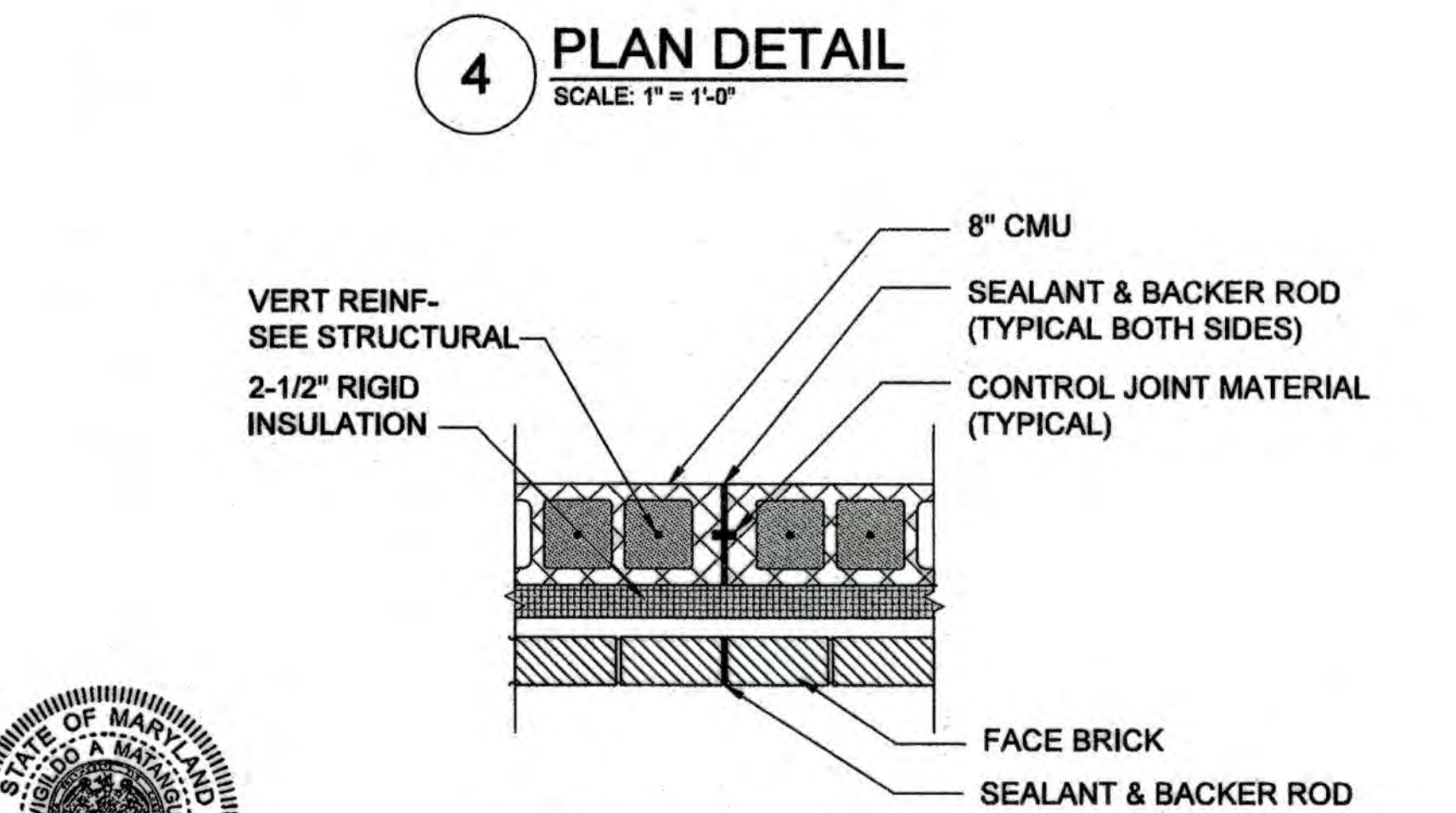
2 PLAN DETAIL
SCALE: 1" = 1'-0"



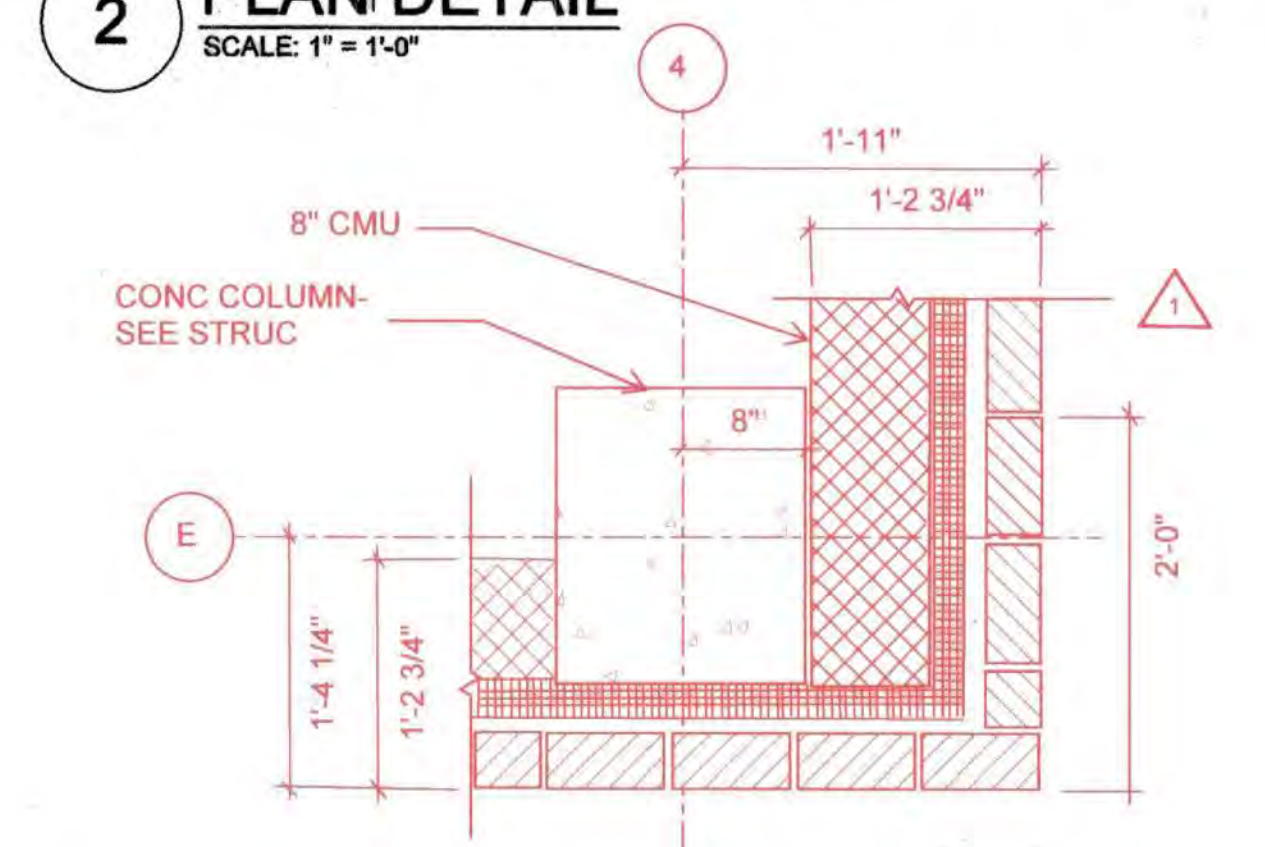
10 PLAN DETAIL
SCALE: 1" = 1'-0"



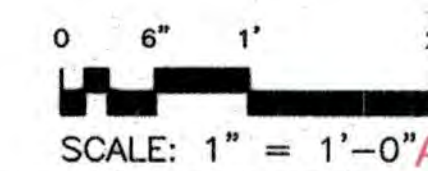
11 SECTION OF SCREEN WALL
SCALE: 1" = 1'-0"



5 TYPICAL CONTROL JOINT
SCALE: 1" = 1'-0"



12 PLAN DETAIL
SCALE: 1" = 1'-0"



SCALE: 1" = 1'-0" AS-BUILT REPLACEMENT SHEET 9/2021

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. 7283, Expiration Date 09/14/2020.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J.S.O. Matanguihan
DIRECTOR OF PUBLIC WORKS
DATE: 12-20-18
CHIEF, BUREAU OF UTILITIES

Thomas S. Scobbe
CHIEF, BUREAU OF ENGINEERING
DATE: 12-20-18
CHIEF, UTILITY DESIGN DIVISION

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ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

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DES:	
DRN:	
CHK:	
DATE: DEC 2018	AG 1
BY NO.	

REVISION	AS-BUILT	8/2021
DATE	600' SCALE MAP NO. 35	BLOCK NO. 17.11

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING NO. A1-501
SCALE AS SHOWN
SHEET 18 of 81

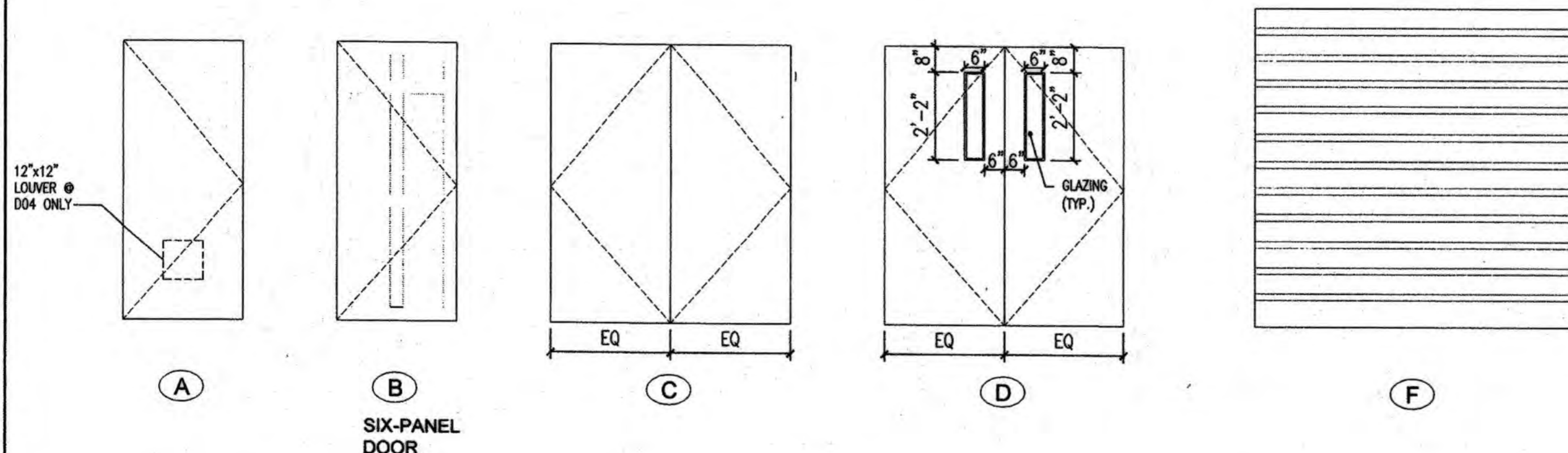
CONFORMED DRAWINGS

DOOR AND FRAME SCHEDULE

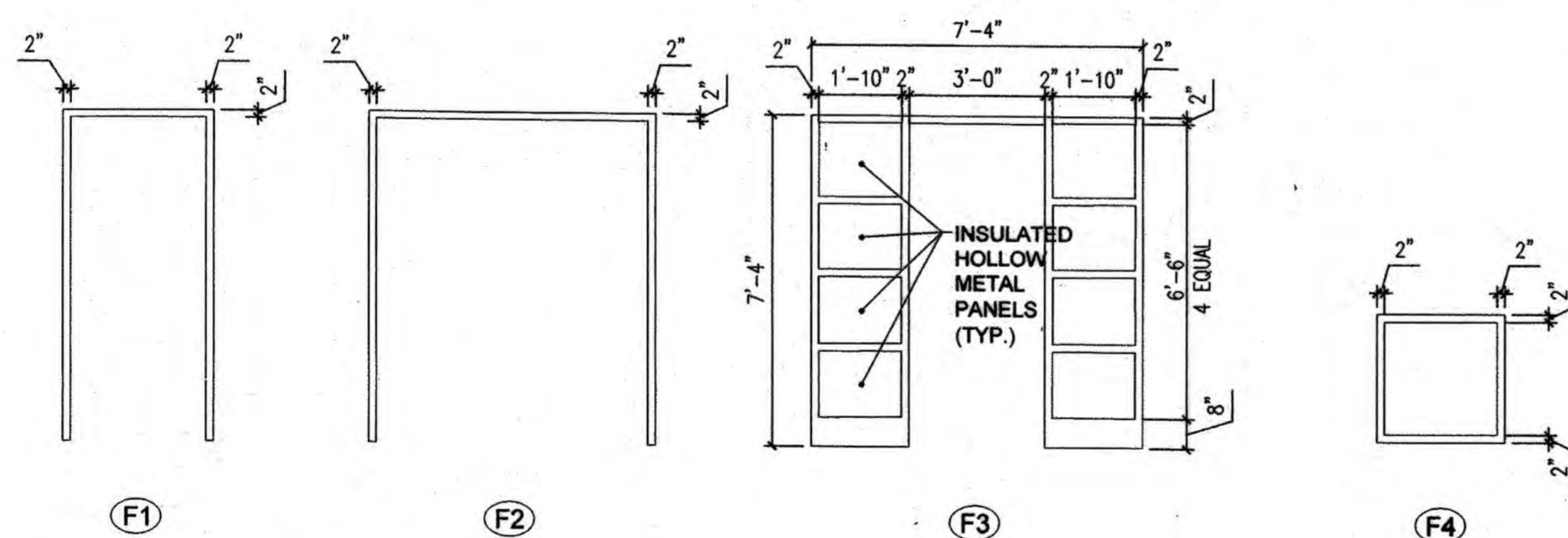
DOOR NO.	DOOR			FRAME				FIRE RATING LABEL	REMARKS			
	SIZE			DETAIL								
	W	H	THK	MATL	TYPE	MATL	TYPE			HEAD	JAMB	SILL
D01	3'-0"	7'-2"	1 3/4"	FRP	B	FRP	F3	2/A1-303	-	2/A1-303	-	SIX-PANEL DOOR
D02	6'-0"	7'-10"	1 3/4"	FRP	C	FRP	F2	H3	J3	S1	-	
D03	6'-0"	7'-2"	1 3/4"	FRP	D	FRP	F2	H1	J1	-	-	
D04	3'-0"	7'-2"	1 3/4"	FRP	A	FRP	F1	H1	J1	-	-	12"x12" LOUVER
D05	3'-0"	7'-2"	1 3/4"	FRP	C	FRP	F2	H3	J3	S1	-	
D06	8'-0"	8'-0"	-	STEEL	E	-	-	H4	J4	S2	-	INSULATED COILING DOOR
D07	3'-0"	7'-2"	1 3/4"	FRP	A	FRP	F1	H1	J1	-	-	90 MIN
D08	3'-0"	7'-2"	1'-3/4"	FRP	A	FRP	F1	H2	J2	S1	-	
D09	2'-6"	2'-6"	1'-3/4"	FRP	A	FRP	-	-	-	-	-	90 MIN ACCESS DOOR & FRAME (WALL)
D10	2'-6"	2'-6"	1'-3/4"	FRP	A	FRP	-	-	-	-	-	90 MIN ACCESS DOOR & FRAME (WALL)
D11	2'-6"	2'-6"	1'-3/4"	FRP	A	FRP	-	-	-	-	-	90 MIN ACCESS DOOR & FRAME (CEILING)

FRP = FIBERGLASS REINFORCED POLYESTER
HARDWARE SCHEDULE: SEE SHEET A1-602

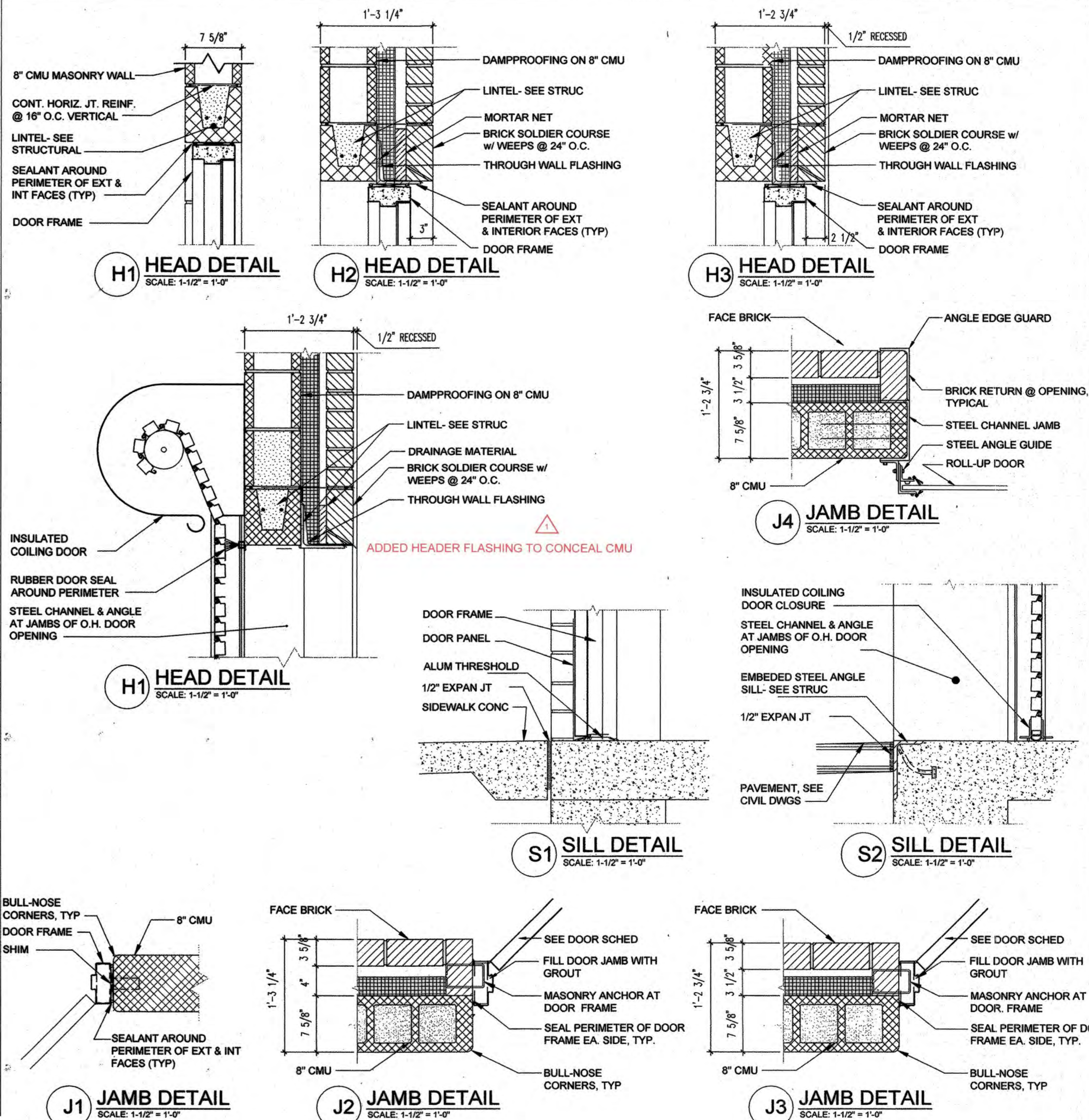
DOOR TYPE



FRAME TYPE



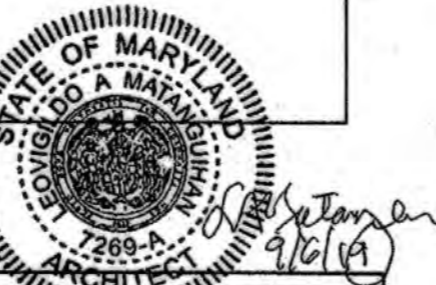
DOOR DETAILS



KCI TECHNOLOGIES PROJECT No.: 131801306.01



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. 7289, Expiration Date 09/14/2020.



DES:	LM
DRN:	LM
CHK:	LP
DATE:	DEC 2018
BY:	NO.
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION
DOOR SCHEDULE & DETAILS

CEDAR LANE
WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. A1-601
SCALE AS SHOWN
SHEET 19 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

WINDOW SCHEDULE

TYPE	SIZE		MATERIAL	REMARKS
	WIDTH	HEIGHT		
W1	3'-4"	5'-4"	ALUMINUM	TEMPERED GLAZING W/ MAR-RESISTANT COATING BOTH SIDES
W2	3'-4"	4'-8"	ALUMINUM	TEMPERED GLAZING W/ MAR-RESISTANT COATING BOTH SIDES
W3	6'-0"	5'-4"	ALUMINUM	

WINDOWS MODIFIED PER SUBMITTAL 085113-001-R1

LOUVER SCHEDULE

TYPE	SIZE		MATERIAL	REMARKS
	WIDTH	HEIGHT		
L1	12'-0"	10'-0"	ALUMINUM	HEAD & SILL DETAILS ON 3&5/A1-306
L2	6'-0"	6'-0"	ALUMINUM	HEAD & SILL DETAILS ON 3&5/A1-306
L3	14'-0"	6'-0"	ALUMINUM	HEAD & SILL DETAILS ON 3&5/A1-306
L4	2'-0"	2'-0"	ALUMINUM	HEAD & SILL DETAILS ON 3&5/A1-306

ROOM FINISH SCHEDULE

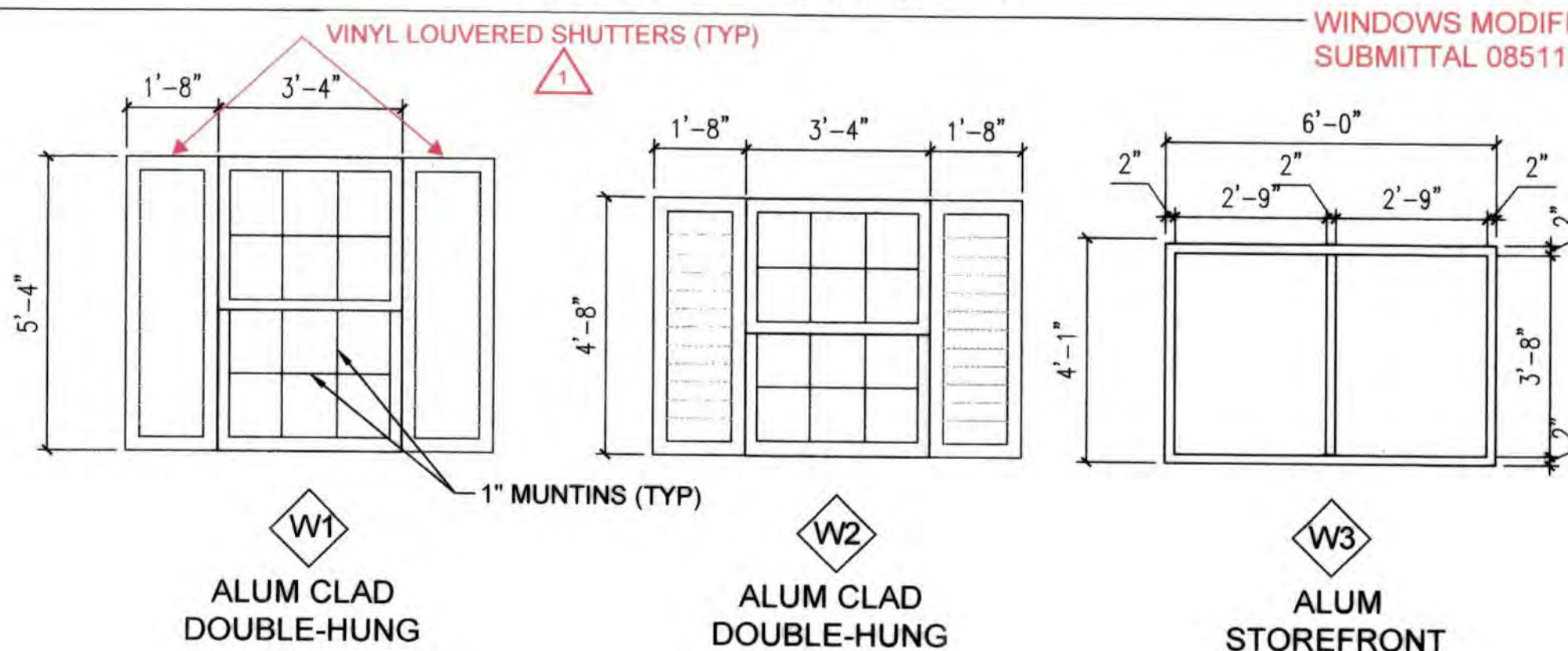
ROOM NO	ROOM NAME	FLOOR	WALLS				CEILING	NOTES
			N	S	E	W		
101	LOWER PUMP ROOM	C.S.	E	E	E	E	E	CONCRETE BLOCK SEALER PROVIDED WITH TINT
201	UPPER PUMP ROOM	C.S.	CBS	CBS	CBS	CBS	E	
202	CONTROL ROOM	C.S.	CBS	CBS	CBS	CBS	E	
203	TOILET ROOM	C.S.	CBS	CBS	CBS	CBS	E	
204	GENERATOR ROOM	C.S.	CBS	CBS	CBS	CBS	E	
205	CHEMICAL FEED ROOM	C.S.	CBS	CBS	CBS	CBS	E	

C.S. = CONCRETE SEALER
C.B.S. = CONCRETE BLOCK SEALER
E = EXPOSED

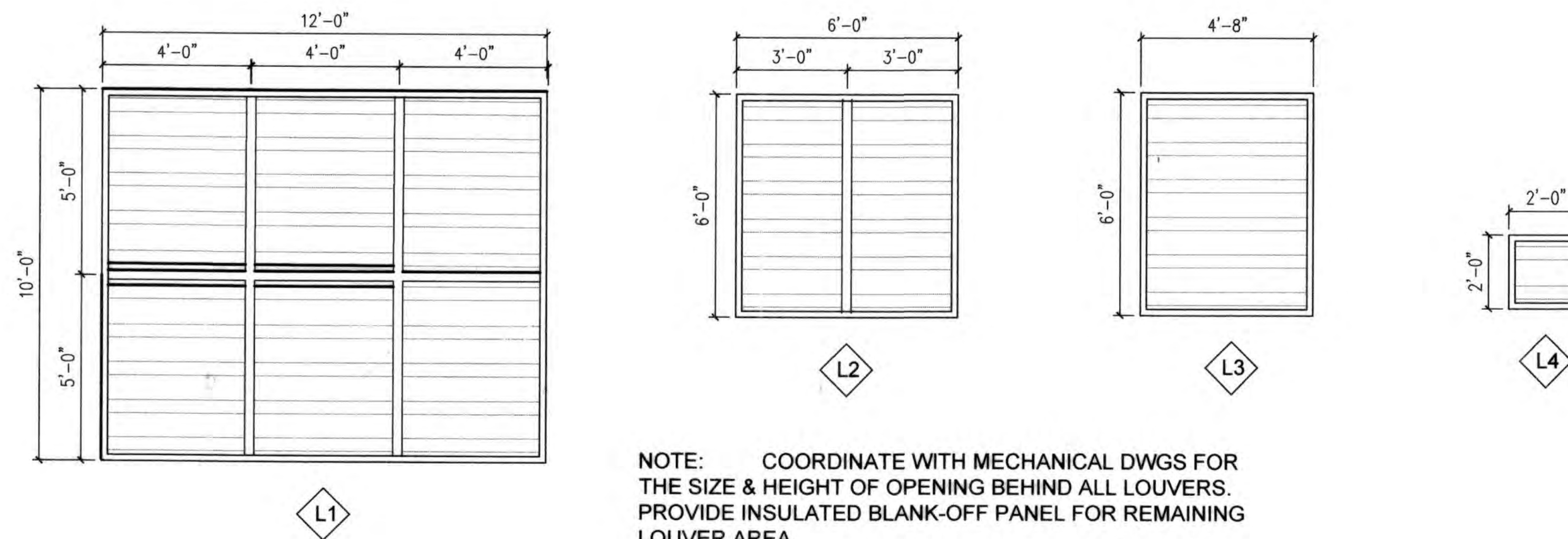
HARDWARE SCHEDULE

HARDWARE SET #1: DOORS D02 & D05 -2 CONTINUOUS HINGE -1 EXIT DEVICE ON ACTIVE LEAF -2 MORTISE BOLTS (TOP & BOTTOM OF IN ACTIVE LEAF) -1 DOOR CLOSER ON ACTIVE LEAF -WEATHERSTRIPPING -ALUM THRESHOLD	HARDWARE SET #3: DOOR D03 -1 CONTINUOUS HINGE -1 EXIT DEVICE ON ACTIVE LEAF -2 MORTISE BOLTS (TOP & BOTTOM OF INACTIVE LEAF) -1 DOOR CLOSER ON ACTIVE LEAF
HARDWARE SET #2: DOORS D01 & D08 -1 CONTINUOUS HINGE -1 EXIT DEVICE -1 DOOR CLOSER -WEATHERSTRIPPING -ALUM THRESHOLD	HARDWARE SET #4: DOOR D04 -1 CONTINUOUS HINGE -1 PRIVACY LOCK SET
	HARDWARE SET #5: DOOR D07, D09, D10 -1 CONTINUOUS HINGE -1 PASSAGE SET -1 DOOR CLOSER

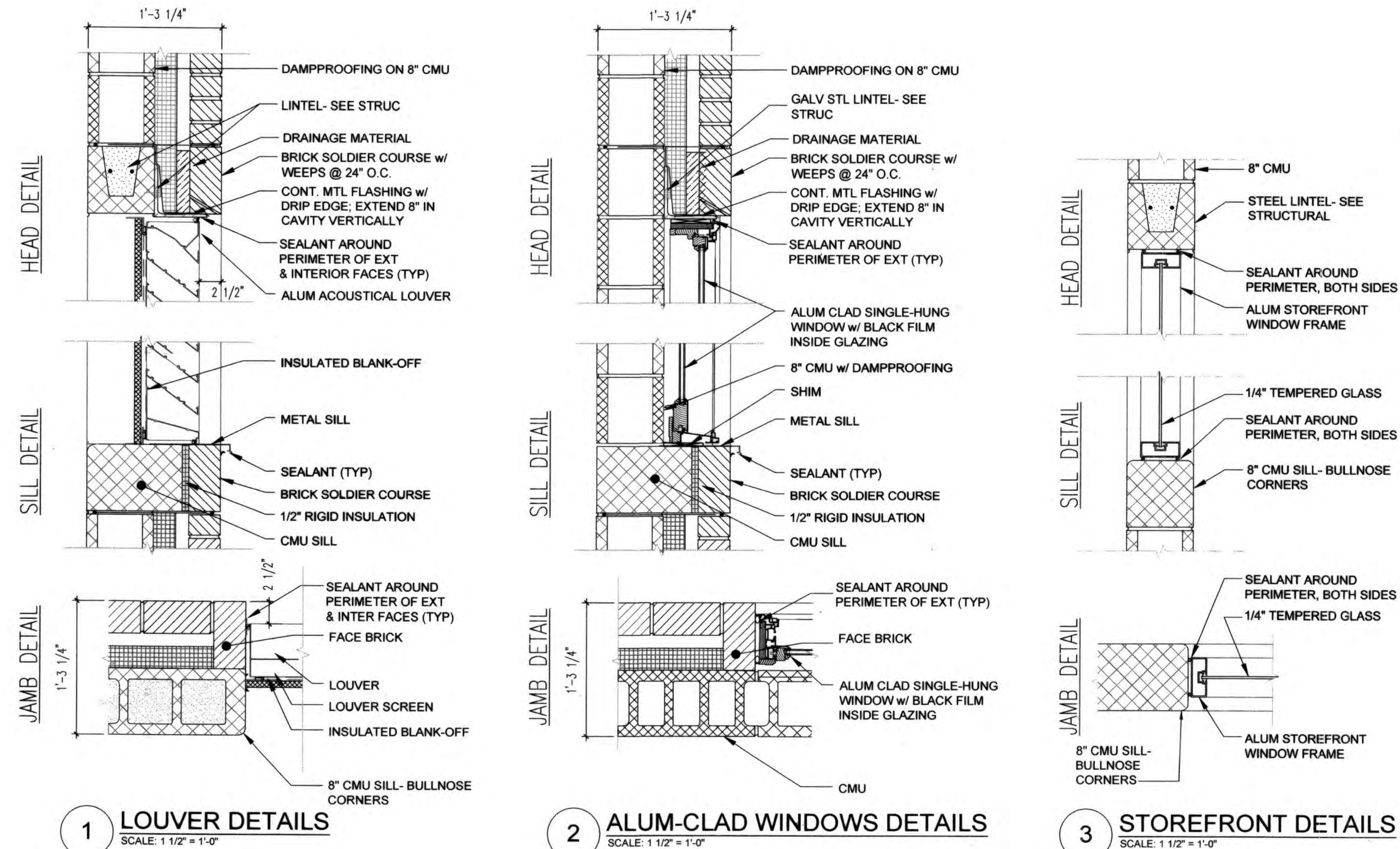
WINDOW TYPE



LOUVER TYPE



NOTE: COORDINATE WITH MECHANICAL DWGS FOR THE SIZE & HEIGHT OF OPENING BEHIND ALL LOUVERS. PROVIDE INSULATED BLANK-OFF PANEL FOR REMAINING LOUVER AREA.



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. 7269, Expiration Date 09/14/2020.

SCALE: 1 1/2" = 1'-0" AS-BUILT REPLACEMENT SHEET 9/2021

DRAWING NO. A1-602

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Leo Matanguihan
DIRECTOR OF PUBLIC WORKS DATE

Matthew B. Butler
CHIEF, BUREAU OF ENGINEERING DATE

Matthew B. Butler
CHIEF, UTILITY DESIGN DIVISION DATE

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PLANNERS
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DES:	
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DATE: DEC 2018	AG 1
BY NO.	AS-BUILT
REVISION	8/2021

PUMPING STATION
SCHEDULE & DETAILS

600' SCALE MAP NO. 35 BLOCK NO. 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET

20 of 81

DESIGN CRITERIA

- A. STRUCTURAL DESIGN SHALL BE IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE FOLLOWING CODE, STANDARDS AND SPECIFICATIONS:
1. INTERNATIONAL BUILDING CODE (IBC) 2018, INCLUDING MODIFICATIONS MADE BY LOCAL JURISDICTION.
2. ASCE 7-16 MIN. DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
3. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
4. ACI 350-06 CODE REQUIREMENTS FOR ENVIRONMENTAL CONCRETE STRUCTURES.
5. ACI 530-13 BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
6. AISC 360-10 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
7. AWS D1.1 STRUCTURAL WELDING CODE - STEEL (LATEST EDITION).
8. AA ADM-2015 ALUMINUM DESIGN MANUAL - LATEST EDITION.
B. SUPERIMPOSED DESIGN LOADS:
LIVE LOADS (MIN):
ROOFS, NON-REDUCIBLE: 40 PSF
STAIRS: 100 PSF
LOWER LEVEL: 250 PSF
FIRST FLOOR MEZZANINE: 100 PSF
WIND LOADS:
ULTIMATE DESIGN SPEED: 125 MPH
EXPOSURE: C
INTERNAL PRESSURE COEFFICIENT, GCPI: +/-0.18
EARTHQUAKE DESIGN DATA:
SEISMIC IMPORTANCE FACTOR: Ie=1.50
DESIGN SPECTRAL RESPONSE ACCELERATION: Ss=0.126 g
DESIGN SPECTRAL RESPONSE ACCELERATION: S1=0.051 g
DESIGN SPECTRAL RESPONSE ACCELERATION: Sd=0.134 g
DESIGN SPECTRAL RESPONSE ACCELERATION: Sd1=0.082 g
SOIL SITE CLASSIFICATION: TYPE D
SEISMIC DESIGN CATEGORY: A
BASIC SEISMIC FORCE-RESISTING SYSTEMS: INTERMEDIATE REINFORCED MASONRY SHEAR WALLS & STEEL ORDINARY MOMENT FRAMES
RESPONSE MODIFICATION COEFFICIENTS: R=3.5 (MASONRY SHEAR WALLS) =3.5 (STEEL MOMENT FRAMES)
SEISMIC RESPONSE COEFFICIENT: Cs= 0.574
DESIGN BASE SHEAR: V = 43.05 KIPS
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
SNOW LOADS:
GROUND SNOW LOAD (Pg): 25 PSF
FLAT ROOF SNOW LOAD (Pf): 20.8 PSF
SNOW EXPOSURE FACTOR (Ce): 0.9
SNOW THERMAL FACTOR (Ct): 1.1
SNOW LOAD IMPORTANCE FACTOR (Is): 1.20

FOUNDATION

- A. ALLOWABLE BEARING PRESSURE = 2,000 PSF PER GEOTECHNICAL REPORT.
B. CONCRETE SHALL NOT BE POURED ON FROZEN GROUND.
C. PROVIDE SHEETING AS REQUIRED TO SUPPORT LATERAL LOADS DURING EXCAVATION. SEE GEOTECHNICAL REPORT FOR SOIL PROPERTIES.
D. FILL ALL VOIDS AND REPLACE DISTURBED SOIL WITH LEAN CONCRETE.
E. RE-USE OF ON-SITE SILT/CLAY MATERIALS FOR WALL BACKFILL IS NOT PERMITTED.
F. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
G. BOTTOM OF EXTERIOR FOOTINGS SHALL BE 2' - 6" MIN BELOW FINISH GRADE, UNO.

BACKFILL

DO NOT BACKFILL AGAINST WALLS UNTIL TOP OF WALL IS EITHER TEMPORARILY BRACED OR SUPPORTING SLABS ARE IN PLACE AND HAVE OBTAINED REQUIRED STRENGTH. WHERE BACKFILL IS REQUIRED ON BOTH SIDES OF WALL, BACKFILL BOTH SIDES SIMULTANEOUSLY.

CAST-IN-PLACE REINFORCED CONCRETE

- A. ALL CONCRETE WORK SHALL CONFORM TO ACI-350-06 BUILDING CODE REQUIREMENTS FOR ENVIRONMENTAL CONCRETE STRUCTURES.
B. MINIMUM 28 DAY COMPRESSIVE STRENGTH, MAX WATER TO CEMENTITIOUS MATERIAL RATIOS & AGGREGATE SIZE SHALL BE 4,500 PSI NORMAL WEIGHT, W/C = 0.45 MAX, #57 AGGREGATE.
C. AIR ENTRAIN ALL CONCRETE EXPOSED TO FREEZING AND THAWING 5% +/-%.
D. SLUMP 3" MAX FOR FOUNDATIONS & 4" MAX FOR WALLS, PRIOR TO MID RANGE WATER REDUCER (MRWR).
E. CHAMFER ALL EDGES OF BEAMS, COLUMNS, HAUNCHES, WALLS EQUIPMENT PADS AND SLABS EXPOSED TO VIEW 3/4" UNLESS OTHERWISE NOTED.
F. WATERPROOF SHALL BE 9" FLAT RIBBED SWA GREENSTREAK OR APPROVED EQUAL.
G. CONCRETE COVER AS PROTECTION OF REINFORCEMENT SHALL BE 2" CLEAR UNO.
H. GROUT SHALL BE MASTER FLOW 555 NON-SHRINK GROUT WITH A COMPRESSIVE STRENGTH OF 8, 500 PSI AT 28 DAYS, BY BASF MANUFACTURER OR APPROVED EQUAL.

GENERAL

- A. ALL ELEVATIONS ARE REFERENCED TO MSL. SEE CIVIL DWG FOR FINISHED FLOOR ELEV. ALL ELEVATIONS SHOWN ON PLANS ARE REFERENCED TO THIS DATUM UNLESS NOTED.
B. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OR START OF CONSTRUCTION.
C. NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED OR OTHERWISE REDUCED IN STRENGTH WITHOUT THE PRIOR NOTIFICATION OF THE STRUCTURAL ENGINEER.
D. THE GENERAL CONTRACTOR SHALL COORDINATE ALL OTHER DISCIPLINES FOR ANY ITEMS WHICH EFFECT THE STRUCTURAL DRAWINGS.
E. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, GUY WIRES, ETC., WHERE NECESSARY TO ADEQUATELY RESIST ALL CONSTRUCTION LOADS.

REINFORCEMENT

- A. ALL DEVELOPMENT AND SPLICES OF REINFORCEMENT SHALL CONFORM TO THE PROVISIONS OF ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318 - LATEST EDITION).
B. REINFORCING STEEL SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE NEW BILLET STEEL CONFORMING TO CURRENT REQUIREMENTS OF ASTM A615 GRADE 60 EXCEPT TIES MAY BE GRADE 40. ALL HOOKS SHALL BE STANDARD HOOKS, UNLESS NOTED OTHERWISE.
C. WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185 (LATEST EDITION).
D. ALL WELDED WIRE FABRIC SHALL BE SPLICED SO THAT THE OVERLAP OF THE OUTERMOST CROSS WIRES OF EACH ADJOINING SHEET IS NOT LESS THAN THE SPACING OF THE CROSS WIRES PLUS TWO INCHES, UNLESS NOTED OTHERWISE.
E. REINFORCING BAR SUPPORTS AND SPACERS SHALL CONFORM TO ACI 315 - (LATEST EDITION) DETAILING MANUAL.
F. TERMINATE ALL DISCONTINUED TOP BARS WITH 90 DEGREE STANDARD HOOK UNLESS OTHERWISE NOTED.
G. CONTINUOUS BOTTOM BARS SHALL BE SPLICED AT CENTERLINE OF SUPPORTS. CONTINUOUS TOP BARS SHALL BE SPLICED AT MIDSPAN.
H. AT CHANGES IN DIRECTION OF CONCRETE WALLS, STRIP FOOTINGS, BEAMS, TIE-BEAMS AND BOND BEAMS, PROVIDE CORNER BARS AT SAME SIZE AND SPACING AS HORIZONTAL STEEL.
I. SHOP DRAWINGS SHOWING ALL NECESSARY SECTIONS AND DETAILS FOR THE PROPER POSITIONING OF ALL REINFORCING STEEL SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW BEFORE FABRICATION OR PLACEMENT OF STEEL.
J. ALL REINFORCEMENT SHALL HAVE 3" COVER TO ALL CONCRETE CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND.

CONCRETE MASONRY

- A. DESIGN CRITERIA: ACI 530-13/ASCE 5-13
B. HOLLOW UNITS: MIN. 2,800 PSI @ 28 DAYS, ASTM C90, GRADE N, NORMAL WEIGHT, fm=2,000 PSI.
C. MORTAR: ASTM C270, TYPE S, MIN. 1800 PSI @ 28 DAYS, 3/8" FULL BEDDING. REMOVE MORTAR PROTRUDING INTO CELL CAVITIES TO BE REINFORCED AND GROUTED.
D. GROUT: ASTM C476, MIN. 3,000 PSI @ 28 DAYS, 3/8" AGGREGATE MAX., 8"-10" SLUMP.
E. REINFORCEMENT:
-HORIZONTAL JOINTS: STD. DUR-O-WALL @ 16" OC, USE PREFABRICATED CORNERS AND TEES @ WALL INTERSECTIONS, OVERLAP DISCONTINUED ENDS AND EXTEND INTO COLUMNS 6" MIN.
-VERTICAL AND HORIZONTAL REINFORCEMENT: ASTM 615, GRADE 60, PROVIDE MIN. #4 BARS TYP @ WALL INTERSECTIONS, EACH SIDE OF OPENINGS, AND @ WALL ENDS, HOOK TOP OF ALL DISCONTINUED BARS, LAP CONT. REINF. 48 BAR DIA. UNO.
-USE BAR SPACERS IN EVERY 4TH COURSE WHERE CELLS ARE TO BE GROUTED.
F. PROVIDE CLEANOUT OPENINGS FOR EACH GROUTED CELL.
G. HIGH LIFT GROUTING SHALL BE USED WITH A MAXIMUM POUR OF 12'-0" IN 4' MAX LIFTS WITH ONE HOUR BETWEEN LIFTS. VIBRATE EACH LIFT AND RECONSOLIDATE PREVIOUS LIFT AFTER PLACING NEXT LIFT. VERTICAL CORES TO BE FILLED WITH GROUT SHALL HAVE A MINIMUM CLEAR DIMENSION OF 3"x3".
H. WHERE EXPANSION ANCHOR BOLTS ARE SET IN MASONRY WALLS, FILL BLOCK CELLS WITH GROUT FOR BOLTED COURSE AND TWO COURSES BELOW ANCHOR ELEVATION.
I. PROVIDE LINTELS OVER OPENINGS LARGER THAN 1'-0" IN ACCORDANCE WITH STRUCTURAL PLANS AND DETAILS.

ALUMINUM STRUCTURAL SHAPES

- A. ALUMINUM STRUCTURAL SHAPES SHALL BE ASTM B-308, 6061-T6.
B. ALLOWABLE TOLERANCES FOR MILLED ALUMINUM STANDARD STRUCTURAL SHAPES SHALL BE IN ACCORDANCE WITH ANSI H35.2. COMPLY WITH THE ALUMINUM DESIGN MANUAL (ADM-1) LATEST EDITION.
C. ALL RECTANGULAR CUTOUTS IN GRATING SHALL BE MADE TO THE NEXT BEARING BAR BEYOND THE PENETRATION WITH A CLEARANCE NOT TO EXCEED BEARING BAR SPACING.
D. USE GRATING CLAMPS TO SECURE GRATING TO SUPPORTING MEMBERS. GRATING CLAMPS TO BE A TYPE TO ALLOW FOR EASY REMOVAL OF GRATING.
E. ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL BE GIVEN A HEAVY COAT OF ALKALI RESISTANT BITUMINOUS PAINT OR OTHER COATING PROVIDING EQUIVALENT PROTECTION BEFORE INSTALLATION.
F. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF ALL ALUMINUM STRUCTURES, INCLUDING HANDRAILS, GUARDRAILS, WALKWAYS, PLATFORMS, GRATING, AND STAIRS. CONTRACTOR SHALL SUBMIT SIGNED AND SEALED PLANS. DESIGN SHALL BE IN ACCORDANCE WITH IBC.

STRUCTURAL STEEL

- A. ALL STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
B. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
-STRUCTURAL STEEL W-SHAPES: A992 HAVING A MINIMUM YIELD STRENGTH OF 50 KSI.
-STRUCTURAL STEEL CHANNELS, ANGLES, BARS & PLATES: A36 HAVING A MINIMUM YIELD STRENGTH OF 36 KSI.
-SQUARE AND RECTANGULAR TUBING: A500, GRADE B HAVING MINIMUM YIELD STRENGTH OF 46 KSI.
-ROUND PIPE: A53, GRADE B HAVING A MINIMUM YIELD STRENGTH OF 35 KSI.
C. BOLTS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS: HIGH STRENGTH BOLTS: A325, ANCHOR BOLTS: F1554, GRADE 36.
D. ALL BOLTS SHALL BE 3/4" DIAMETER, OPEN HOLES 13/16" DIAMETER, UNLESS OTHERWISE SHOWN OR NOTED.
E. WELDING SHALL BE IN ACCORDANCE WITH AWS CODE FOR WELDING IN BUILDING CONSTRUCTION (AWS D1.1) AND SHALL BE PERFORMED BY CERTIFIED WELDERS. ALL WELDS SHALL BE MADE WITH AWS A5.1 E-70XX ELECTRODES.
F. ALL SHOP CONNECTIONS SHALL BE HIGH STRENGTH BOLTED OR WELDED.
G. ALL FIELD CONNECTIONS SHALL BE HIGH STRENGTH BOLTED EXCEPT WHERE DETAILS INDICATE WELDING.
H. NO PENETRATIONS ARE PERMITTED THROUGH STRUCTURAL STEEL MEMBERS UNLESS INDICATED ON STRUCTURAL DRAWINGS OR APPROVED BY ARCHITECT/ENGINEER.
I. APPROVAL OF THE ARCHITECT/ENGINEER SHALL BE MANDATORY FOR THE USE OF CUTTING TORCH IN THE FIELD.
J. ALL GROUT UNDER STEEL PLATES SHALL BE NON-SHRINK "PRE-MIX" TYPE AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
K. FOR ALL MISCELLANEOUS STEEL CONSTRUCTION NOT SHOWN ON STRUCTURAL DRAWINGS, SEE THE ARCHITECTURAL AND MECHANICAL DRAWINGS.
L. STRUCTURAL STEEL SHALL BE INSPECTED IN THE FIELD BY AN INDEPENDENT TESTING AGENCY APPROVED BY THE ARCHITECT AND PAID FOR BY THE CONTRACTOR.
M. ALL STEEL & CONNECTIONS EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.
N. ALL STEEL DESIGNATED AS "STAINLESS STEEL" SHALL BE IN ACCORDANCE WITH ASTM A276, TYPE 304.

PRECAST HOLLOW-CORE CONCRETE SLAB

- A. ALL PRECAST, PRESTRESSED, HOLLOW-CORE CONCRETE SLABS SHALL BE DESIGNED AND MANUFACTURED BY AN EXPERIENCED CONCRETE PRE-CASTING FACILITY CERTIFIED BY THE PRESTRESSED CONCRETE INSTITUTE (PCI). PRECAST CONCRETE DESIGN AND CONSTRUCTION SHALL BE IN FULL ACCORDANCE WITH THE FOLLOWING PUBLICATIONS:
-ACI 318-14, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
-PCI MNL 116, "MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF PRECAST AND PRESTRESSED CONCRETE PRODUCTS"
B. CONCRETE FOR HOLLOW-CORE SLABS SHALL BE 5,000 PSI MIN AT 28 DAYS. THE USE OF CALCIUM CHLORIDE, CHLORIDE IONS, OR OTHER SALTS ARE NOT PERMITTED.
C. DEFORMED STEEL REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. LAP ALL SPLICES 30 BAR DIAMETERS, MIN (UNO).
D. MANUFACTURER SHALL PREPARE SHOP DRAWINGS FOR EACH PRECAST UNIT WHICH DETAIL ALL INTENDED DIMENSIONS, REINFORCING SIZE AND LOCATIONS, OPENINGS, BLOCK-OUTS AND EMBEDDED ITEMS, INCLUDING LIFTING DEVICES. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
E. PROVIDE CONNECTION POINTS, LIFTING DEVICES, JOINT GASKETS, GROUT AND OTHER ITEMS AS REQUIRED FOR HANDLING, AND FOR A COMPLETE INSTALLATION.
F. PRECAST SLABS SHALL NOT BE CUT, DRILLED OR MODIFIED IN THE FIELD EXCEPT AS INDICATED ON THE CONTRACT DRAWINGS, OR AS APPROVED BY THE ENGINEER.
G. HOLLOW-CORE SLAB UNITS SHALL BE LIFTED AND SUPPORTED DURING MANUFACTURING, STOCKPILING, TRANSPORTING, AND ERECTION ONLY AT THE LIFTING OR SUPPORTING POINTS AS SHOWN ON THE SHOP DRAWINGS AND WITH APPROVED LIFTING DEVICES. STORE ALL UNITS ABOVE THE GROUND.
H. PROVIDE KOROLATH BEARING PAD AT ALL HOLLOW-CORE SLAB BEARING LOCATIONS PER OLD CASTLE MANUFACTURER OR APPROVED EQUAL.
I. GROUT INTO KEYWAY SHALL BE MINIMUM 3,000 PSI AT 28 DAYS AND 3/8" AGGREGATE MAX.

METAL DECK

- A. METAL DECK SHALL CONFORM TO THE AISI (AMERICAN IRON AND STEEL INSTITUTE) SPECIFICATIONS FOR THE DESIGN OF LIGHT GAGE COLD-FORMED STRUCTURAL STEEL MEMBERS AND SDI CODE OF RECOMMENDED STANDARD PRACTICE.
B. METAL DECKING SHALL BE MADE OF STEEL CONFORMING TO ASTM A653 GRADE A FOR GALVANIZED DECK AND/OR ASTM A1008, GRADE C FOR PAINTED DECK HAVING A MINIMUM YIELD STRENGTH OF 33,000 PSI.
C. ALL METAL DECK HAS BEEN DESIGNED TO BE CONTINUOUS OVER THREE SPANS MINIMUM, AND SHALL BEAR AT LEAST 2" ON STEEL SUPPORTS. FOR ONE OR TWO SPAN CONDITIONS, THE CONTRACTOR SHALL PROVIDE SHORING AS REQUIRED, OR FURNISH HIGHER GAGE DECK AS REQUIRED TO SUPPORT ALL THE APPLICABLE LOADS. CONTRACTOR SHALL SUBMIT ALTERNATE FOR APPROVAL.
D. DECK SHALL BE WELDED TO SUPPORTING STEEL AT ENDS OF UNITS AND AT ALL INTERMEDIATE SUPPORTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SIDE LAPS SHALL BE WELDED OR SCREWED AT 3" O/C MAXIMUM FOR SPANS OVER 5'. USE WELDING WASHERS FOR ATTACHING METAL DECK OF 23 GAGE OR LIGHTER.
E. PROVIDE RIDGE AND VALLEY PLATES, STANDARD CLOSURES, CANT STRIPS, POUR STOPS AND OTHER ACCESSORIES AS SHOWN ON DRAWINGS OR AS REQUIRED.
F. METAL DECK SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES PER FOOT WIDTH:
1 1/2", TYPE B, WIDE RIB, 22 GAUGE (0.0295 INCH)
I = 0.169 IN^4
SP = 0.198 IN^3
SN = 0.213 IN^2
G. PROVIDE STEEL LEDGER ANGLE L2 1/2x2 1/2x1/4 AT STEEL COLUMNS AS REQUIRED FOR SUPPORT OF METAL DECKING.
H. DECK OPENINGS THAT ARE LARGER THAN 8" OR CUT THROUGH MORE THAN 2 WEBS SHALL BE REINFORCED PER TYPICAL DETAILS.
I. METAL DECK SHALL BE INSPECTED IN THE FIELD BY AN INDEPENDENT TESTING AGENCY APPROVED BY THE ARCHITECT AND PAID FOR BY THE CONTRACTOR.

ABBREVIATIONS

Table with 2 columns: Abbreviation and Full Name. Includes terms like ANGLE, DEGREE, PLUS / MINUS, ADD'L, ABOVE FINISHED FLOOR, ALUMINUM, ARCHITECTURAL, BOTTOM BEARING, CAST-IN-PLACE CONTROL JOINT, CENTERLINE, CLEAR, CONCRETE MASONRY UNIT, CONCRETE, CONTINUOUS COORDINATE, DEGREE, DIAMETER, DIMENSION, DETAIL, DRAWING(S), EACH, EACH END, EACH FACE, ELEVATION, EMBED, EQUAL, EXISTING, EACH WAY, EXPANSION, FINISHED FLOOR, FIBER REINFORCED PLASTIC, FOOTING, FIELD VERIFY, GALVANIZED, HOT-DIPPED GALVANIZED, HORIZONTAL, HOLLOW STRUCTURAL SECTION JOINT, KIPS / SQUARE INCH, LONG LEG HORIZONTAL, LONG LEG VERTICAL, LONGITUDINAL, MANUFACTURER, MAXIMUM, MECHANICAL, MINIMUM, MISCELLANEOUS, MID RANGE WATER REDUCER, NUMBER, ON CENTER, POUNDS / CUBIC FOOT, PLATE, POUNDS / SQUARE INCH, REINFORCEMENT, ROOF TOP UNIT, SCHEDULE, SECTION, SQUARE FOOT, SIMILAR, SLAB ON GRADE, SQUARE, STAINLESS STEEL, STANDARD, TOP AND BOTTOM, TONGUE AND GROOVE, TOP OF STEEL, TUBE STEEL, TRANSVERSE, TYPICAL, TOP OF, UNLESS NOTED OTHERWISE, VERTICAL, VERIFY IN FIELD, WITH, WATER TO CEMENT RATIO, WITHIN, WITHOUT, WELDED WIRE FABRIC, DOWN, CONTROL, ROOM, FRONT OF, BOTTOM OF.



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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Includes signatures of Director of Public Works and Chief, Utility Design Division.

KCI TECHNOLOGIES logo and address: 936 RIDGEBROOK ROAD SPARKS, MD 21152. Phone: (410)316-7800. Fax: (410)316-7817. Website: WWW.KCI.COM

Professional Engineer Seal for Robert L. Albrecht, State of Maryland, License No. 23393, Expiration Date 8/25/2020.

Table with columns: DES, DRN, CHK, DATE, BY, NO. Values: JWG/RCC, ANM, RLA, DEC 2018, AG, 1.

GENERAL STRUCTURAL NOTES. Includes revision table with columns: NO., REVISION, DATE. Revision 1: AS-BUILT, 8/2021.

CEDAR LANE WATER PUMPING STATION. CAPITAL PROJECT NO. W-8328. CONTRACT NO. 44-5036. ELECTION DISTRICT NO. 5. HOWARD COUNTY, MARYLAND.

DRAWING S1-001. SCALE AS SHOWN. SHEET 21 OF 81.

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SUBMISSIONS

IN ADDITION TO SUBMISSIONS AS REQUIRED IN THE SPECIFICATIONS, CONTRACTOR SHALL PROVIDE PLANS AND DETAILS, SIGNED AND SEALED BY A MARYLAND PROFESSIONAL ENGINEER, FOR THE FOLLOWING: HANDRAILS, GUARDRAILS, GRATING, METAL STAIRS, PRECAST HOLLOW CORE CONCRETE SLABS, AND ROOF TRUSSES.

SUBMITTALS

- A. BEFORE SUBMISSION OF SHOP DRAWINGS, THE CONTRACTOR SHALL HAVE DETERMINED AND VERIFIED ALL QUANTITIES, DIMENSIONS, SPECIFIED PERFORMANCE CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS AND SIMILAR DATA AND SHALL HAVE COORDINATED EACH SHOP DRAWING WITH OTHER SHOP DRAWINGS AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- B. PRIOR TO SUBMISSIONS, THE CONTRACTOR SHALL STAMP OR PROVIDE A SIMILAR WRITTEN INDICATION THAT THE CONTRACTOR HAS REVIEWED THE SUBMISSION AND IS SATISFIED THE CONTENTS ARE IN COMPLIANCE WITH THE CONTRACT DRAWINGS.
- C. REPRINTS OF THE CONTRACT DRAWINGS WILL NOT BE ACCEPTED.
- D. NO DIMENSIONAL INFORMATION MAY BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.
- E. ADEQUATE SETS SHALL BE SUBMITTED SO THAT THE ARCHITECT/ENGINEER CAN MAINTAIN ONE RECORD SET AT ALL TIMES.

SPECIAL INSPECTION

- A. SPECIAL INSPECTIONS, IN ACCORDANCE WITH IBC CHAPTER 17, ARE REQUIRED. THE OWNER WILL ENGAGE A SPECIAL INSPECTIONS ENGINEER OF RECORD TO PERFORM THE SERVICES INDICATED.
 - 1. CONTRACTOR SHALL REGULARLY PROVIDE SPECIAL INSPECTIONS ENGINEER OF RECORD WITH A CURRENT CONSTRUCTION SCHEDULE SO THAT THE REQUIRED INSPECTIONS CAN BE PROVIDED IN A TIMELY MANNER.
- B. THE OWNER WILL ENGAGE AN APPROVED, QUALIFIED TESTING AGENCY TO PROVIDE TESTING AND INSPECTION SERVICES AS INDICATED BELOW. SUBMIT REPORTS TO THE STRUCTURAL ENGINEER OF RECORD AND CODE OFFICIAL (AS APPLICABLE).

TYPE OF INSPECTION	IBC SECTIONS
SPECIAL INSPECTIONS	1704.2
STEEL CONSTRUCTION	1705.2
CONCRETE CONSTRUCTION	1705.3
MASONRY CONSTRUCTION	1705.4
SOILS	1705.6

WATERPROOFING

FOR WATERPROOFING FOR EXTERIOR WALLS, SEE ARCHITECTURAL DRAWINGS. MEMBRANE WATERPROOFING SHALL BE AS SPECIFIED IN SECTION 071000.




PRE-ENGINEERED COLD-FORMED STEEL ROOF TRUSSES

- A. ALL COLD-FORMED DESIGN AND FABRICATION SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING:
 - "AMERICAN IRON AND STEEL INSTITUTE STANDARD FOR COLD-FORMED STEEL FRAMING - TRUSS DESIGN"
 - "AMERICAN IRON AND STEEL INSTITUTE, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS"
 - "STRUCTURAL BUILDING COMPONENTS ASSOCIATION - COLD-FORMED STEEL BUILDING COMPONENT SAFETY INFORMATION (CFSBCSI)"
- B. SHOP DRAWINGS FOR ALL COLD-FORMED STEEL TRUSSES AND CONNECTORS SHALL IDENTIFY THE SPECIFIC PROJECT, SHALL LIST ALL DESIGN CRITERIA AND SHALL SHOW ALL DETAILS NECESSARY FOR PROPER ERECTION. SHOP DRAWINGS SHALL BEAR THE SIGNATURE AND IMPRESSED SEAL OF THE PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MARYLAND WHO PREPARED THEM.
- C. SIGNED AND SEALED SHOP DRAWINGS SHALL INCLUDE ALL TRUSS MEMBER SIZES, CONNECTORS, FRAMING PLANS IDENTIFYING EACH TRUSS AND ITS LOCATION, PERMANENT BRACING AND ANCHORAGE OF BRACING, TRUSS TO TRUSS CONNECTION DETAILS, TRUSS TO STRUCTURE CONNECTIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS AND ANY OTHER TEMPORARY AND PERMANENT ERECTION AND FABRICATION INFORMATION.
- D. PROVIDE COMPONENTS WITH PROTECTIVE ZINC COATING COMPLYING WITH ASTM A653, MINIMUM G60 COATING.
- E. STRUCTURAL MEMBERS SHALL MEET THE FOLLOWING MINIMUM YIELD STRENGTH REQUIREMENTS:
 - CHORD AND WEB MEMBER: Fy=50 KSI,
 - BRACING, BRIDGING AND BLOCKING MEMBERS: Fy=33 KSI
- F. THE ERECTION AND BRACING OF COLD-FORMED STEEL TRUSSES SHALL BE THE RESPONSIBILITY OF THE OTHERWISE NOTED ON APPROVED SHOP DRAWINGS.
- G. TRUSSES SHALL PRODUCE NO HORIZONTAL THRUST TO BEARING WALLS.

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

 DATE 12-20-18
 DIRECTOR OF PUBLIC WORKS
 DATE 12-20-18
 CHIEF, BUREAU OF ENGINEERING
 DATE 12-20-18
 CHIEF, UTILITY DESIGN DIVISION


 ENGINEERS
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 936 RIDGEBROOK ROAD
SPARKS, MD 21152
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DES: JWG/RCC	BY	NO.	REVISION	DATE
DRN: ANM				
CHK: RLA				
DATE: DEC 2018				

GENERAL STRUCTURAL NOTES

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

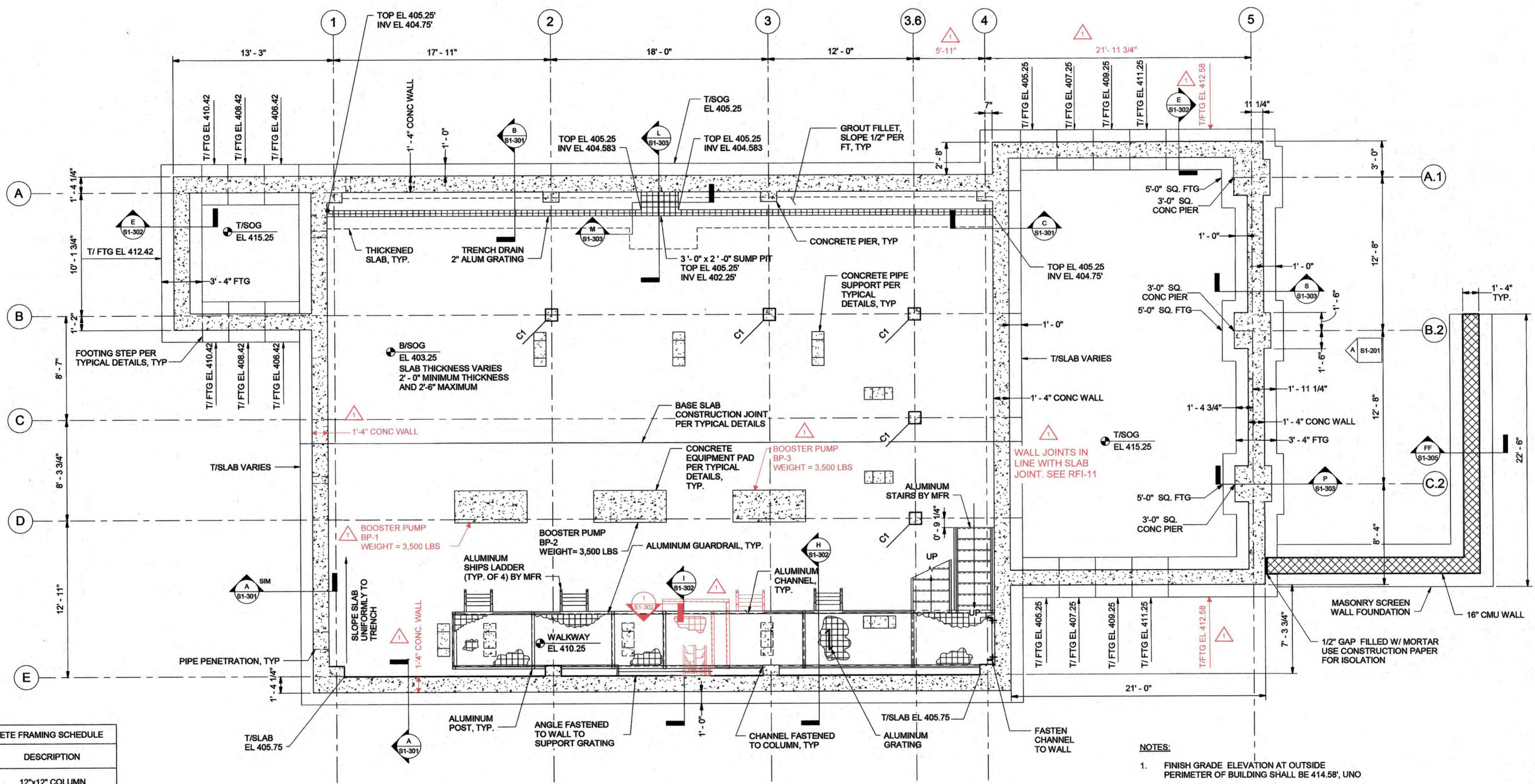
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

AS-BUILT
DATE 9/2021

DRAWING
S1-002
SCALE
AS SHOWN
SHEET
22 OF 81

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CONCRETE FRAMING SCHEDULE	
I.D.	DESCRIPTION
C1	12"x12" COLUMN

NOTE:
 REFER TO SECTIONS AND DETAILS FOR REINFORCEMENT

1 PUMPING STATION LOWER LEVEL PLAN
 SCALE: 1/4" = 1'-0"

NOTES:
 1. FINISH GRADE ELEVATION AT OUTSIDE PERIMETER OF BUILDING SHALL BE 414.58', UNO



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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 12-20-18
 Chief, Bureau of Utilities: [Signature] DATE: 12-20-18

Chief, Bureau of Engineering: [Signature] DATE: 12-20-18
 Chief, Utility Design Division: [Signature] DATE: 12-20-18

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS

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DRN:	ANM				
CHK:	RLA				
DATE:	DEC 2018	AG:	1	AS-BUILT	8/2021
BY:	NO.	REVISION:			

PUMPING STATION LOWER LEVEL PLAN

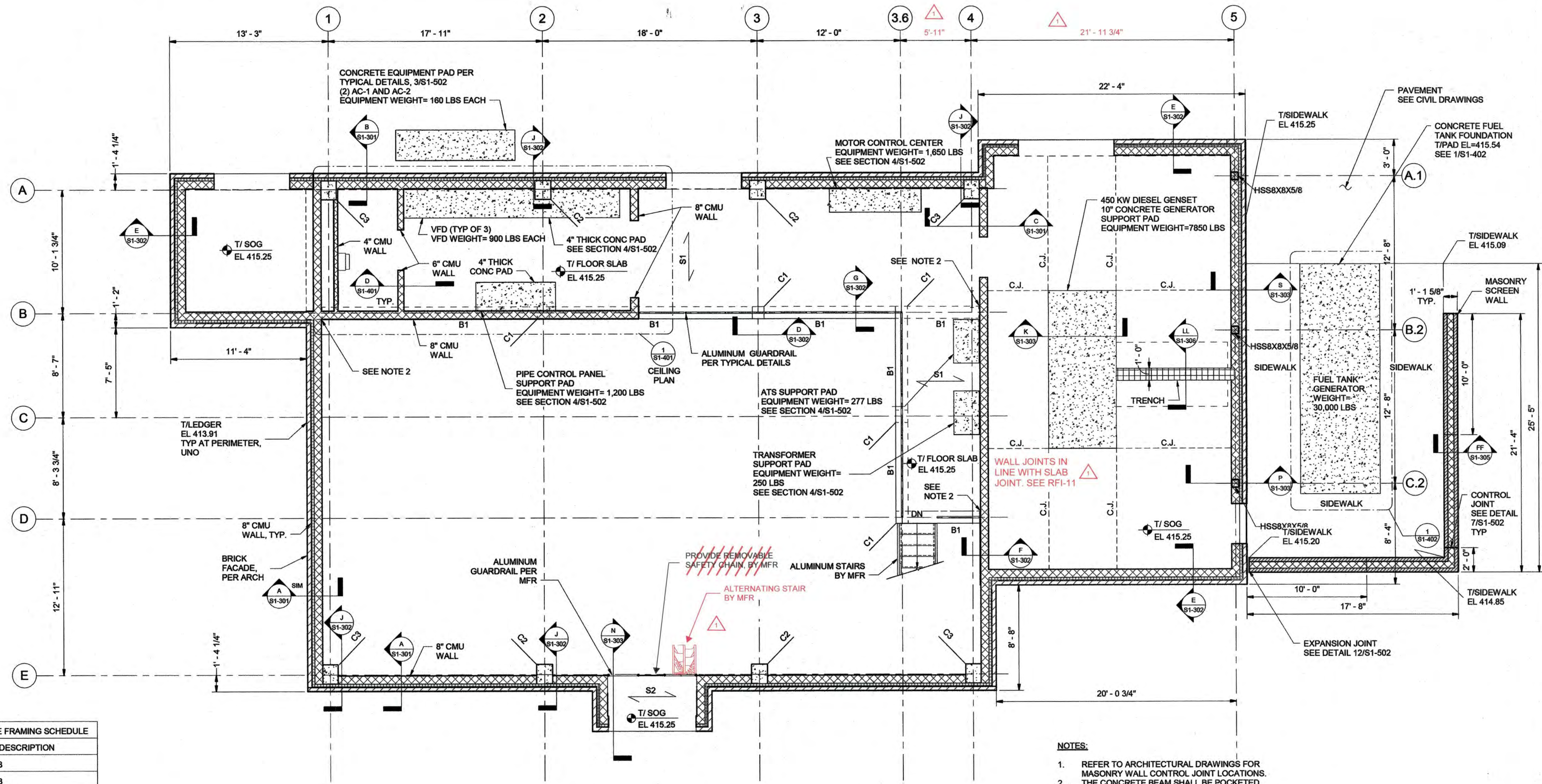
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036

DRAWING S1-101
 SCALE AS SHOWN
 SHEET 28 OF 81

AS-BUILT REPLACEMENT SHEET 9/2021

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CONCRETE FRAMING SCHEDULE	
I.D.	DESCRIPTION
S1	8" SLAB
S2	8" SLAB
B1	12" W x 18" D
C1	12" x 12" COLUMN
C2	14 3/4" W x 19" D COLUMN
C3	16" W x 19" D COLUMN

1 PUMPING STATION FIRST FLOOR PLAN
 SCALE: 1/4" = 1'-0"

- NOTES:**
- REFER TO ARCHITECTURAL DRAWINGS FOR MASONRY WALL CONTROL JOINT LOCATIONS. THE CONCRETE BEAM SHALL BE POCKETED INTO THE WALL AT THIS LOCATION.
 - FINISH GRADE ELEVATION AT OUTSIDE PERIMETER OF BUILDING SHALL BE 414.58', UNO
 - SEE CIVIL DRAWINGS FOR FUEL TANK AREA FOR FINISH FLOOR ELEVATIONS.
 - FOR EXTERIOR SIDEWALK, SEE CONTRACT SDP18-046.

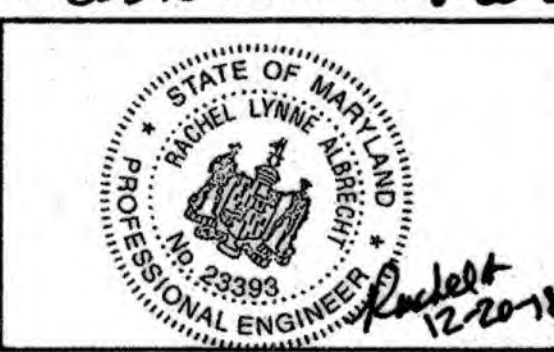
NOTE:
 REFER TO SECTIONS AND DETAILS FOR REINFORCEMENT



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ALBRECHT ENGINEERING INC
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *12/20/18*
 Chief, Bureau of Engineering: *12/20/18*
 Chief, Bureau of Utilities: *12-20-18*
 Chief, Utility Design Division: *12/20/18*

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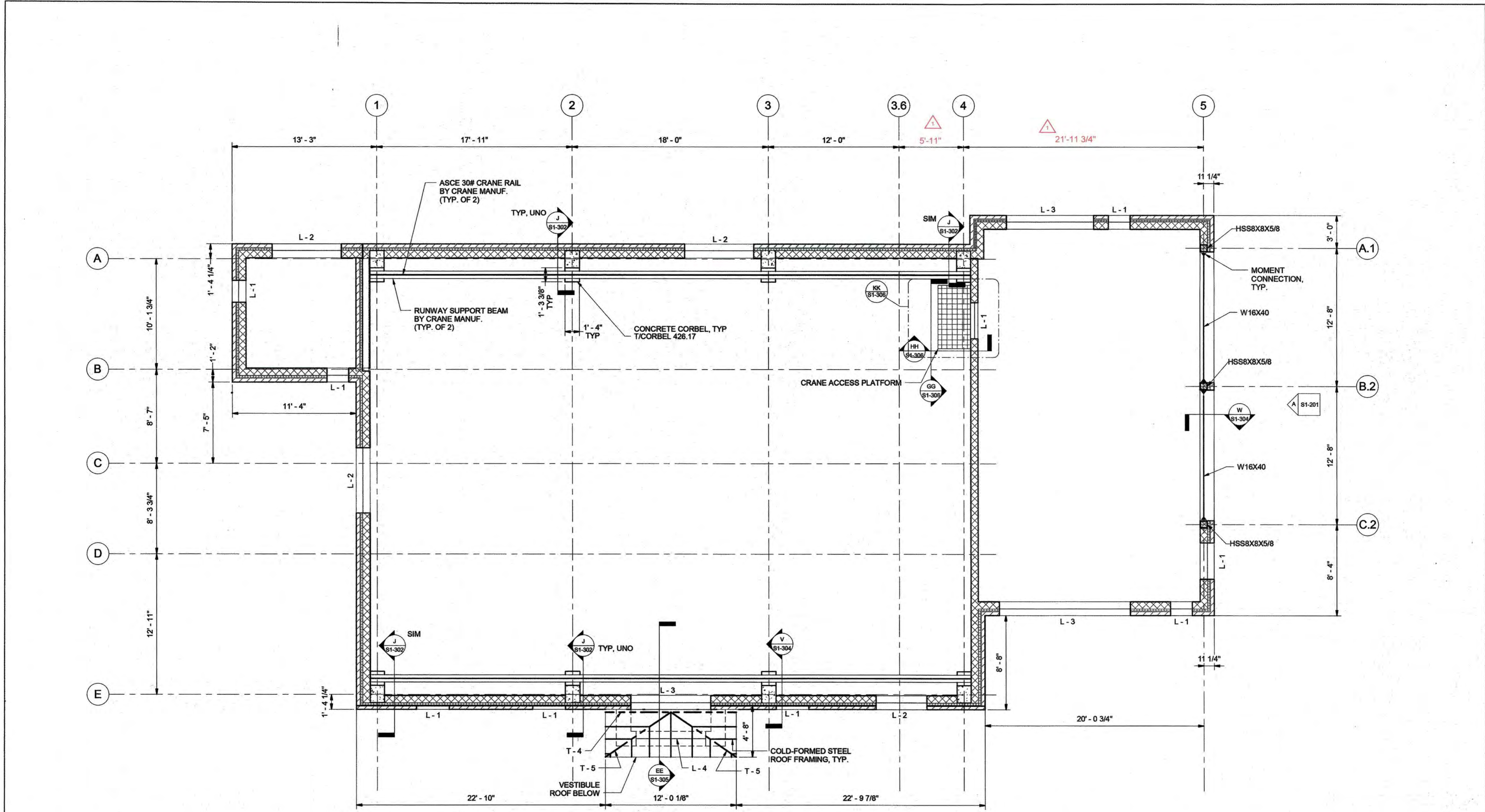
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DRN:	ANM
CHK:	RLA
DATE:	DEC 2018
BY:	NO.

AG:	1	AS-BUILT	8/2021
REVISION:			
DATE:			
600' SCALE MAP NO.:	35	BLOCK NO.:	17, 11

PUMPING STATION FIRST FLOOR PLAN
CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

DRAWING: **S1-102**
 SCALE: AS SHOWN
 SHEET: 24 OF 31

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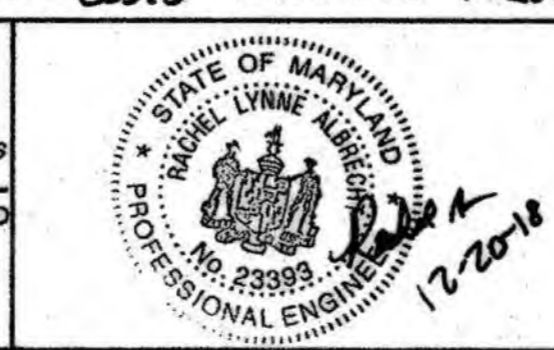
1 PUMPING STATION CRANE PLAN
 SCALE: 1/4" = 1'-0"



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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] DATE: 12-20-18
 Chief, Bureau of Utilities: [Signature] DATE: [Signature]
 Chief, Utility Design Division: [Signature] DATE: [Signature]

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
KCI TECHNOLOGIES
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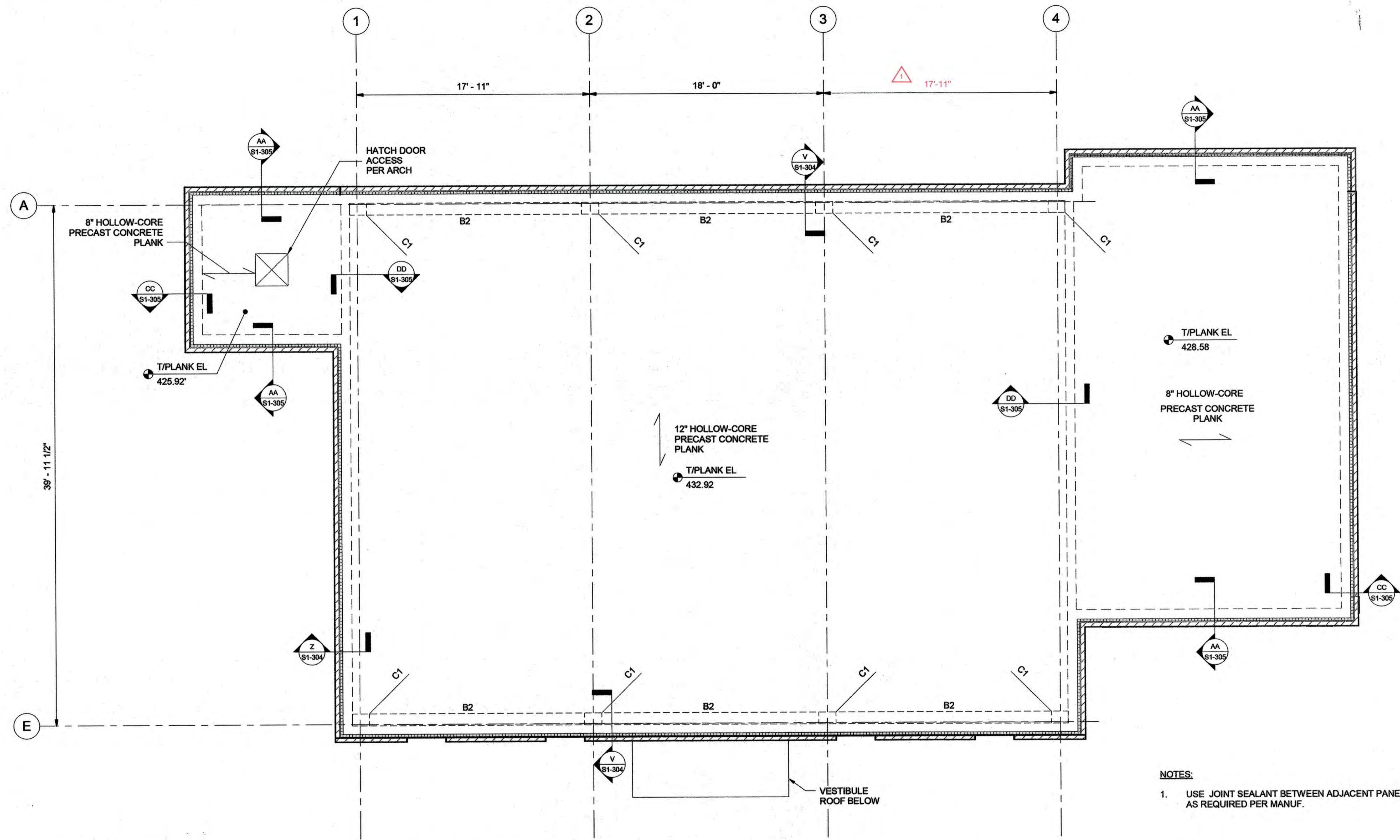
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DRN:	ANM	BY:	NO.
CHK:	RLA	NO.	
DATE:	DEC 2018	REVISION:	AS-BUILT
	AG 1	DATE:	8/2021

PUMPING STATION CRANE PLAN
 600' SCALE MAP NO.: 35
 BLOCK NO.: 17, 11

AS-BUILT REPLACEMENT SHEET 9/2021
CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

DRAWING S1-103
 SCALE AS SHOWN
 SHEET 25 OF 81

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NOTES:
 1. USE JOINT SEALANT BETWEEN ADJACENT PANELS AS REQUIRED PER MANUF.

CONCRETE FRAMING SCHEDULE	
I.D.	DESCRIPTION
C1	12" Wx12" D COLUMN
B2	10 1/2" W x 18" D BEAM

NOTE:
 REFER TO SECTIONS AND DETAILS FOR REINFORCEMENT

1 PUMPING STATION CEILING PLAN
 SCALE: 1/4" = 1'-0"



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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 12-26-18
 Chief, Bureau of Utilities: *[Signature]* DATE: 12-26-18

Chief, Utility Design Division: *[Signature]* DATE: 12-26-18

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DRN:	ANM
CHK:	RLA
DATE:	DEC 2018
BY:	AG
NO.:	1
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION CEILING PLAN

600' SCALE MAP NO.: 35
 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

DRAWING: S1-104
 SCALE: AS SHOWN
 SHEET: 26 OF 81

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. A. ... DATE *12-20-18*
 DIRECTOR OF PUBLIC WORKS
 CHIEF, BUREAU OF UTILITIES

Thomas S. ... DATE
 CHIEF, BUREAU OF ENGINEERING
 CHIEF, UTILITY DESIGN DIVISION

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DES:	JWG/RCC
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CHK:	RLA
DATE:	DEC 2018
BY:	NO.
REVISION:	

PUMPING STATION ROOF PLAN

DATE 600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

CEDAR LANE WATER PUMPING STATION

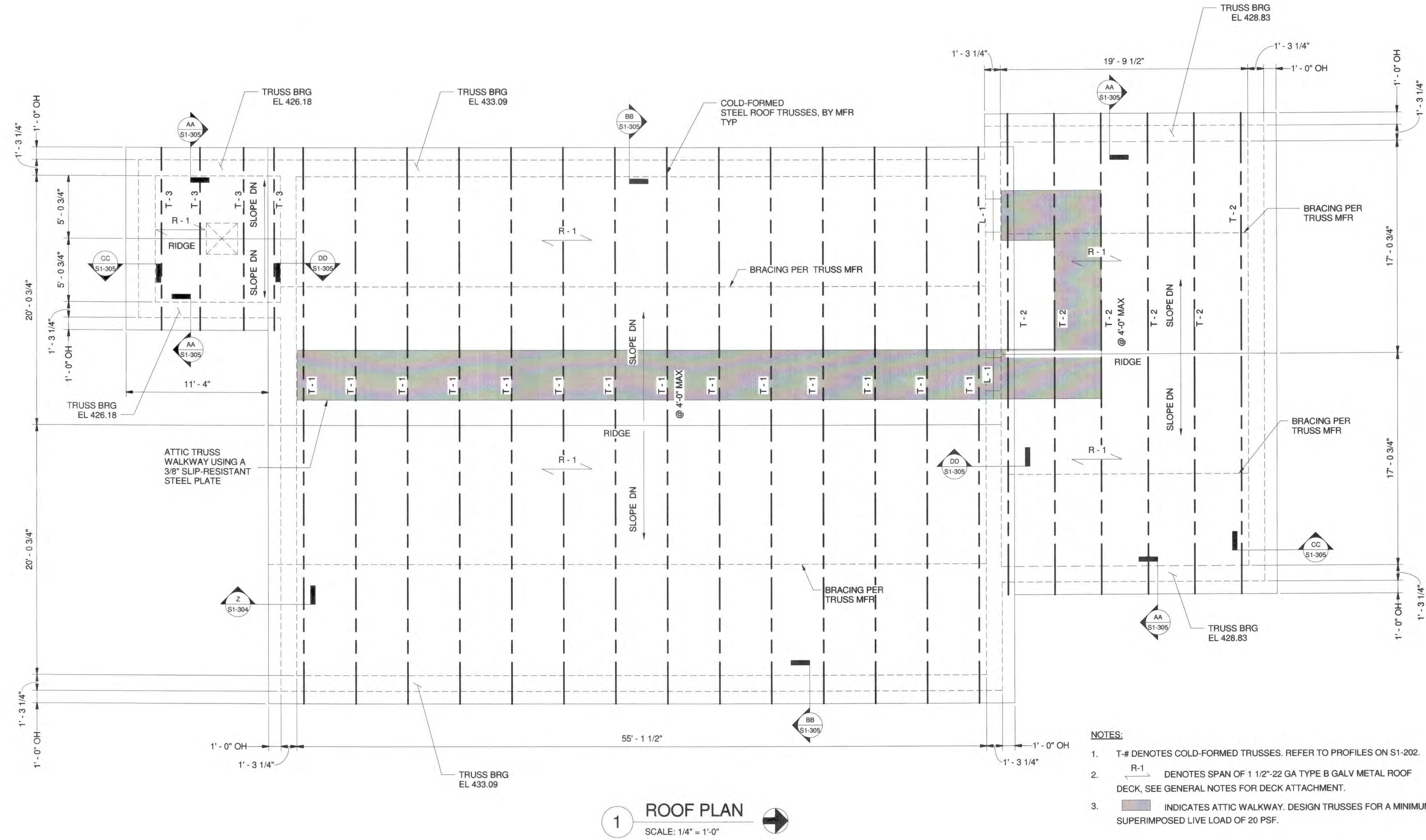
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

AS-BUILT
DATE 9/2021

DRAWING
S1-105

SCALE
AS SHOWN

SHEET
27 OF 81



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

- NOTES:**
- T-# DENOTES COLD-FORMED TRUSSES. REFER TO PROFILES ON S1-202.
 - R-1 DENOTES SPAN OF 1 1/2"-22 GA TYPE B GALV METAL ROOF DECK. SEE GENERAL NOTES FOR DECK ATTACHMENT.
 - INDICATES ATTIC WALKWAY. DESIGN TRUSSES FOR A MINIMUM SUPERIMPOSED LIVE LOAD OF 20 PSF.

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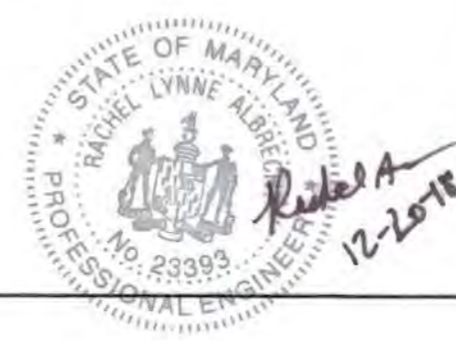


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. J. [Signature]
DIRECTOR OF PUBLIC WORKS
DATE: 12-21-18
CHIEF, BUREAU OF UTILITIES

Thomas P. [Signature]
CHIEF, BUREAU OF ENGINEERING
DATE: 12-21-18
CHIEF, UTILITY DESIGN DIVISION

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DRN:	ANM				
CHK:	RLA				
DATE:	DEC 2018	BY	NO.	REVISION	DATE

MOMENT FRAME SECTION AND DETAILS

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

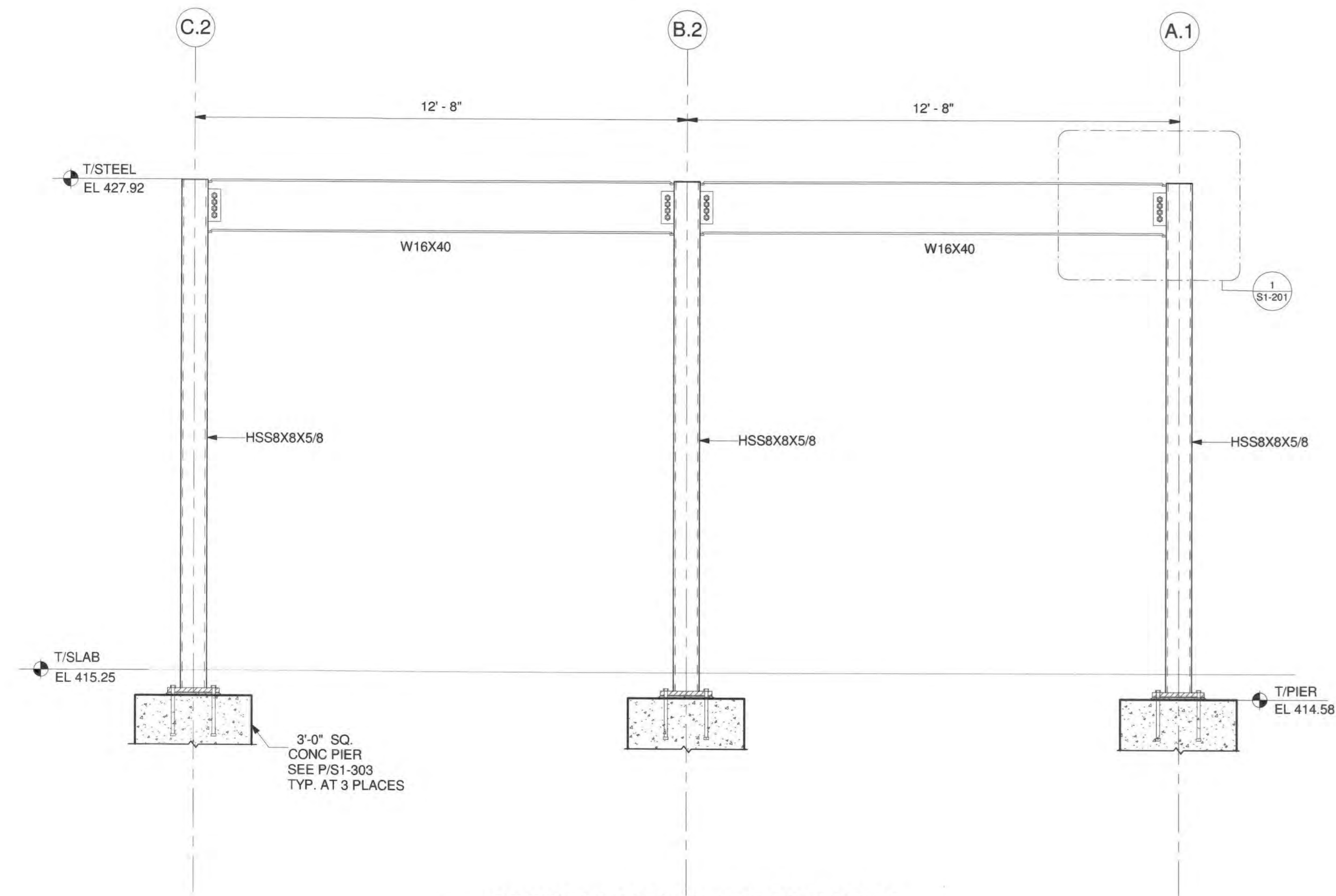
CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

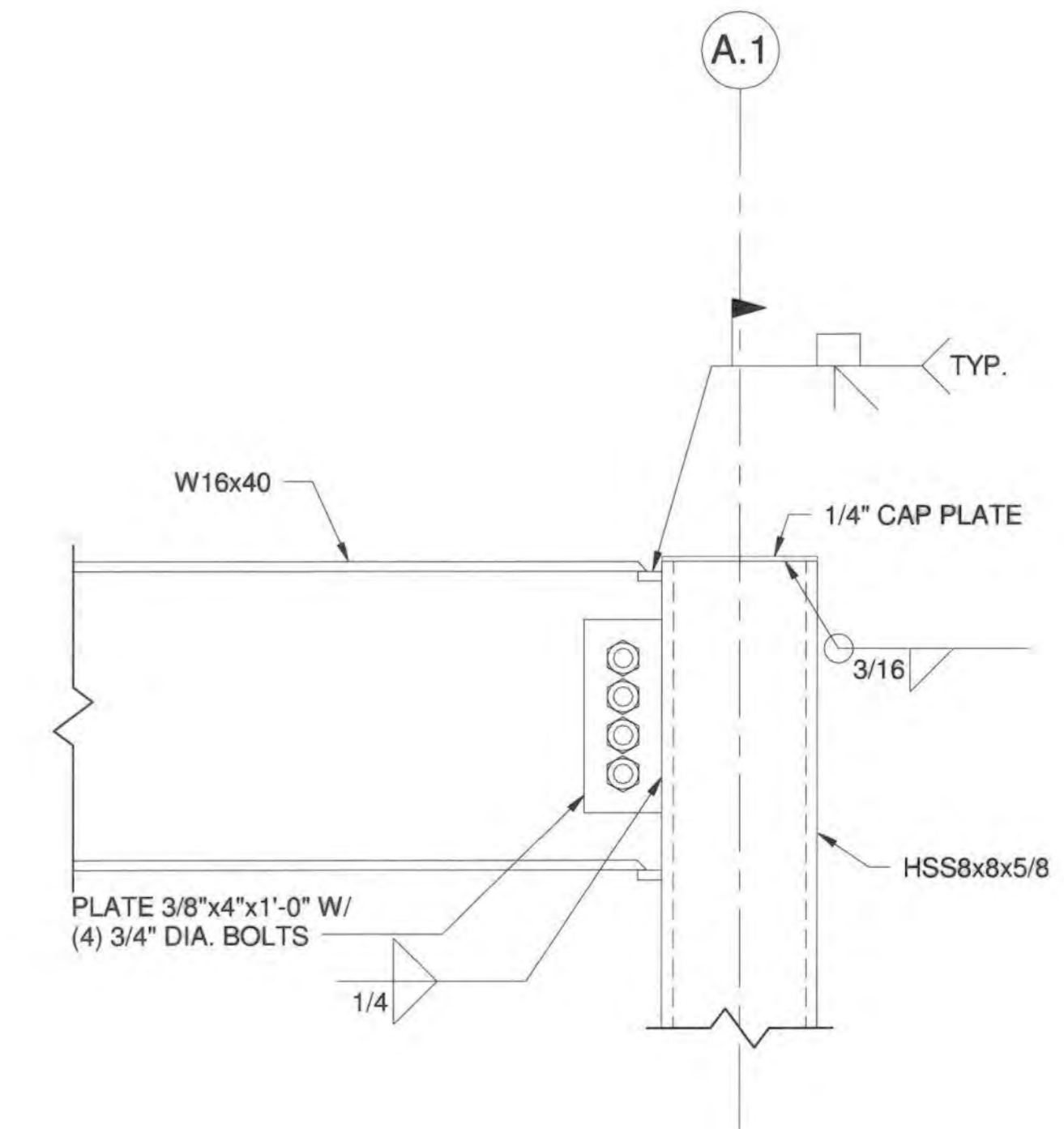
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

AS-BUILT
DATE: 9/2021

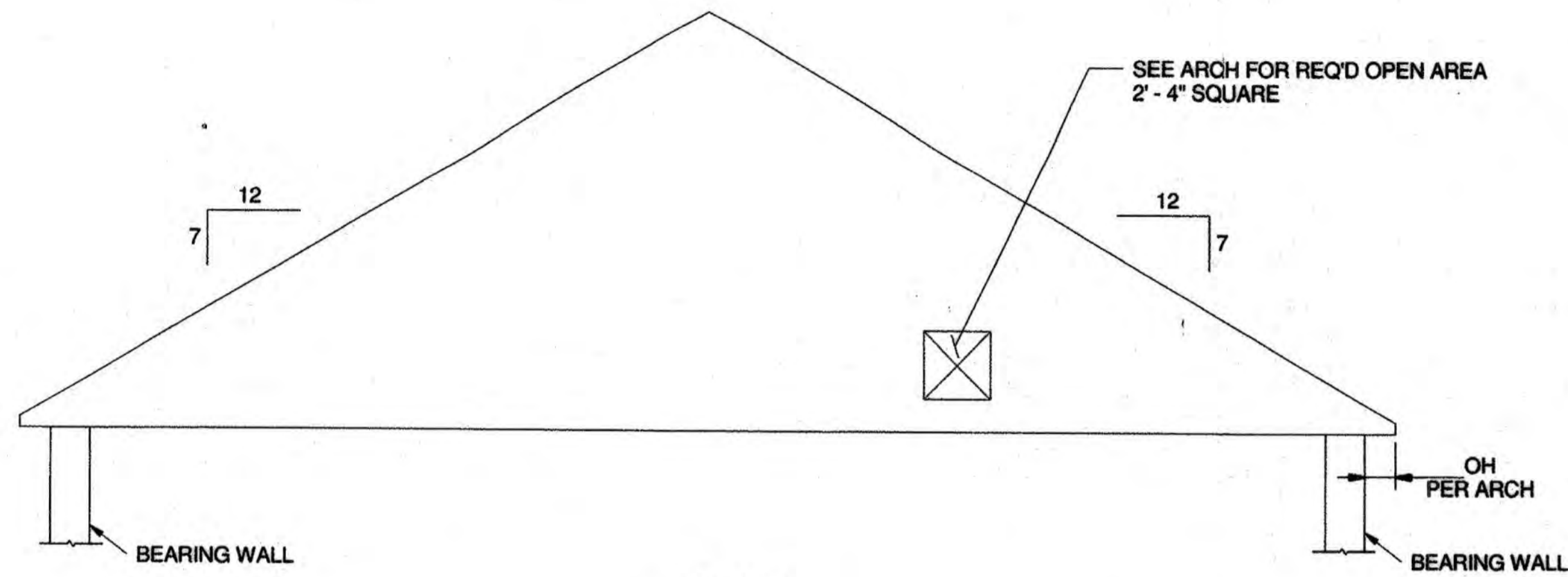
DRAWING: S1-201
SCALE: AS SHOWN
SHEET: 28 OF 81



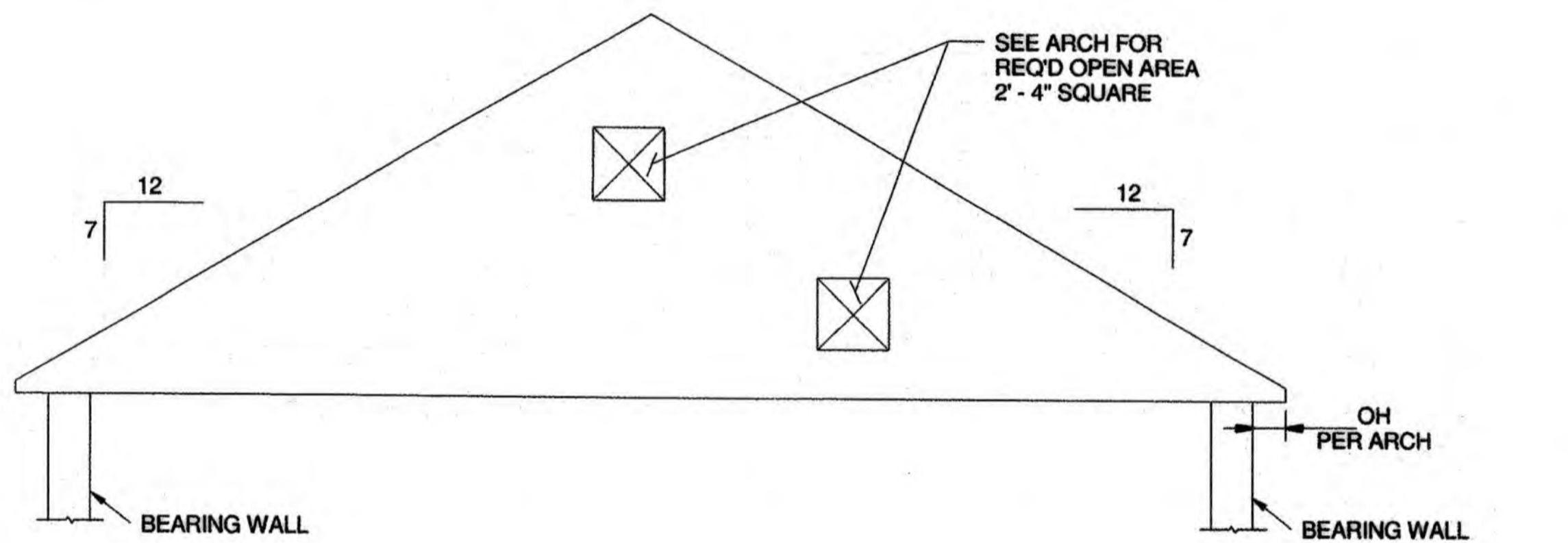
A STEEL FRAMING AT GRIDLINE 5
SCALE: 1/2" = 1'-0"



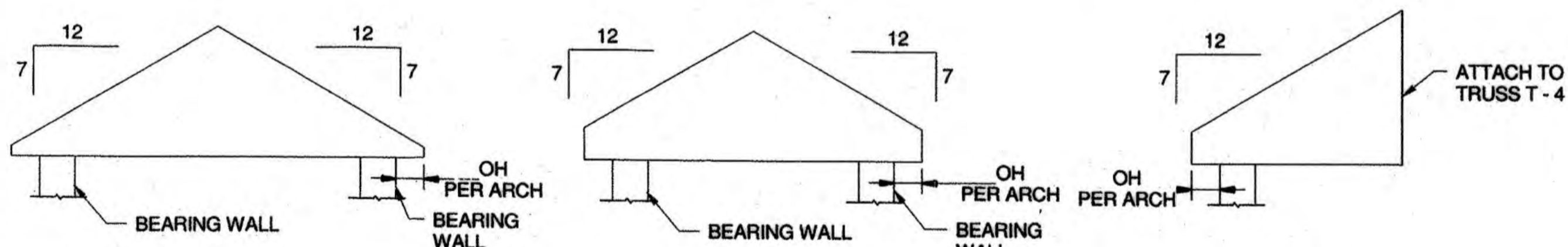
1 DETAIL
SCALE: 1 1/2" = 1'-0"



TRUSS T-1



TRUSS T-2



TRUSS T-3

TRUSS T-4

TRUSS T-5

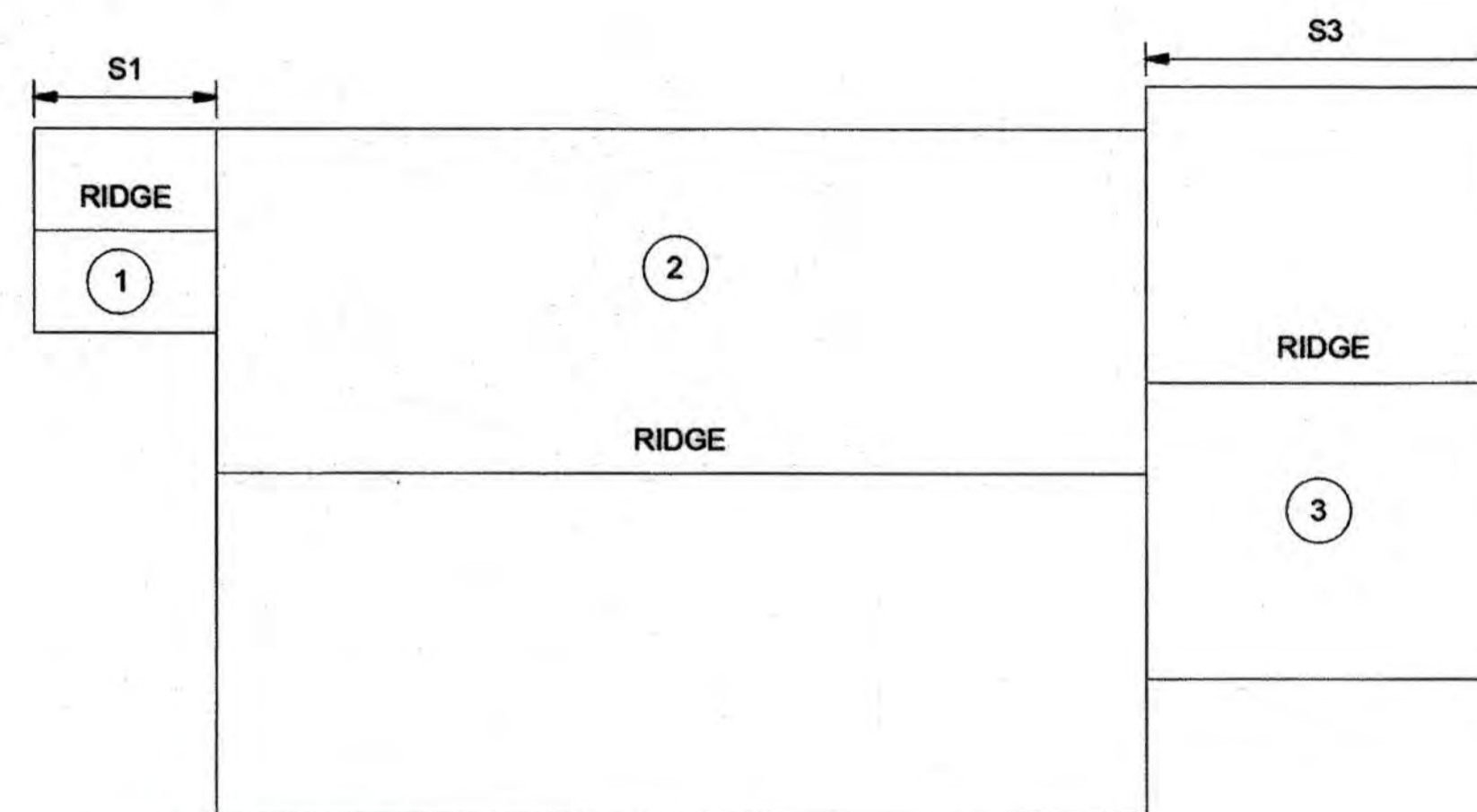
ROOF TRUSS NOTES:

1. TRUSS LAYOUT, TYPES, AND PROFILES SHOWN ON THE CONSTRUCTION DOCUMENTS SHOW DESIGN INTENT. THE TRUSS FABRICATOR SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAILING OF THE ROOF TRUSS FRAMING. SUBMIT SIGNED AND SEALED SHOP DRAWINGS INCLUDING TRUSS LAYOUT, PIECE DRAWINGS CONNECTION DETAILS, AND CALCULATIONS TO THE ENGINEER.
2. DIMENSIONED PROFILES ARE FOR DESIGN INTENT ONLY. TRUSS MANUFACTURER/DETAILER SHALL VERIFY AND COORDINATE DIMENSIONS AND SLOPES WITH ARCHITECTURAL DRAWINGS.
3. HOLD DOWNS AND ANCHORAGE ARE TO BE PROVIDED TO DEVELOP FORCES SHOWN ON APPROVED TRUSS SHOP DRAWINGS.
4. OPENINGS FOR ATTIC TRUSSES ONLY REQ'D IN AREA OF WALKWAY. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR LOCATION, DIMENSIONS AND ELEVATIONS.
5. TRUSSES SHALL BE MADE OF COLD-FORMED METAL FRAMING.

ROOF TRUSS LOADING

- TOP CHORD DEAD LOAD = 10 PSF
- BOTTOM CHORD LIVE LOAD = 40 PSF

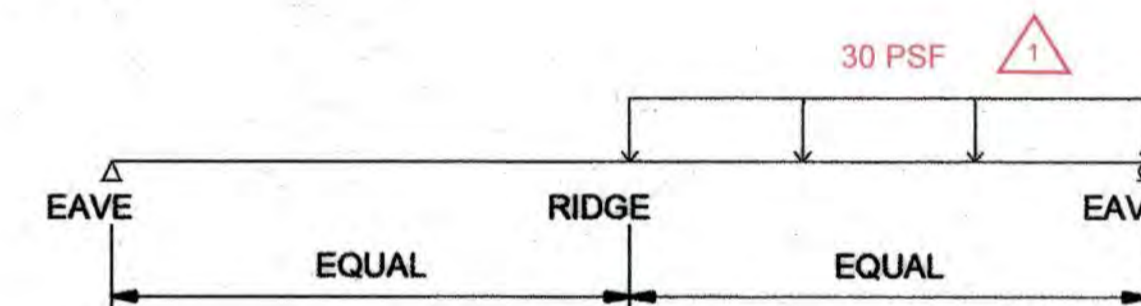
SNOW LOADS



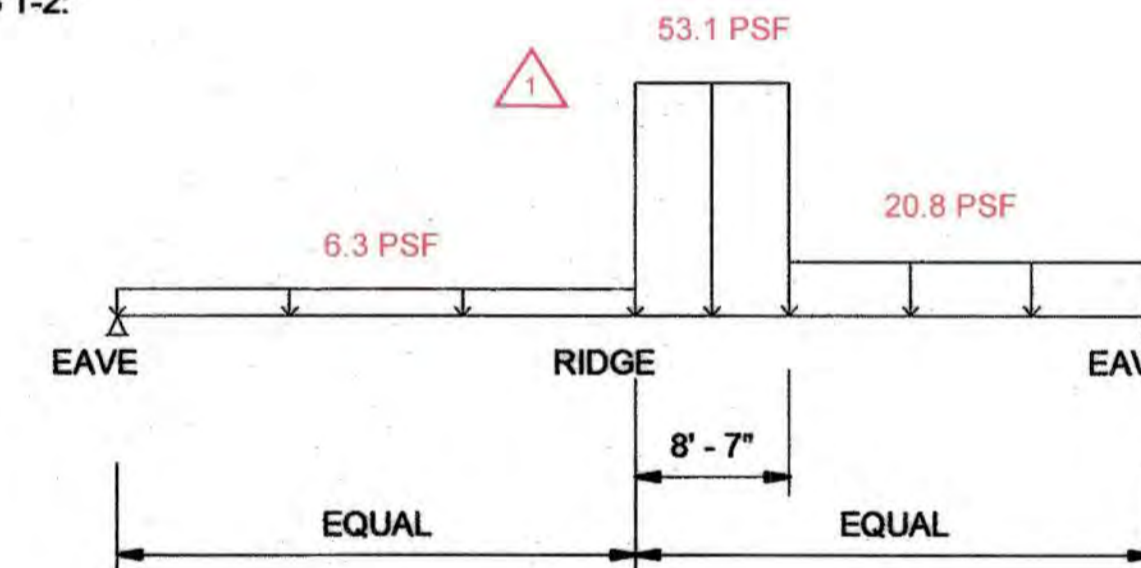
$P_s = 20.8$ PSF

UNBALANCED SNOW LOAD

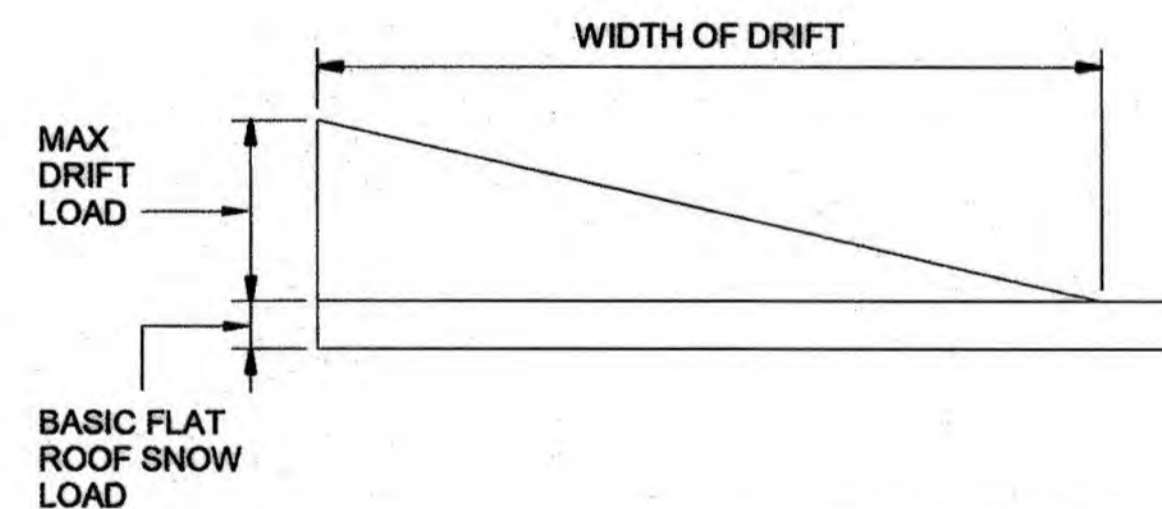
TRUSS T-1 & T-3:



TRUSS T-2:



SNOW DRIFT SCHEDULE

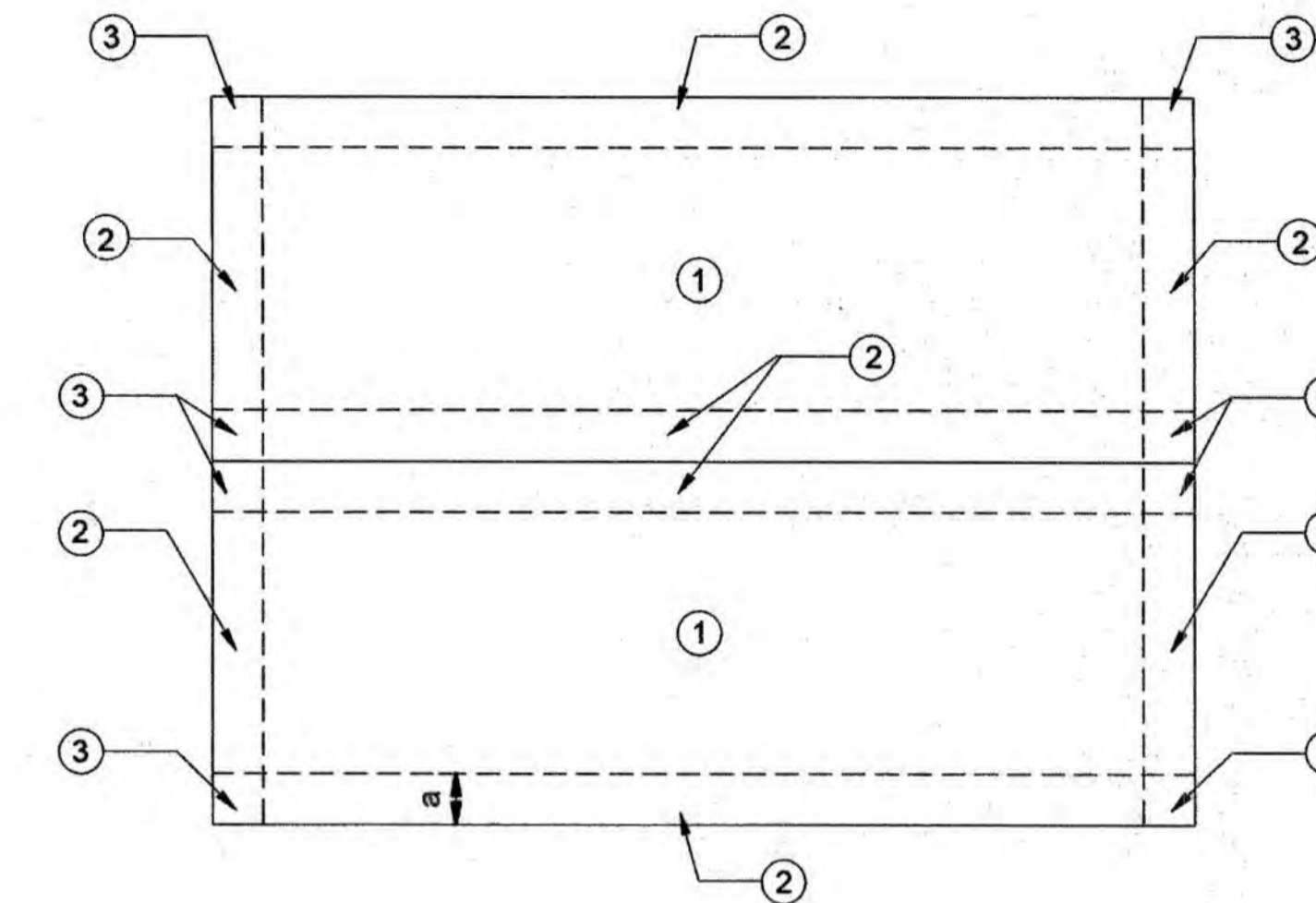


SNOW DRIFT SCHEDULE		
SNOW DRIFT MARK	MAX DRIFT LOAD	WIDTH OF DRIFT
S1	69 PSF	16'
S3	69 PSF	16'

NOTE:

IF THE DRIFT WIDTH EXCEEDS THE WIDTH OF THE LOWER ROOF, THE DRIFT SHALL BE TRUNCATED AT THE FAR EDGE OF THE ROOF.

WIND LOADS



$p = -41.9$ PSF (ZONE 1)
 $p = -70.2$ PSF (ZONE 2)
 $p = -105.7$ PSF (ZONE 3)

a = 10% OF LEAST HORIZONTAL DIMENSION OR .4h, WHICHEVER IS SMALLER, BUT NOT LESS THAN EITHER 4% OF LEAST HORIZONTAL DIMENSION OR 3 FT.

NOTES:

1. WIND LOADS HAVE BEEN COMPUTED USING ASCE 7-16 FOR COMPONENTS AND CLADDING AND ARE STRENGTH LEVEL.
2. WIND LOADS MAY BE REDUCED BASED ON EFFECTIVE WIND AREA PER TABLE 30.7-2.



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. 23393, Expiration Date 12-20-20



DES: JWG/RCC
 DRN: ANM
 CHK: RLA
 DATE: DEC 2018

ROOF TRUSS ELEVATIONS, LOADING, AND NOTES

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING S1-202
 SCALE AS SHOWN
 SHEET 29 OF 81

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\\AES1\AES\albrecht\Engineering Inc\Projects\2018\2018-009 KCI HoCo 630W\04_CADD\03 STRUCT\13160130601-STRUCT-1.rvt

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jerry Van 12/20/18
DIRECTOR OF PUBLIC WORKS DATE
Thomas S. Scheller 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE
RD
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
KCI
TECHNOLOGIES
936 RIDGEBROOK ROAD
SPARKS, MD 21152
PHONE: (410)316-7800
FAX: (410)316-7817
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DES:	JWG/ROC				
DRN:	ANM				
CHK:	RLA				
DATE:	DEC 2018	AG	1	AS-BUILT	7/2021
BY:		NO.		REVISION	

600' SCALE MAP NO.:	35
BLOCK NO.:	17, 11

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

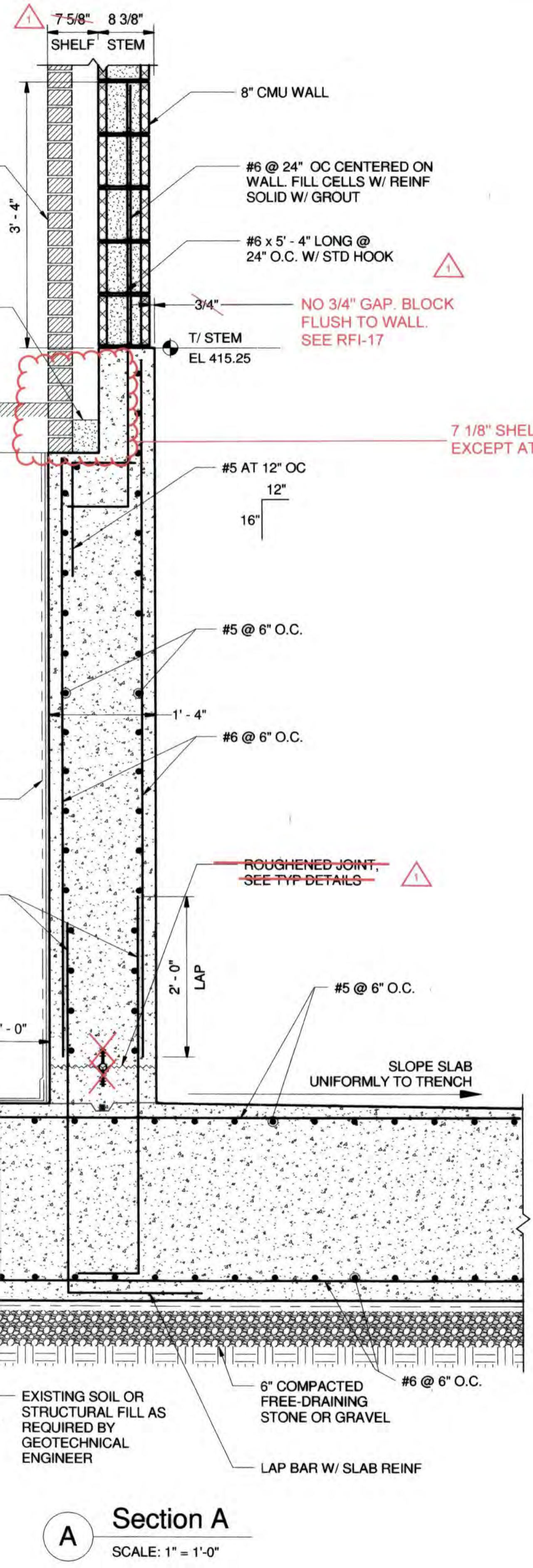
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S1-301
SCALE
AS SHOWN
SHEET
30 OF 81

AS-BUILT REPLACEMENT SHEET 9/2021

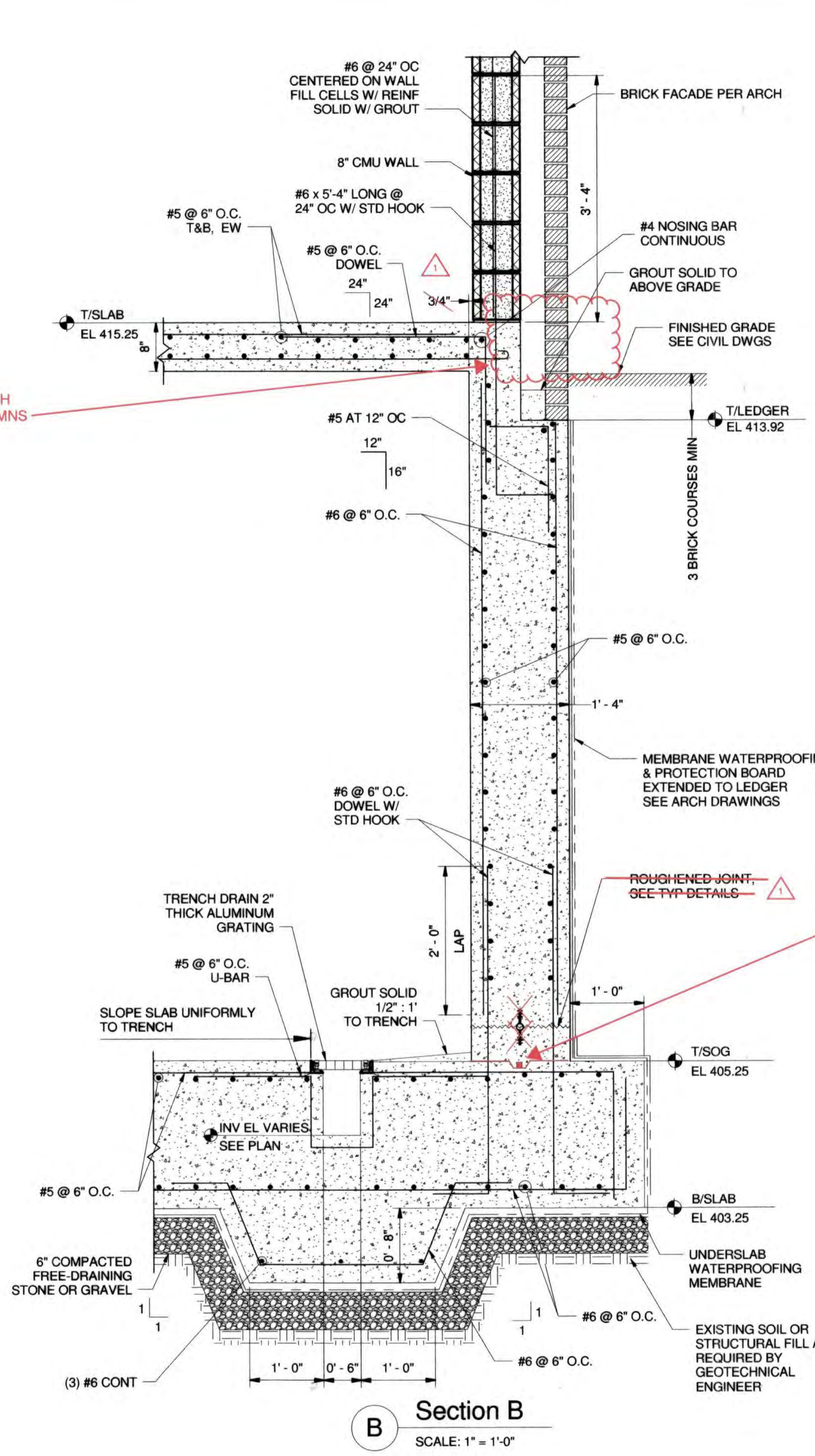
CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

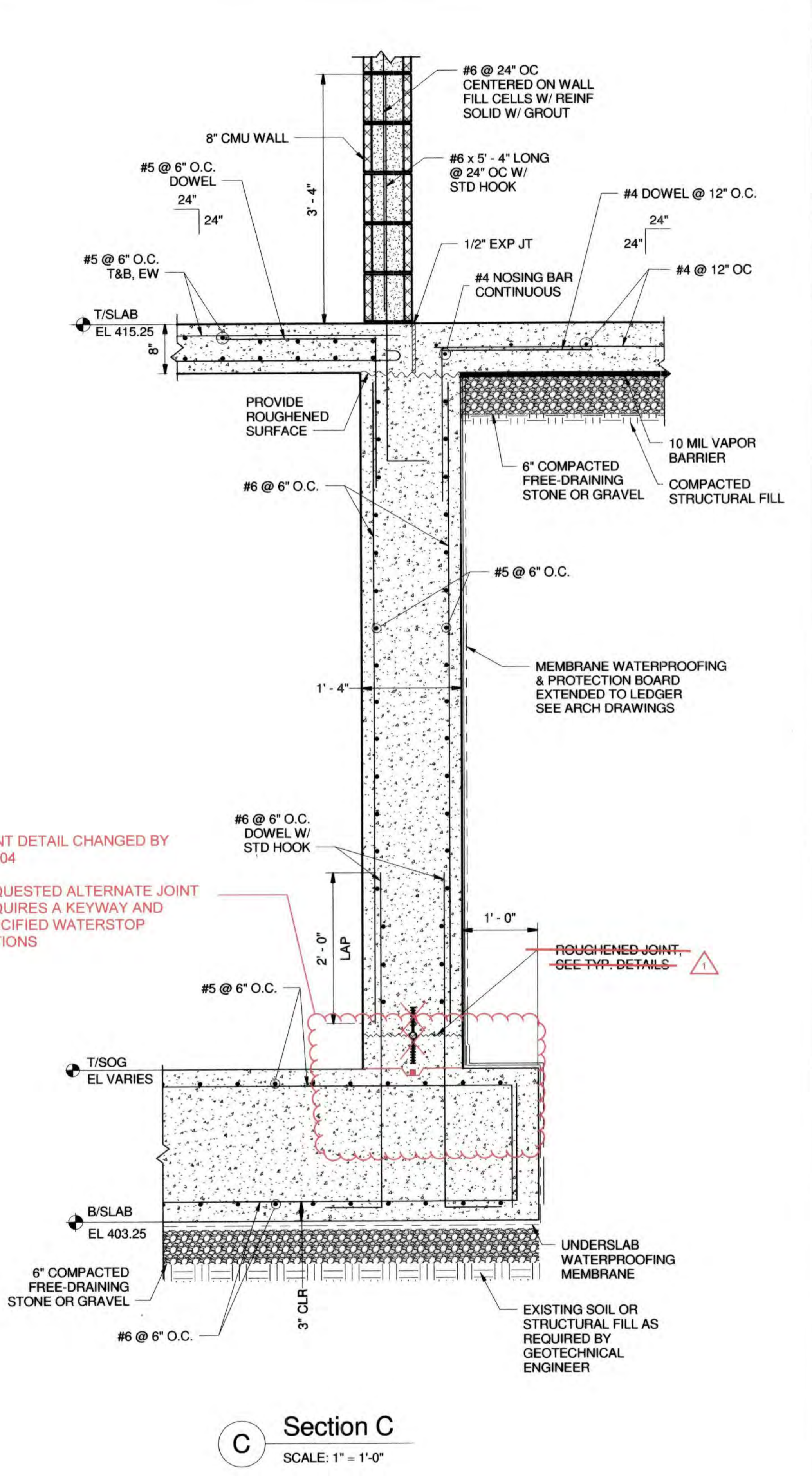
SECTIONS



A Section A
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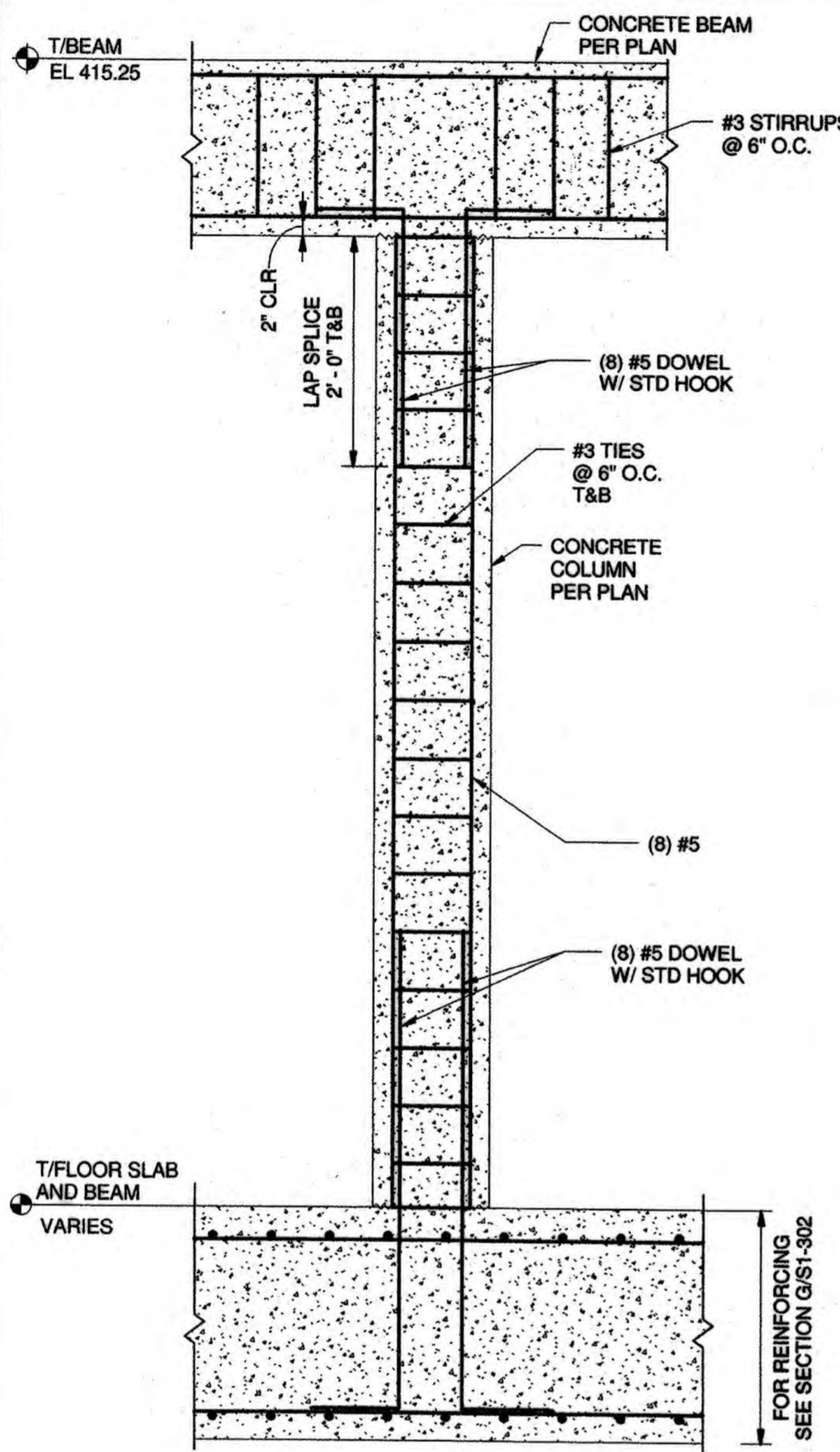


B Section B
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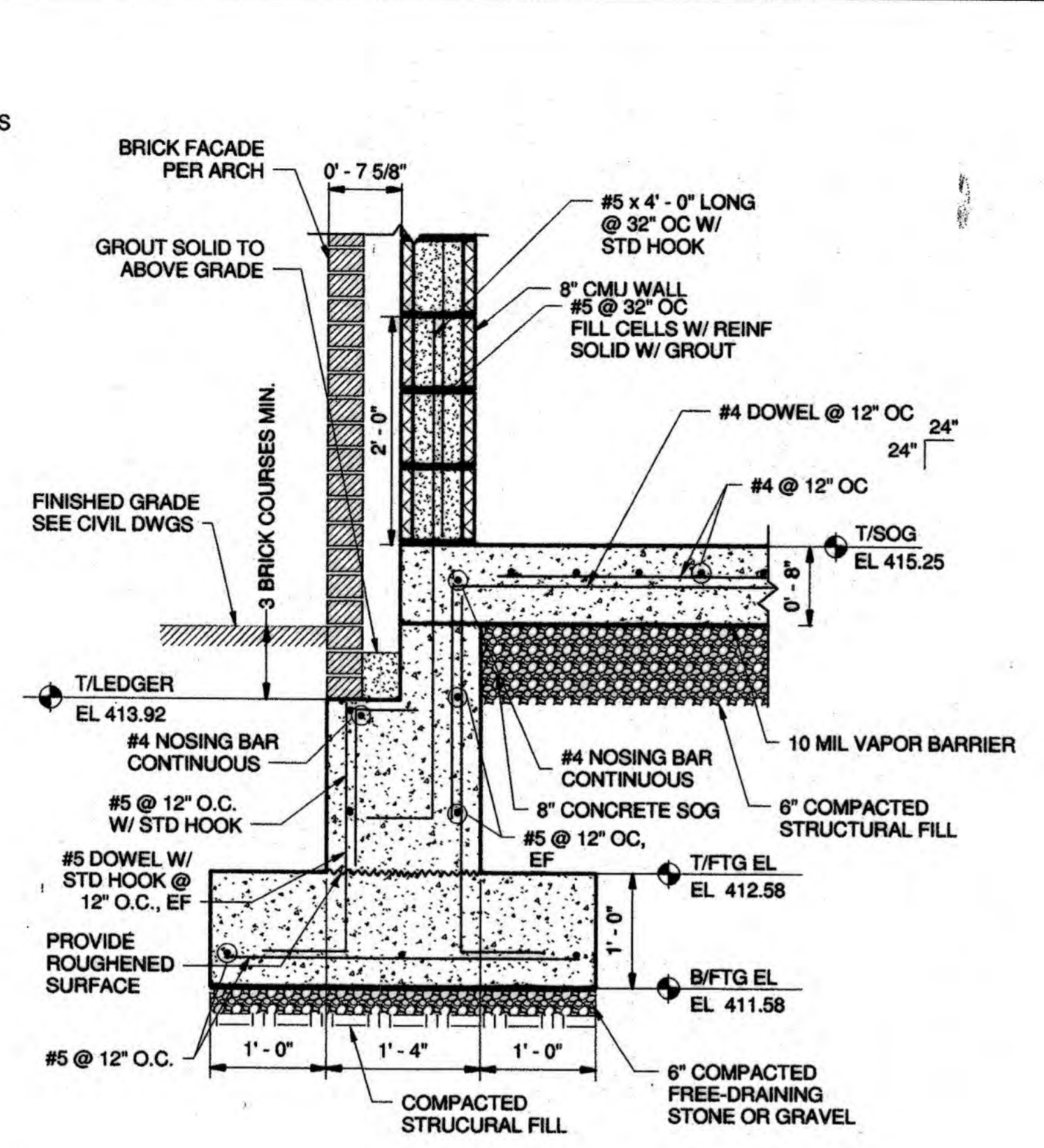


C Section C
SCALE: 1" = 1'-0"

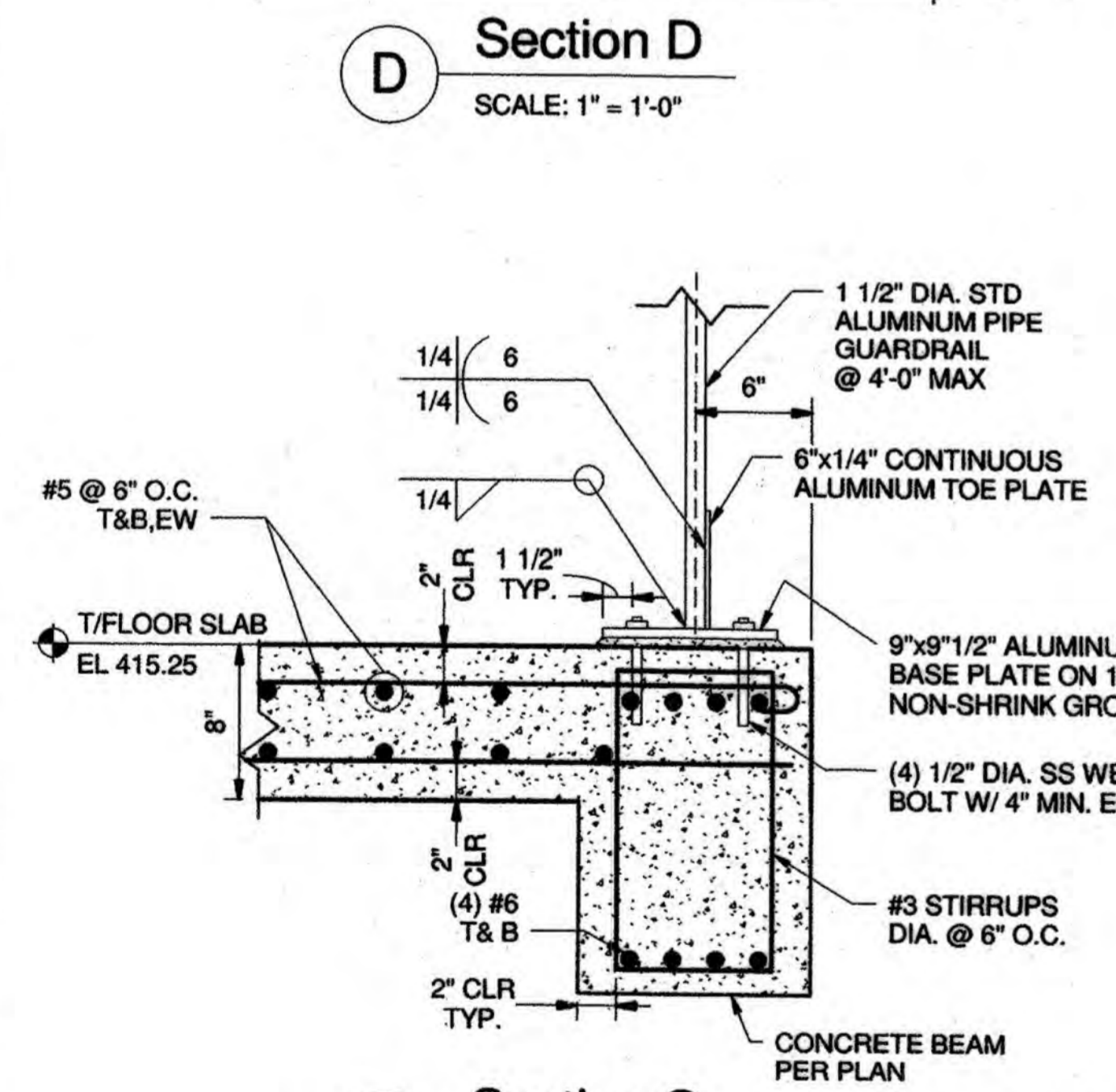
PROFESSIONAL CERTIFICATION. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 23393, Expiration Date 8-25-2025



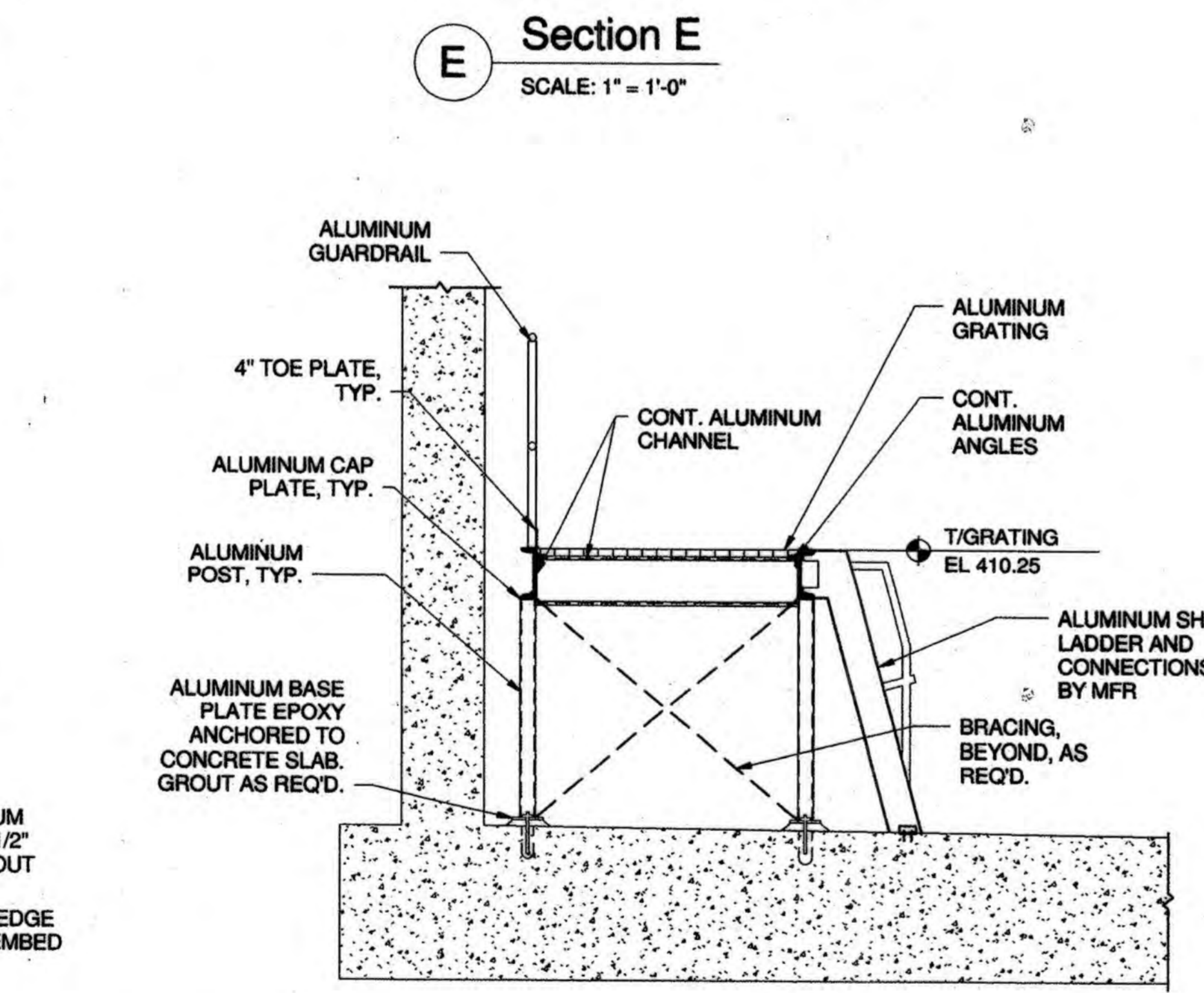
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SCALE: 1" = 1'-0"



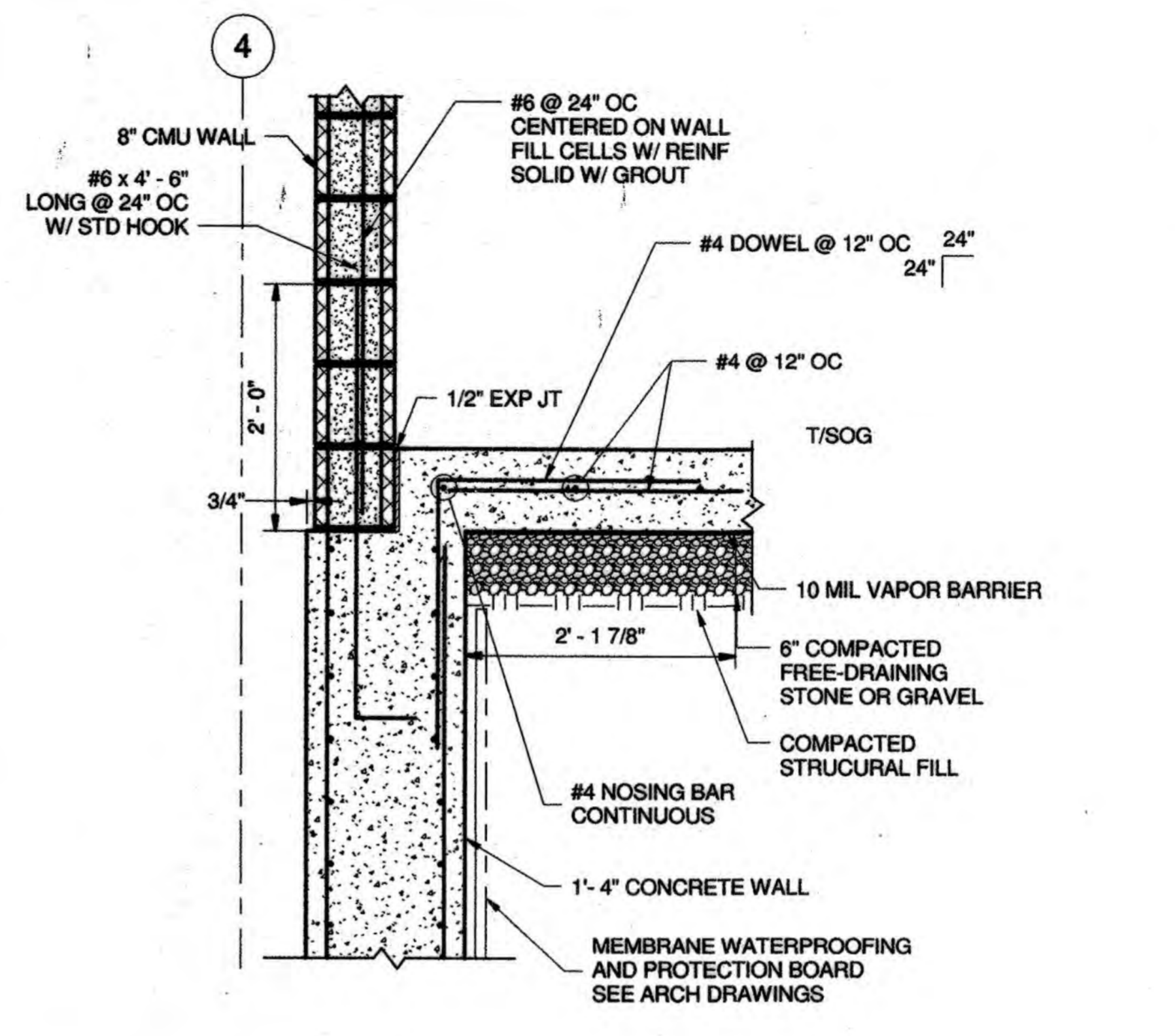
E Section E
SCALE: 1" = 1'-0"



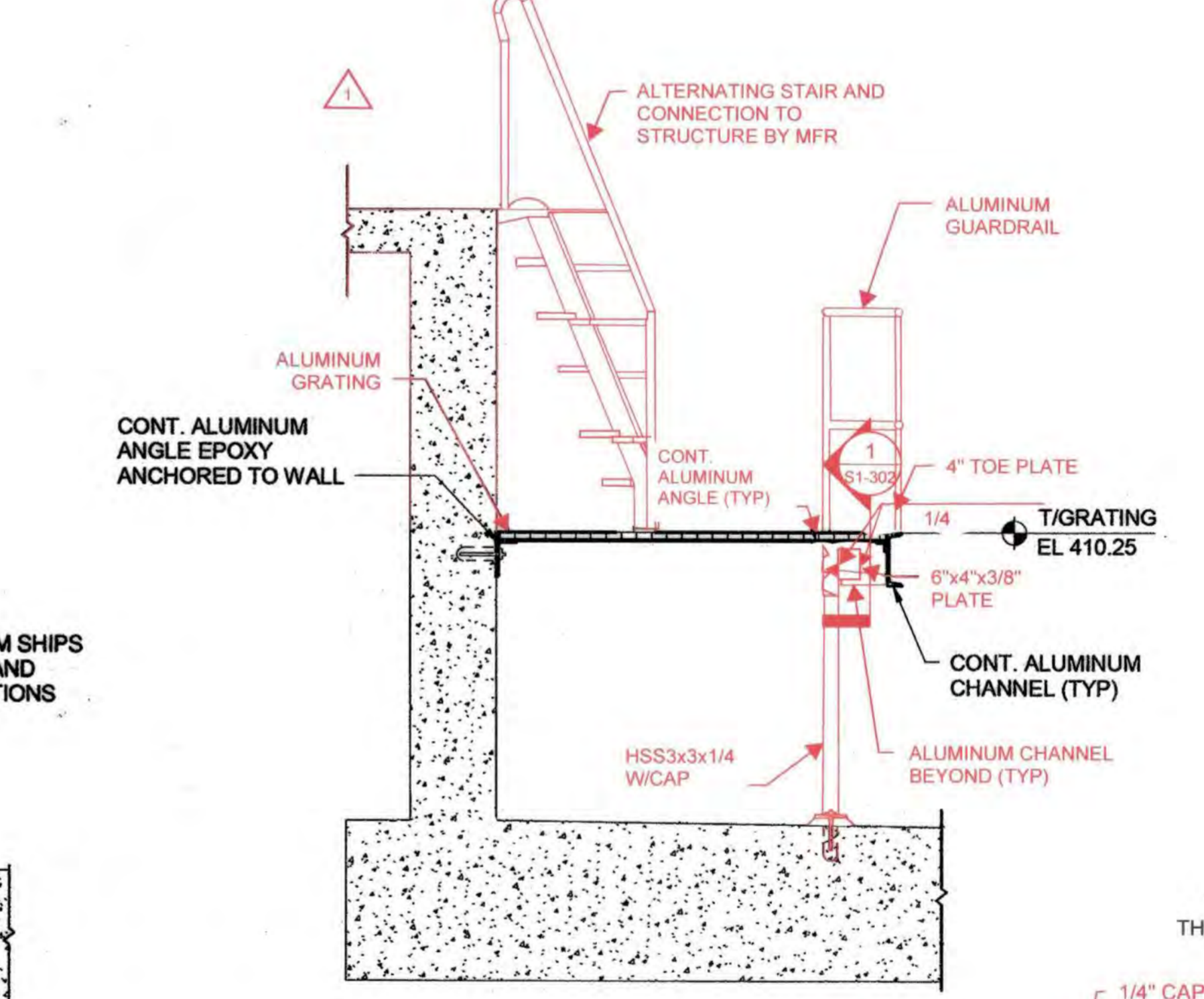
G Section G
SCALE: 1 1/2" = 1'-0"



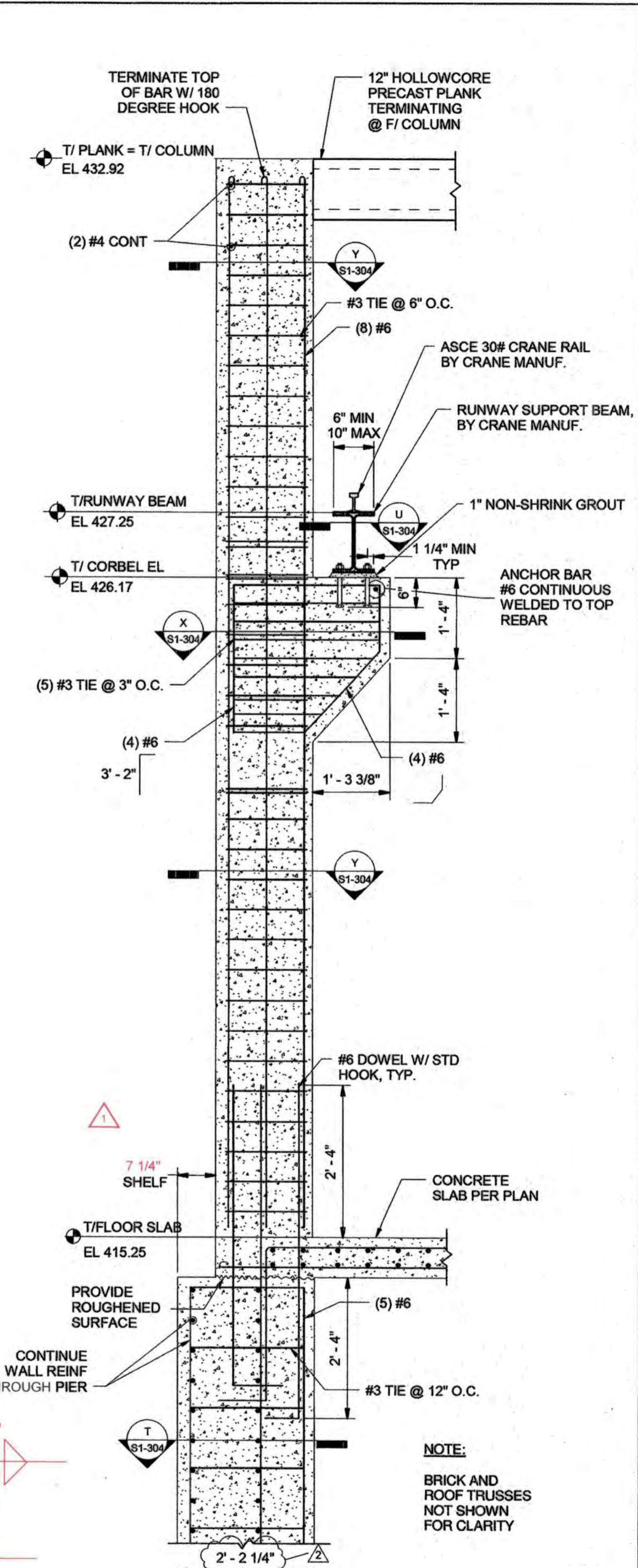
H Section H
SCALE: 1/2" = 1'-0"



F Section F
SCALE: 1" = 1'-0"



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



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

NOTES:
1. INFORMATION SHOWN, INCLUDING: FRAMING SIZE / ORIENTATION, GRATING, CONNECTION PLATES, ANCHORS, HANDRAILS, AND GUARDRAILS ARE FOR INFORMATION ONLY. DRAWINGS AND CALCULATIONS, SIGNED AND SEALED BY A MARYLAND PROFESSIONAL ENGINEER, SHALL BE PROVIDED.
2. ALL LANDINGS, GUARDRAILS, HANDRAILS, GRATING, STAIRS, AND POSTS SHALL BE ALUMINUM, BY STAIR AND GUARDRAIL MFR.

STATE OF MARYLAND
RACHEL LYNN ALBRECHT
PROFESSIONAL ENGINEER
No. 23393
Exp. 12-20-19

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. 23393, Expiration Date 12-20-2022

ALBRECHT ENGINEERING INC.
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: [Signature] DATE: 12-20-18
Chief, Bureau of Engineering: [Signature] DATE: 12-20-18
Chief, Bureau of Utilities: [Signature] DATE: 12-20-18
Chief, Utility Design Division: [Signature] DATE: 12-20-18

KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MD 21152
PHONE: (410) 316-7800
FAX: (410) 316-7817
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STATE OF MARYLAND
RACHEL LYNN ALBRECHT
PROFESSIONAL ENGINEER
No. 23393
Exp. 12-20-19

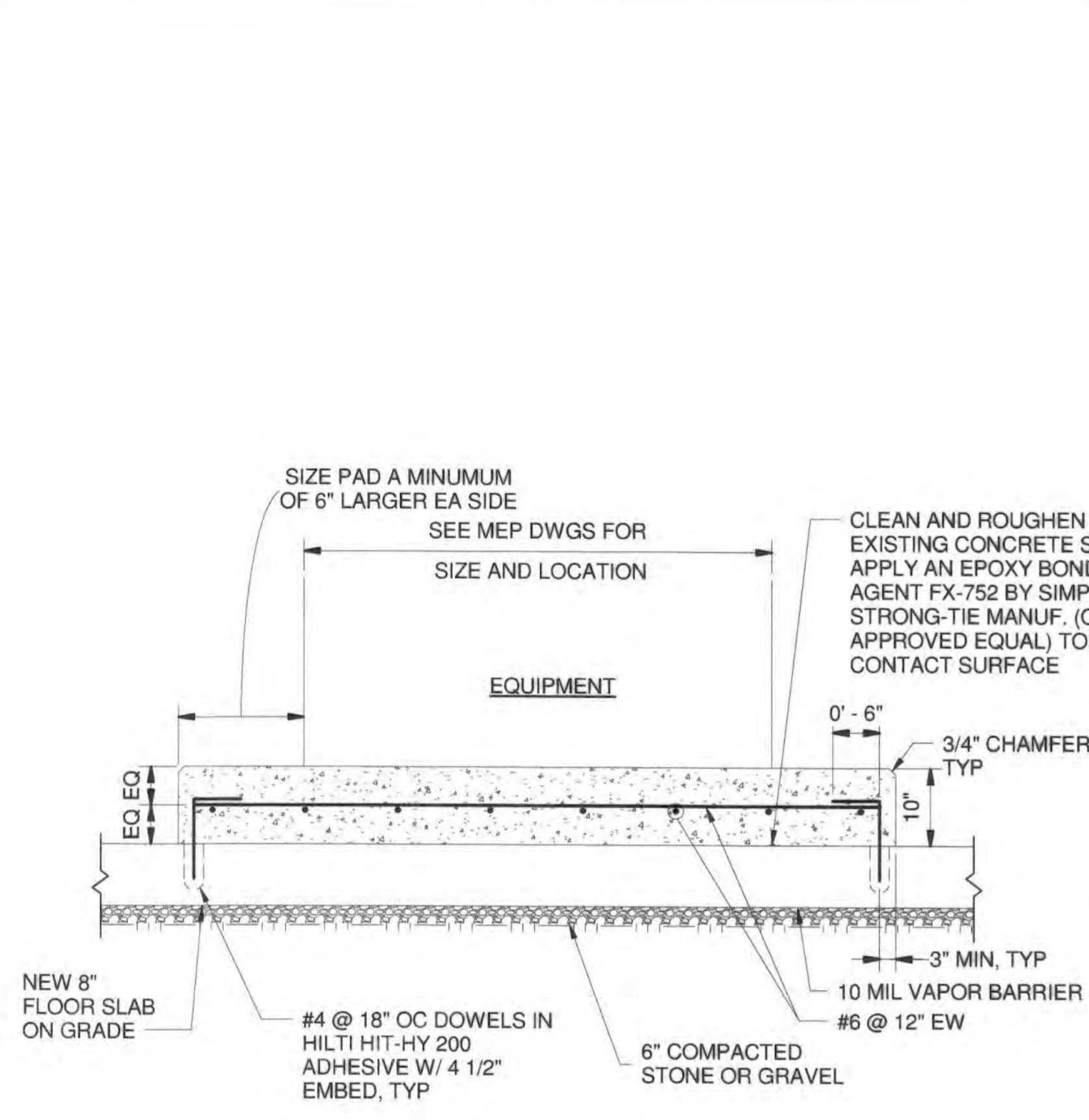
DES:	JWG/RCC
DRN:	ANM
CHK:	RLA
DATE:	DEC 2018
AG	1
BY	NO.
NO.	AS-BUILT
REVISION	
DATE	9/2021

SECTIONS

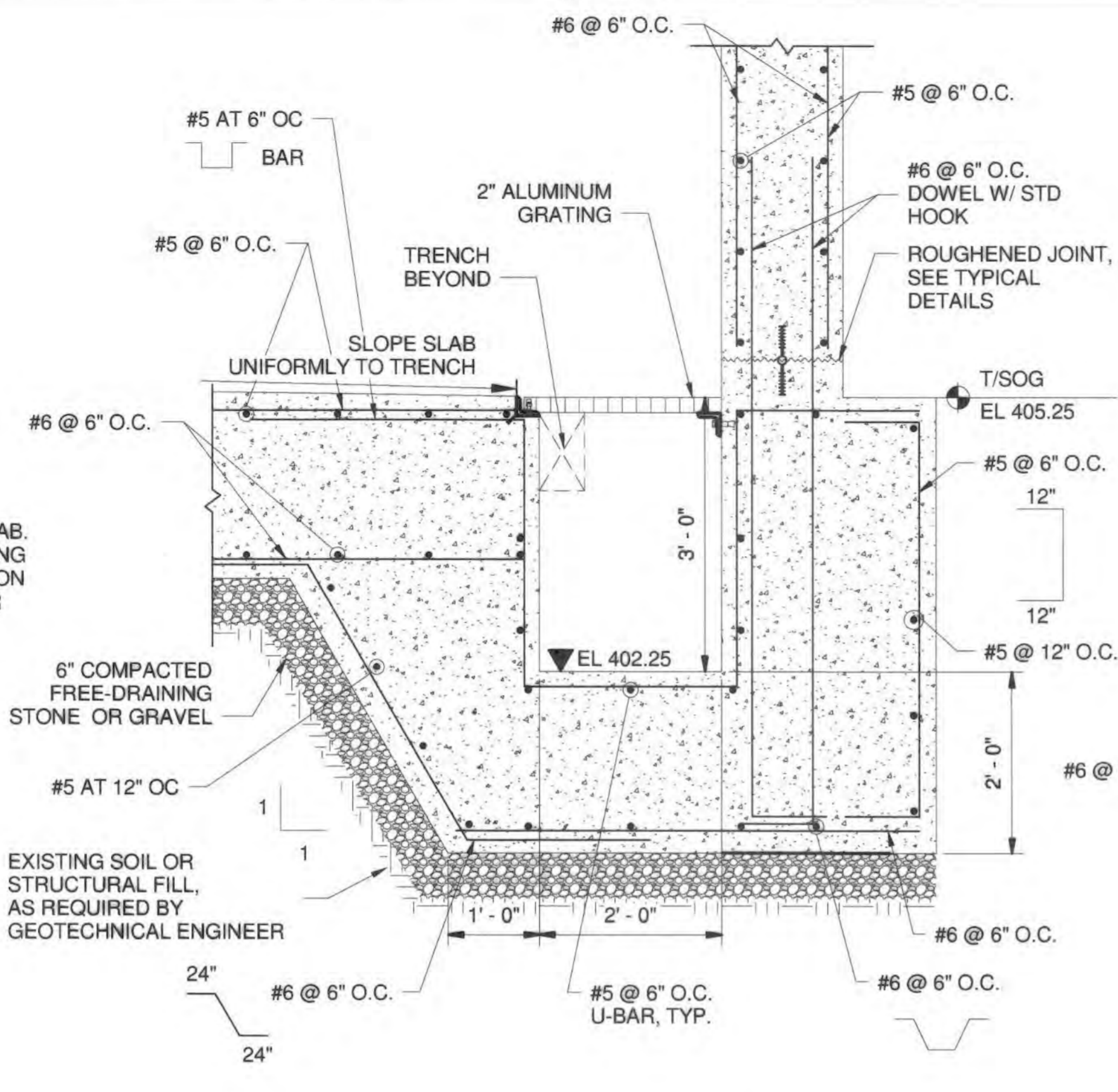
1 Section 1
SCALE: 1" = 1'-0"

AS-BUILT REPLACEMENT SHEET 9/2021
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND
DRAWING: S1-302
SCALE: AS SHOWN
SHEET: 31 OF 81

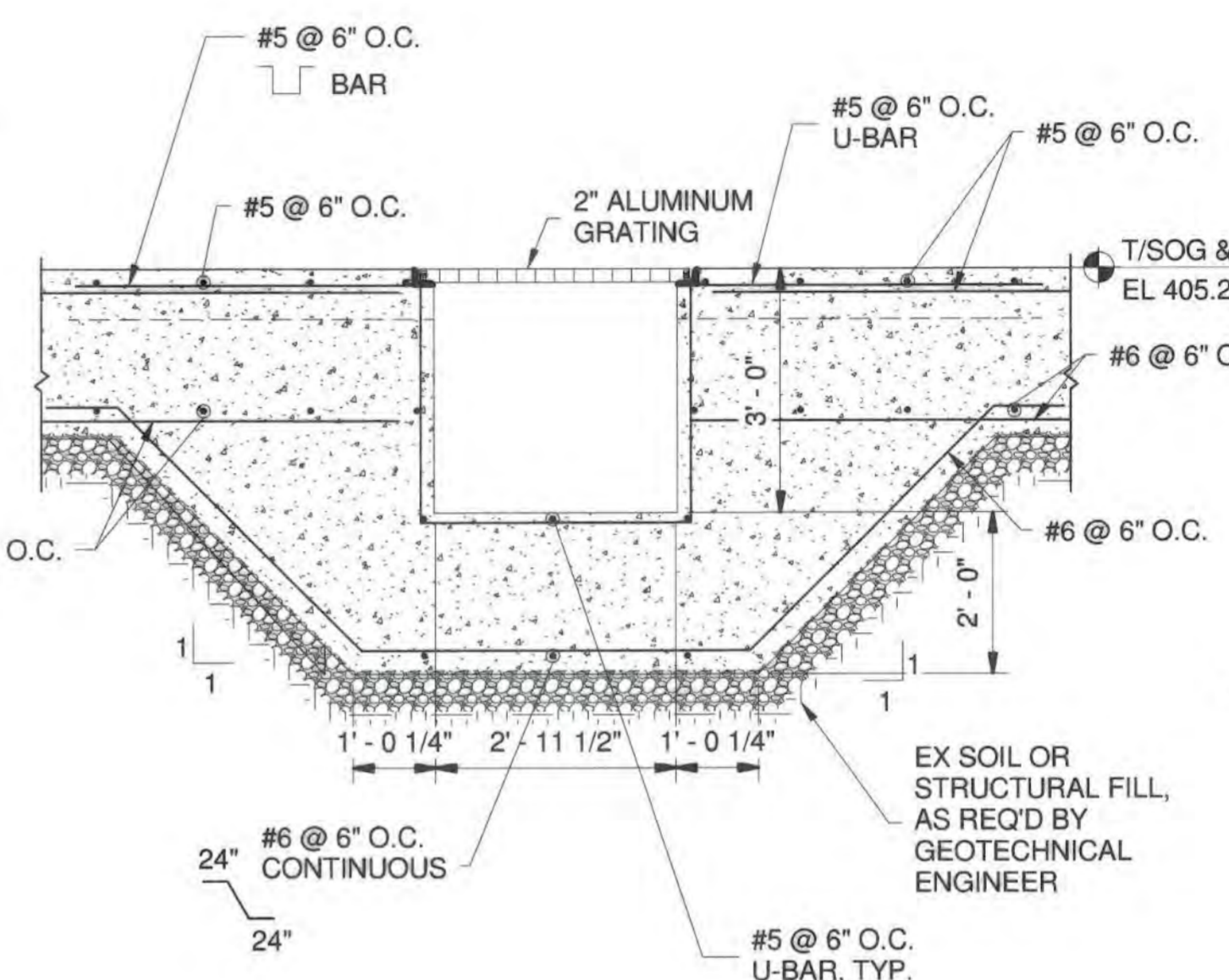
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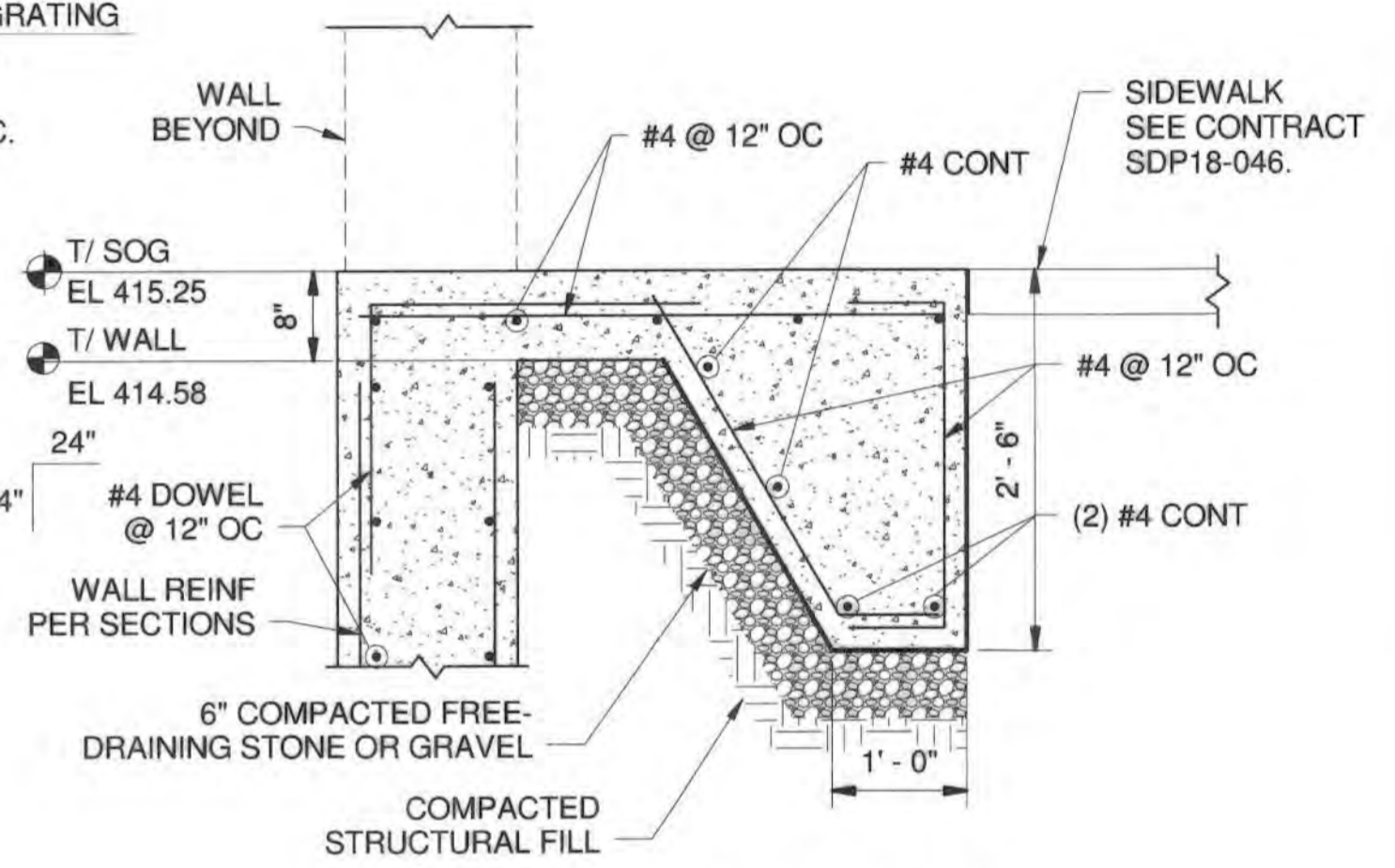
K Section K
SCALE: 3/4" = 1'-0"



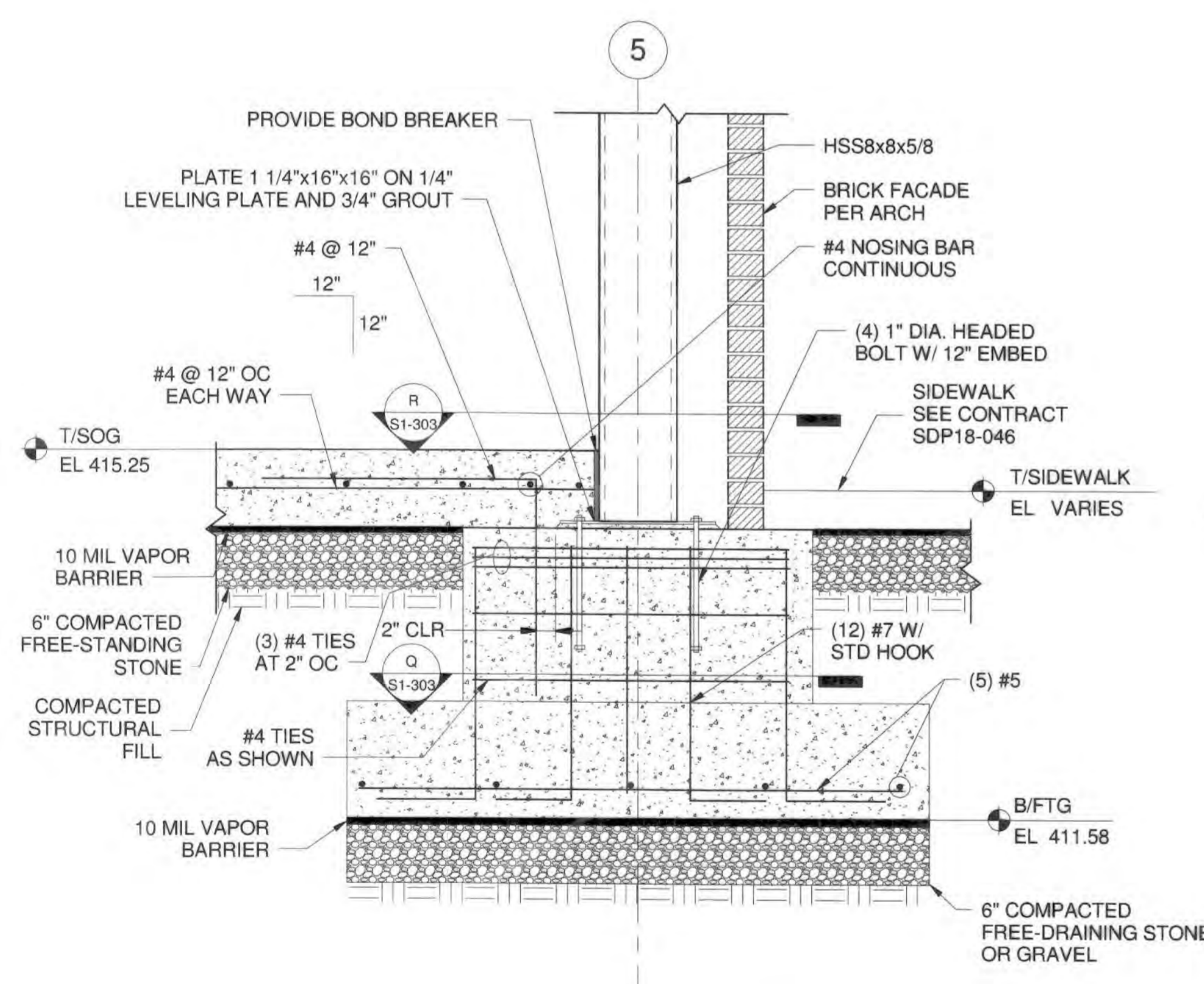
L Section L
SCALE: 3/4" = 1'-0"



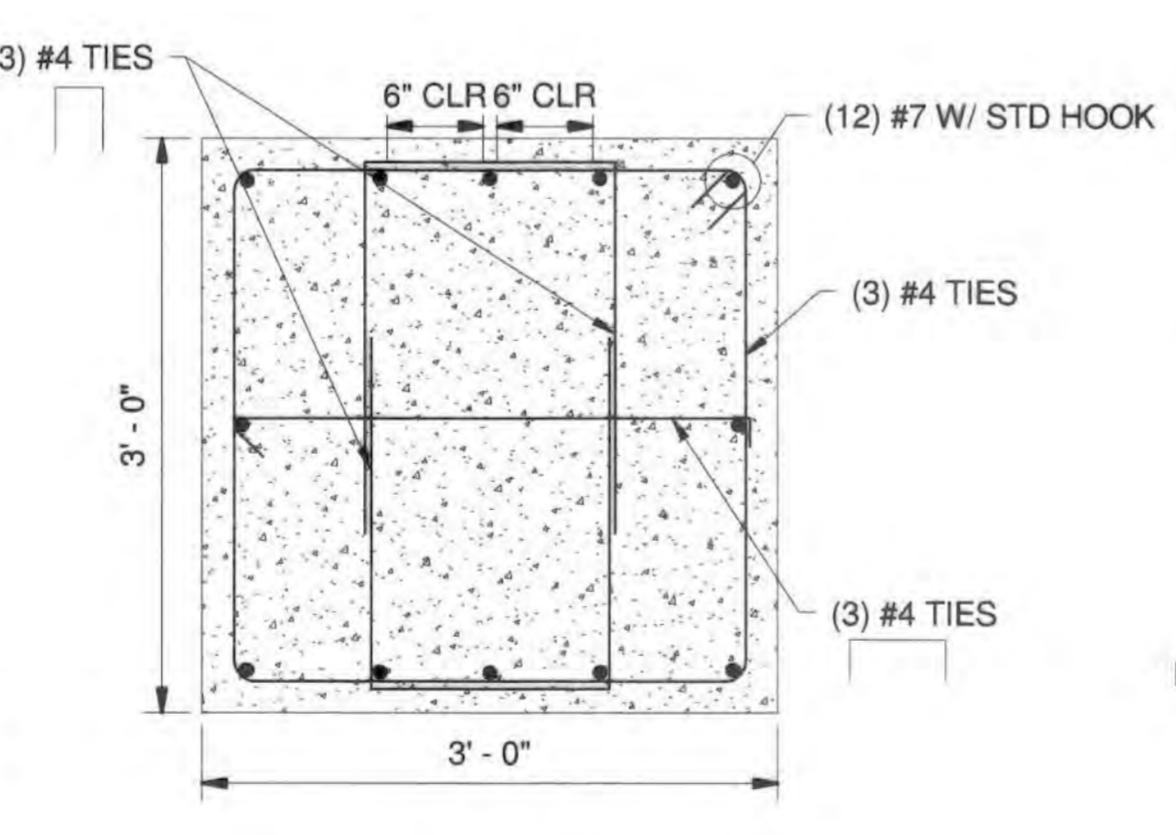
M Section M
SCALE: 1/2" = 1'-0"



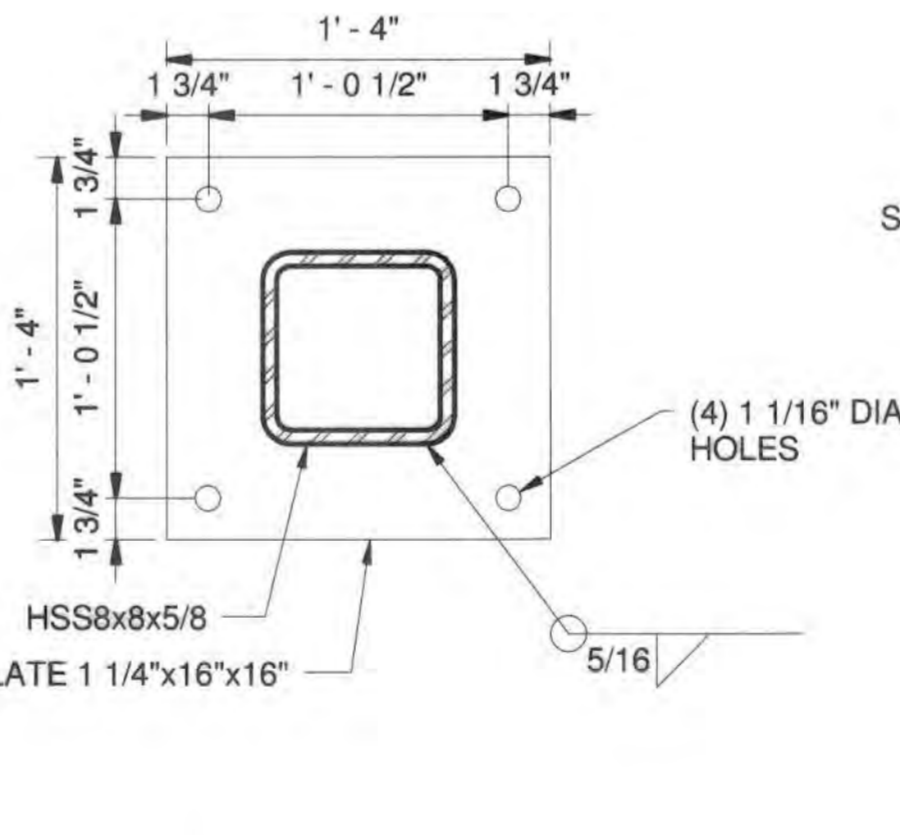
N Section N
SCALE: 3/4" = 1'-0"



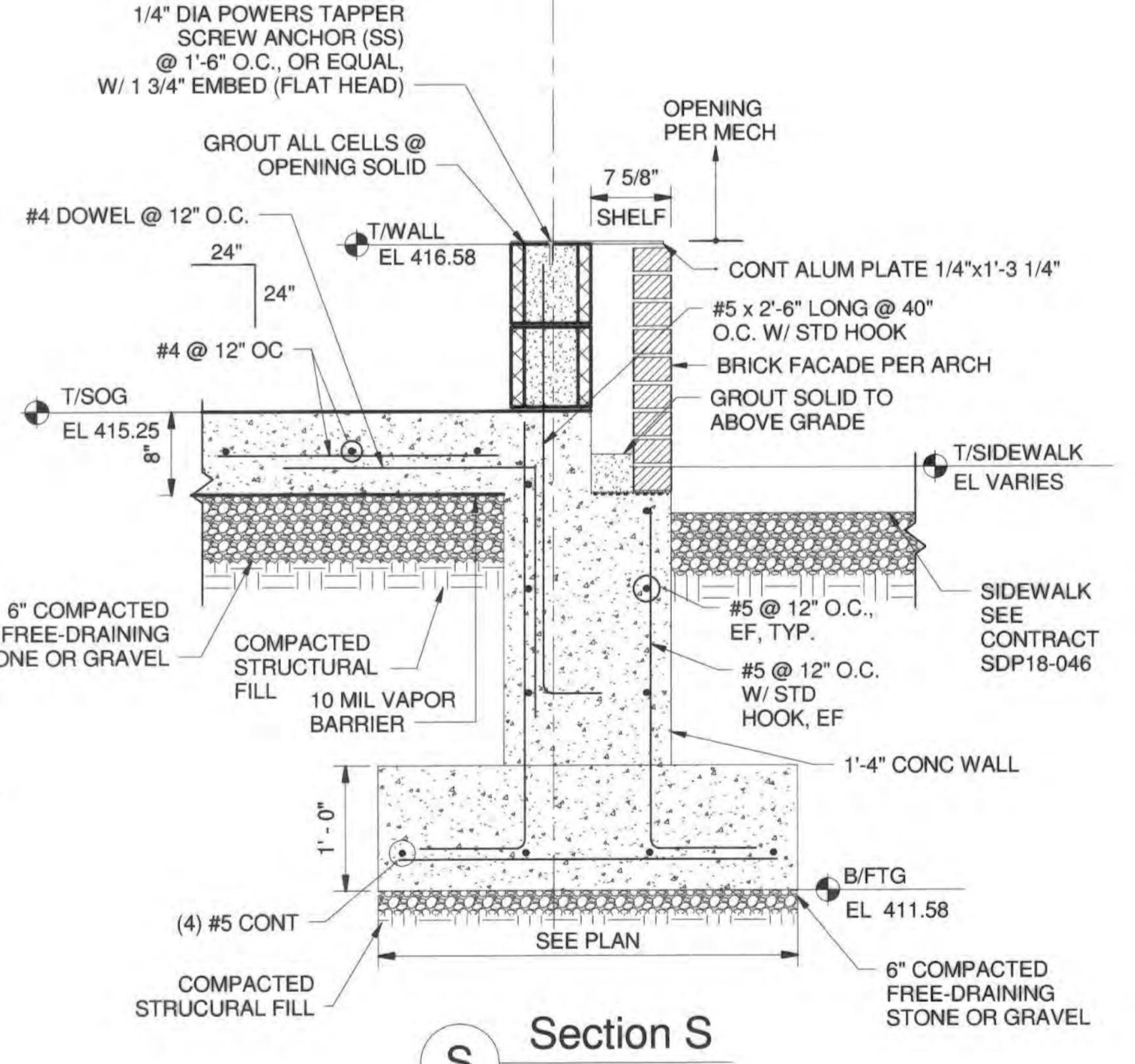
P Section P
SCALE: 1" = 1'-0"



Q Section Q
SCALE: 1" = 1'-0"



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



S Section S
SCALE: 1" = 1'-0"

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AS-BUILT
DATE 9/2021

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: *John A. ...* DATE: 12-20-18
Chief, Bureau of Engineering: *Thomas S. ...* DATE: 12/20/18
Chief, Bureau of Utilities: *...* DATE: 12/20/18
Chief, Utility Design Division: *...* DATE: 12/20/18

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
KCI TECHNOLOGIES
936 RIDGEBROOK ROAD
SPARKS, MD 21152
PHONE: (410)316-7800
FAX: (410)316-7817
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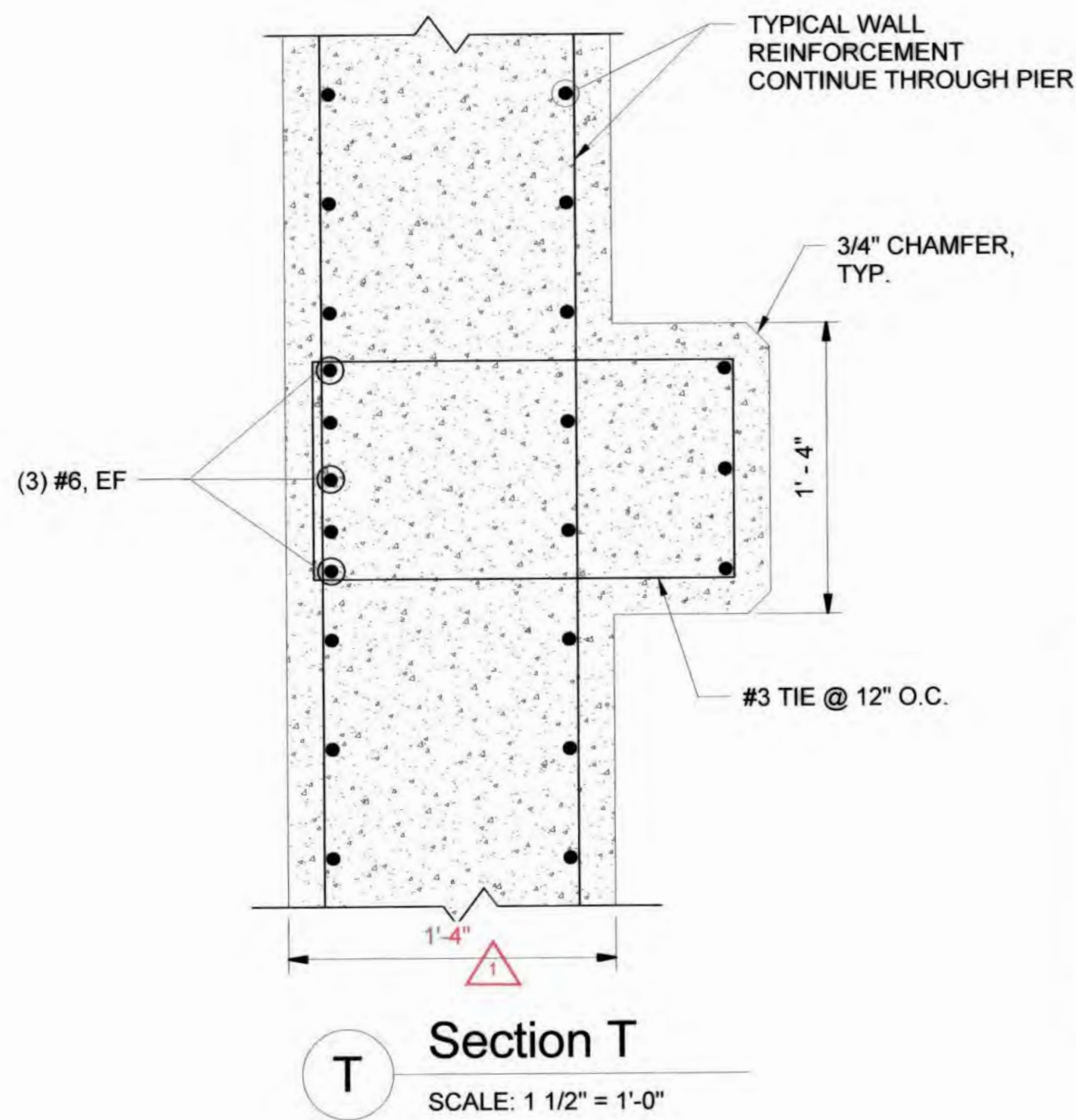


DES:	JWG/RCC
DRN:	ANM
CHK:	RLA
DATE:	DEC 2018
BY:	NO.
NO.	
REVISION	
DATE	

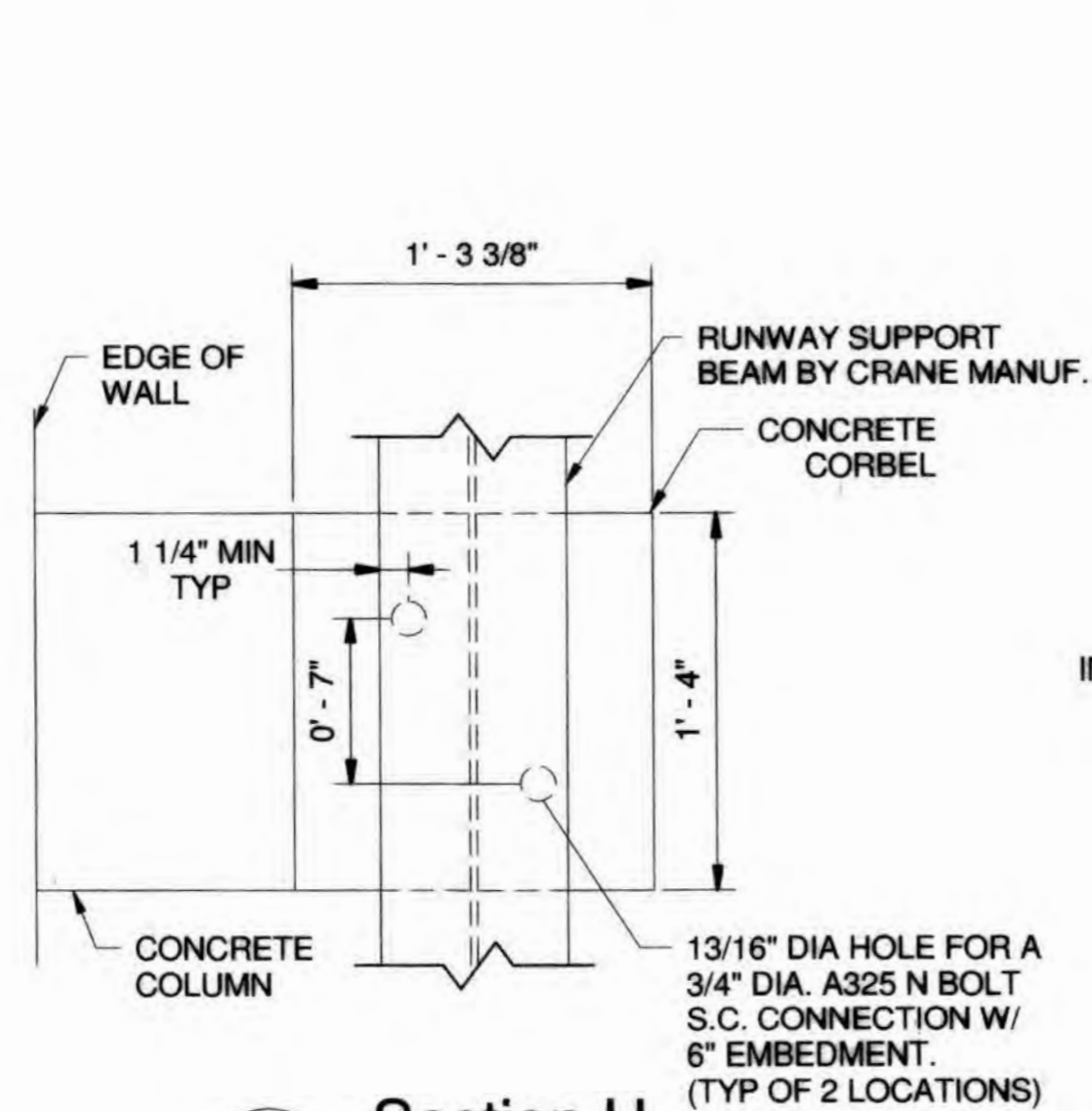
600' SCALE MAP NO.:	35
BLOCK NO.:	17, 11

SECTIONS
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

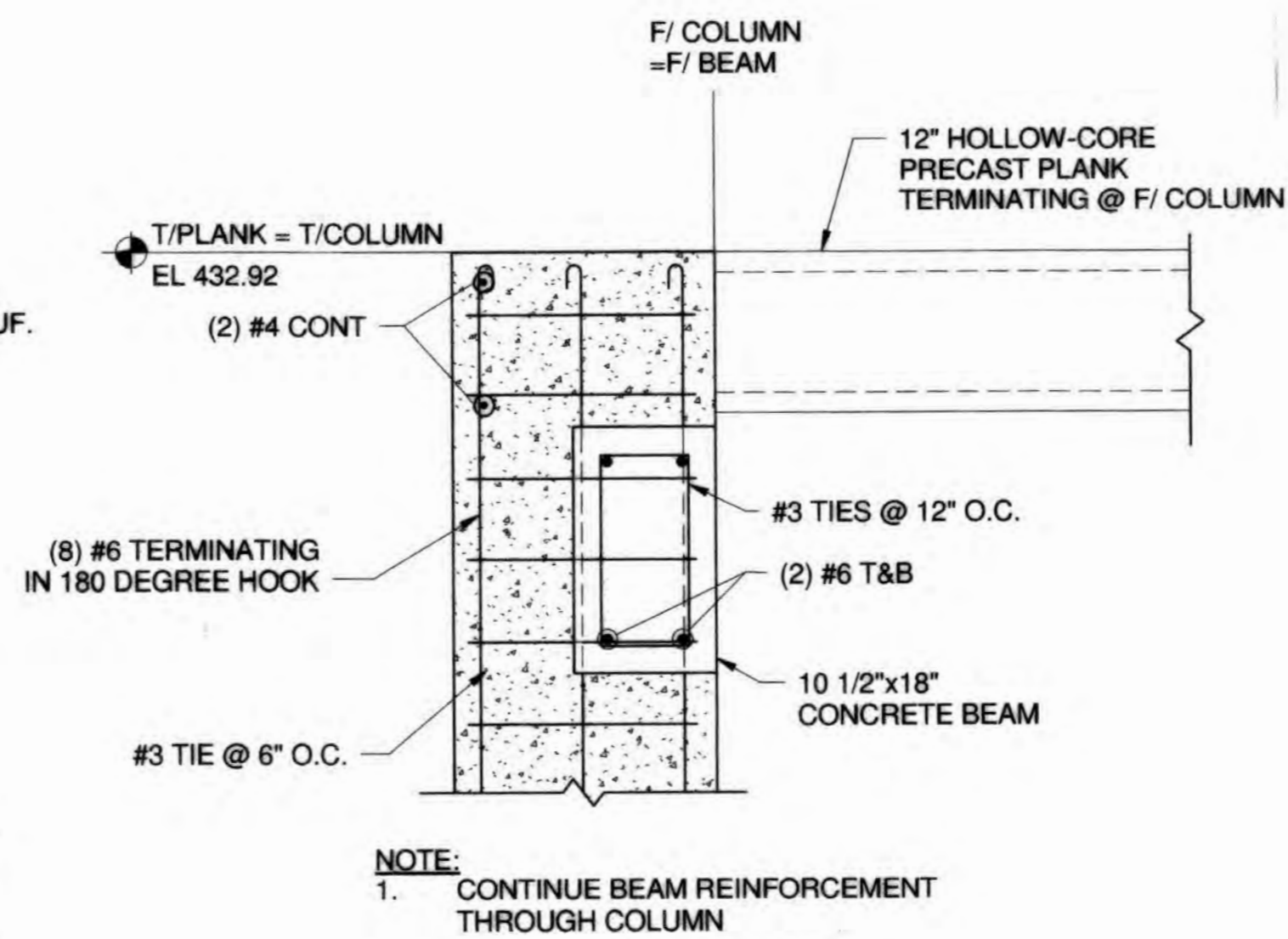
DRAWING S1-303
SCALE AS SHOWN
SHEET
32 OF 81



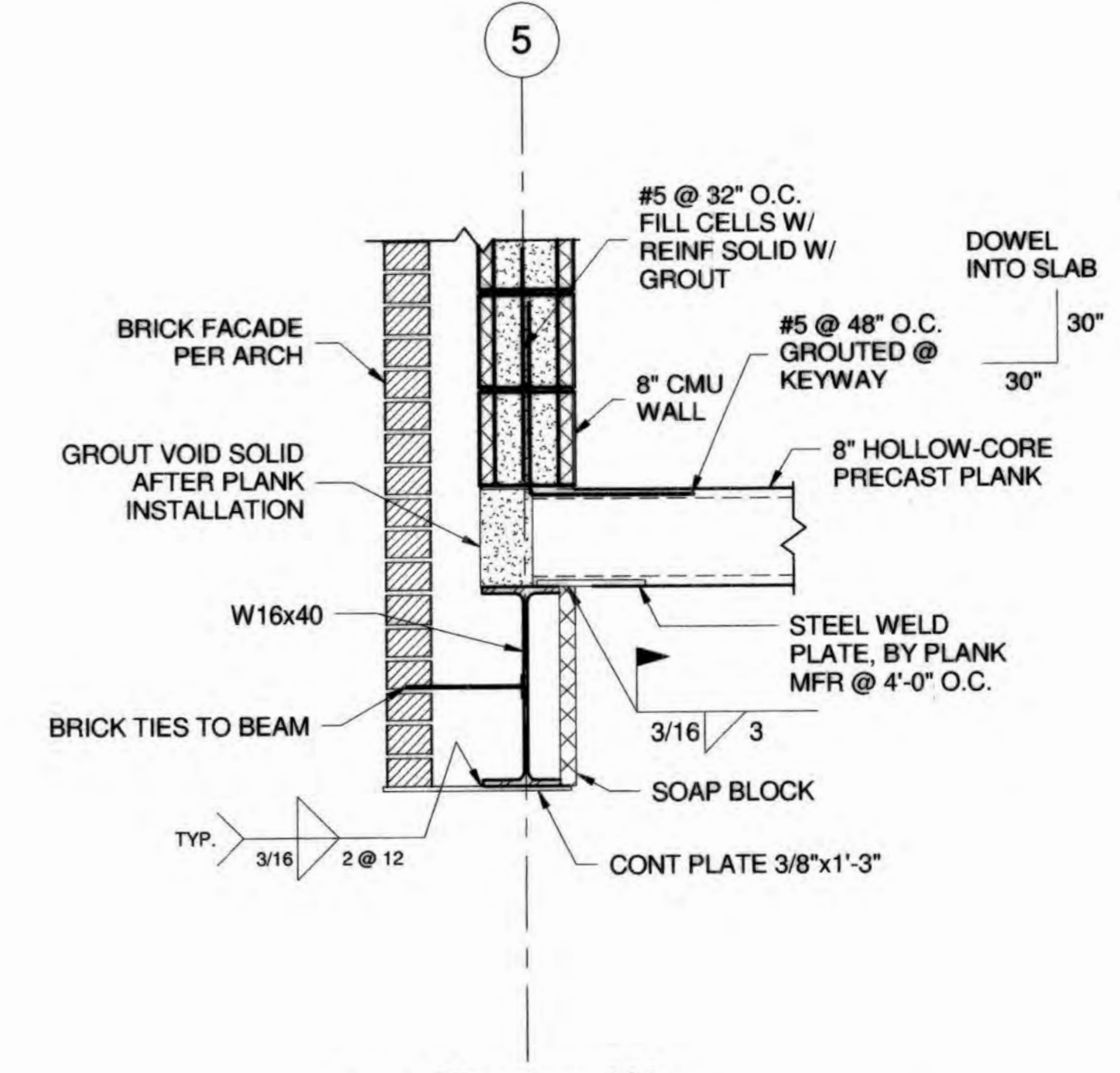
T Section T
SCALE: 1 1/2" = 1'-0"



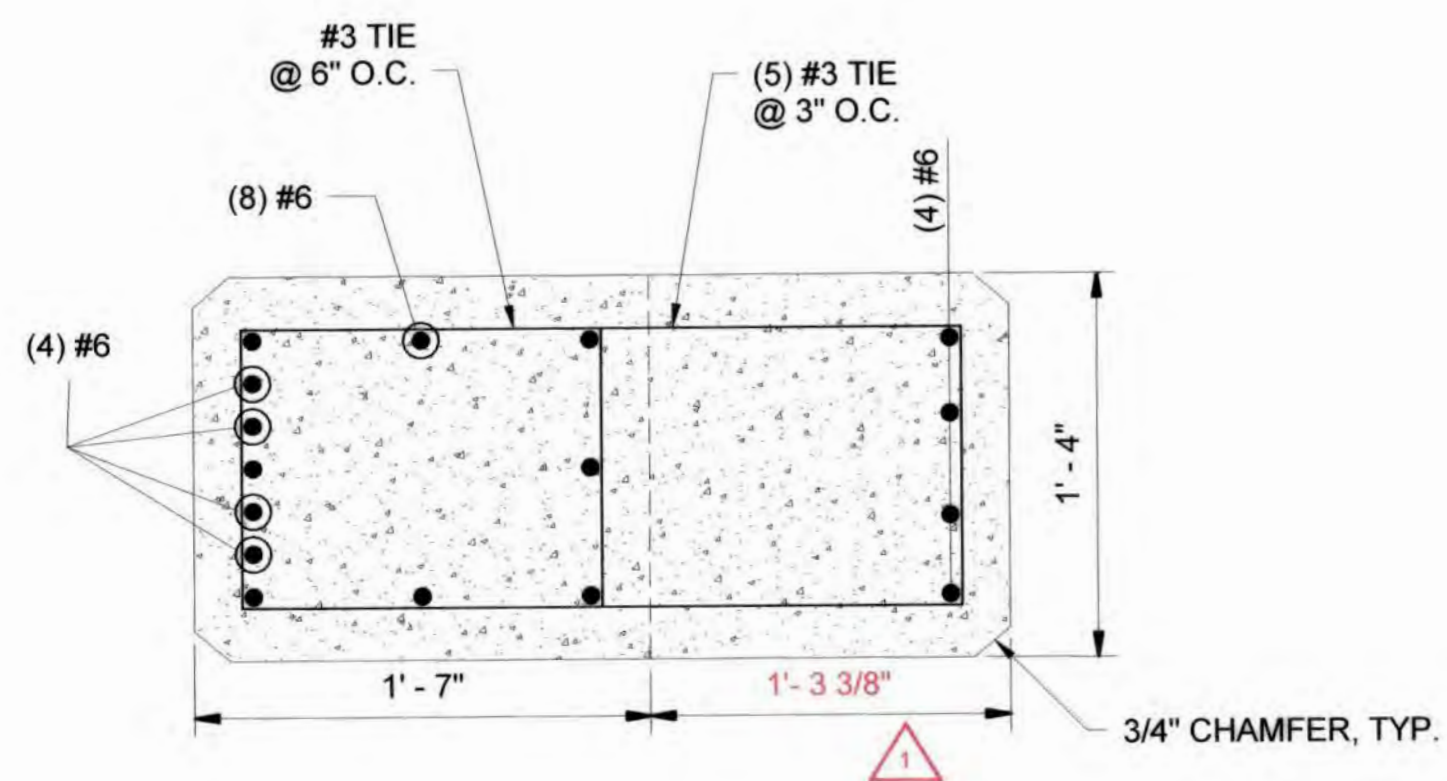
U Section U
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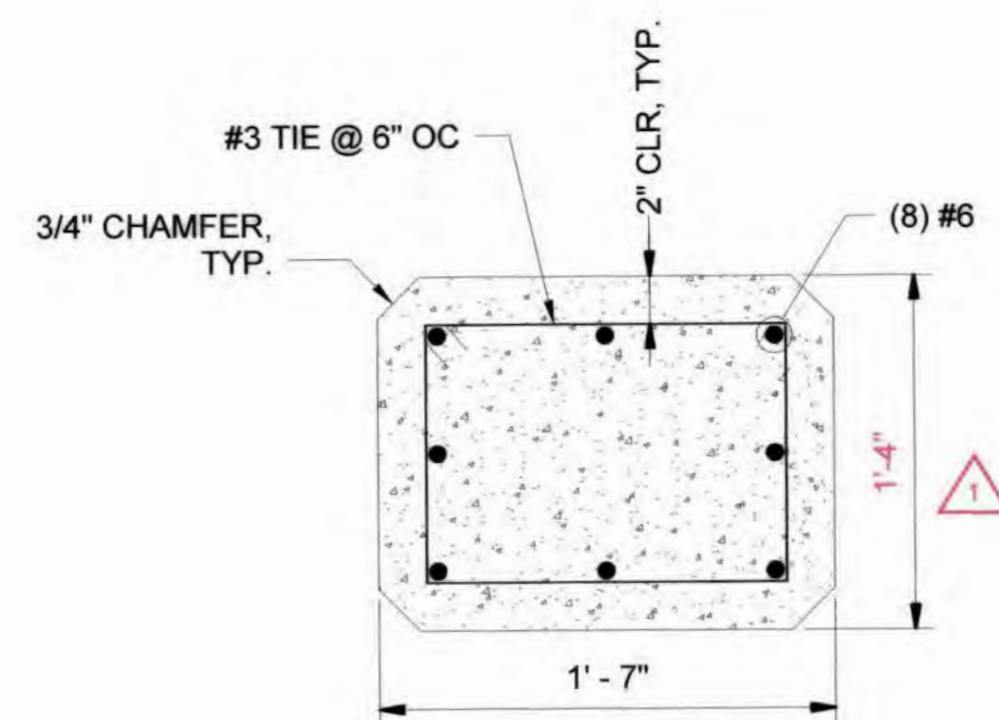
V Section V
SCALE: 1" = 1'-0"



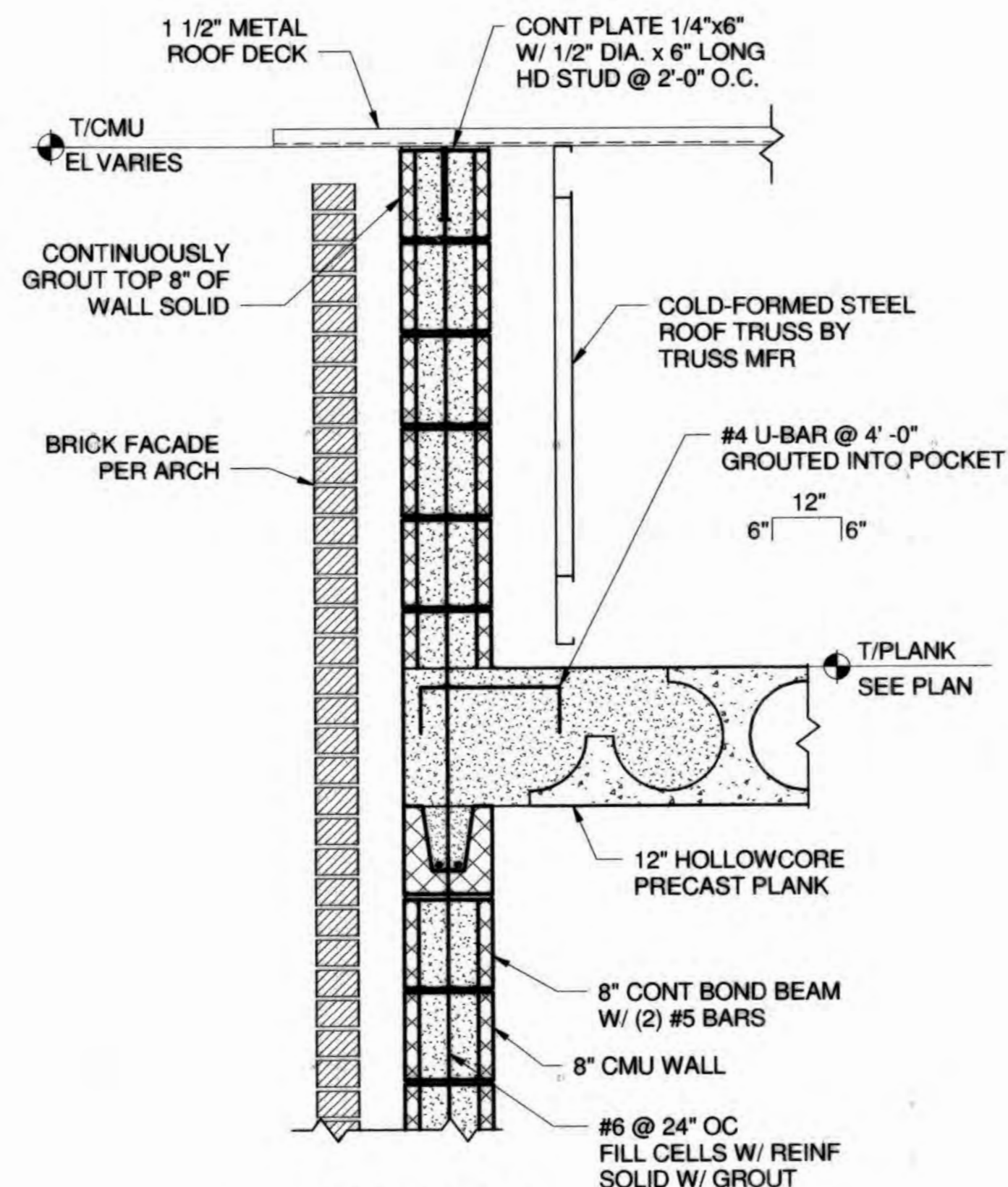
W Section W
SCALE: 1" = 1'-0"



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



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



Z Section Z
SCALE: 1" = 1'-0"



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DRN:	ANM				
CHK:	RLA				
DATE:	DEC 2018	AG	1	AS-BUILT	8/2021
BY:		NO.		REVISION	DATE

SECTIONS

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

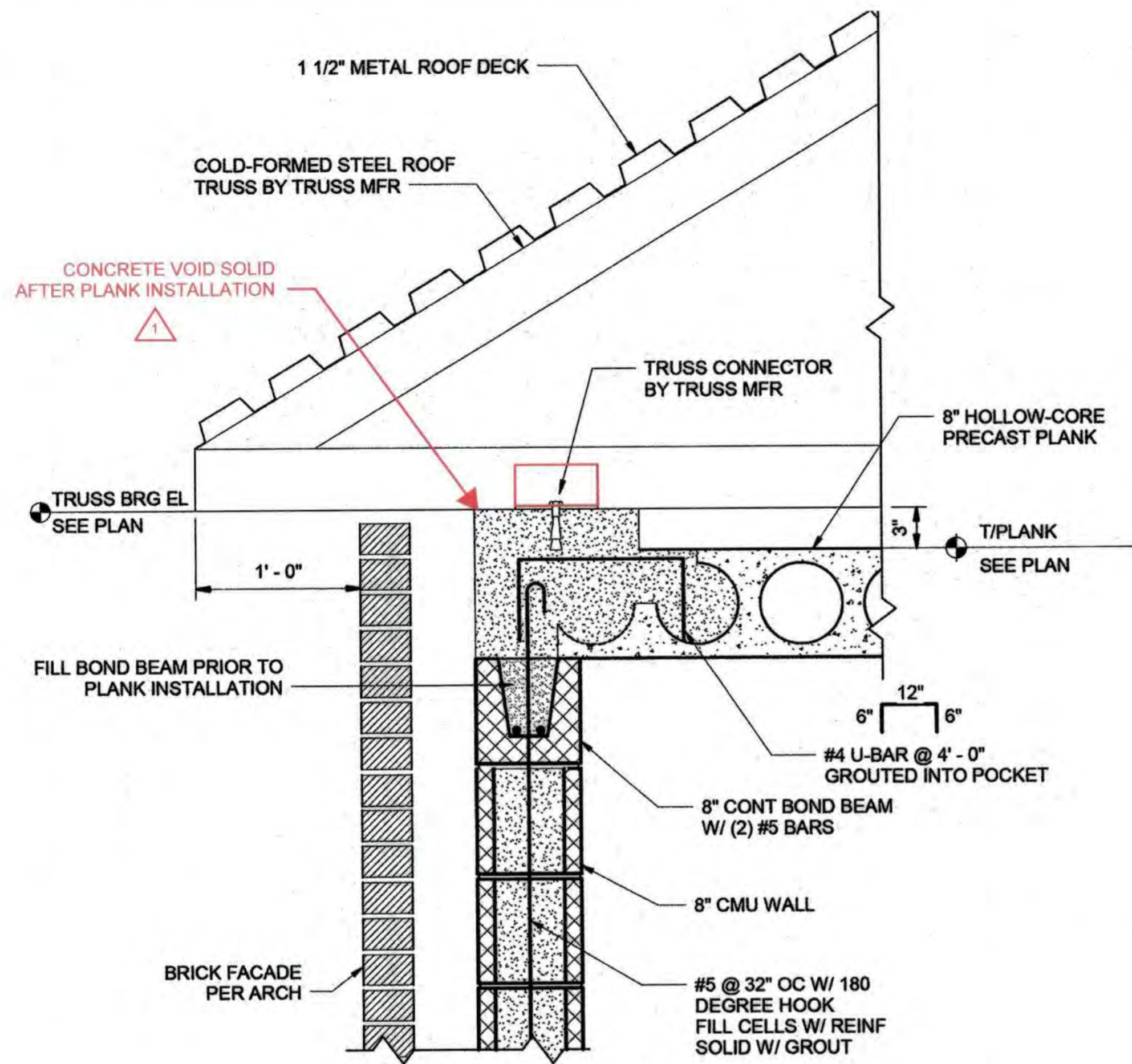
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SCALE	AS SHOWN
SHEET	33 OF 81

AS-BUILT REPLACEMENT SHEET 9/2021

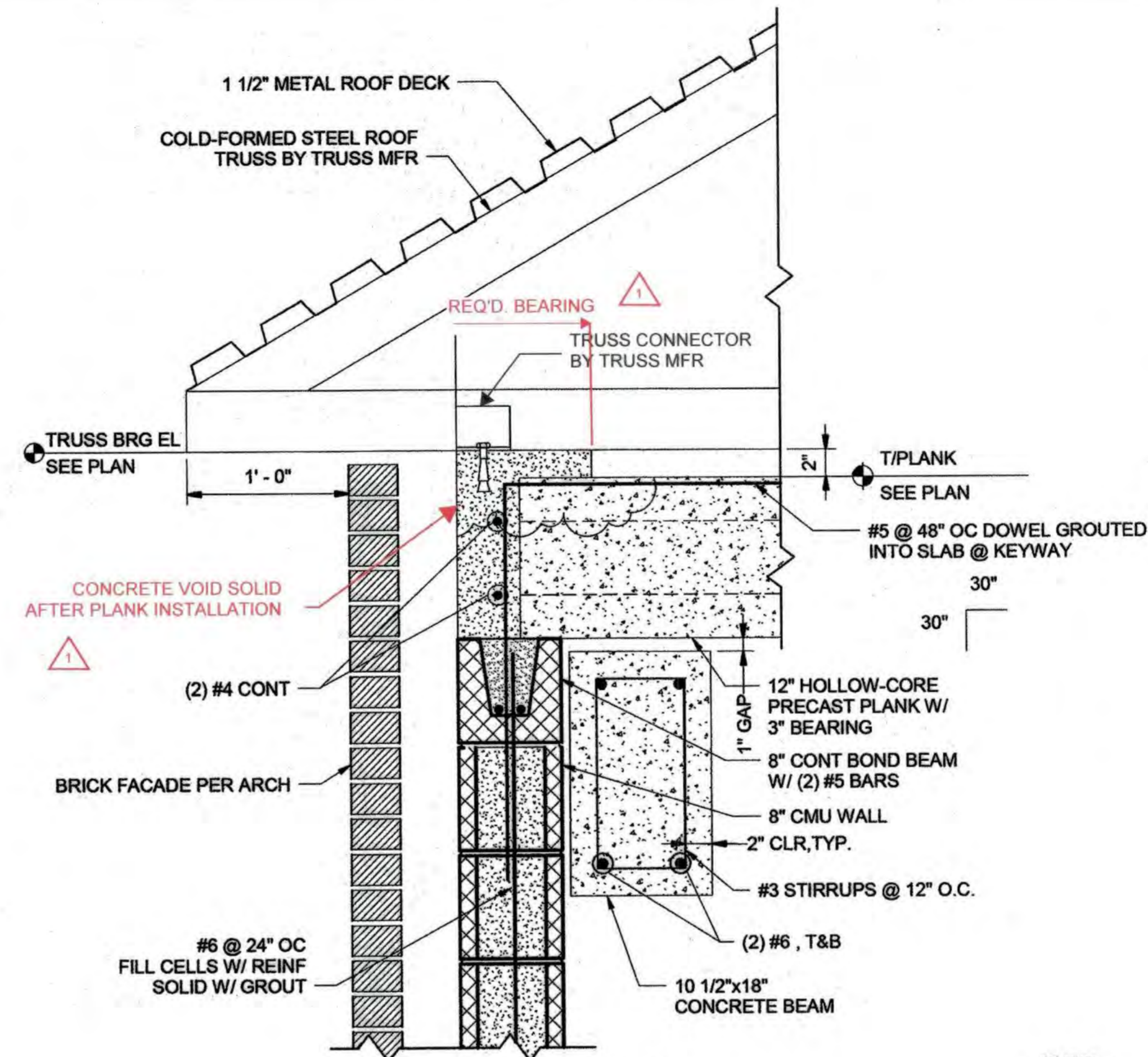


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: *[Signature]* 12/25/18
Chief, Bureau of Engineering: *[Signature]* 12/26/18
Chief, Bureau of Utilities: *[Signature]* 12/25/18
Chief, Utility Design Division: *[Signature]* 12/26/18

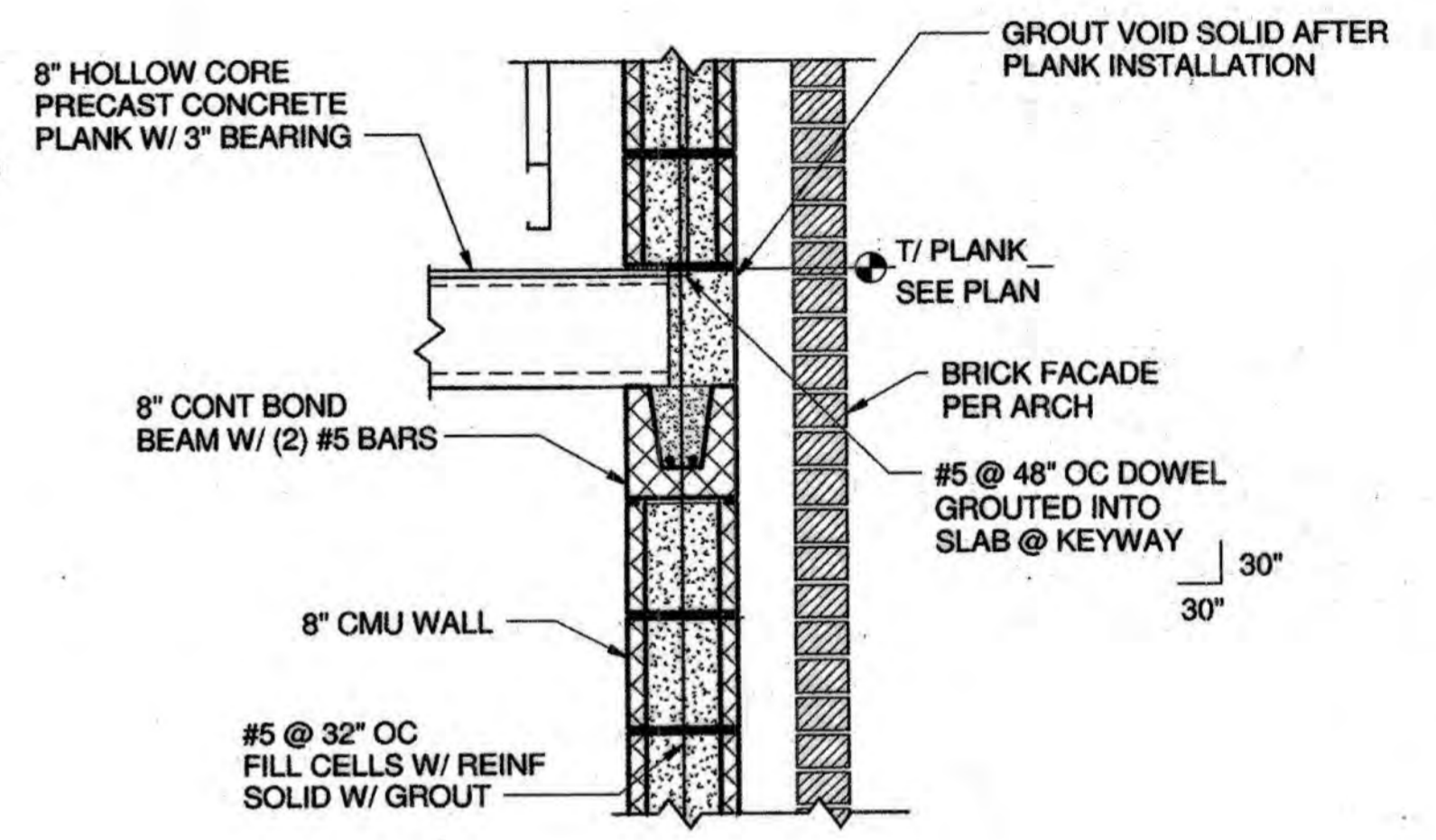
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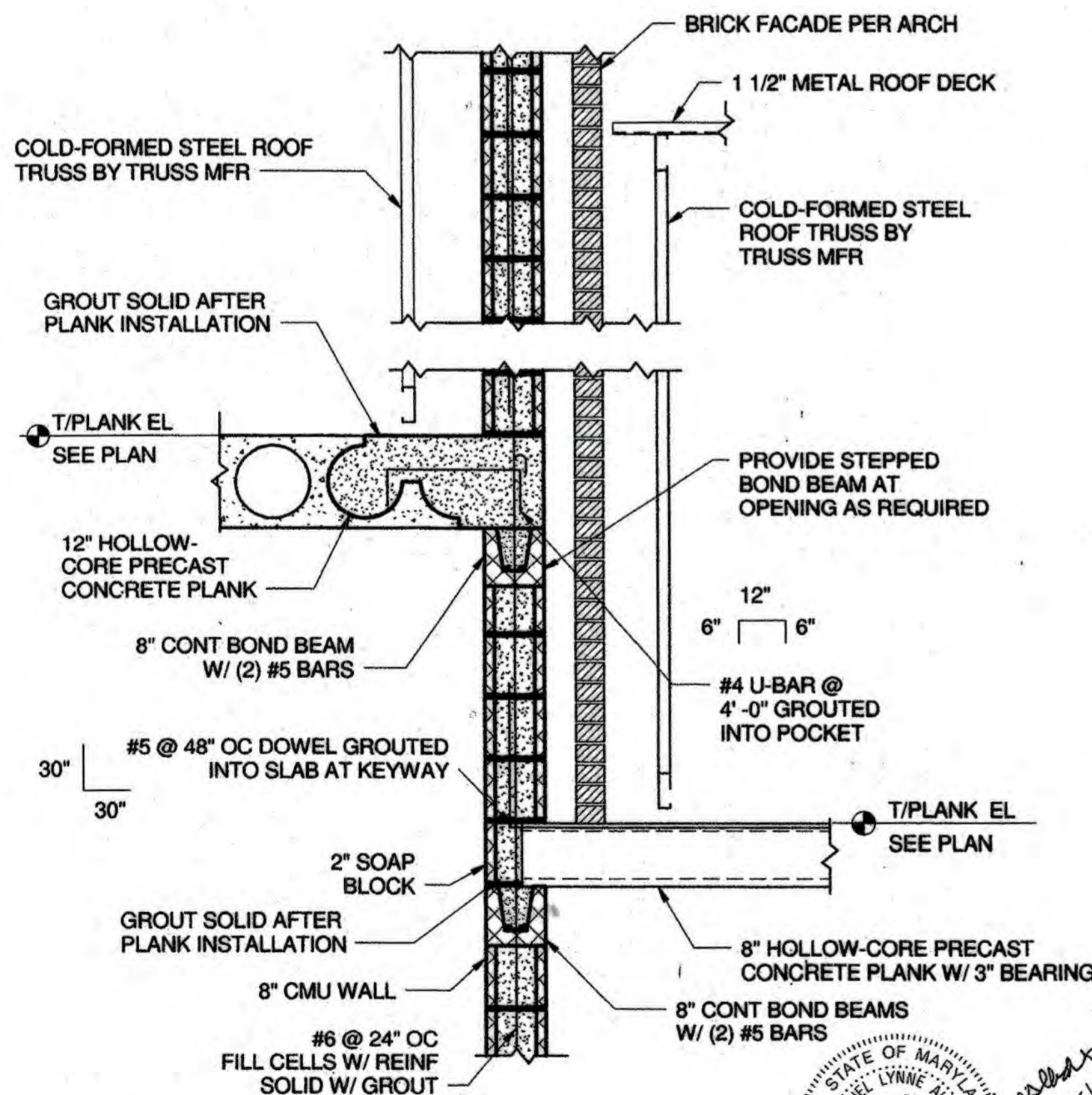
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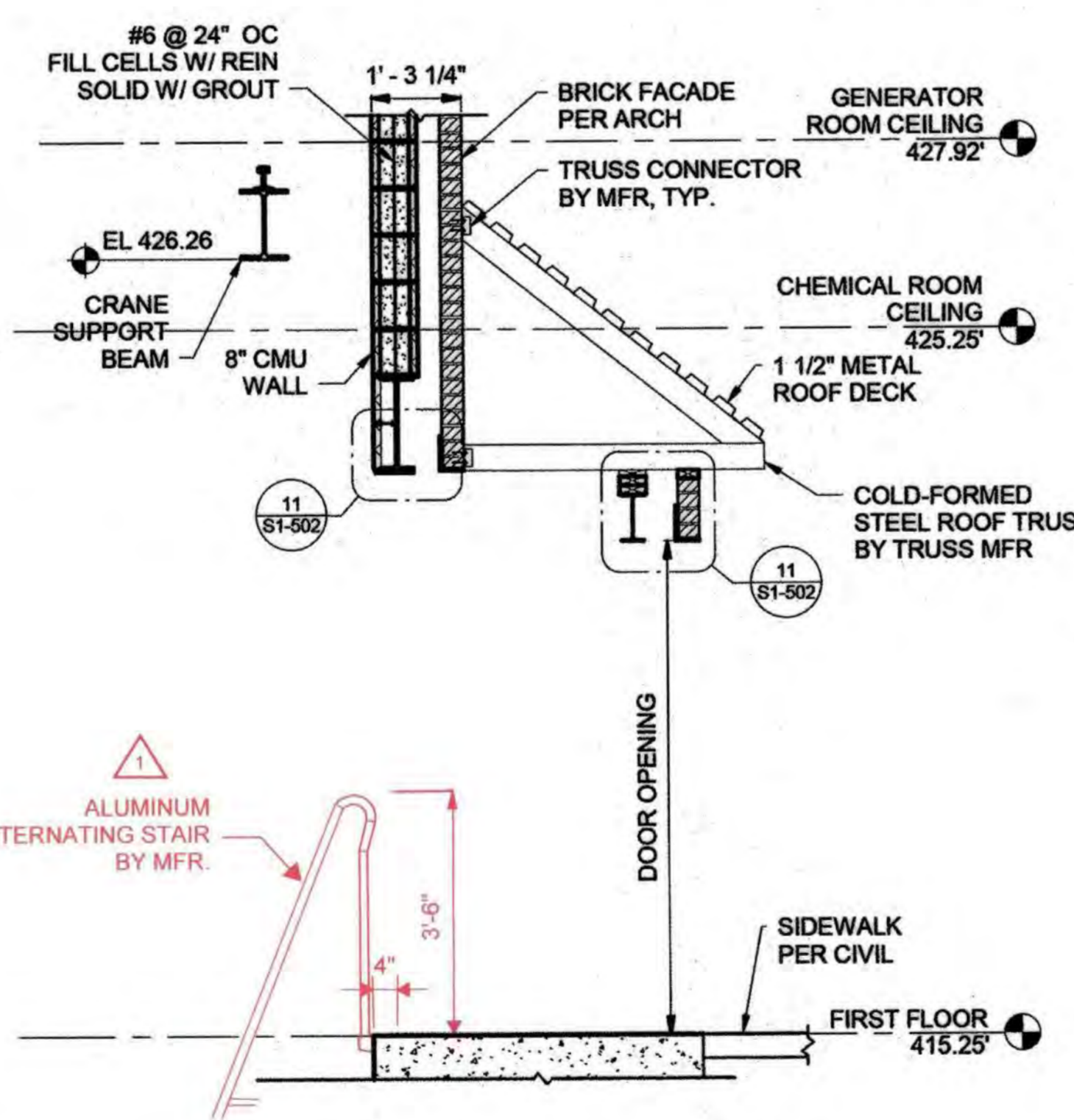
BB Section BB
SCALE: 1 1/2" = 1'-0"



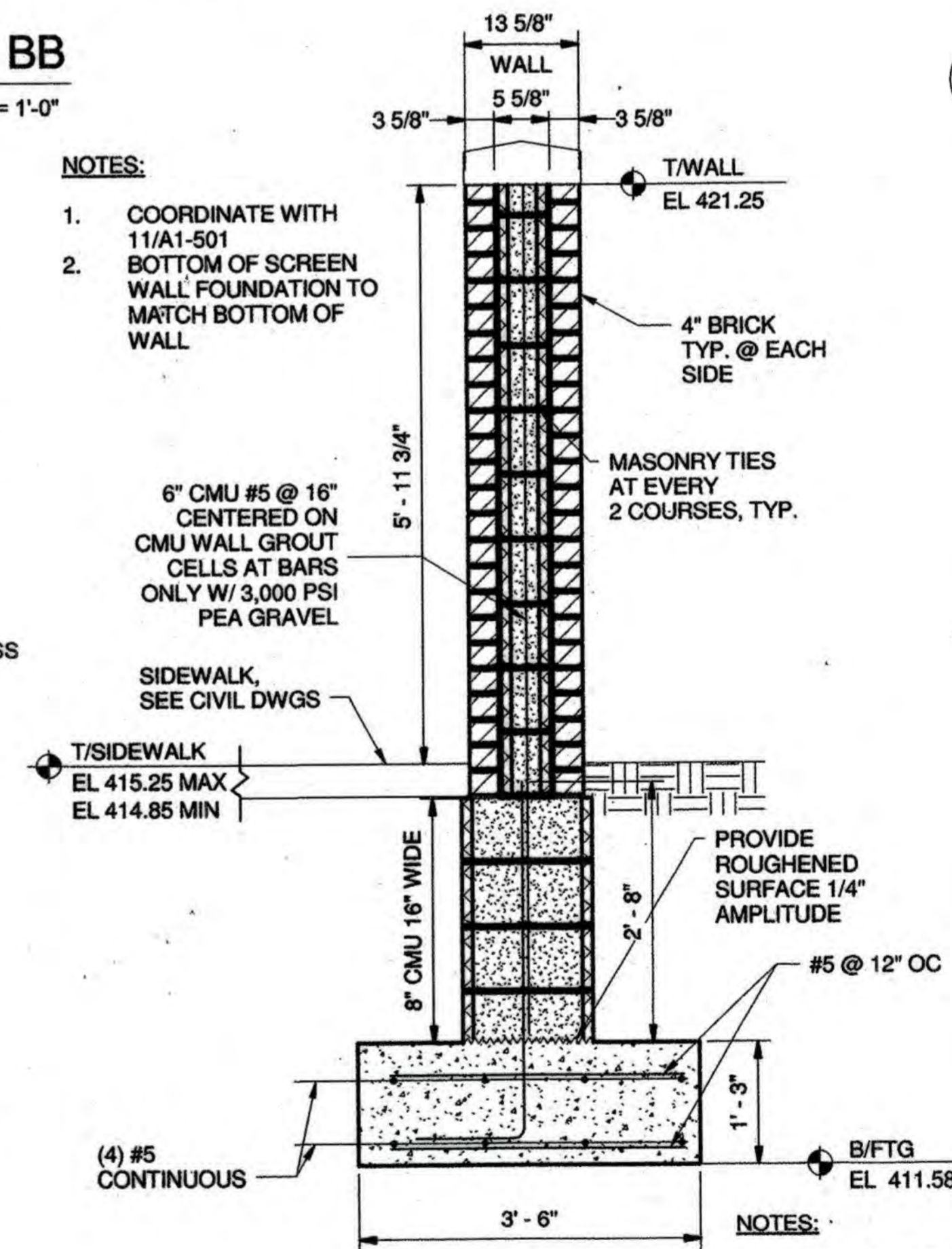
CC Section CC
SCALE: 1" = 1'-0"



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



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



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

NOTES:

- COORDINATE WITH 11/A1-501
- BOTTOM OF SCREEN WALL FOUNDATION TO MATCH BOTTOM OF WALL

6" CMU #5 @ 16" CENTERED ON CMU WALL GROUT CELLS AT BARS ONLY W/ 3,000 PSI PEA GRAVEL

SIDEWALK, SEE CIVIL DWGS

T/SIDEWALK EL 415.25 MAX EL 414.85 MIN

PROVIDE ROUGHENED SURFACE 1/4" AMPLITUDE

- SEE ARCH DRAWINGS FOR FINISHES.
- SEE CIVIL DRAWINGS FOR GRADE ELEVATIONS.
- FILL CELLS BELOW GRADE W/ PEA GRAVEL (FC=3,000 PSI) CONTINUOUSLY.

AS-BUILT REPLACEMENT SHEET 9/2021

STATE OF MARYLAND
RACHEL LYNN ALBRECHT
PROFESSIONAL ENGINEER
NO. 23393
EXPIRES 12-31-2021

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. 23393. Expiration Date 12-31-2021



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John Van...*
Date: 12-20-18

Chief, Bureau of Engineering: *Thomas S. Keller*
Date: 12-20-18

Chief, Utility Design Division: *David...*
Date: 12-20-18

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
KCI TECHNOLOGIES
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PHONE: (410) 316-7800
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DRN:	ANM				
CHK:	RLA				
DATE:	DEC 2018				
BY:	AG	1	AS-BUILT	8/2021	
NO.			REVISION	DATE	

SECTIONS

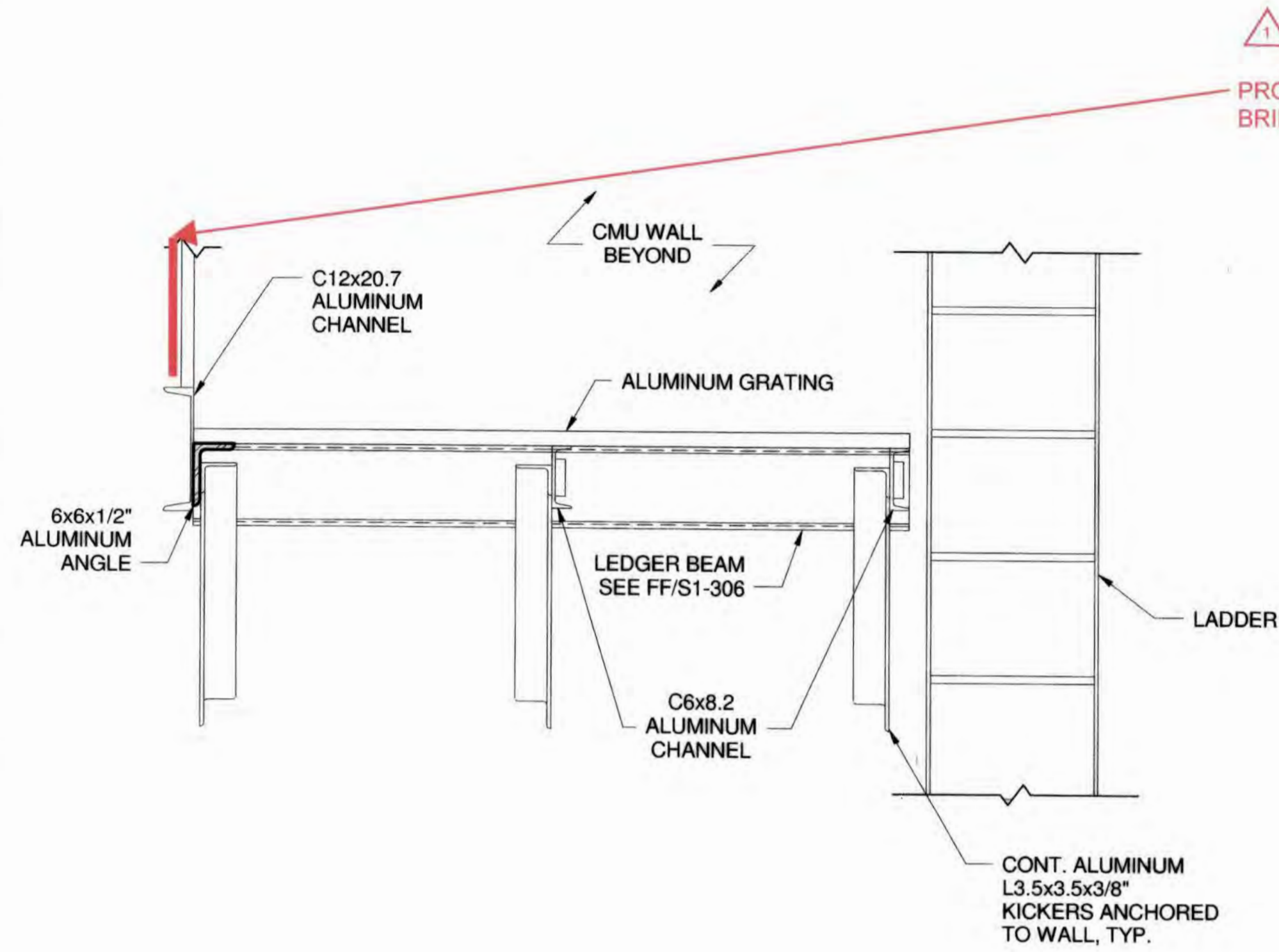
600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

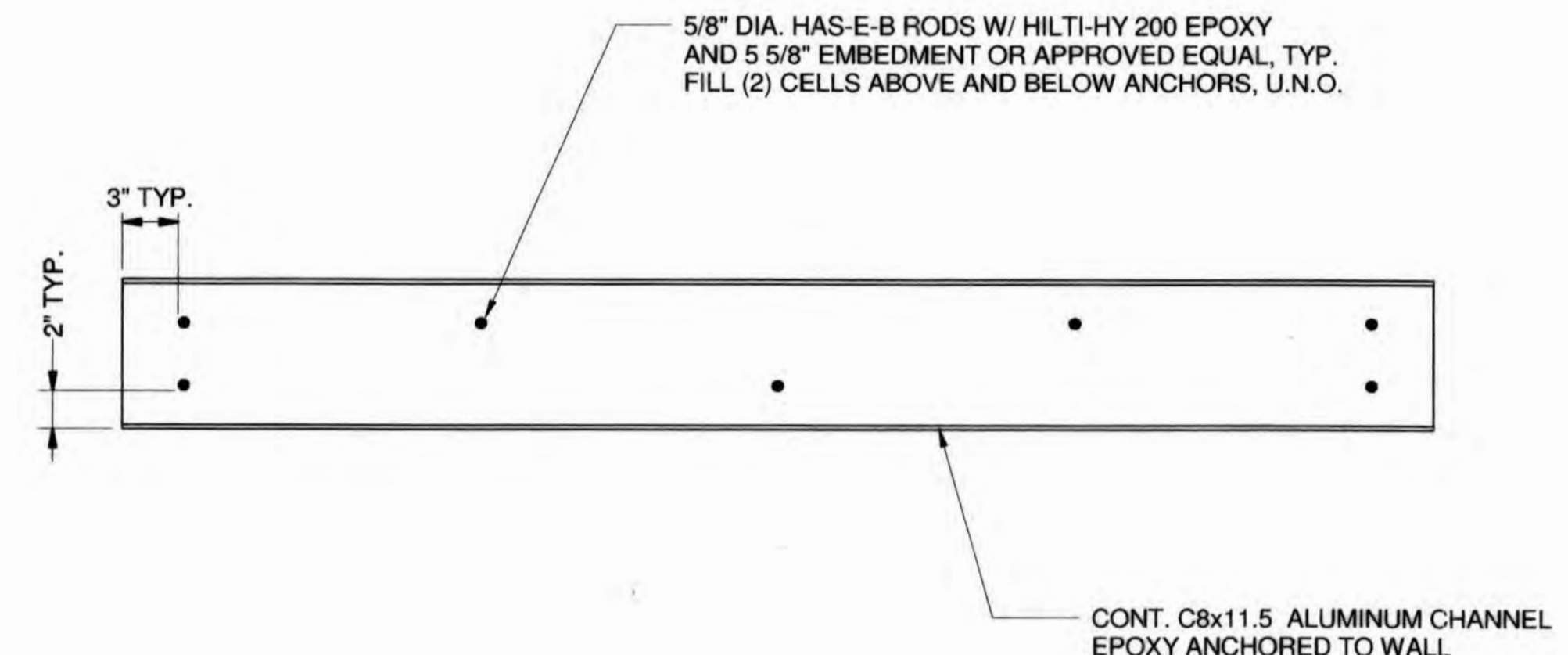
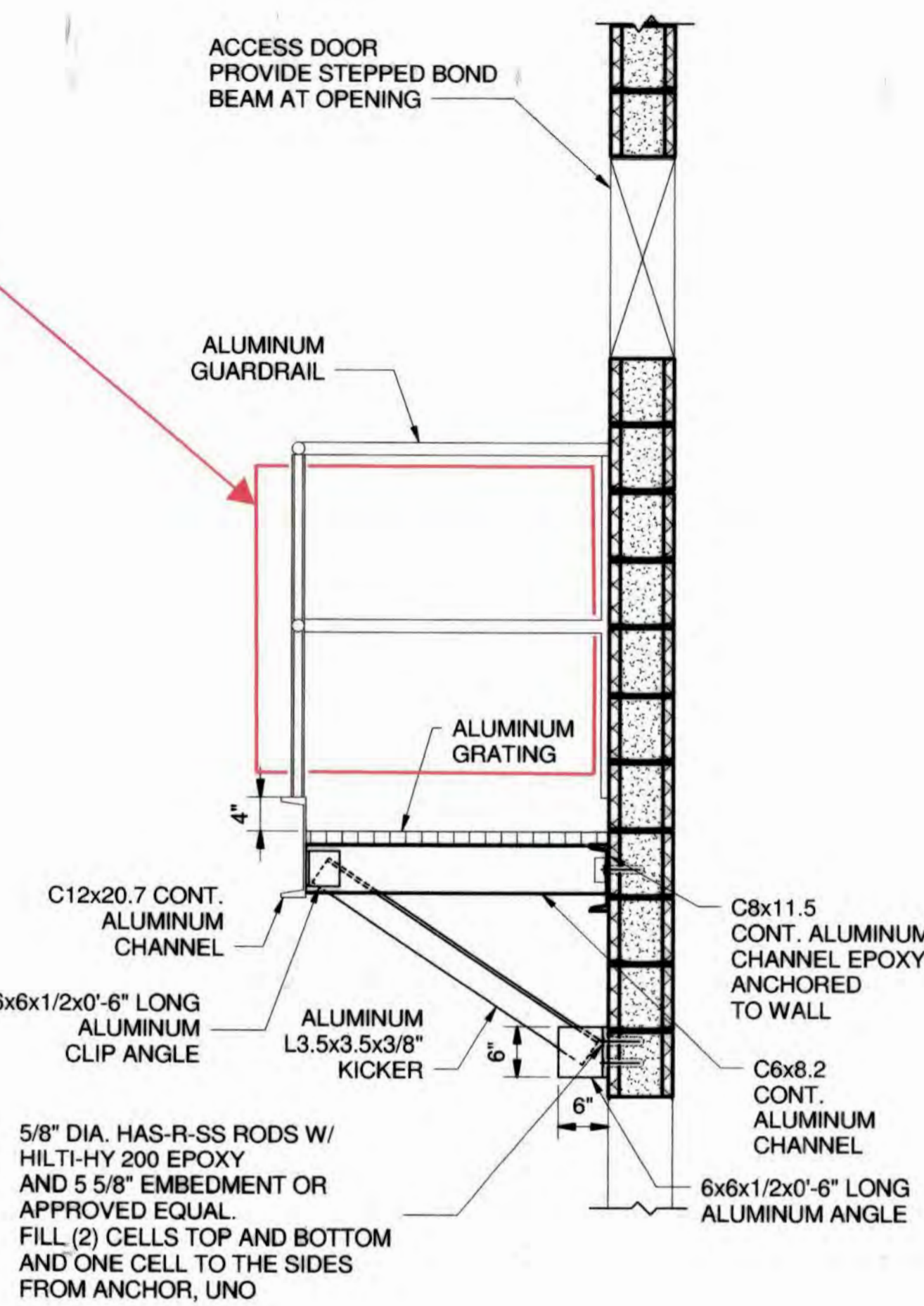
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING S1-305
SCALE AS SHOWN
SHEET 34 OF 81

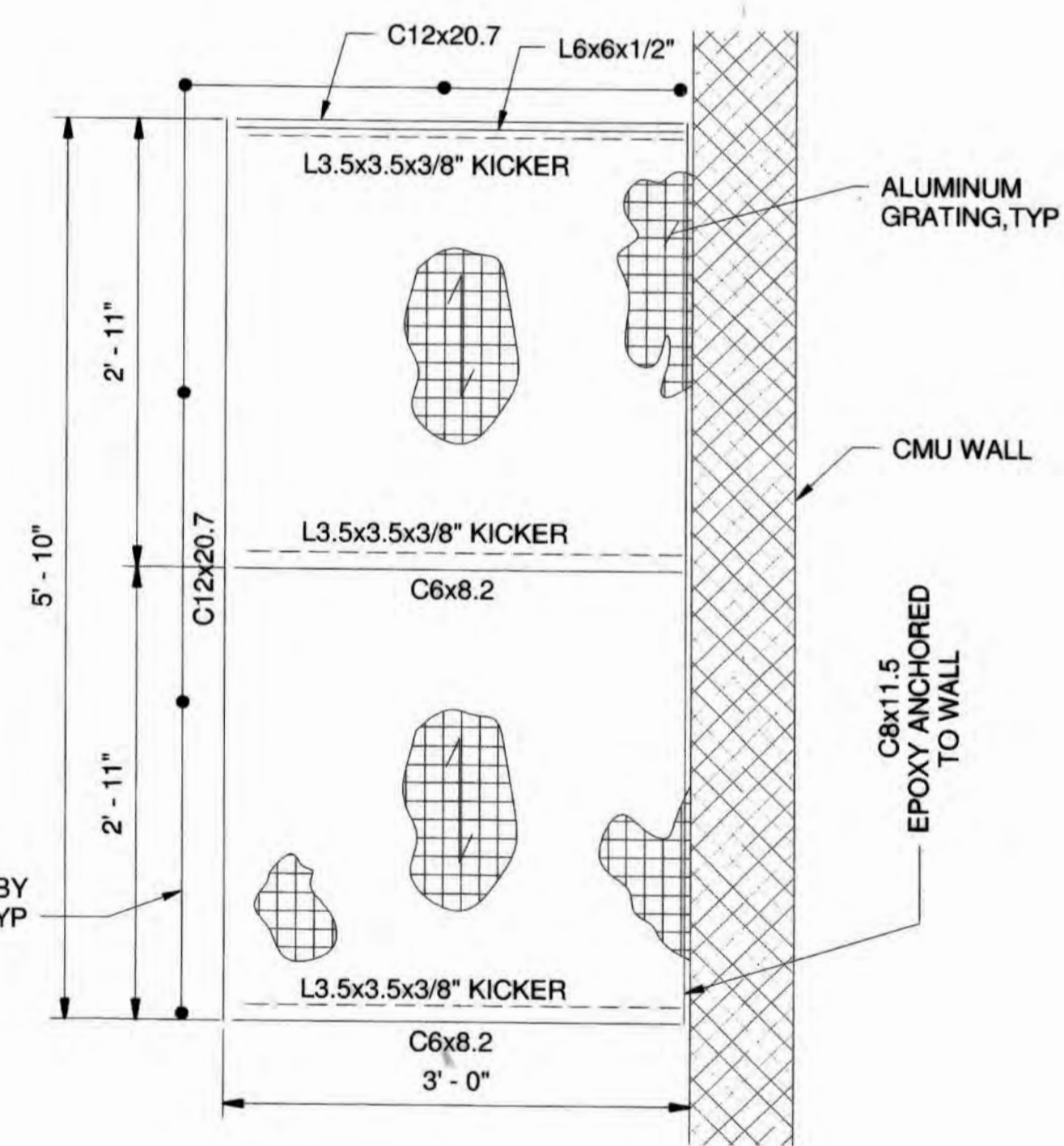
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PROTECTIVE STEEL PLATE ADDED AT BRIDGE CRANE ELECTRIFICATION.



GG Section GG
SCALE: 1" = 1'-0"

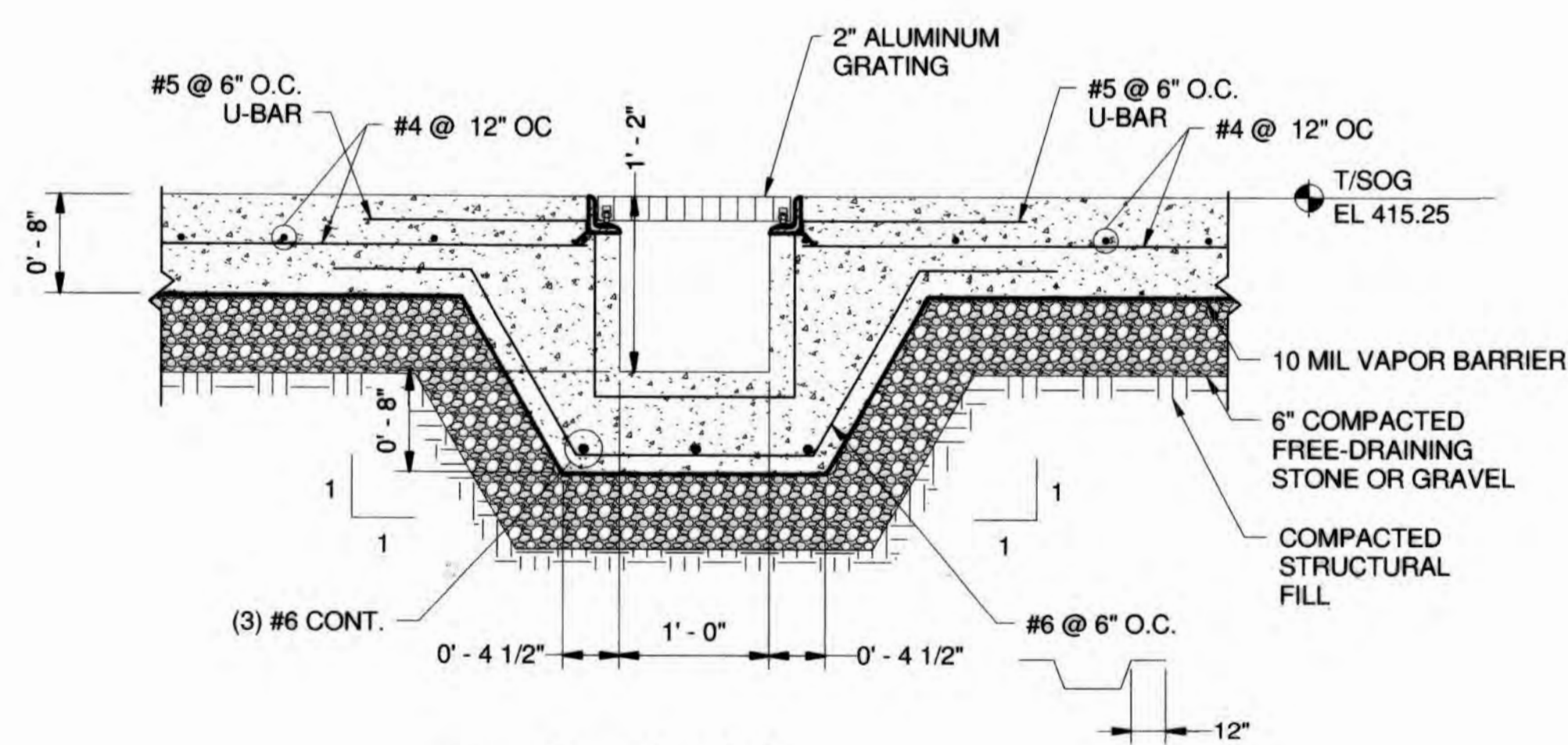


KK CRANE PLAN
SCALE: 1" = 1'-0"

NOTES:

- ISOLATE BOLTS AND NUTS FROM ALUMINUM AND STAINLESS STEEL USING PLASTIC WASHERS BETWEEN THE BOLT HEAD AND THE SIDE OF THE JOIN AND ALSO BETWEEN THE NUT AND THE OTHER SIDE OF THE JOIN. ALSO, USE A NON-CONDUCTIVE SLEEVE TO FIT ON THE SHAFT OF THE BOLT TO KEEP IT FROM MAKING CONTACT WITH THE STEEL AND/OR ALUMINUM.

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



LL Section LL
SCALE: 1" = 1'-0"

JJ LEDGER BEAM AT CRANE
SCALE: 1 1/2" = 1'-0"

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Roberts 12/20/18
DIRECTOR OF PUBLIC WORKS DATE

Thomas E. Keller 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE

John S. ... 12-20-18
CHIEF, BUREAU OF UTILITIES DATE

... 12/20/18
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

KCI
TECHNOLOGIES

936 RIDGEBROOK ROAD
SPARKS, MD 21152
PHONE: (410)316-7800
FAX: (410)316-7817
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DES:	JWG/RCC
DRN:	ANM
CHK:	FLA
DATE:	DEC 2018
BY:	AG
NO.:	1
REVISION:	AS-BUILT
DATE:	8/2021

600' SCALE MAP NO.:	35
BLOCK NO.:	17, 11

AS-BUILT REPLACEMENT SHEET 9/2021

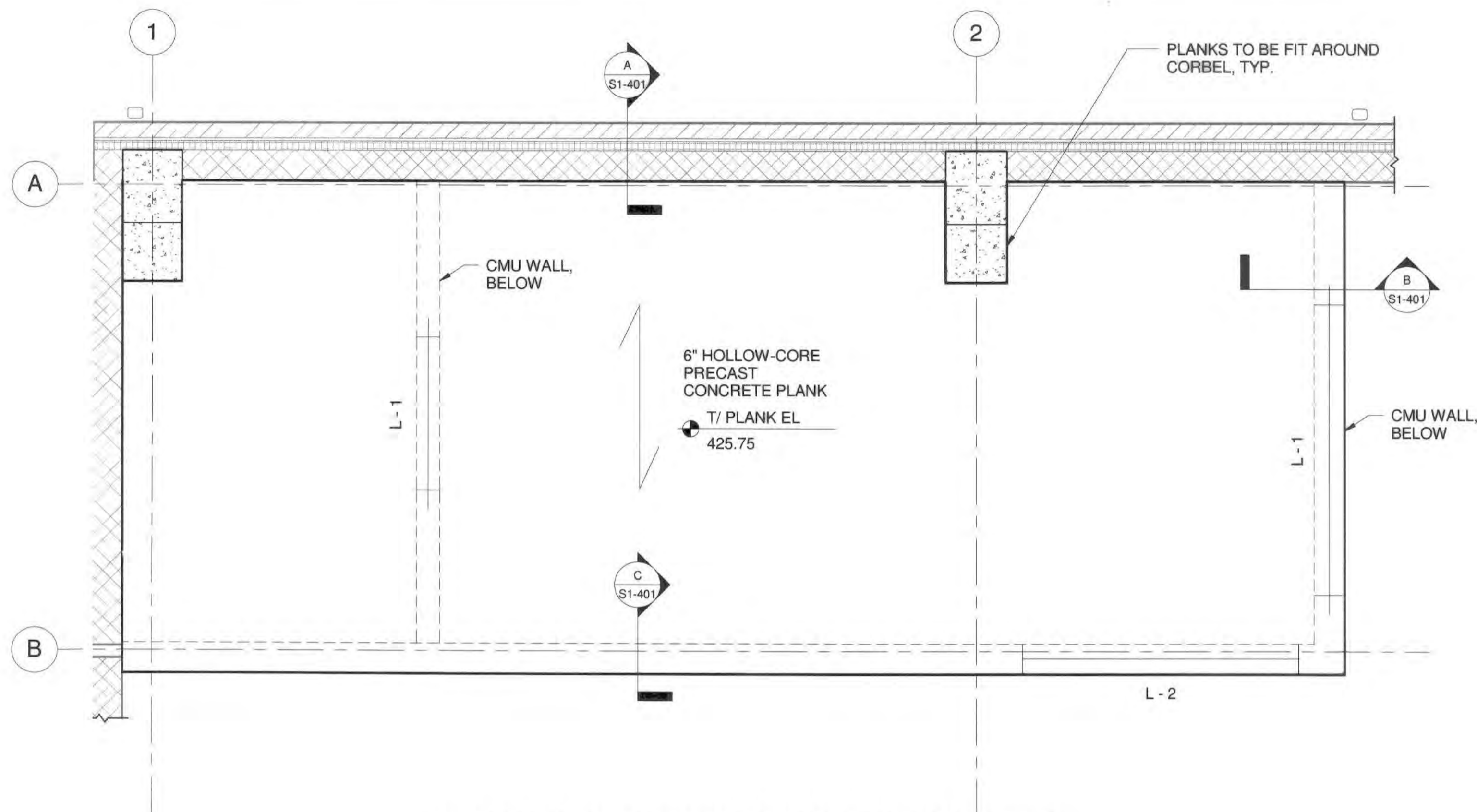
SECTION

CEDAR LANE WATER PUMPING STATION

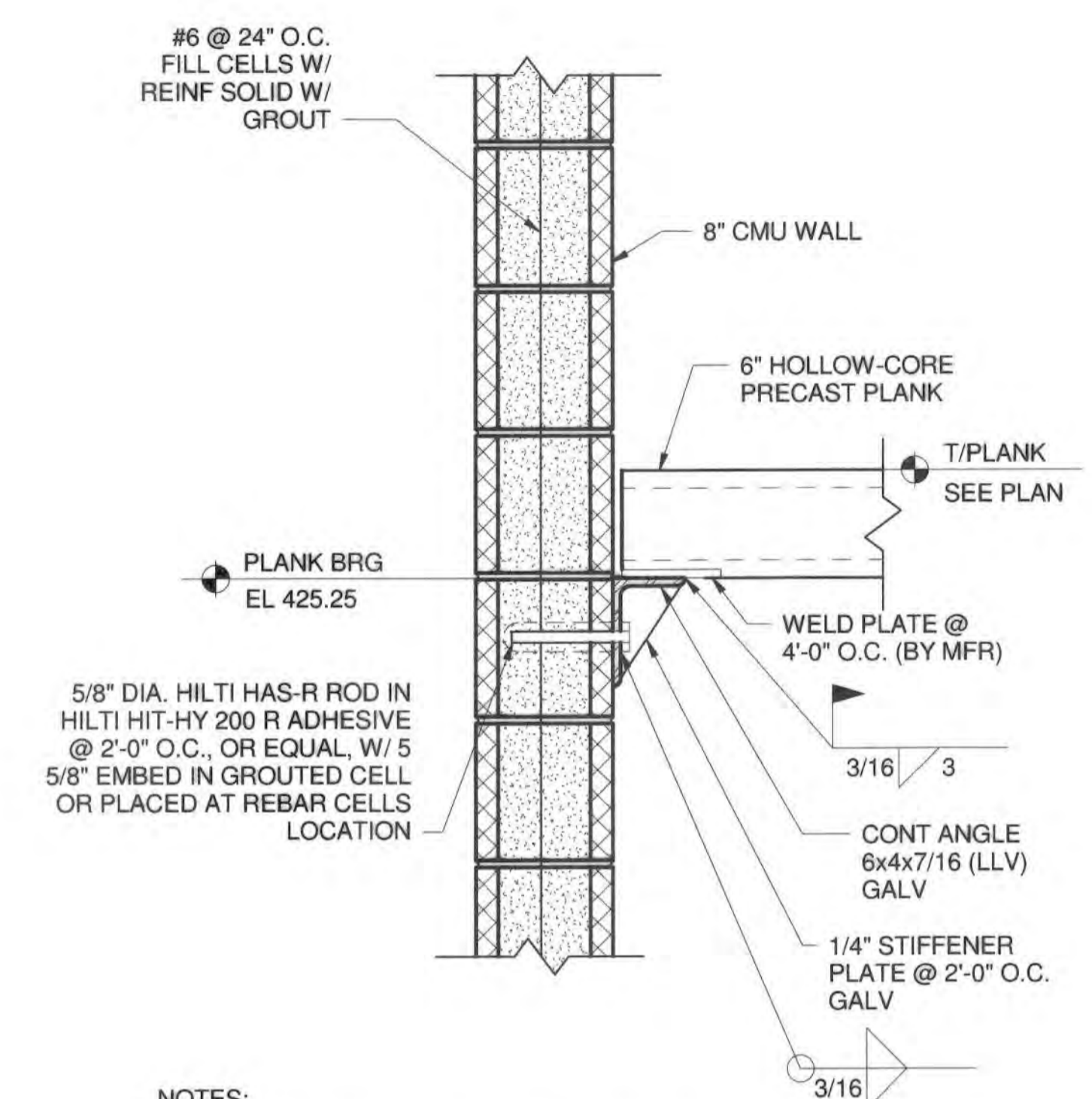
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

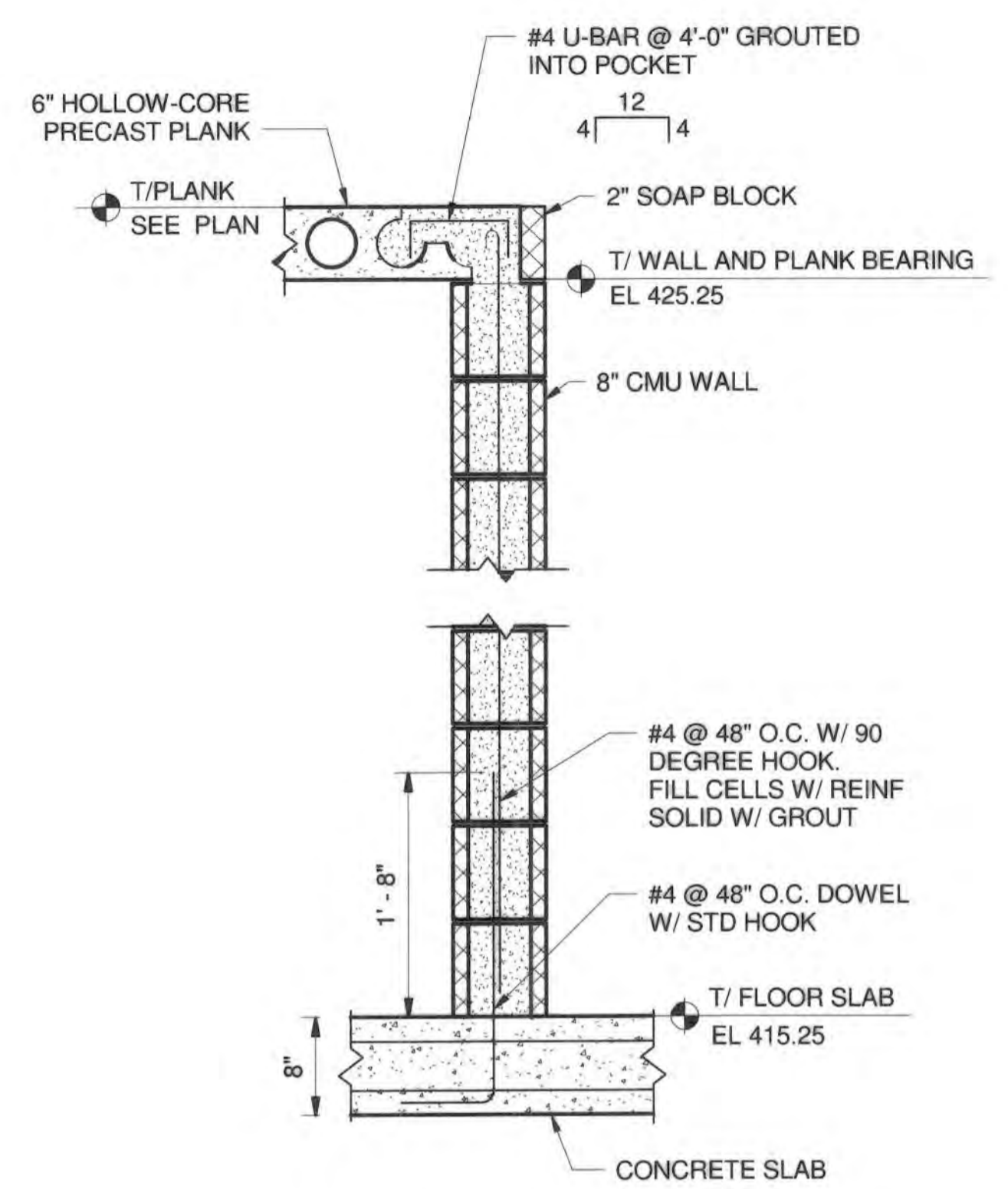
DRAWING	S1-306
SCALE	AS SHOWN
SHEET	35 OF 81



1 PARTIAL CONTROL ROOM CEILING PLAN
SCALE: 1/2" = 1'-0"

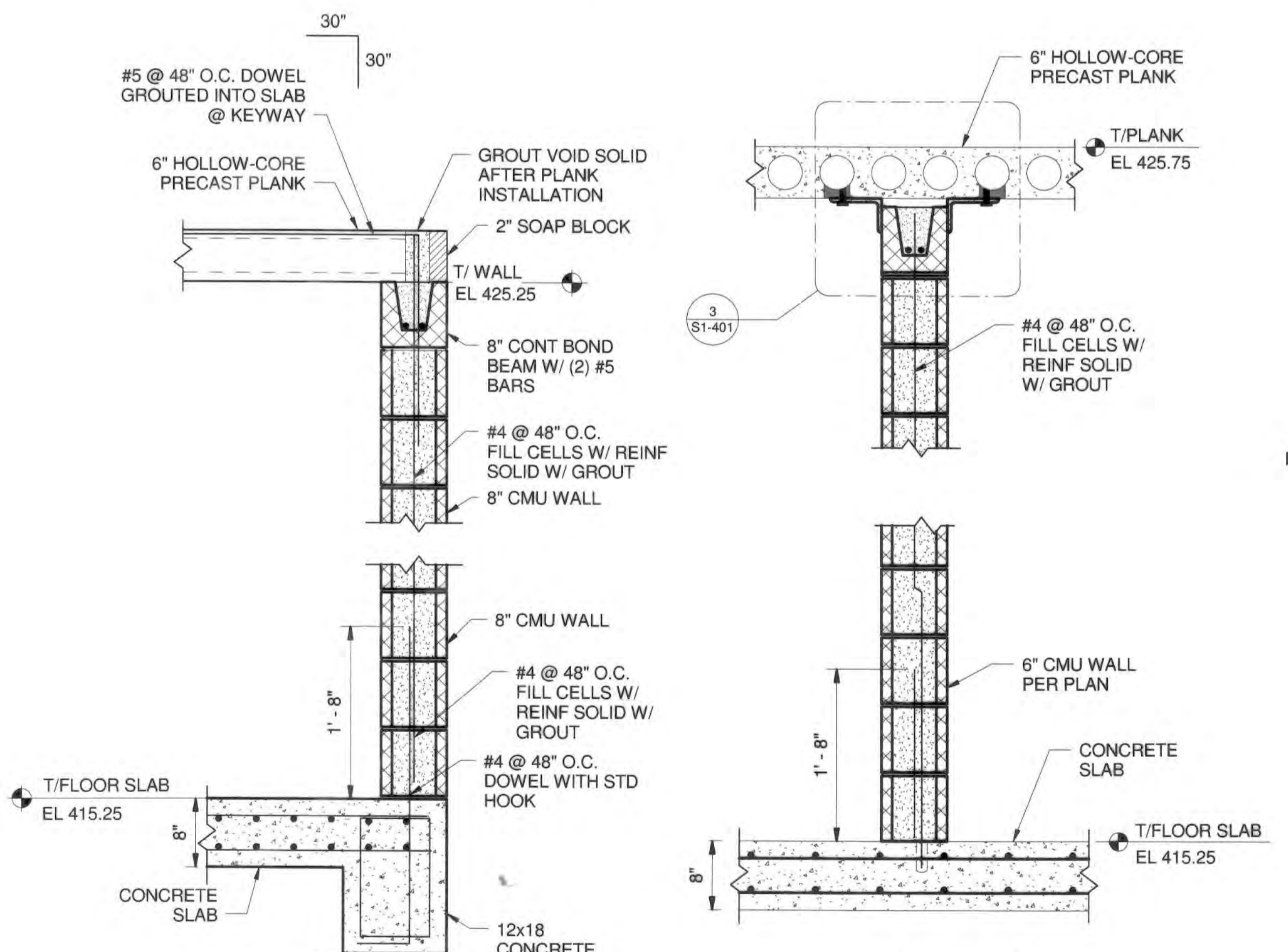


NOTES:
1. ISOLATE BOLT AND WASHER OR NUT FROM GALVANIZED MATERIAL USING A NON-CONDUCTIVE MATERIAL SUCH AS PLASTIC WASHER, RUBBER, PAINT SLEEVE, ETC. TO AVOID GALVANIC CORROSION.



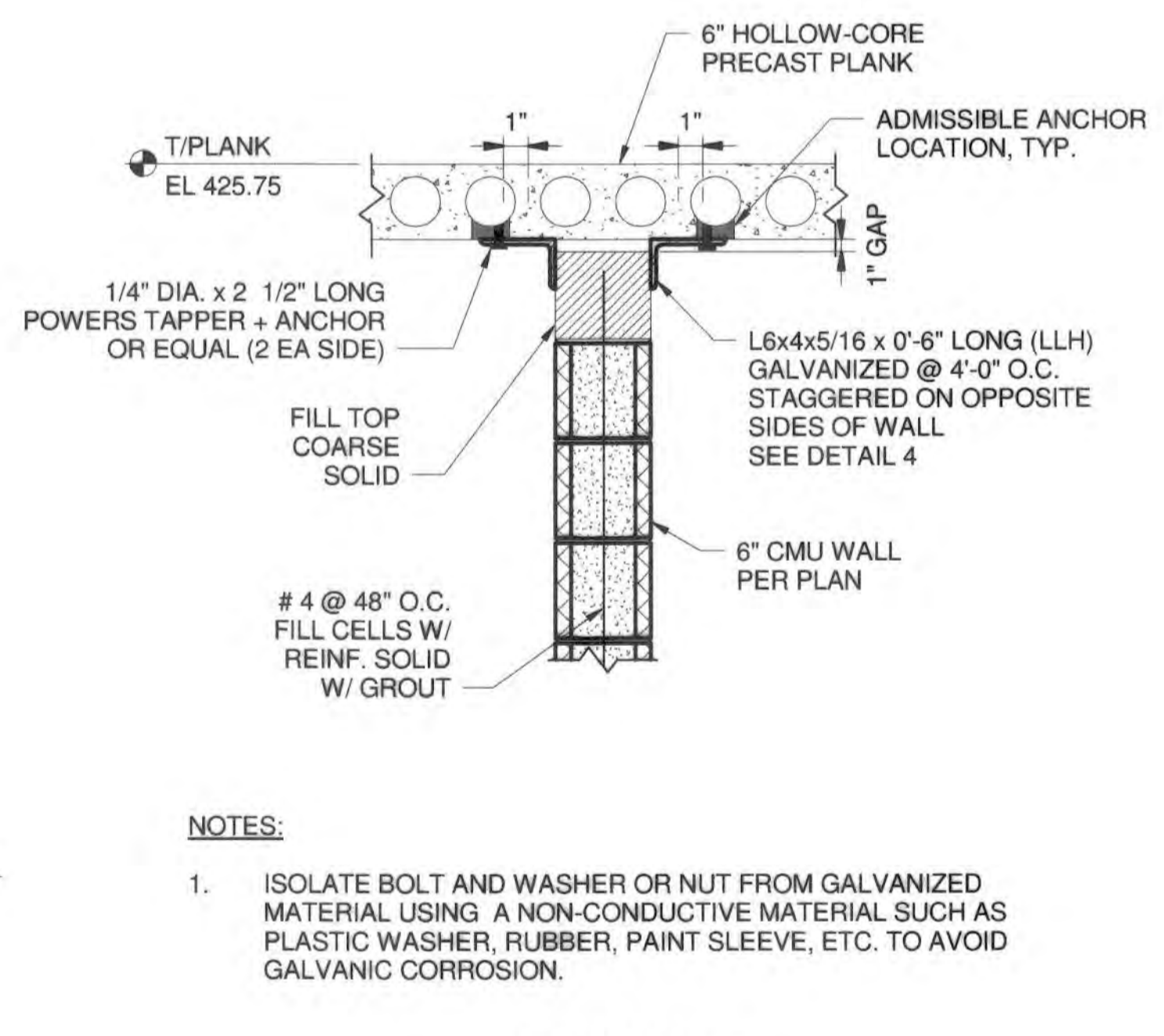
B Section B
SCALE: 1" = 1'-0"

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

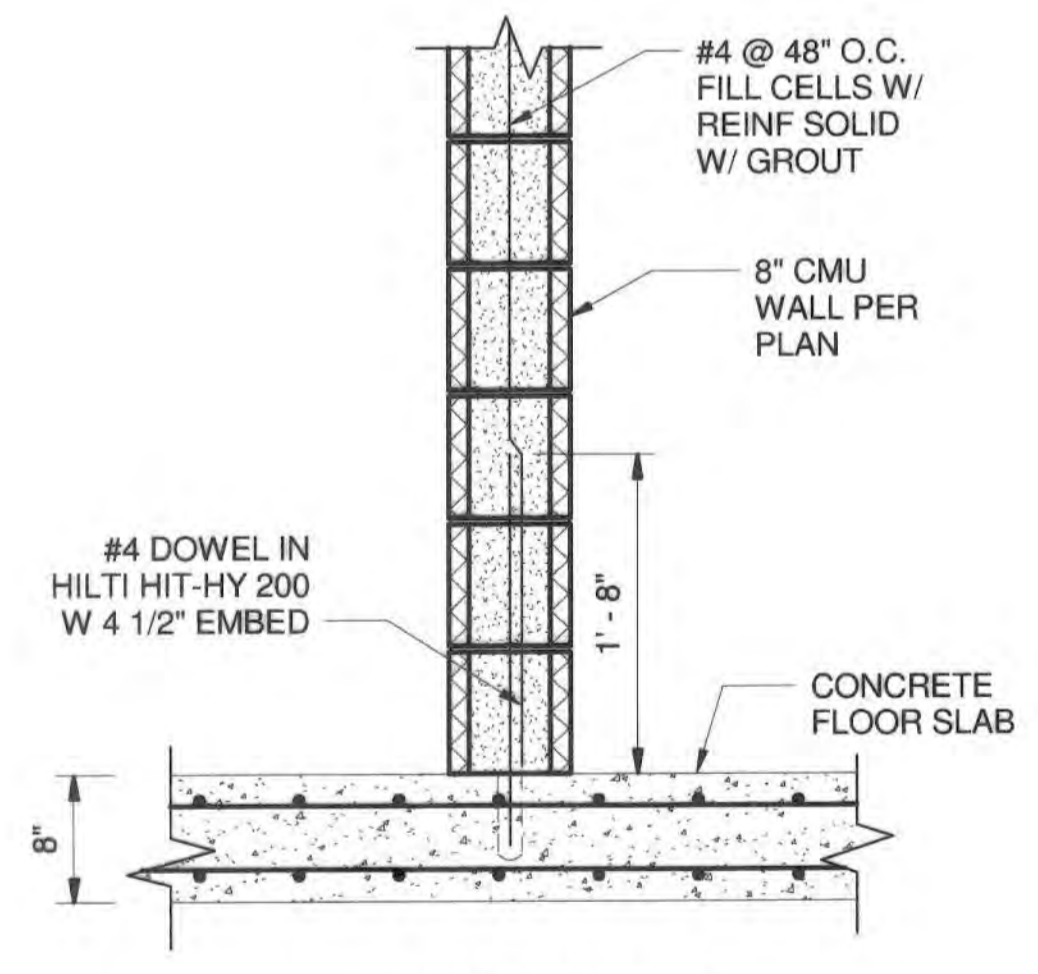


C Section C
SCALE: 1" = 1'-0"

D Section D
SCALE: 1" = 1'-0"



3 DETAIL 3
SCALE: 1" = 1'-0"



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

NOTES:
1. ISOLATE BOLT AND WASHER OR NUT FROM GALVANIZED MATERIAL USING A NON-CONDUCTIVE MATERIAL SUCH AS PLASTIC WASHER, RUBBER, PAINT SLEEVE, ETC. TO AVOID GALVANIC CORROSION.

AS-BUILT
DATE: 9/2021

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. 25343, Expiration Date 8-23-2020

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\\AES1\AE\In\Albrecht Engineering Inc\Projects\2016\2016-009 KCI HoCo 630\W04 CADD\03 STRUCT\13160130601-STRUCT-1.rvt



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: [Signature]
Chief, Bureau of Engineering: [Signature]
Chief, Bureau of Utilities: [Signature]
Chief, Utility Design Division: [Signature]

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
KCI TECHNOLOGIES
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DRN:	ANM
CHK:	RLA
DATE:	DEC 2018
BY:	NO.
REVISION:	

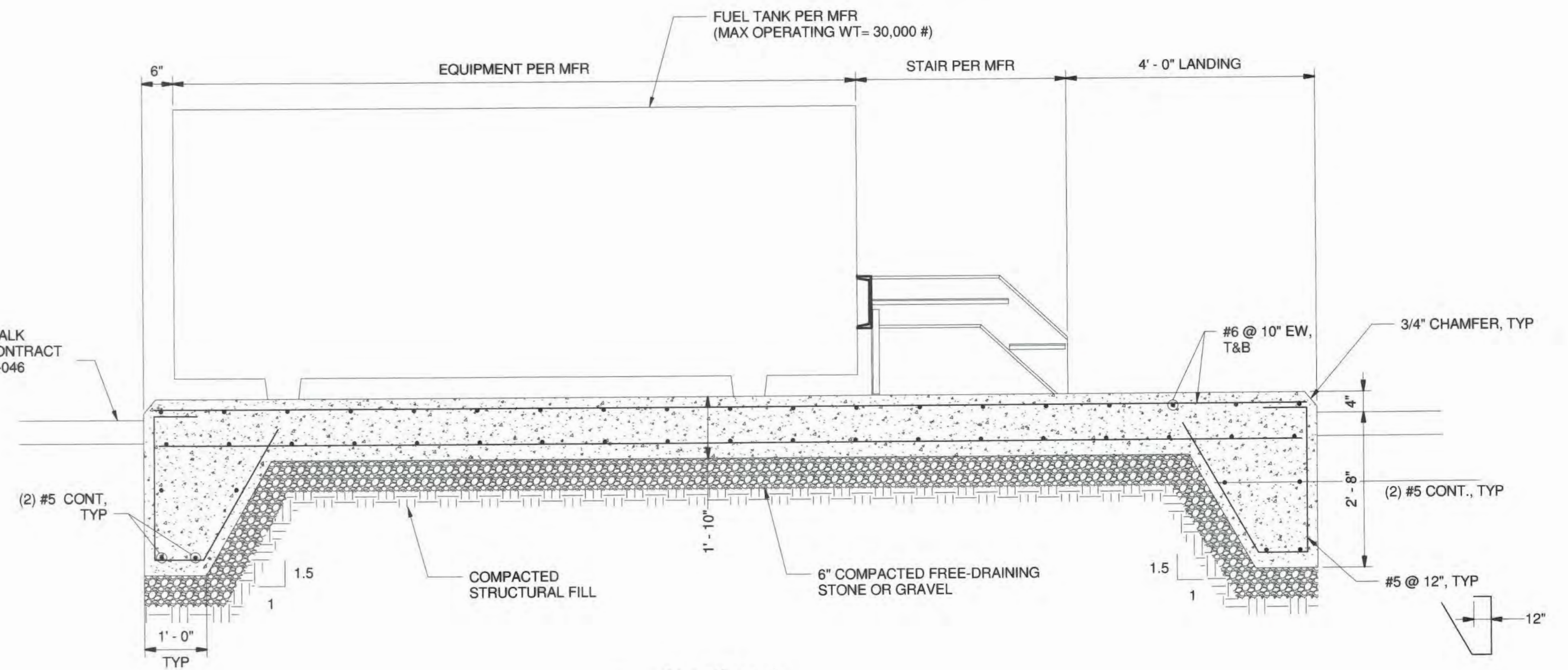
PARTIAL CONTROL ROOM CEILING PLAN
600' SCALE MAP NO.: 35
BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

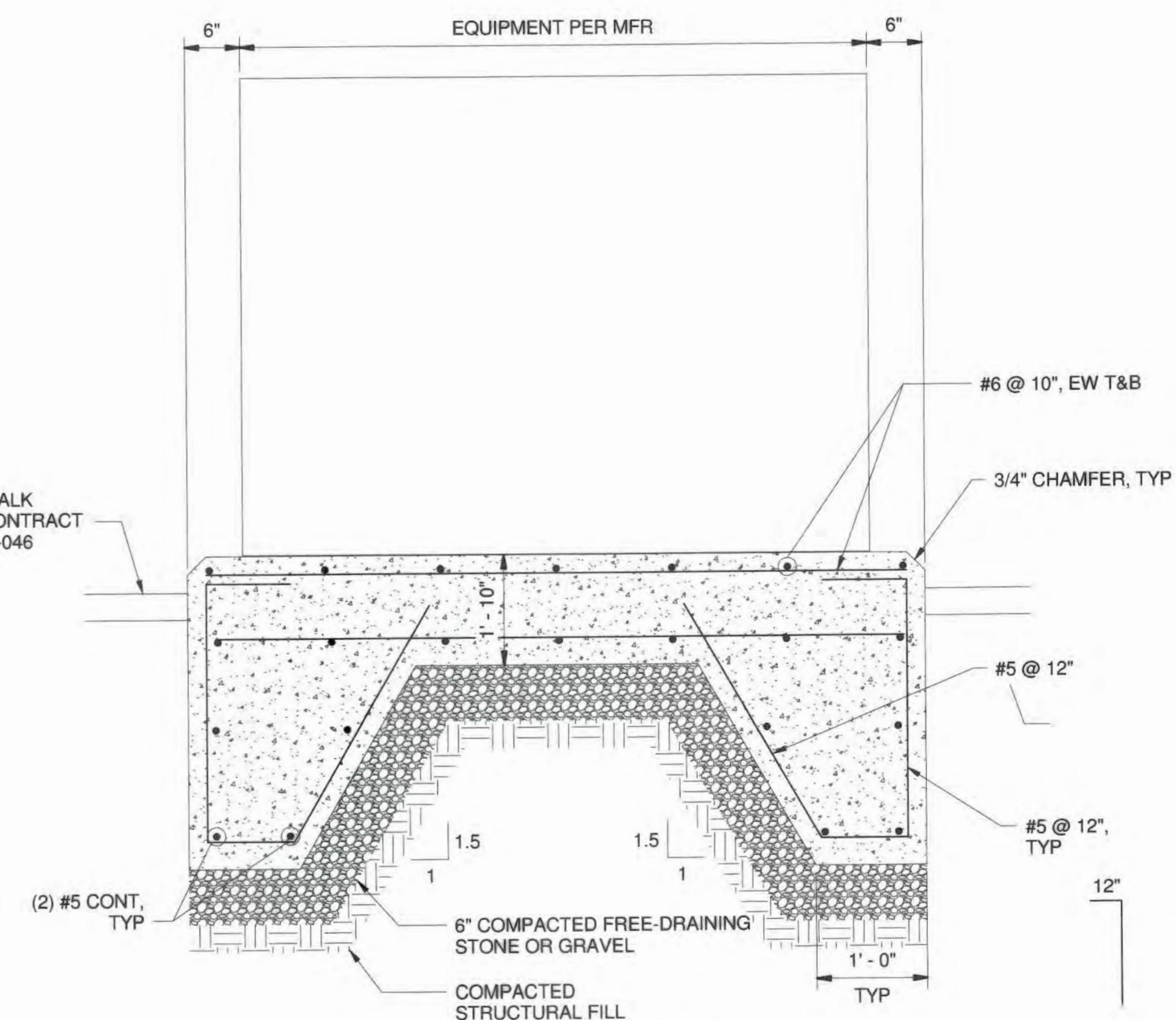
DRAWING: S1-401
SCALE: AS SHOWN
SHEET: 36 OF 81

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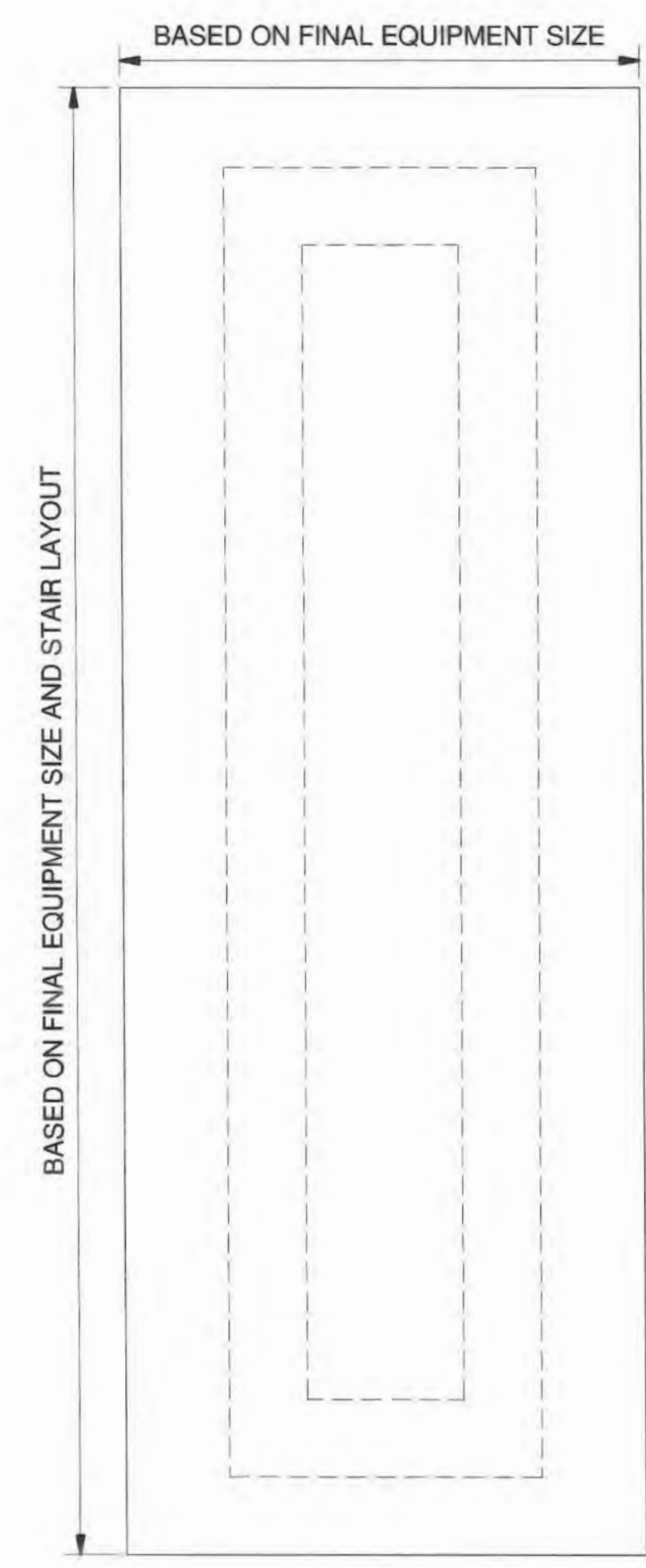
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A Section A
SCALE: 3/4" = 1'-0"



B Section B
SCALE: 1" = 1'-0"



1 PARTIAL FUEL TANK FOUNDATION PLAN
SCALE: 1/2" = 1'-0"

AS-BUILT
DATE 9/2021

ALBRECHT
ENGINEERING INC

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. J. ... 12/26/18
DIRECTOR OF PUBLIC WORKS DATE

... 12/26/18
CHIEF, BUREAU OF UTILITIES DATE

... 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

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STATE OF MARYLAND
PROFESSIONAL ENGINEER
RACHEL L. ...
12-20-18

DES:	JWG/RCC
DRN:	ANM
CHK:	RLA
DATE:	DEC 2018
BY:	NO.
REVISION:	

PARTIAL FUEL TANK FOUNDATION PLAN AND SECTIONS

DATE: 600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

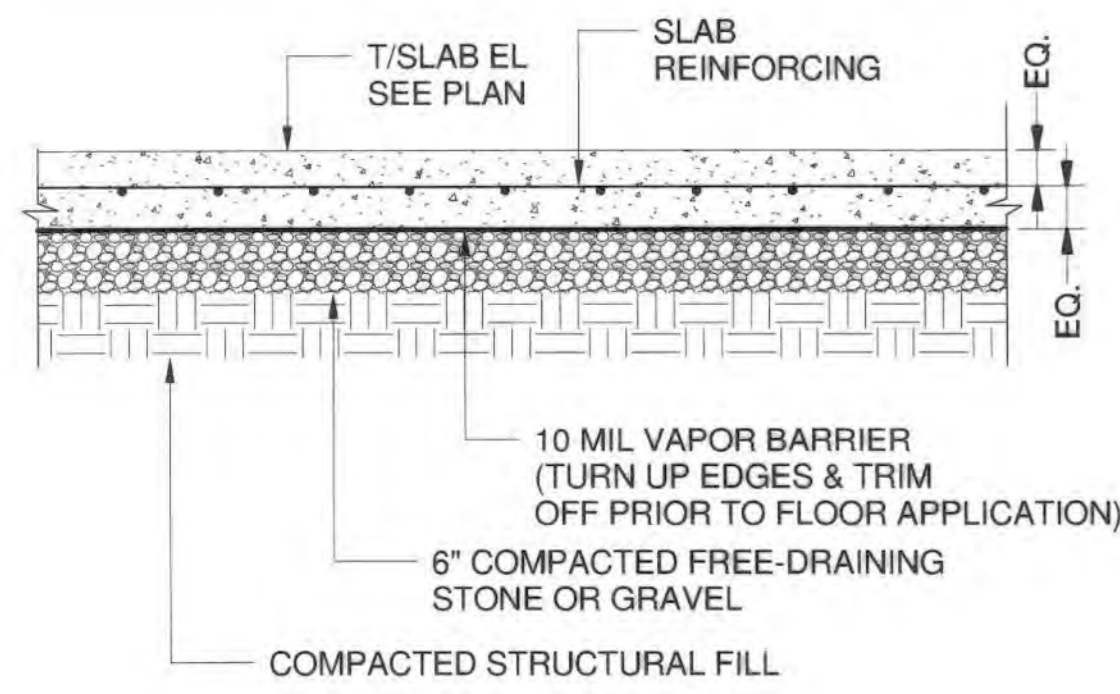
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

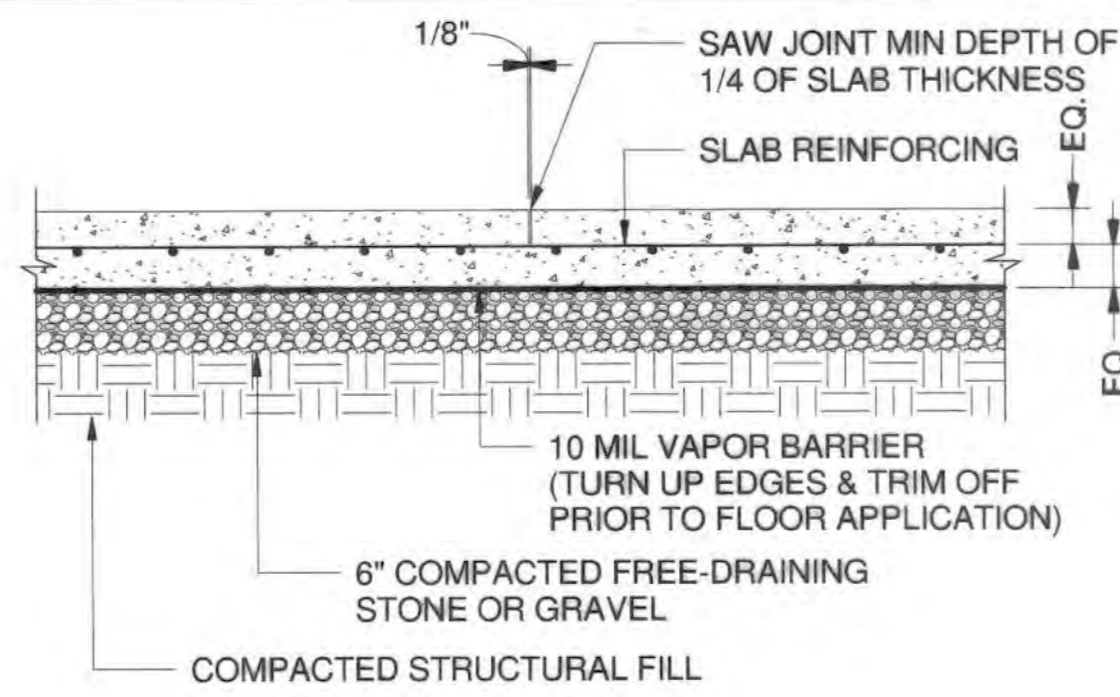
DRAWING
S1-402

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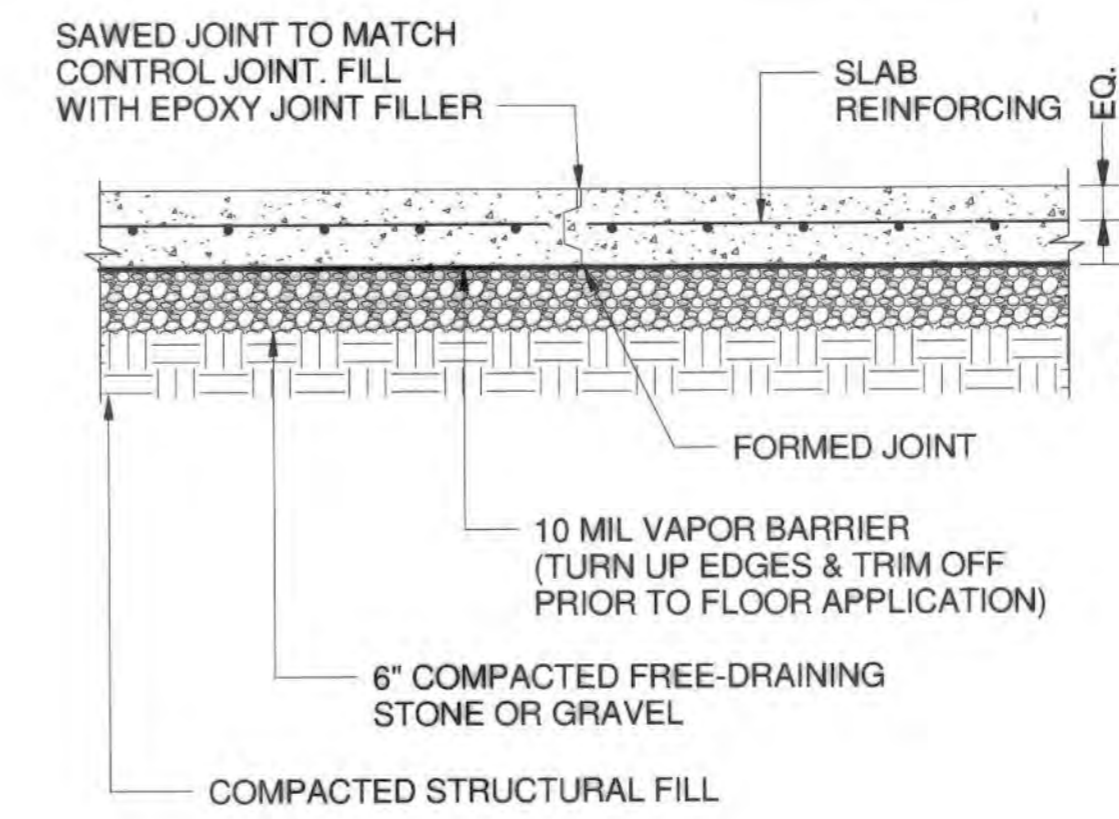
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37 OF 81



1 SLAB-ON-GRADE
SCALE: 1" = 1'-0"

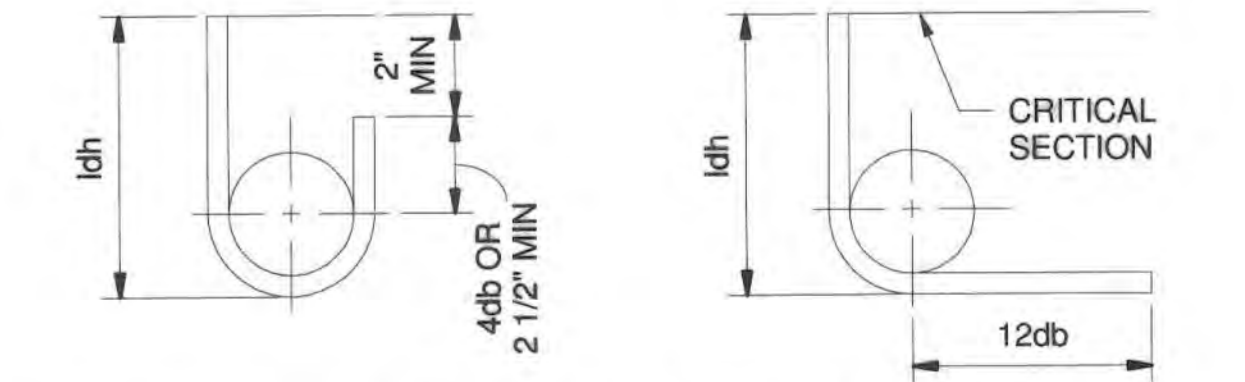


2 SLAB-ON-GRADE CONTROL JOINT
SCALE: 1" = 1'-0"



3 SLAB-ON-GRADE CONSTRUCTION JOINT
SCALE: 1" = 1'-0"

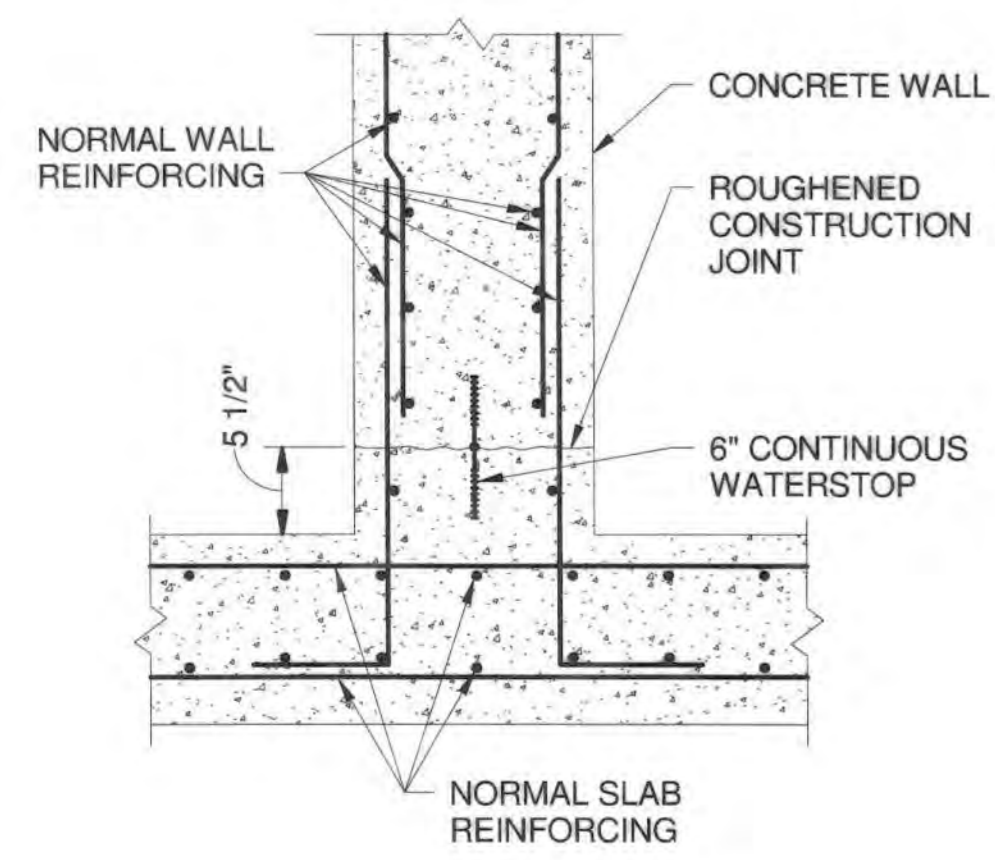
BAR SIZE	LAP SPLICE LENGTH				MINIMUM TENSION EMBEDMENT			
	SLAB AND WALL	BEAM	OTHER BARS	TOP BARS	STD 90° HOOK	STD 180° HOOK	OTHER BARS	TOP BARS
#3	12"	13"	12"	13"	6"	5"	6"	3"
#4	14"	18"	17"	22"	6"	6"	6"	3"
#5	17"	22"	25"	32"	8"	8"	8"	3"
#6	20"	26"	34"	44"	9"	9"	9"	3"
#7	33"	43"	49"	63"	11"	11"	11"	4"
#8	42"	54"	56"	72"	12"	12"	12"	4"
#9	53"	69"	63"	81"	14"	14"	14"	5"
#10	67"	87"	71"	92"	16"	16"	16"	6"
#11	78"	102"	78"	102"	17"	17"	17"	6"



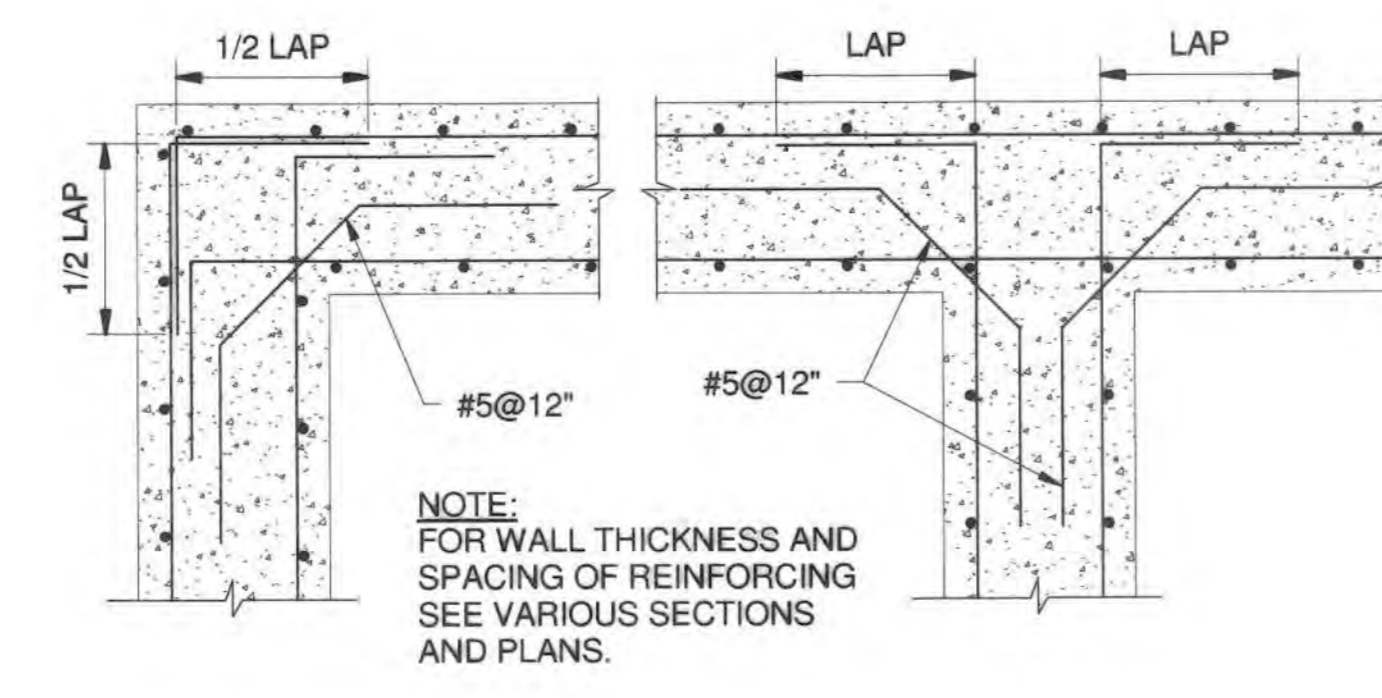
STANDARD 180° END HOOK **STANDARD 90° END HOOK**

STANDARD HOOK ASSUMPTIONS:
SIDE COVER SHALL NOT BE LESS THAN 1 1/2".
END COVER ON 90 DEGREE HOOK SHALL NOT BE LESS THAN 2".

LAP SPLICE ASSUMPTIONS:
CONCRETE: 5,000 PSI COMPRESSIVE STRENGTH (NORMAL WEIGHT CONCRETE).
SLAB & WALL: 4" MINIMUM REBAR SPACING WITH CONCRETE COVER = 2" CLEAR.
BEAM: MINIMUM CLEAR SPACING BETWEEN BARS = 1 1/2".
MINIMUM CONCRETE COVER = 3".
MINIMUM STIRRUP #4@12" OC PROVIDED.
TOP BAR: TOP BAR FOR SLAB AND BEAM SHALL BE DEFINED AS REINFORCEMENT SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST BELOW THE SPLICE.

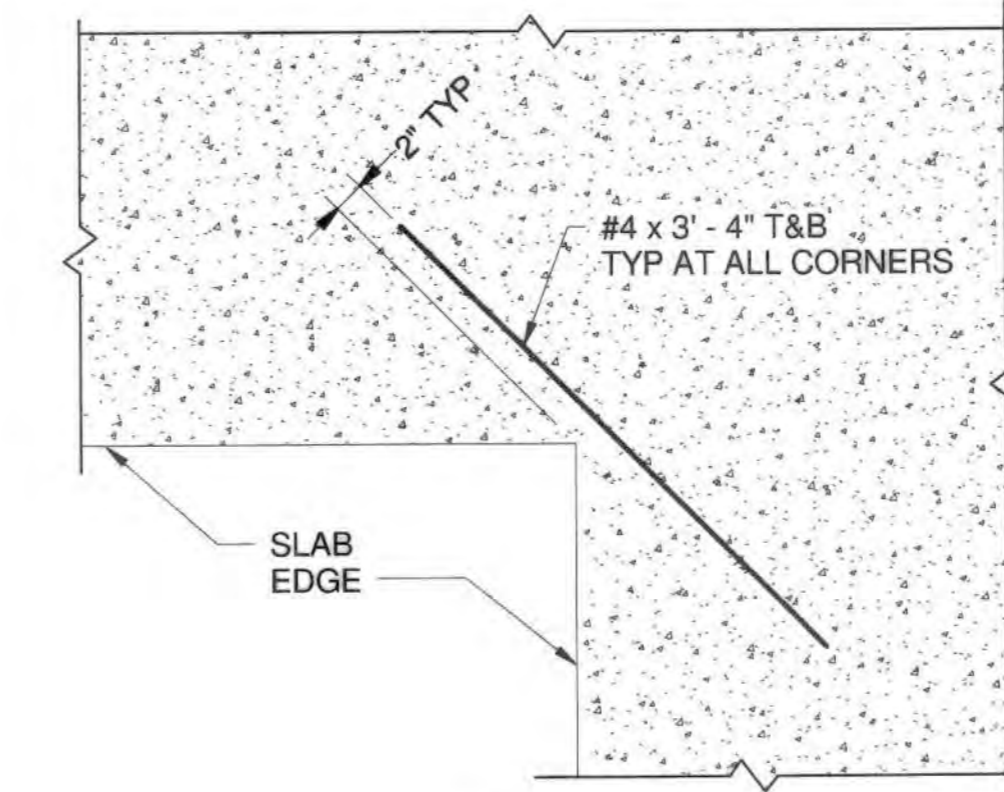


4 WALL TO SLAB CONSTRUCTION JOINT
SCALE: 1" = 1'-0"



PLAN VIEW

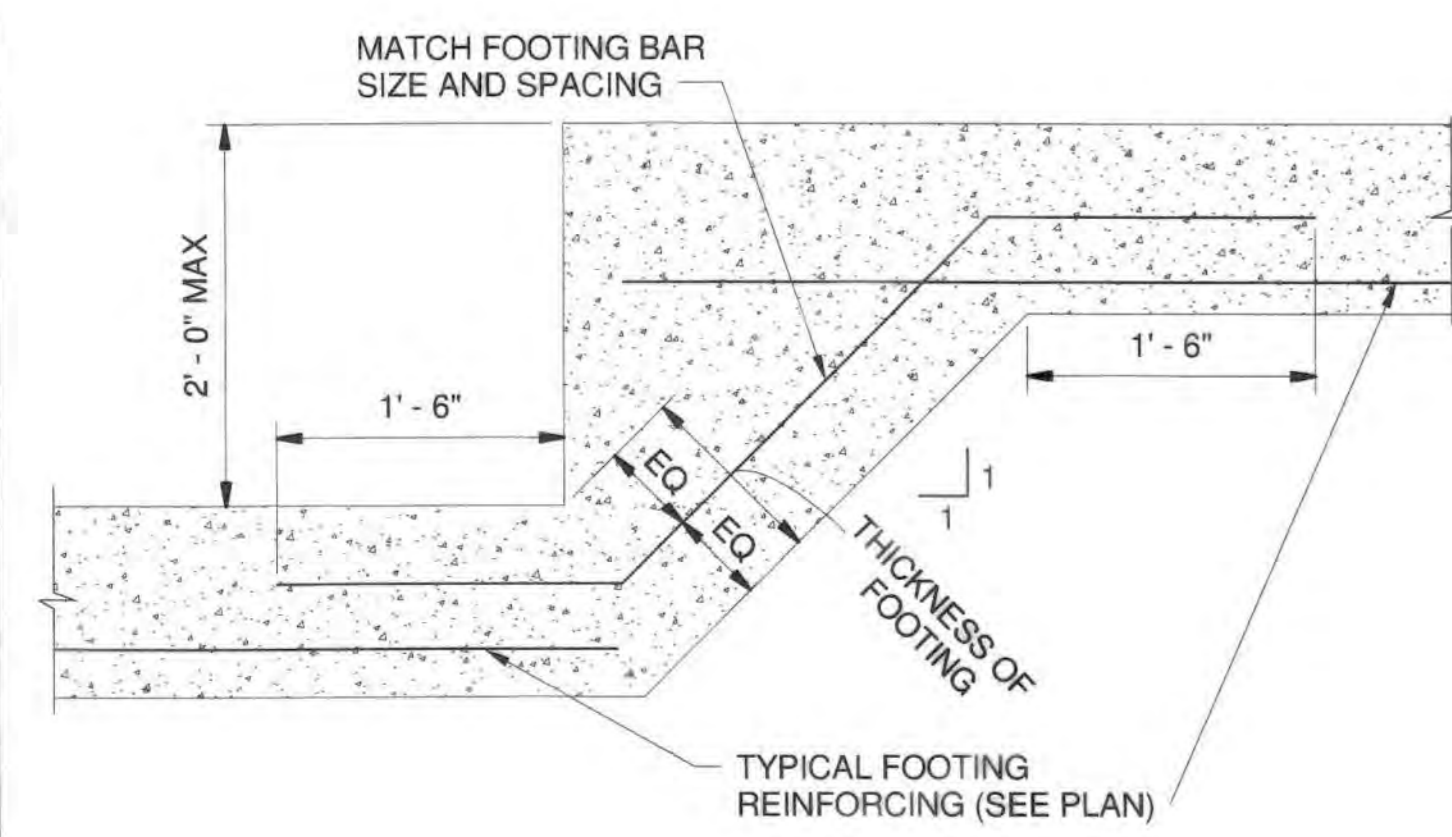
5 REINFORCING AT INTERSECTIONS
SCALE: 1" = 1'-0"



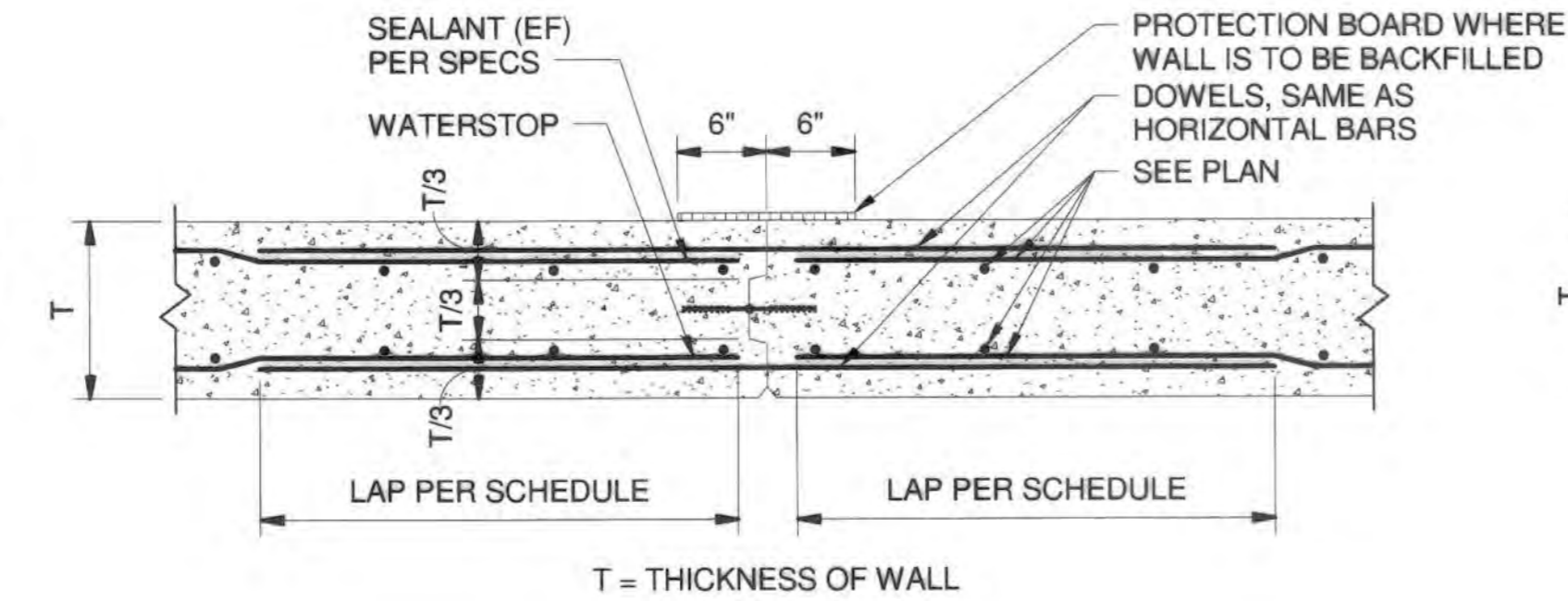
PLAN VIEW

6 ADDITIONAL REINFORCEMENT AT CORNERS
SCALE: 1" = 1'-0"

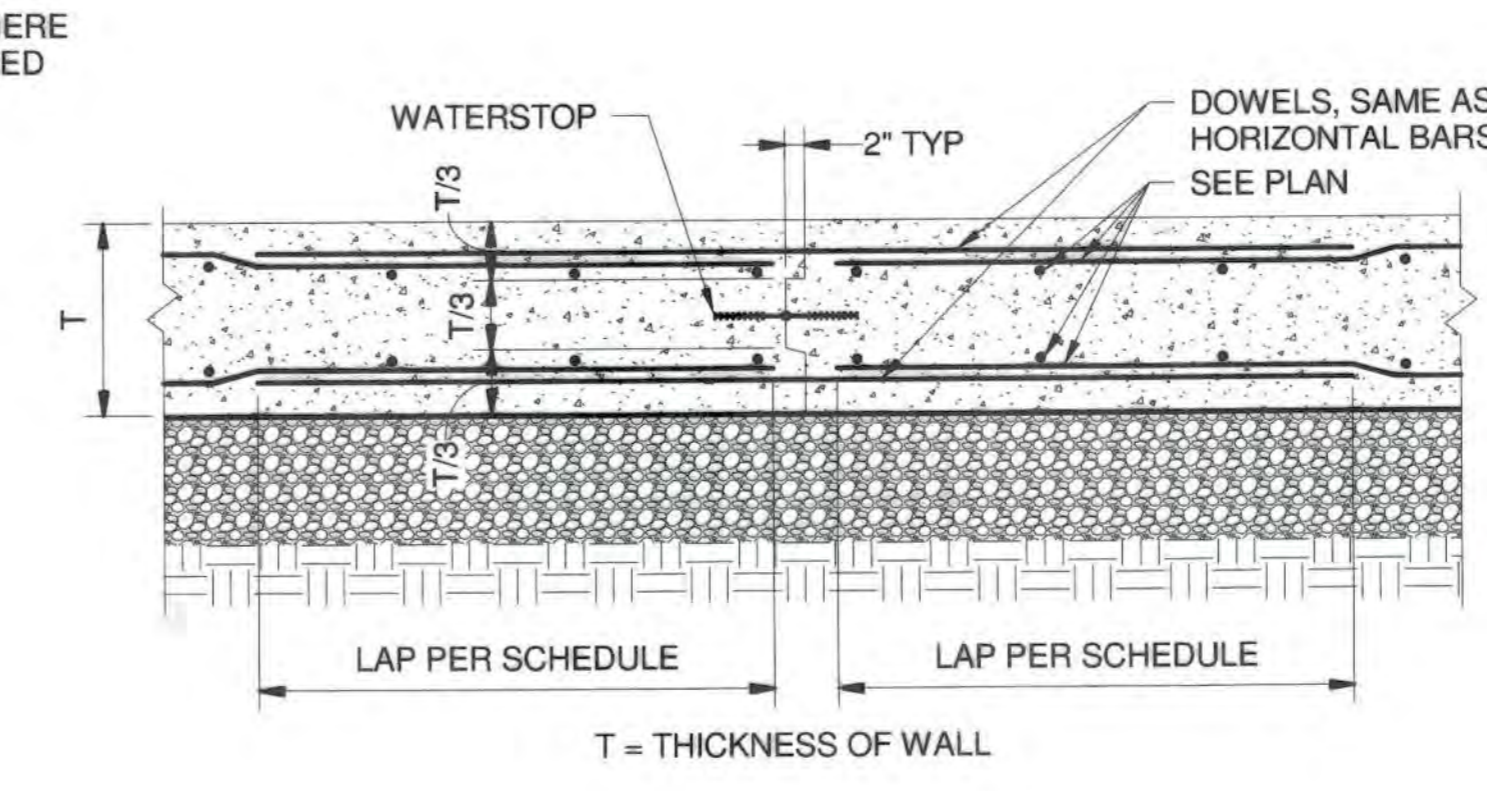
7 REINFORCEMENT LAP SPLICE AND STANDARD HOOK LENGTHS
SCALE: 1" = 1'-0"



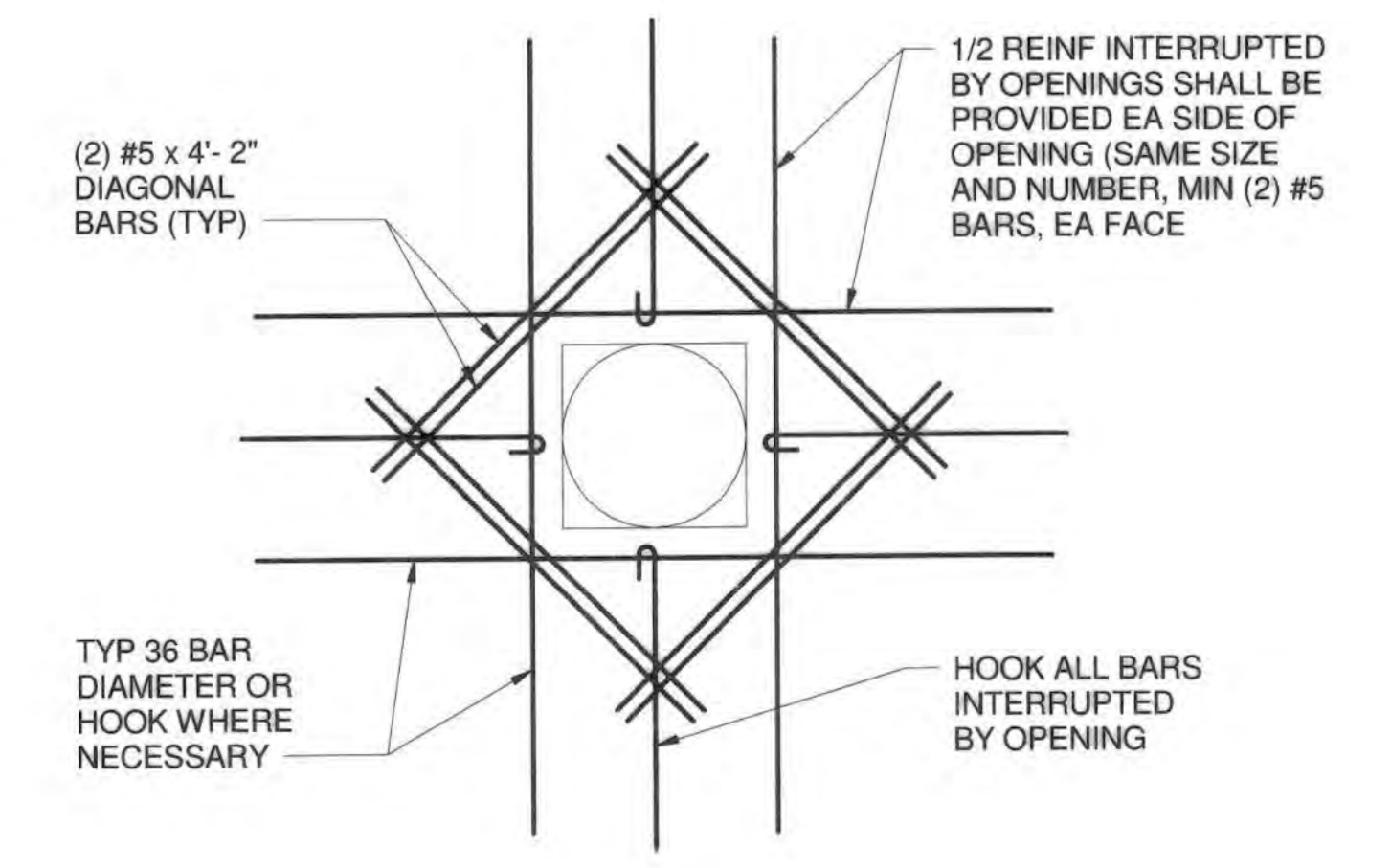
8 STEP FOOTING
SCALE: 1" = 1'-0"



9 WALL CONSTRUCTION JOINT
SCALE: 1" = 1'-0"



10 BASE SLAB CONSTRUCTION JOINT
SCALE: 1" = 1'-0"



11 SLAB AND WALL OPENING REINFORCEMENT
SCALE: 1" = 1'-0"

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ALBRECHT ENGINEERING INC

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: Jay. San 12/20/18
Chief, Bureau of Utilities: [Signature] 12/20/18

Chief, Bureau of Engineering: Thomas F. Switzer 12/20/18
Chief, Utility Design Division: [Signature] 12/20/18

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. 28393, Expiration Date 8-25-2020

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DES: JWGRCC
DRN: ANM
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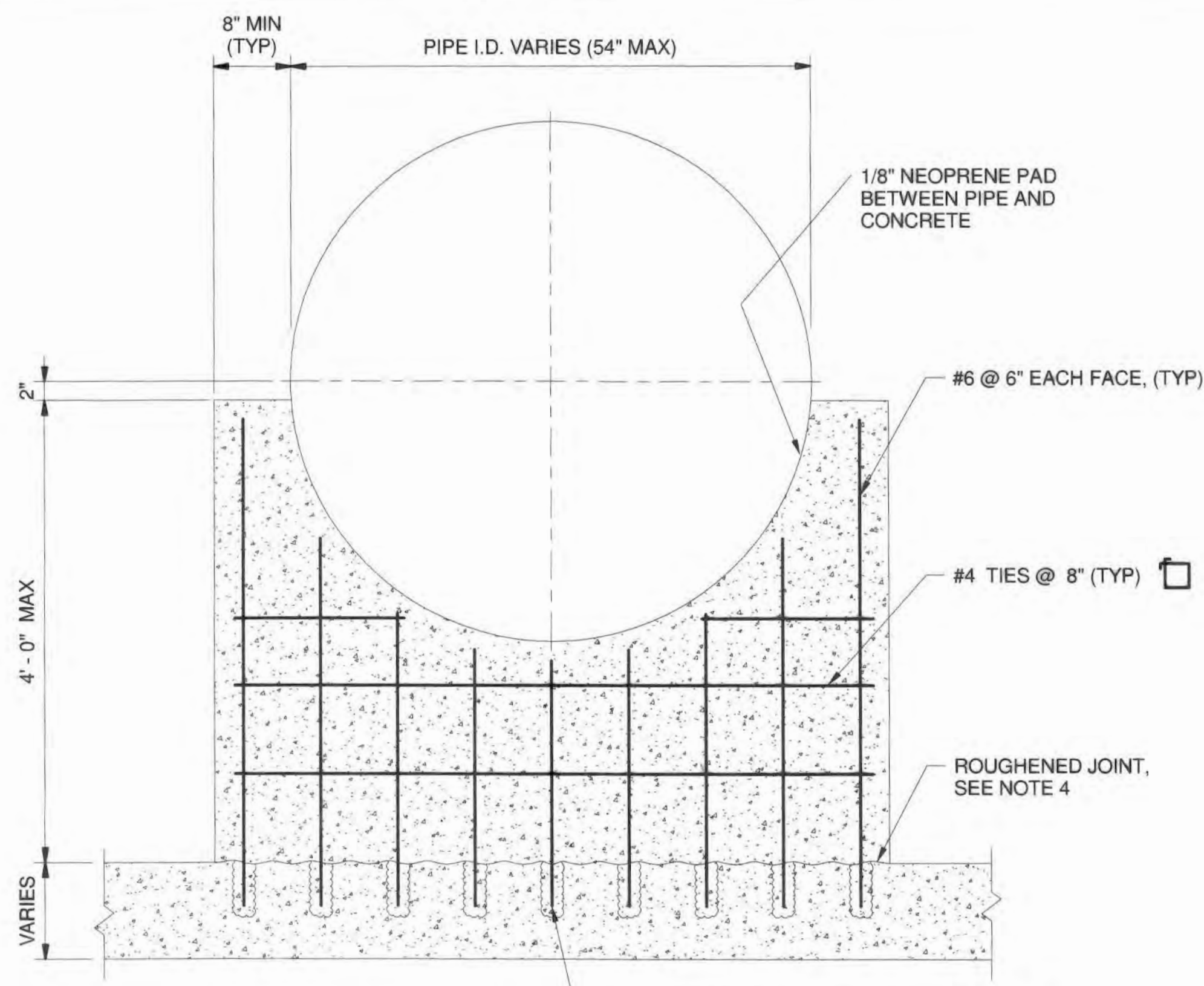
TYPICAL DETAILS

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

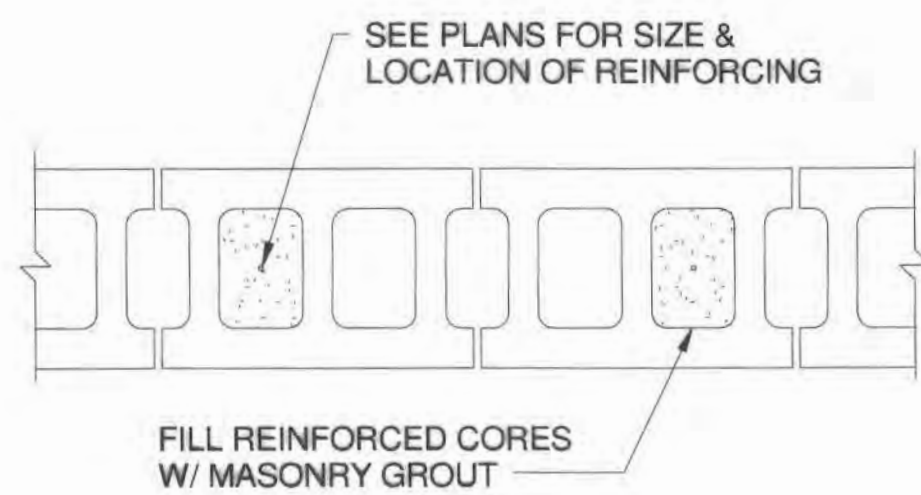
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

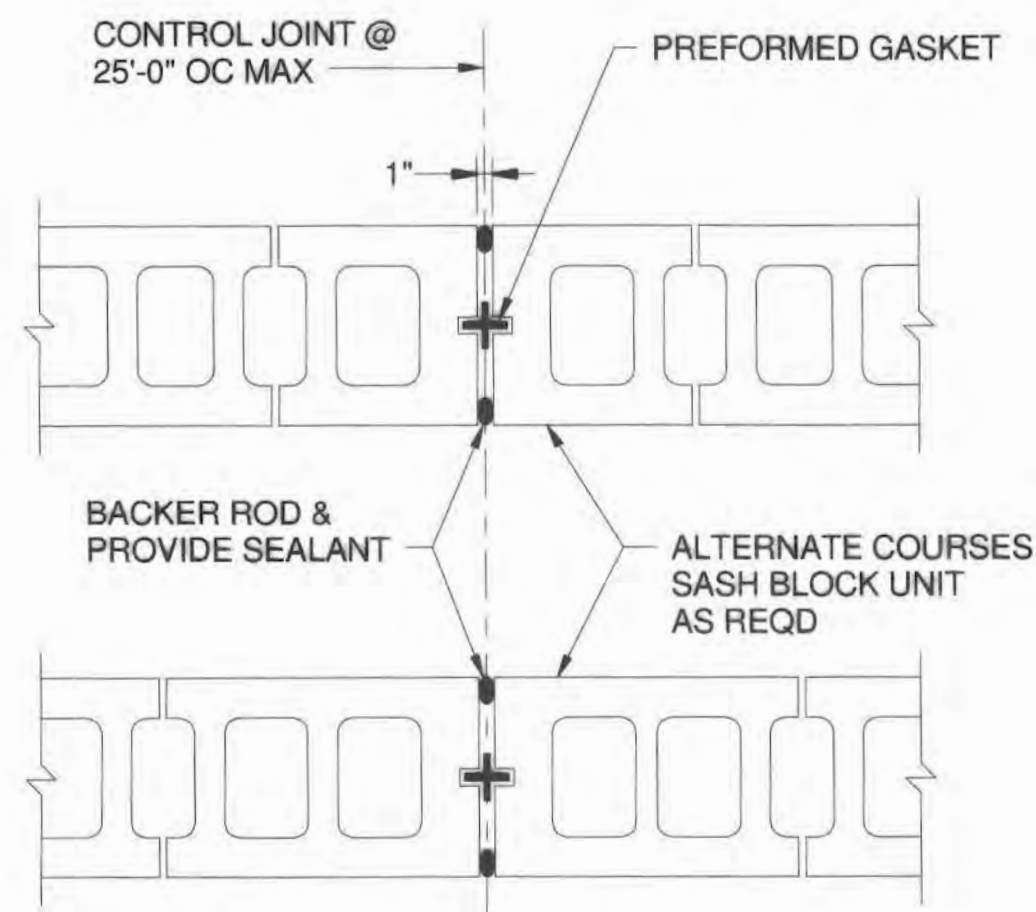
DRAWING S1-501
SCALE AS SHOWN
SHEET
38 OF 81



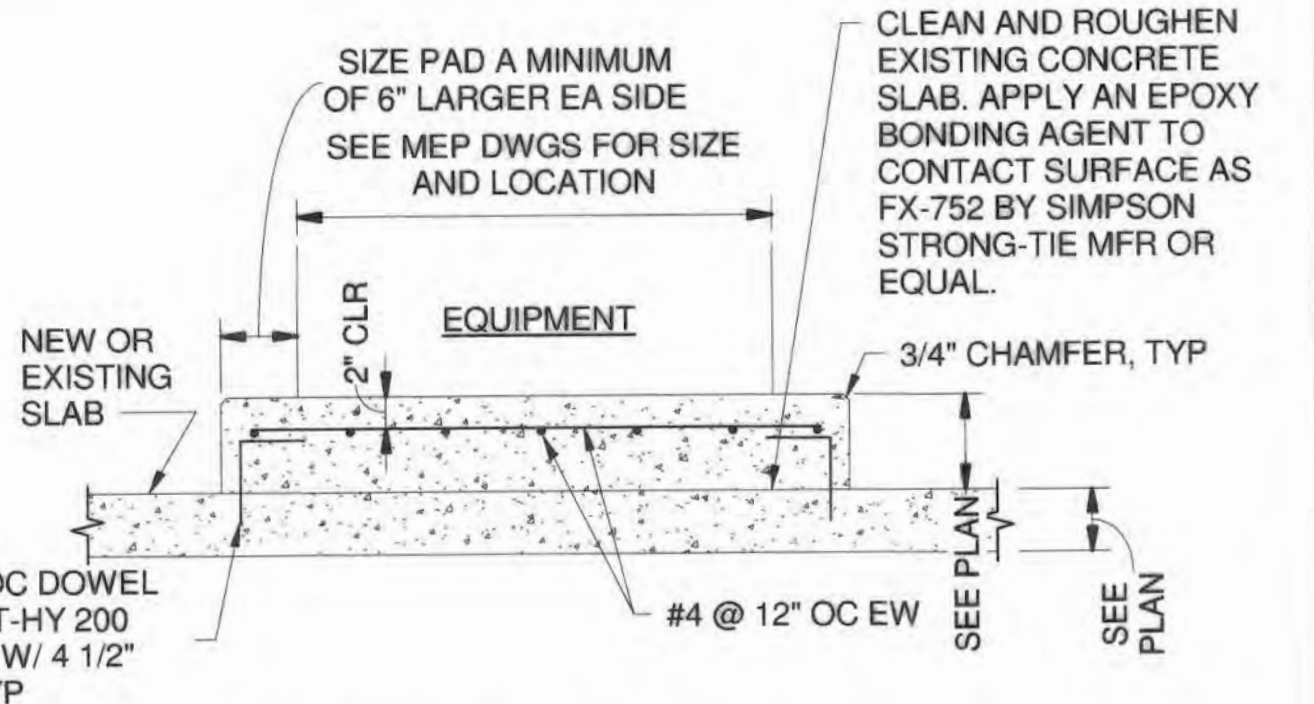
NOTES:
 1. PIPE SUPPORT IS 12" WIDE.
 2. THE PIPE SUPPORT SPACING SHALL BE PER CONTRACTOR'S PIPE SUPPORT DESIGN.
 3. PIPE STRAP SHALL NOT INTERFERE WITH VALVE OPERATION.
 4. SURFACE OF EXISTING CONCRETE SHALL BE ROUGHENED TO A FULL AMPLITUDE OF 1/4" AND SCRUBBED WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PROVIDE A ROUGHENED SURFACE FOR BONDING NEW CONCRETE TO EXISTING CONCRETE. APPLY BONDING COMPOUND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. EPOXY BONDING AGENT SHALL BE "SIKADUR 32, HI MOD" OR APPROVED EQUAL.



2 MASONRY WALL REINFORCEMENT
 SCALE: 1" = 1'-0"

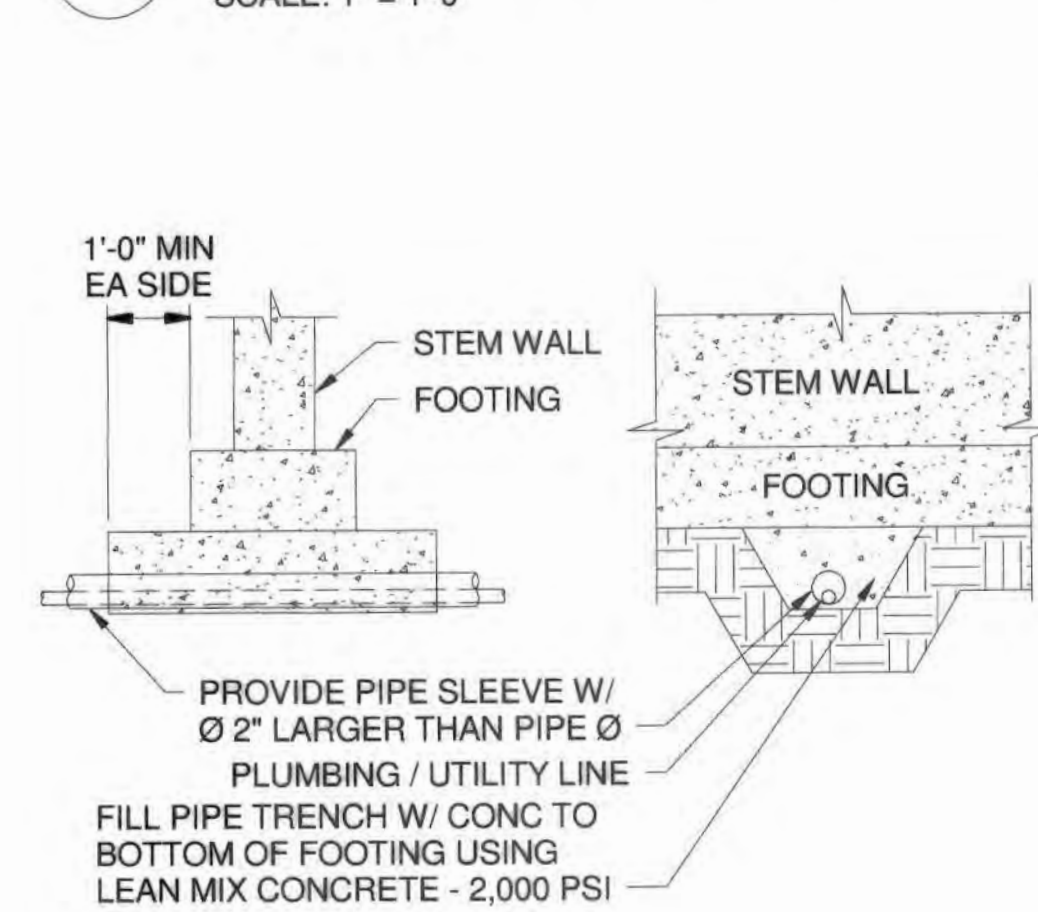


3 EXTERIOR EQUIPMENT PAD SUPPORT
 SCALE: 1" = 1'-0"

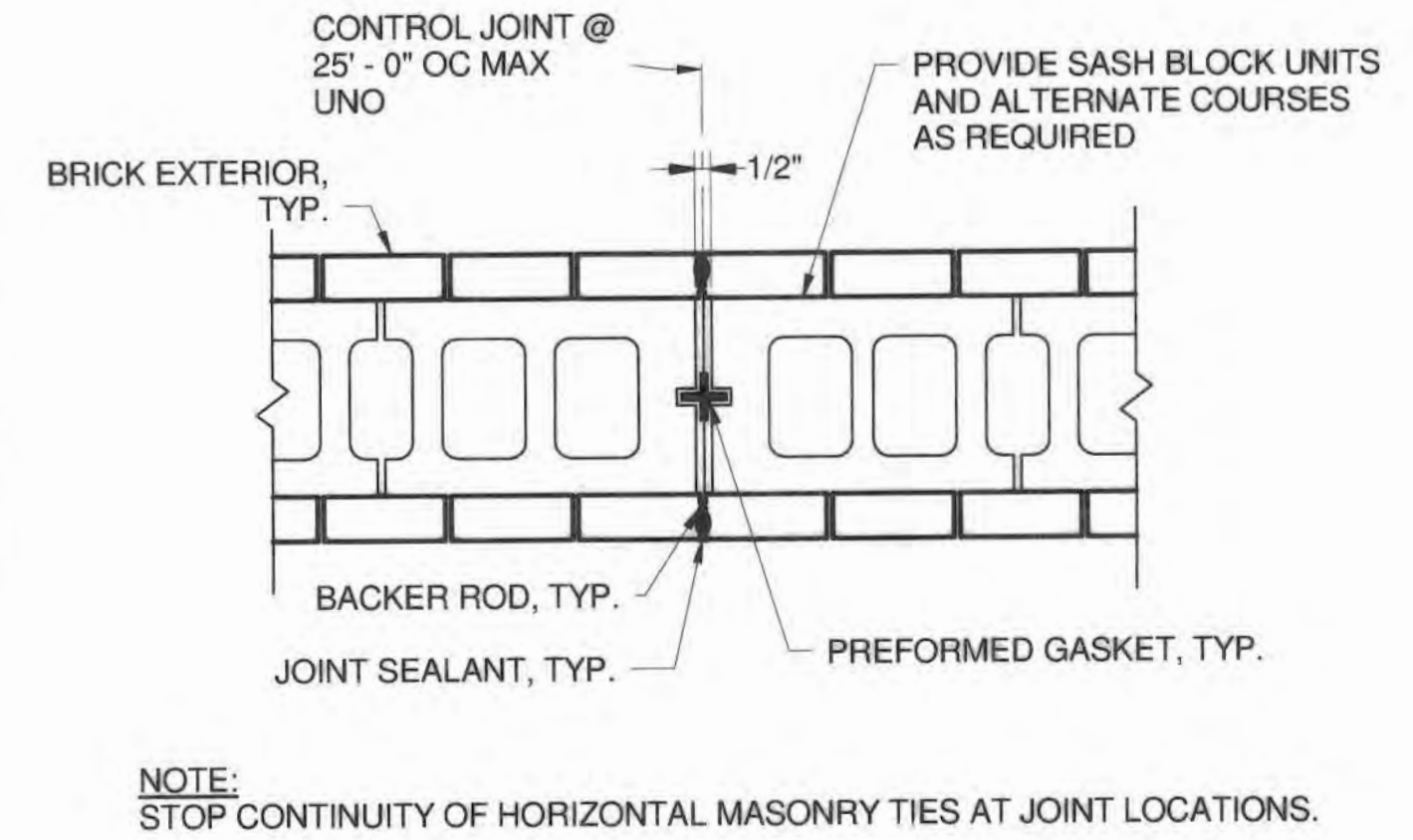


4 TYP EQUIPMENT PAD SUPPORT
 SCALE: 1" = 1'-0"

NOTE: REFER TO ARCH DRAWINGS FOR CONTROL JOINT LOCATIONS

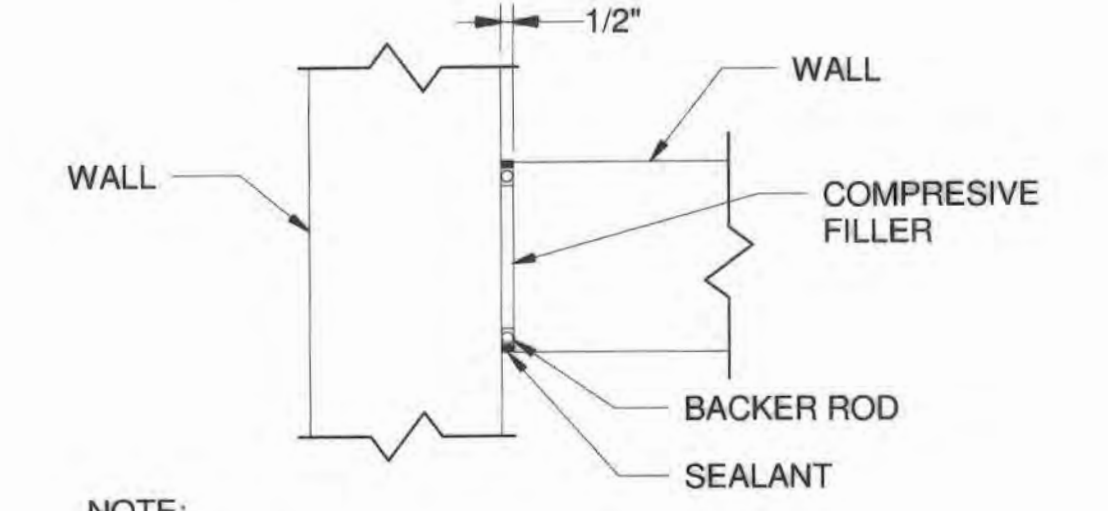


5 CONTROL JOINTS IN CMU MASONRY WALLS
 SCALE: 1" = 1'-0"



6 UTILITY PIPE UNDER FOOTING
 SCALE: 1" = 1'-0"

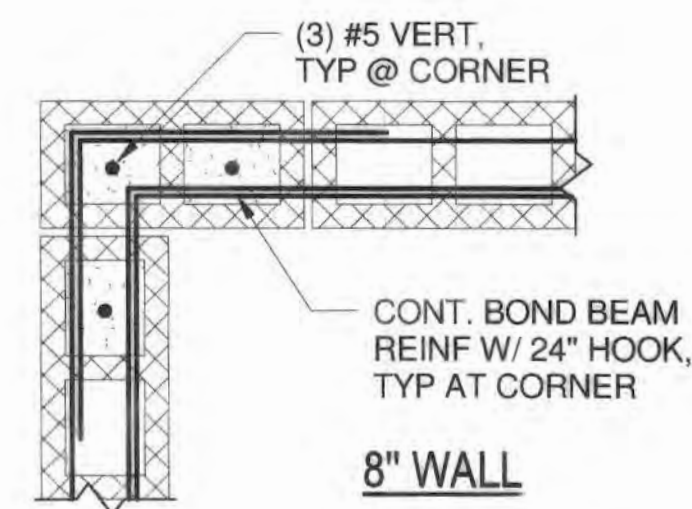
7 CONTROL JOINTS IN SCREEN WALLS - PLAN VIEW
 SCALE: 1" = 1'-0"



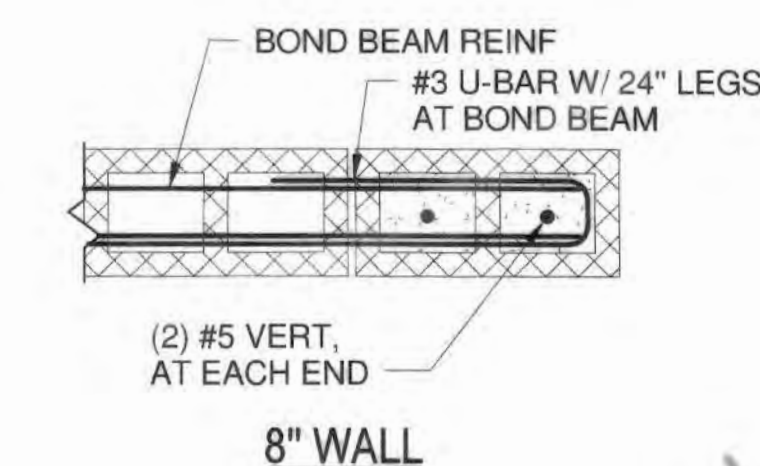
NOTE: PROVIDE INTERSECT ANCHOR WALLS AT 48" MAX VERTICALLY.

12 ISOLATION JOINT - PLAN VIEW
 SCALE: 1 1/2" = 1'-0"

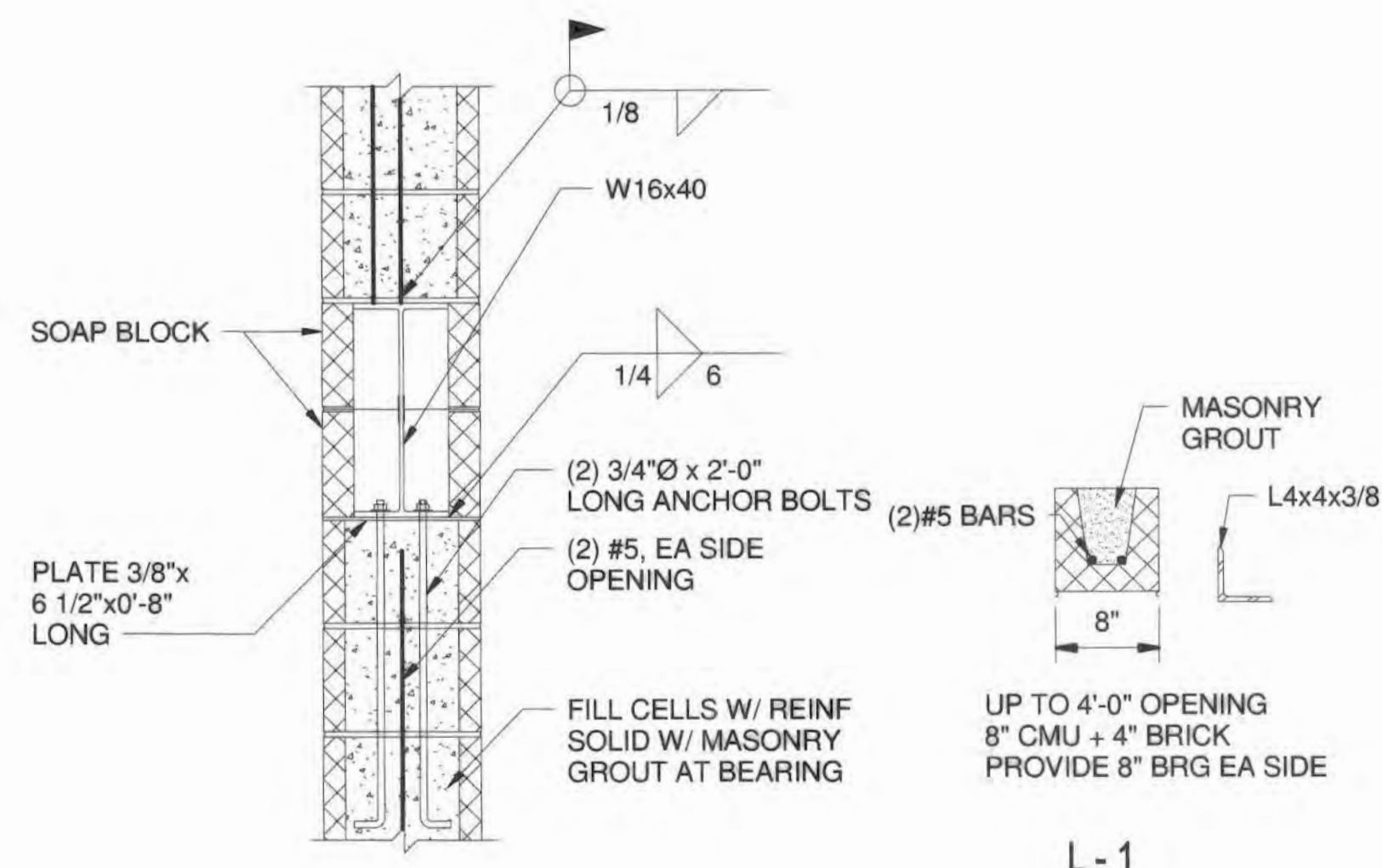
1 CONCRETE PIPE SADDLE SUPPORT
 SCALE: 1" = 1'-0"



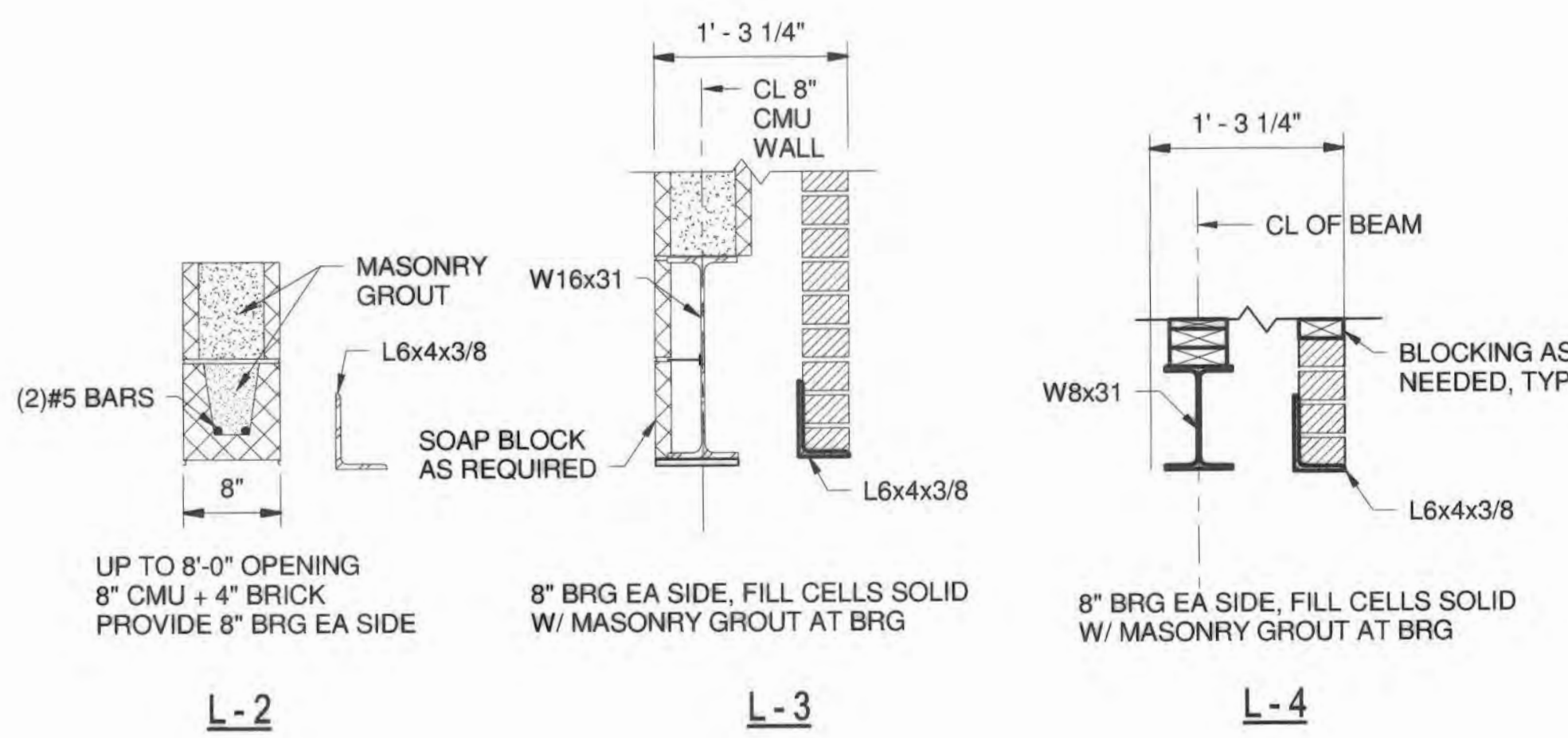
8 REINFORCING AT CORNER
 SCALE: 1" = 1'-0"



9 REINFORCING AT JAMBS AND WALL ENDS
 SCALE: 1" = 1'-0"



10 W16 BEARING ON CMU WALL
 SCALE: 1" = 1'-0"



11 LINTELS
 SCALE: 1" = 1'-0"

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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 12-26-18
 Chief, Bureau of Engineering: [Signature] DATE: []
 Chief, Bureau of Utilities: [Signature] DATE: []
 Chief, Utility Design Division: [Signature] DATE: []

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS

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DES:	JWG/RCC
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CHK:	RLA
DATE:	DEC 2018
BY:	NO.
REVISION:	
DATE:	600' SCALE MAP NO.: 35
	BLOCK NO.: 17, 11

TYPICAL DETAILS

CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

DRAWING: S1-502
 SCALE: AS SHOWN
 SHEET: 39 OF 81

GENERAL ABBREVIATIONS

ADDL	ADDITIONAL	LP	LOW POINT
AFF	ABOVE FINISHED FLOOR	LWL	LOW WATER LEVEL
ALT	ALTERNATE	MAX	MAXIMUM
ARV	AIR RELEASE VALVE	MFR	MANUFACTURER
BF	BLIND FLANGE	MG	MILLION GALLONS
BFV	BUTTERFLY VALVE	MGD	MILLION GALLONS PER DAY
BLDG	BUILDING	MIN	MINIMUM
BV	BALL VALVE	MJ	MECHANICAL JOINT
CI	CAST IRON	NAVD88	NORTH AMERICAN VERTICAL DATUM 1988
CL	CENTERLINE	NC	NORMALLY CLOSED
CLR	CLEAR/CLEARANCE	NGVD29	NATIONAL GEODETIC VERTICAL DATUM 1929
CONC	CONCRETE	NPT	NATIONAL PIPE THREAD
CONT	CONTINUOUS	OC	ON CENTER
D	DEEP/DEPTH	PE	PLAIN END
DIA	DIAMETER	PPD	POUNDS PER DAY
DIP	DUCTILE IRON PIPE	PRV	PRESSURE REDUCING VALVE
DWG	DRAWING	PS	PUMPING STATION
ECC	ECCENTRIC	PSI	POUNDS PER SQUARE INCH
EFF	EFFLUENT	PVC	POLYVINYL CHLORIDE
EJ	EXPANSION JOINT	PV	PLUG VALVE
EL OR ELEV	ELEVATION	R	RADIUS
ELL	ELBOW	RCP	REINFORCED CONC. PIPE
EQ	EQUALIZATION	REINF	REINFORCEMENT
EW	EACH WAY	REQ	REQUIRED
EX	EXISTING	RGC	RIGID GROOVED COUPLING
FCA	FLANGE COUPLING ADAPTOR	RGP	RIGID GROOVED PIPE
FCV	FLOW CONTROL VALVE	RPM	REVOLUTIONS PER MINUTE
FF	FINISHED FLOOR	SCH	SCHEDULE
FLG	FLANGE	SIM	SIMILAR
FLR	FLOOR	SSMH	SANITARY SEWER MANHOLE
FM	FORCE MAIN	SS	STAINLESS STEEL
FPM	FEET PER MINUTE	STL	STEEL
FRP	FIBERGLASS REINFORCED PLASTIC	SYM	SYMMETRICAL
GALV	GALVANIZED	TDH	TOTAL DYNAMIC HEAD
GPM	GALLONS PER MINUTE	TSS	TOTAL SUSPENDED SOLIDS
GWRV	GROUNDWATER RELIEF VALVE	TYP	TYPICAL
H	HIGH/HEIGHT	VERT	VERTICAL
HORIZ	HORIZONTAL	W	WIDE/WIDTH/WATER
HP	HIGH POINT OR HORSEPOWER	W/	WITH
HWL	HIGH WATER LEVEL	WFP	WATER FILTRATION PLANT
ID	INSIDE DIAMETER	WL	WATER LEVEL
IMC	INTERNATIONAL MECHANICAL CODE	WS	WATERSTOP
INV	INVERT		
JB	JUNCTION BOX		
JC	JUNCTION CHAMBER		
L	LONG/LENGTH		
LF	LINEAR FEET		

PROCESS EQUIPMENT ABBREVIATIONS

BP-x	BOOSTER PUMP
DMSC	DRUM SCALE
MP-x	METERING PUMP

FLOWSTREAM ABBREVIATIONS

D	DRAIN
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
NAOCL	SODIUM HYPOCHLORITE
PW	POTABLE WATER
S	SANITARY DRAIN OR SEWER

HVAC ABBREVIATIONS

AHU	AIR HANDLING UNIT
B	BELT DRIVE
BDD	BACKDRAFT DAMPER
BTUH	BRITISH THERMAL UNITS PER HOUR
C	CELSIUS
CB	CENTRIFUGAL BLOWER
CE	CEILING EXHAUST
CFM	CUBIC FEET PER MINUTE
CWE	CENTRIFUGAL WALL EXHAUST
D	DIRECT DRIVE
EA	EXHAUST AIR
EAG	EXHAUST AIR GRILLE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EWB	ENTERING WET BULB TEMPERATURE
F	FAHRENHEIT
FPM	FEET PER MINUTE
FRG	FILTERED RETURN GRILLE
GD	GRAVITY DAMPER
I	INLINE
IA	INLINE AXIAL
IC	INLINE CENTRIFUGAL
KW	KILOWATT
LDB	LEAVING DRY BULB TEMPERATURE
LWB	LEAVING WET BULB TEMPERATURE
MBH	THOUSANDS OF BRITISH THERMAL UNITS PER HOUR
MOD P	MOTOR OPERATED DAMPER
RA	RETURN AIR
RAD	RETURN AIR DIFFUSER
RE	ROOF EXHAUST
RAG	RETURN AIR GRILLE
SA	SUPPLY AIR
SAD	SUPPLY AIR DIFFUSER
SAG	SUPPLY AIR GRILLE
SF	SUPPLY FAN

PLUMBING ABBREVIATIONS

BFP	BACKFLOW PREVENTER
CO	CLEAN OUT
CW	COLD WATER
D	DRAIN
ES	EMERGENCY SHOWER
EW	EMERGENCY EYEWASH
EW/ES	EMERGENCY EYEWASH & SHOWER
FD	FLOOR DRAIN
FCO	FLOOR CLEAN OUT
GW	GRAY WATER
HB	HOSE BIBB
HD	HUB DRAIN
HR	HOSE RACK
HRL	HOSE REEL
HV	HOSE VALVE
HW	HOT WATER
NFWH	NON FREEZE WALL HYDRANT
RD	ROOF DRAIN
S	SANITARY DRAIN
SP	SUMP PUMP
SPD	SUMP PUMP DISCHARGE
TD	TRENCH DRAIN
TW	TEMPERED WATER
V	VENT
VTR	VENT THROUGH ROOF

GENERAL MECHANICAL NOTES

- THE FOLLOWING NOTES APPLY TO ALL MECHANICAL DRAWINGS.
- COORDINATE ALL SHUTDOWNS AND SEQUENCING WITH THE OWNER. OWNER WILL MAINTAIN AND OPERATE EXISTING EQUIPMENT.
- CONTRACTOR SHALL NOT OPERATE EXISTING VALVES OR EQUIPMENT, UNLESS OTHERWISE NOTED, ITEMS ARE NEW UNLESS CALLED OUT AS EXISTING.
- COORDINATE ALL WORK TO AVOID EQUIPMENT CLEARANCE ISSUES.
- CHECK ALL DIMENSIONS OF EXISTING CONSTRUCTION WHICH AFFECT NEW WORK.
- STRUCTURE ELEVATIONS PROVIDED FOR CLARITY. SEE STRUCTURAL AND ARCHITECTURAL DRAWINGS FOR FF ELEVATIONS AND FLOOR SLOPE.
- COORDINATE HATCH LOCATIONS, GRATING AND CLEAR OPENINGS TO SUIT EQUIPMENT REMOVAL.
- COORDINATE ALL PENETRATIONS WITH OTHER DISCIPLINES. ALL PENETRATIONS SHALL BE WATERTIGHT.
- UNLESS OTHERWISE NOTED, WALL PIPE AND SLEEVES SHALL HAVE A WATERSTOP COLLAR POSITIONED IN THE CENTER OF THE WALL OR FLOOR. SEE TYPICAL DETAILS FOR CONFIGURATION. WALL PIPES AND SLEEVES SHALL BE INSTALLED AND PROPERLY SECURED PRIOR TO CONCRETE PLACEMENT.
- PIPING 3 INCH AND SMALLER HAS BEEN SCHEMATICALLY SHOWN ON PLAN AND SECTION DRAWINGS. PROVIDE PIPE ROUTING AND ALL APPURTENANCES IN ACCORDANCE WITH RESPECTIVE SCHEMATICS. PROVIDE ALL NECESSARY FITTINGS TO MAKE CONNECTIONS. UNIONS, BUSHINGS AND/OR REDUCING INSERTS, ETC NOT SHOWN ON DRAWING BUT REQUIRED FOR INSTALLATIONS SHALL BE PROVIDED.
- SCHEMATIC DRAWINGS SHOW PROCESS CONNECTIONS AND NOT SPATIAL ORIENTATION.
- THE SIZES OF THE PIPE CONNECTIONS AT EQUIPMENT ARE SHOWN TO DEMONSTRATE INTENT. SIZES MAY VARY FROM WHAT IS SHOWN. COORDINATE THE SIZE OF CONNECTIONS TO ALL APPROVED EQUIPMENT.
- SIZE OF FITTINGS SHOWN SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED.
- PROVIDE PROCESS PIPING DRAINS WHERE INDICATED AND AT THE FOLLOWING: LOW POINTS; FLOW METERS AND AT PUMPS. PUMP DRAINS SHALL BE BETWEEN THE SUCTION AND DISCHARGE ISOLATION VALVES. CENTRIFUGAL PUMPS SHALL DRAIN ON SUCTION SIDE.
- UNLESS OTHERWISE NOTED, ECCENTRIC REDUCERS SHALL BE INSTALLED FLAT SIDE ON TOP.
- FLEXIBLE COUPLINGS AND FLANGE ADAPTORS SHALL HAVE TIE RODS AS SHOWN IN COUNTY DETAIL G8.41.
- VERIFY VALVE OPERATOR ORIENTATION WITH ENGINEER.
- VALVES ARE NORMALLY OPEN (N.O.) UNLESS OTHERWISE NOTED AS NORMALLY CLOSED (N.C.).
- COORDINATE THE LOCATION OF VALVE SUPPORTS SO THAT ACCESS TO VALVE BEARINGS IS NOT RESTRICTED.
- VALVES WITH CENTERLINES HIGHER THAN 5 FEET ABOVE FLOOR OR WALKWAY SHALL HAVE CHAINWHEEL OPERATORS.
- UNLESS OTHERWISE NOTED, ALL EQUIPMENT SHALL BE PROVIDED WITH A MINIMUM 4 INCH HIGH CONCRETE HOUSEKEEPING PAD SIZED TO SUIT EQUIPMENT.
- SUPPORTS AND HANGERS ARE ONLY SHOWN WHERE SPECIFIC TYPES OR LOCATIONS ARE REQUIRED. ADDITIONAL SUPPORTS AND HANGERS SHALL BE REQUIRED AS SPECIFIED.
- METAL FABRICATIONS WITH BURRS, SHARP EDGES OR POSE A HAZARD SHALL BE MADE DULL/BLUNT OR SHALL BE PROVIDED WITH AN APPROPRIATE COVERING THAT SHALL MITIGATE AND DRAW ATTENTION TO HAZARD.
- ALL DUCTS, AIR HANDLERS, FANS AND FILTER BOXES SHALL BE SEALED IN ACCORDANCE WITH SECTION 603.9 OF THE IMC.
- DUCTWORK SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS.
- PROVIDE FLEXIBLE CONNECTIONS BETWEEN EQUIPMENT AND DUCTWORK.
- DUCTWORK SIZES SHOWN ARE MINIMUM INSIDE FREE OPENING SIZES. UNLESS OTHERWISE NOTED, ALL PLUMBING WORK SHALL CONFORM TO THE IPC, LATEST EDITION.
- UNLESS OTHERWISE NOTED, MINIMUM SLOPE FOR DRAINS SHALL BE 1/4 INCH PER LINEAR FOOT.
- COORDINATE THE LOCATION OF VALVES, WATER HAMMER ARRESTORS AND TRAP PRIMERS SO THEY ARE ACCESSIBLE.
- TRAP PRIMERS SHALL BE REQUIRED FOR ALL FLOOR AND TRENCH DRAIN TRAPS. TRAP PRIMER VALVES AND PIPING LOCATIONS ARE NOT SHOWN. FIELD ROUTE PIPING DURING INSTALLATION OF DRAINS AND PRIOR TO CONCRETE PLACEMENT. LOCATE TRAP PRIMER VALVES IN ACCESSIBLE LOCATIONS.
- COMPLY WITH CODE OF MARYLAND (COMAR) LEAD FREE REQUIREMENTS SHOWN ON DRAWING G-001.
- CLEAR PVC CONTAINMENT PIPING SHALL NOT BE PAINTED.

PROCESS PIPING SYMBOLS

	DOUBLE LINE	SINGLE LINE
WELDED PIPING		
FLANGED PIPING (4" & LARGER)		
MECHANICAL JOINT PIPING (4" & LARGER)		
RIGID GROOVED PIPING (4" & LARGER)		
THREADED PIPING		
ELBOW UP		
ELBOW DOWN		
TEE UP		
TEE DOWN		
LATERAL UP		
LATERAL DOWN		
CONCENTRIC REDUCER		
ECCENTRIC REDUCER		
UNION		
FLANGED COUPLING ADAPTOR		
FLEXIBLE COUPLING		
METAL BELLOWS EXP JOINT		
ELASTOMER BELLOWS EXP JOINT		
PIPE CAP OR BLIND FLANGE		

VALVE SYMBOLS

	SIDE VIEW	TOP VIEW	SINGLE LINE
BALL VALVE			
BUTTERFLY VALVE			
CHECK VALVE			
GATE VALVE			
GLOBE VALVE			

HVAC SYMBOLS

DUCT SIZE- RECTANGULAR (FIRST DIMENSION IS SIDE SHOWN)	
DUCT TRANSITION- FLAT ON BOTTOM	
DUCT TRANSITION- FLAT ON TOP	
DUCT TRANSITION-CIRCULAR TO RECTANGULAR	
FLEXIBLE CONNECTION AT FAN-INLET AND OUTLET	
RETURN AIR DUCT (SIMILAR FOR ROUND)	
EXHAUST AIR DUCT (SIMILAR FOR ROUND)	
SUPPLY AIR DUCT (SIMILAR FOR ROUND)	
SQUARE ELBOW WITH TURNING VANES	
EXHAUST FLOW ARROW	
SUPPLY FLOW ARROW	
MOTOR OPERATED DAMPER	
VOLUME DAMPER	
FIRE DAMPER	
UNIT HEATER	
HEAT TRACE	
THERMOSTAT- AIR CONDITIONING	
FREEZE/STAT	
THERMOSTAT- VENTILATION	
THERMOSTAT- HIGH HEAT	

PLUMBING SYMBOLS

	TOP VIEW	SINGLE LINE
BACKFLOW PREVENTER		
CLEAN OUT		
EMERGENCY EYEWASH & SHOWER		
FLOOR DRAIN		
FLOOR CLEAN OUT		
HOSE BIBB		
HOSE RACK		
HOSE REEL		
HOSE VALVE		
NON FREEZE WALL HYDRANT		

ANNOTATION SYMBOLS

WATER SURFACE ELEVATION	
ONE WAY FLOW DIRECTION	
BOTH WAYS FLOW DIRECTION	
NEW WORK	
EXISTING	
DEMOLITION	
EQUIPMENT TAG	
FLOWSTREAM TAG	
PLUMBING FIXTURE TAG	

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STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 LARS PETERSON
 12/20/18

DES:	MM
DRN:	Author
CHK:	LAP
DATE:	DEC 2018
BY	NO.
REVISION	DATE

PROCESS GENERAL NOTES, ABBREVIATIONS AND LEGEND

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND
 SHEET 40 OF 81

AS-BUILT
 DATE 9/2021

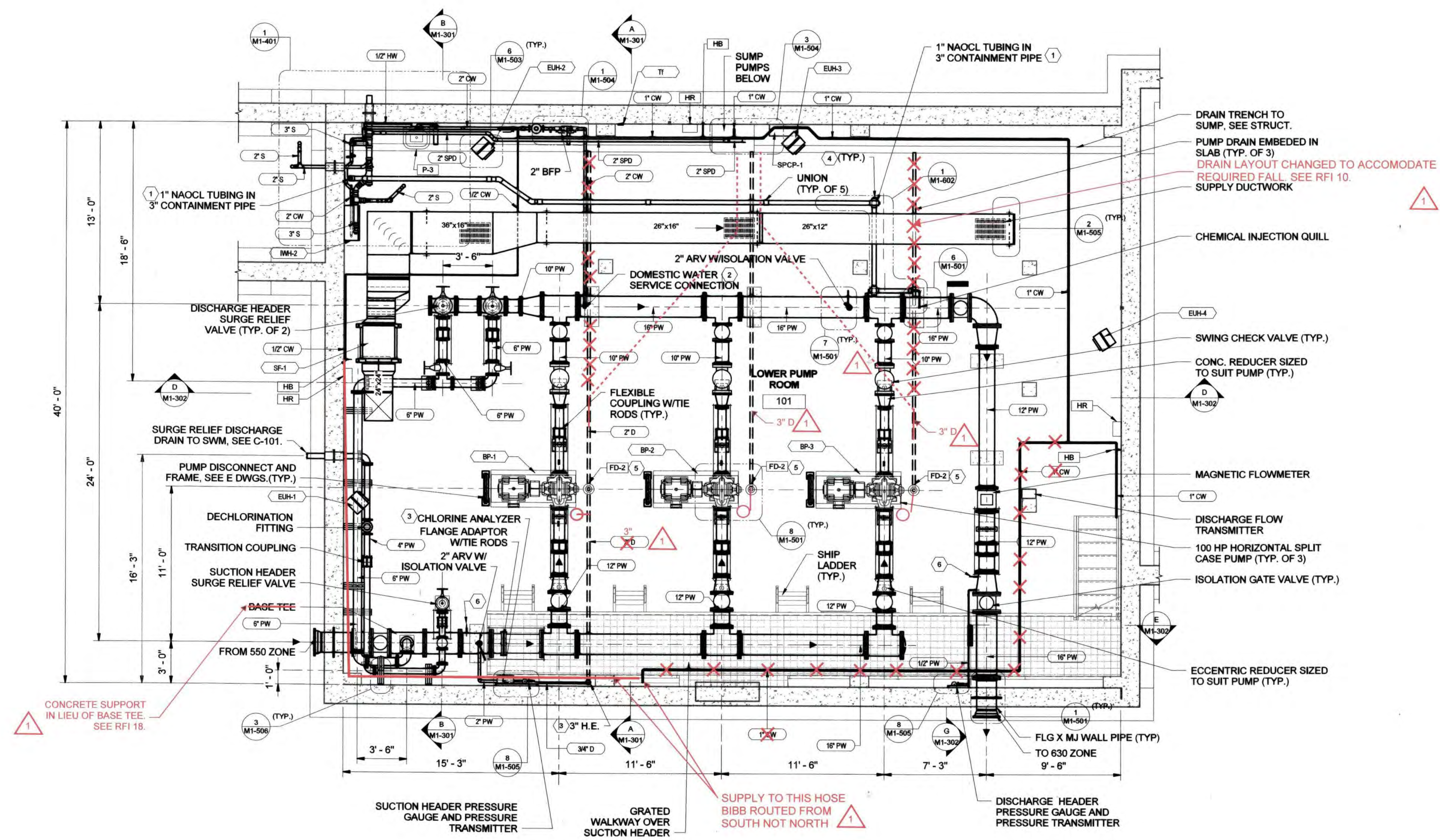
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GENERAL SHEET NOTES

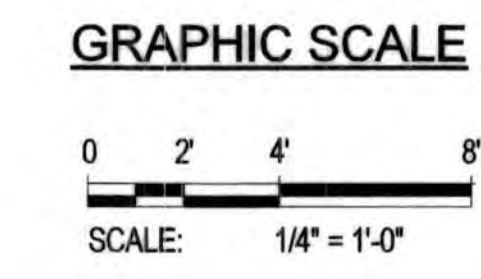
- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.
- SEE DWG. M1-601 FOR PROCESS PRESSURE RANGES AND SETTINGS.

(X) SHEET KEY NOTES

- PVC CONTAINMENT PIPE SHALL BE SCHEDULE 40 CLEAR PVC AND SHALL BE COMPATIBLE WITH NaOCL.
- SEE DOMESTIC WATER SCHEMATIC ON DWG. M1-602.
- ROUTE ANALYZER DRAIN TO 3" H.E. PROVIDE SUITABLE CONNECTORS TO MAKE PIPE CONNECTIONS TO ANALYZER. PROVIDE TEE FITTINGS WITH THREADED PLUGS TO FACILITATE CHEMICAL TUBING MAINTENANCE.
- PROVIDE PVC PIPING TO CONNECT PUMP SEAL WATER FROM PUMP SEALS TO FLOOR DRAIN FOR PROPER SEAL WATER DRAINAGE.
- MDE SAMPLE TAP



1 LOWER LEVEL PLAN
SCALE: 1/4" = 1'-0"



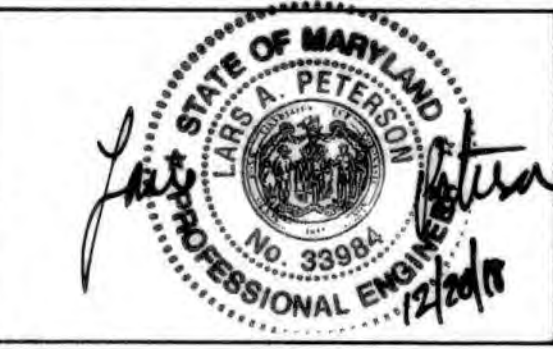
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. C. ...
DIRECTOR OF PUBLIC WORKS
DATE: 12-26-18
CHIEF, BUREAU OF UTILITIES

Ronald ...
CHIEF, BUREAU OF ENGINEERING
DATE: 12/26/18
CHIEF, UTILITY DESIGN DIVISION

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DRN:	JW
CHK:	LP
DATE:	DEC 2018
AG:	1
BY:	NO.
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION LOWER LEVEL

600' SCALE MAP NO.: 35
BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING: **M1-101**
SCALE: AS SHOWN
SHEET: 41 OF 81

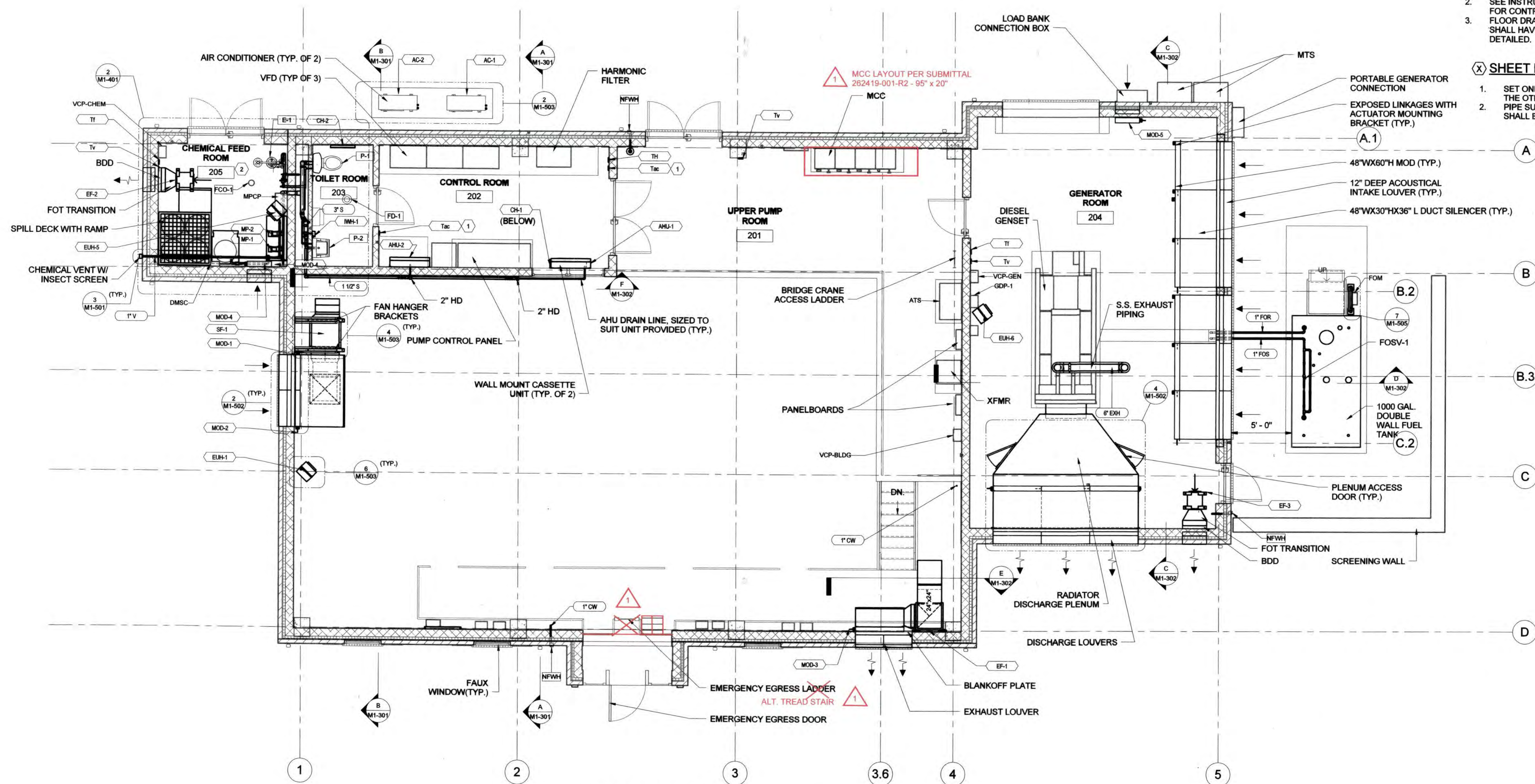
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GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.
- SEE INSTRUMENTATION DRAWINGS FOR CONTROL PANEL DETAILS. FLOOR DRAINS ON THIS LEVEL SHALL HAVE TRAP PRIMERS AS DETAILED.

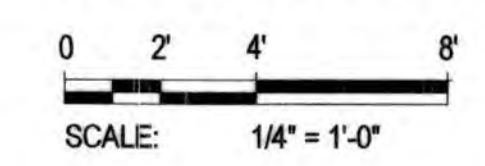
(X) SHEET KEY NOTES

- SET ONE TSTAT TO 75 DEG AND THE OTHER TO 85 DEG.
- PIPE SUPPORTS IN THIS ROOM SHALL BE FRP.



2 FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE

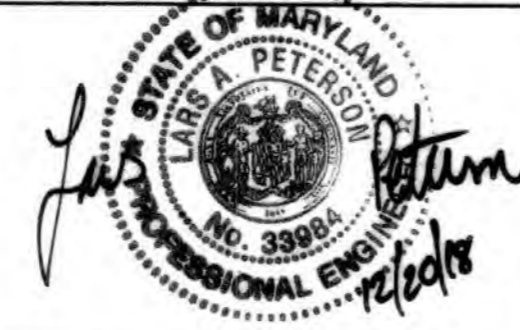


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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. J. ...
DIRECTOR OF PUBLIC WORKS
DATE: 12-28-18
CHIEF, BUREAU OF UTILITIES

Thomas E. ...
CHIEF, BUREAU OF ENGINEERING
DATE: ...
CHIEF, UTILITY DESIGN DIVISION



DES:	MM
DRN:	Author
CHK:	LP
DATE:	DEC 2018
BY:	AG
NO.:	1
REVISION:	AS-BUILT
DATE:	8/2021

PUMPING STATION FIRST FLOOR

600' SCALE MAP NO.: 35
BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

AS-BUILT REPLACEMENT SHEET 9/2021

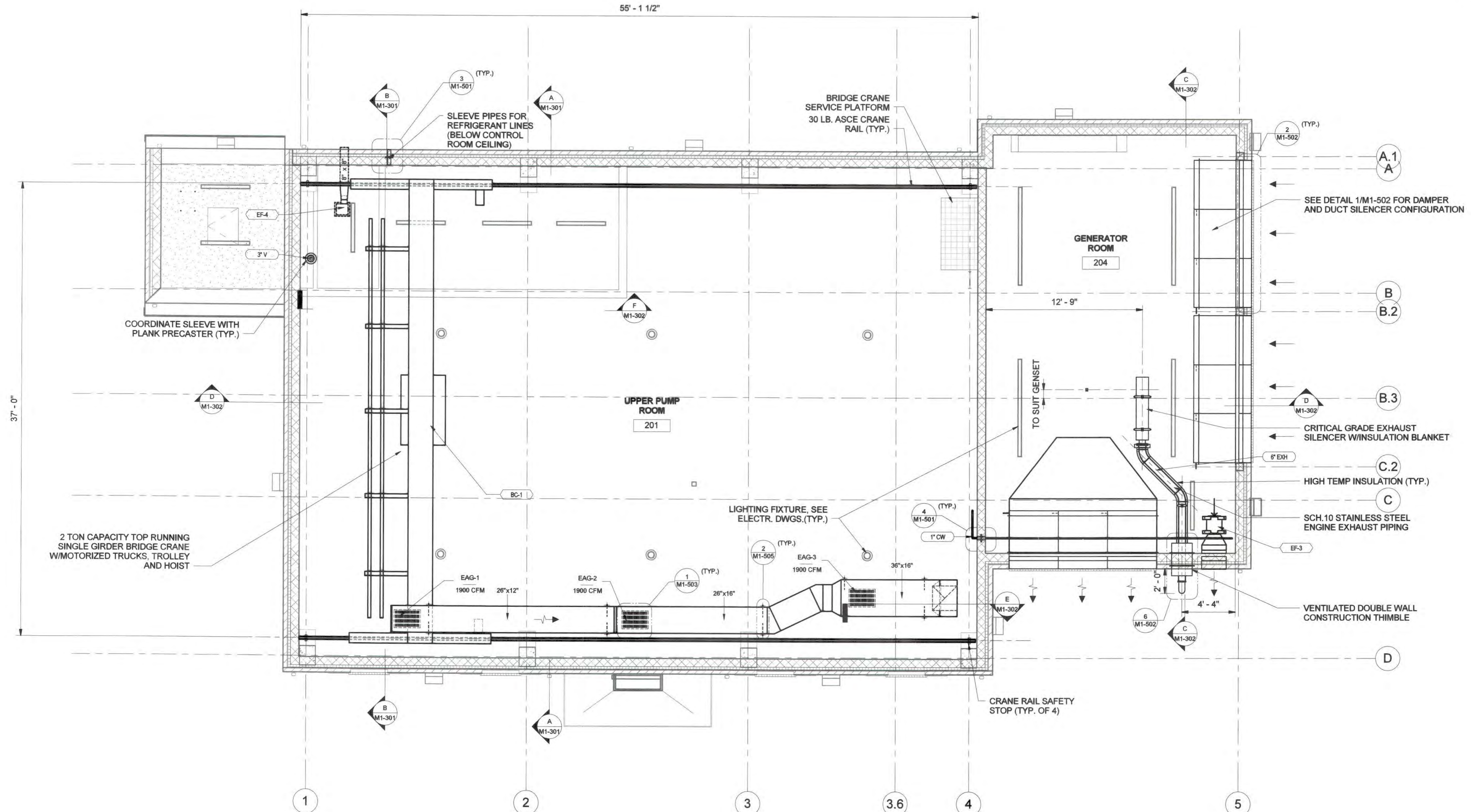
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SCALE
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42 OF 81

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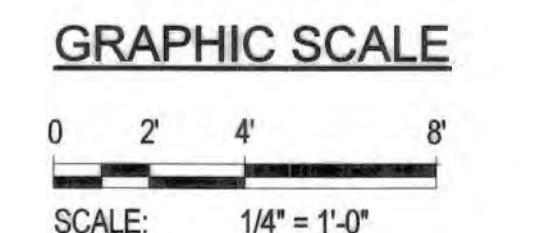
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GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.



1 UPPER LEVEL PLAN
SCALE: 1/4" = 1'-0"



AS-BUILT
DATE 9/2021

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. A. G. [Signature]
DIRECTOR OF PUBLIC WORKS
DATE 12-25-18
CHIEF, BUREAU OF UTILITIES

Thomas E. [Signature]
CHIEF, BUREAU OF ENGINEERING
DATE
CHIEF, UTILITY DESIGN DIVISION

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STATE OF MARYLAND
LISA A. PETERSON
PROFESSIONAL ENGINEER
No. 33984
12/20/18

DES:	MM
DRN:	Author
CHK:	LP
DATE:	DEC 2018
BY:	NO.
REVISION:	
DATE:	600' SCALE MAP NO.: 35
BLOCK NO.:	17, 11

CEILING PLAN

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING
M1-103
SCALE
AS SHOWN
SHEET
43 OF 81

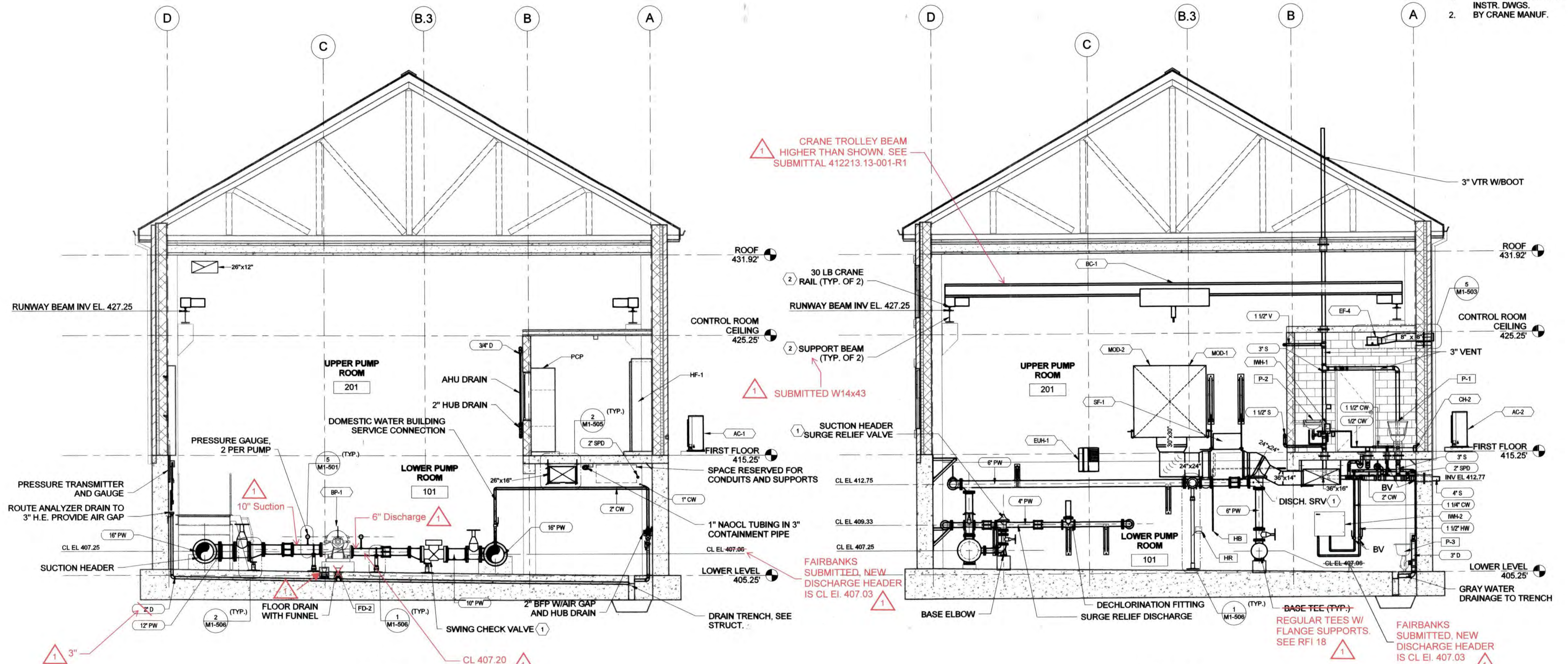
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GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.

SHEET KEY NOTES

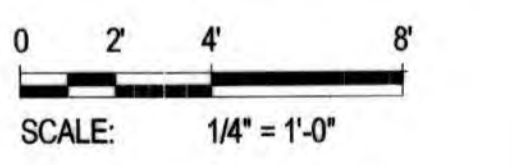
- VALVE MOUNTED LIMIT SWITCH. SEE INSTR. DWGS.
- BY CRANE MANUF.



A SECTION
SCALE: 1/4" = 1'-0"
REF: M1-101

B SECTION
SCALE: 1/4" = 1'-0"
REF: M1-101

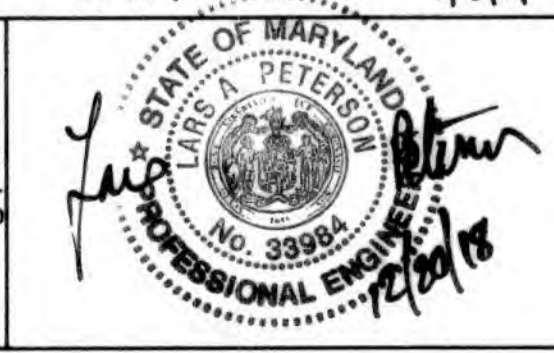
GRAPHIC SCALE



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DEPARTMENT OF PUBLIC WORKS
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Director of Public Works: [Signature] DATE: 12-20-18
Chief, Bureau of Engineering: [Signature] DATE: []
Chief, Utility Design Division: [Signature] DATE: []

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CHK:	LP				
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BY:	AG	1	AS-BUILT	9/2021	
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REVISION:					

PUMPING STATION SECTIONS

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

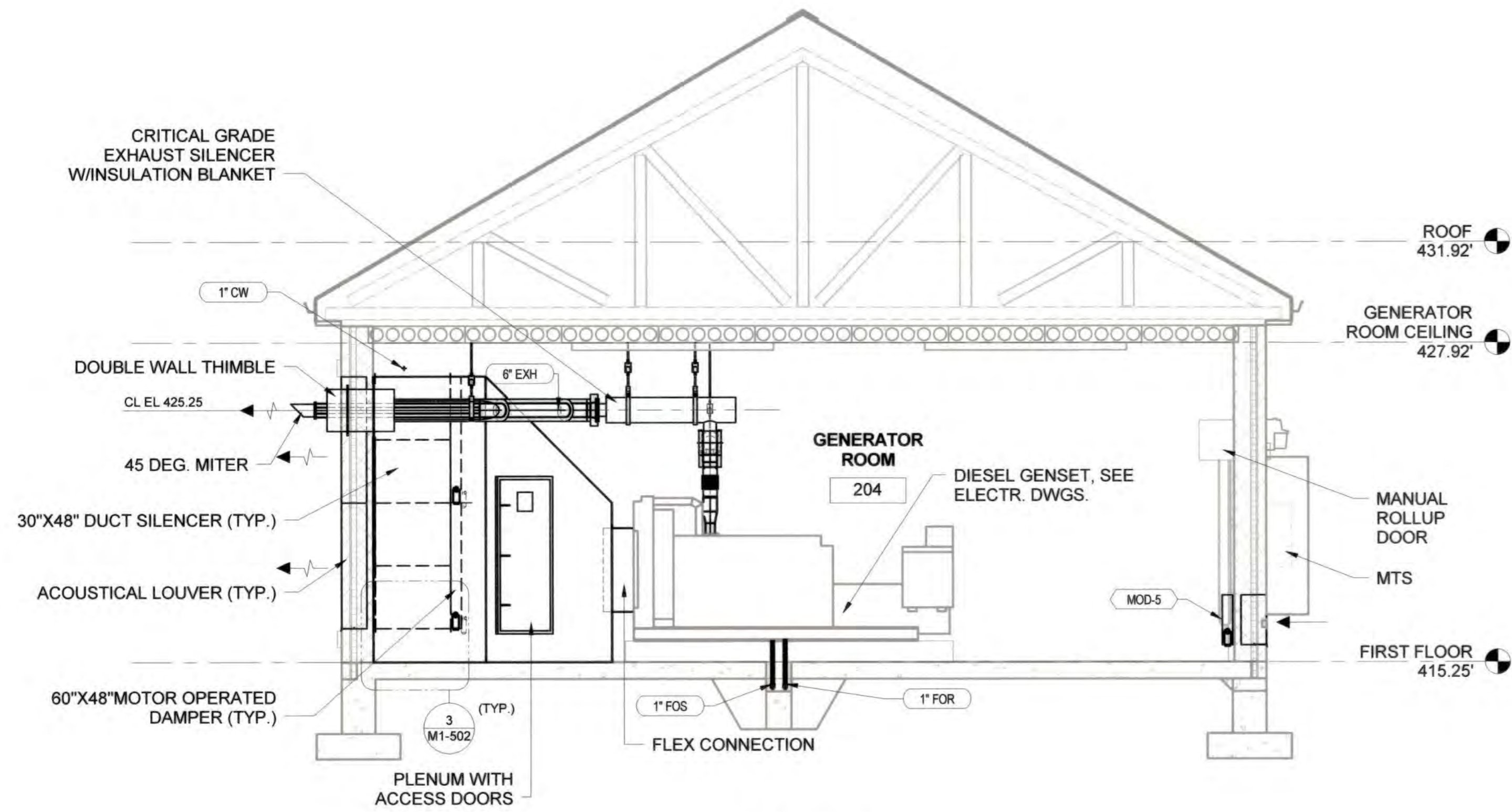
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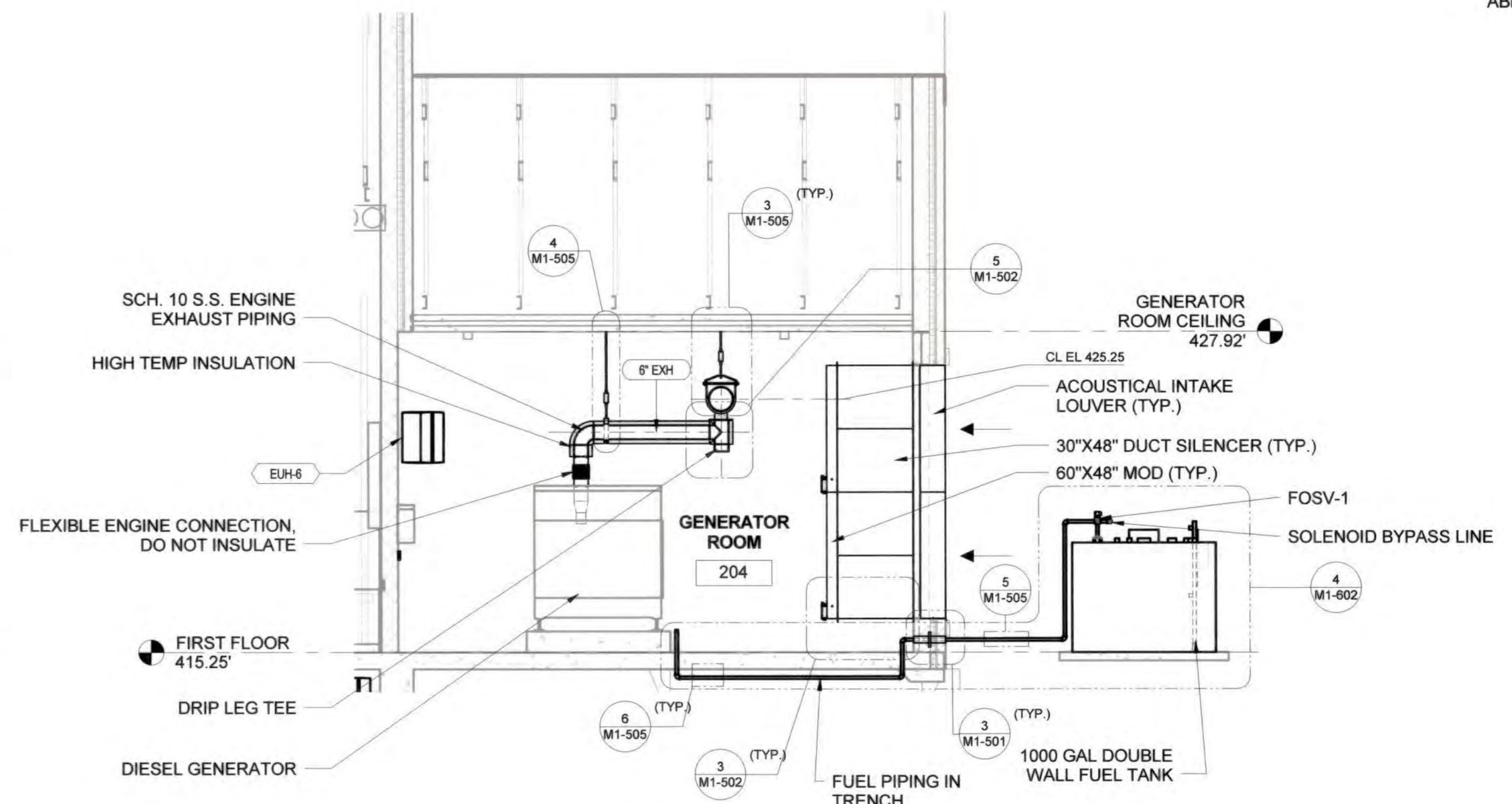
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GENERAL SHEET NOTES

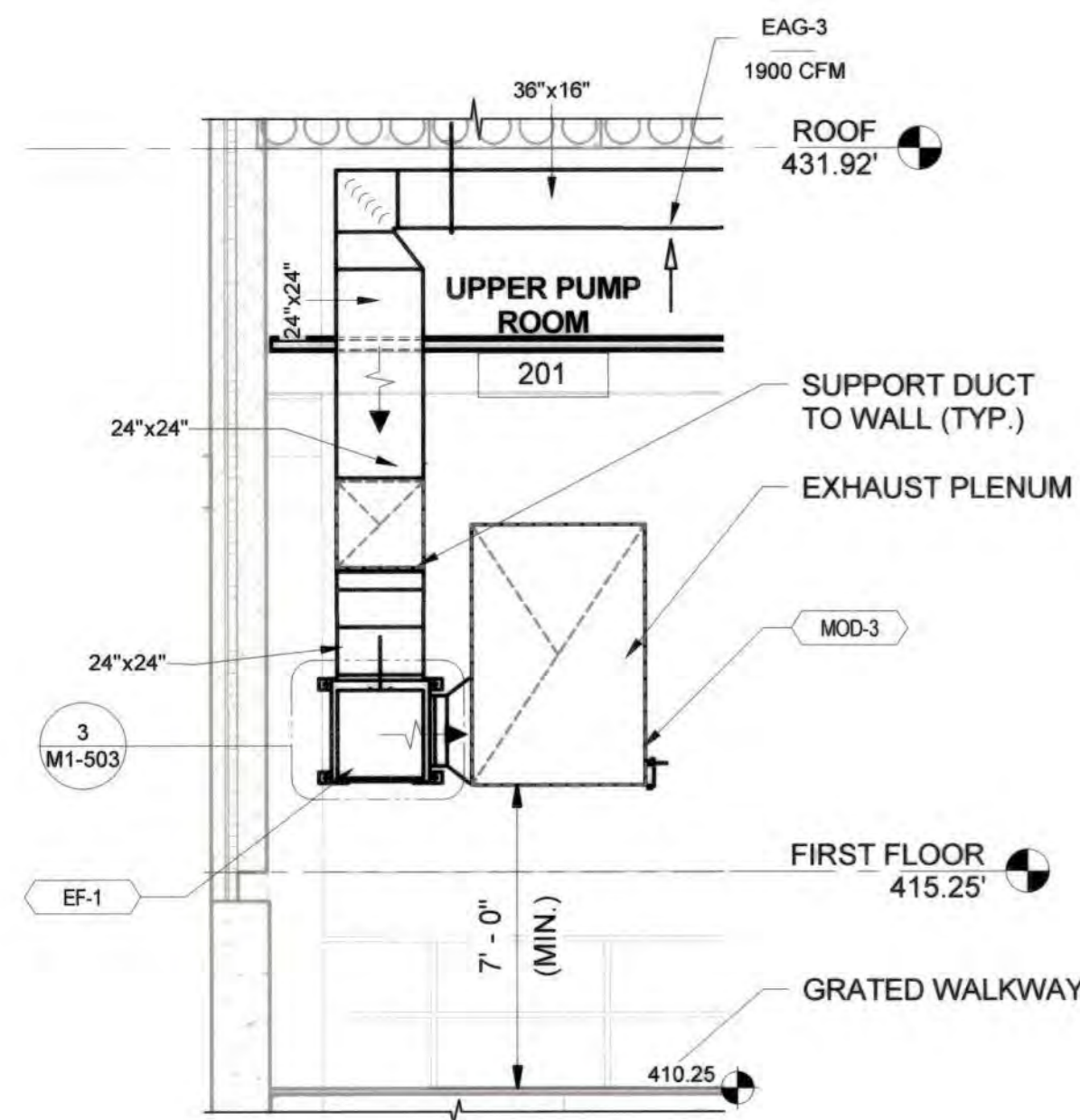
- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.



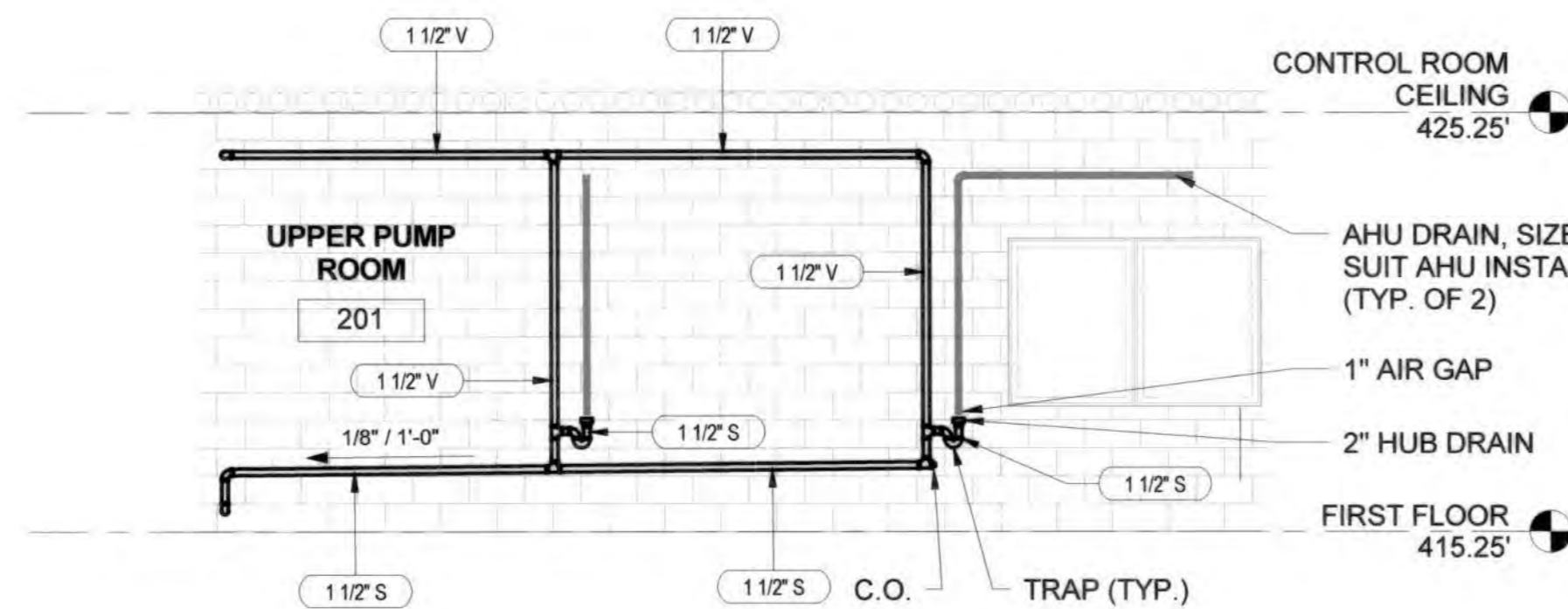
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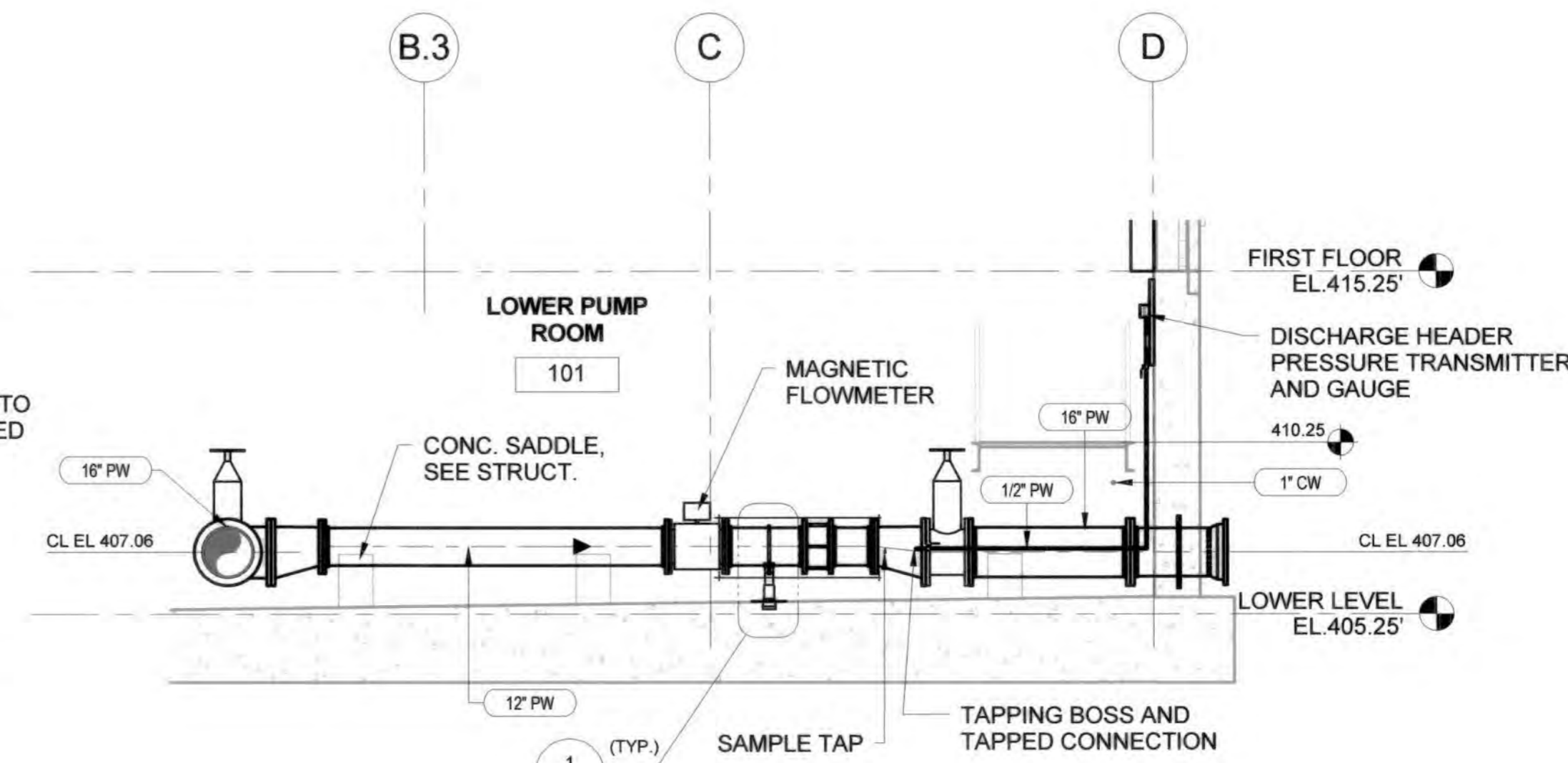
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E SECTION
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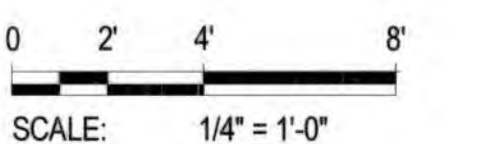


F SECTION
SCALE: 1/4" = 1'-0"
REF:M1-102



G SECTION
SCALE: 1/4" = 1'-0"
REF:M1-101

GRAPHIC SCALE



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DATE: 9/2021

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CHK:	LP				
DATE:	DEC 2018	BY:	NO.	REVISION	

PUMPING STATION SECTIONS

DATE: 600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING
M1-302
SCALE
AS SHOWN
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45 OF 81

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HOWARD COUNTY, MARYLAND

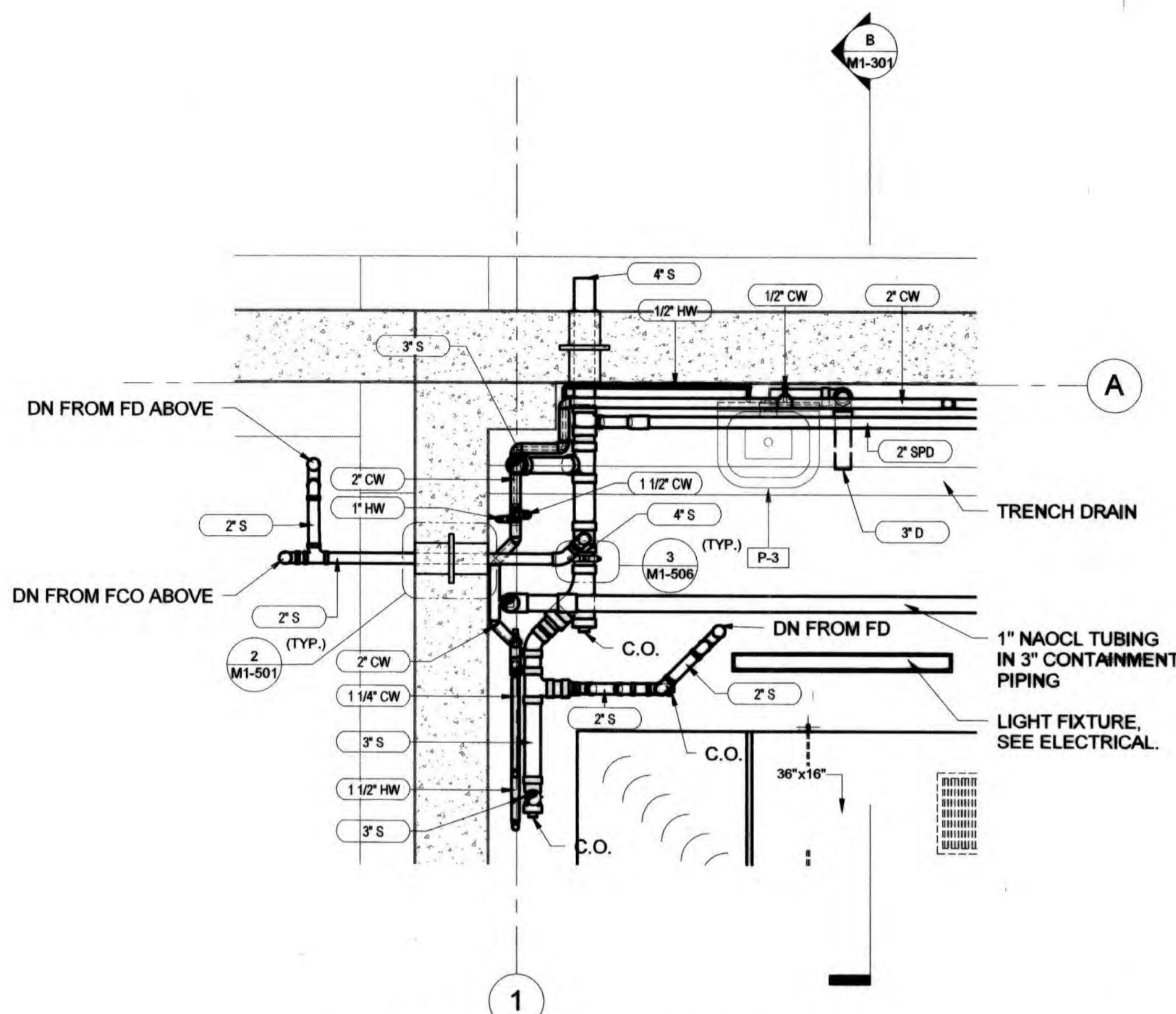
Director of Public Works: *Janet...* DATE: 12-28-18
Chief, Bureau of Engineering: *Thomas...* DATE: 12/26/18
Chief, Bureau of Utilities: *...* DATE: 12/26/18
Chief, Utility Design Division: *...* DATE: 12/26/18

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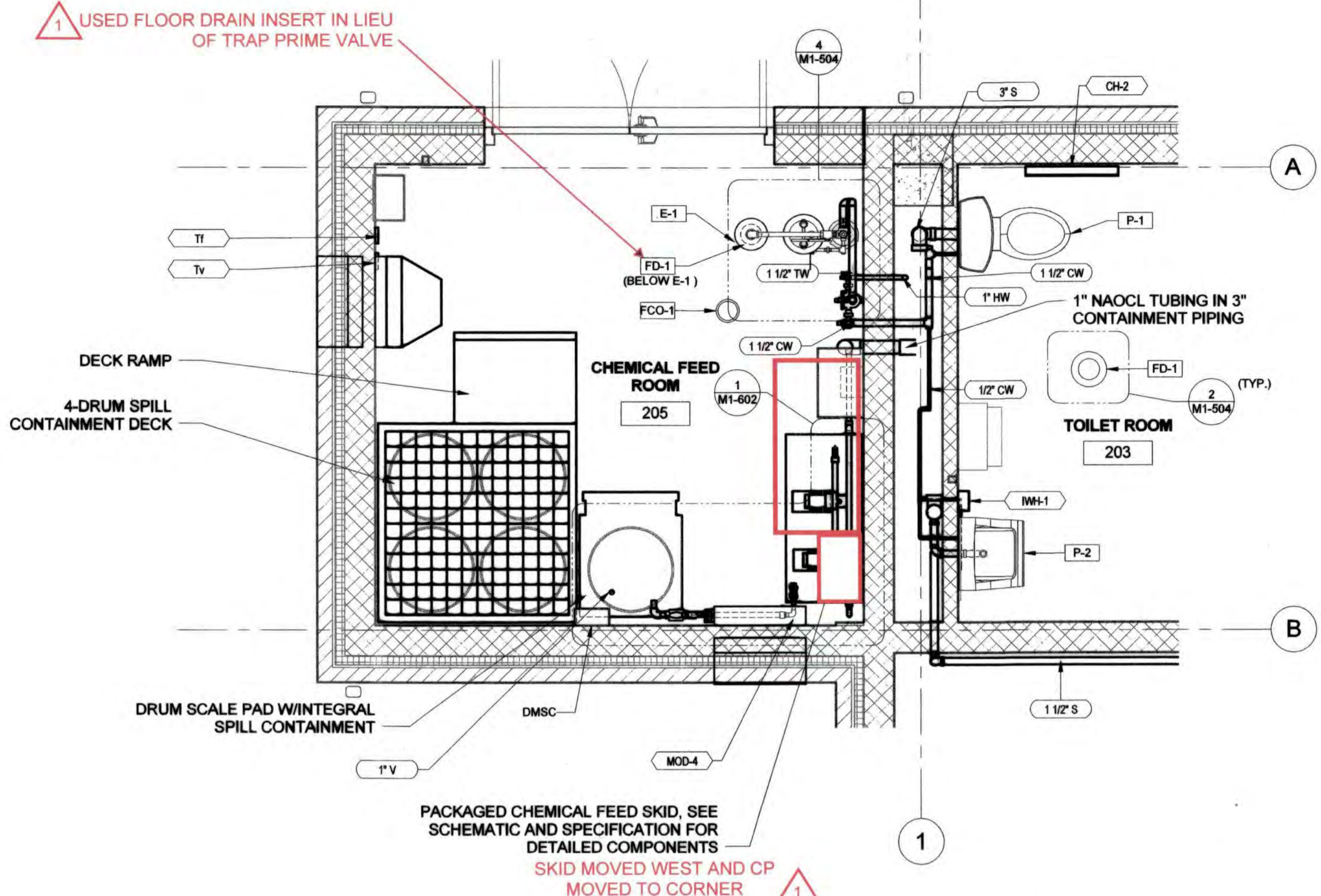
STATE OF MARYLAND
LARS A. PETERSON
PROFESSIONAL ENGINEER
NO. 33894
EXPIRES 1/15/19

GENERAL SHEET NOTES

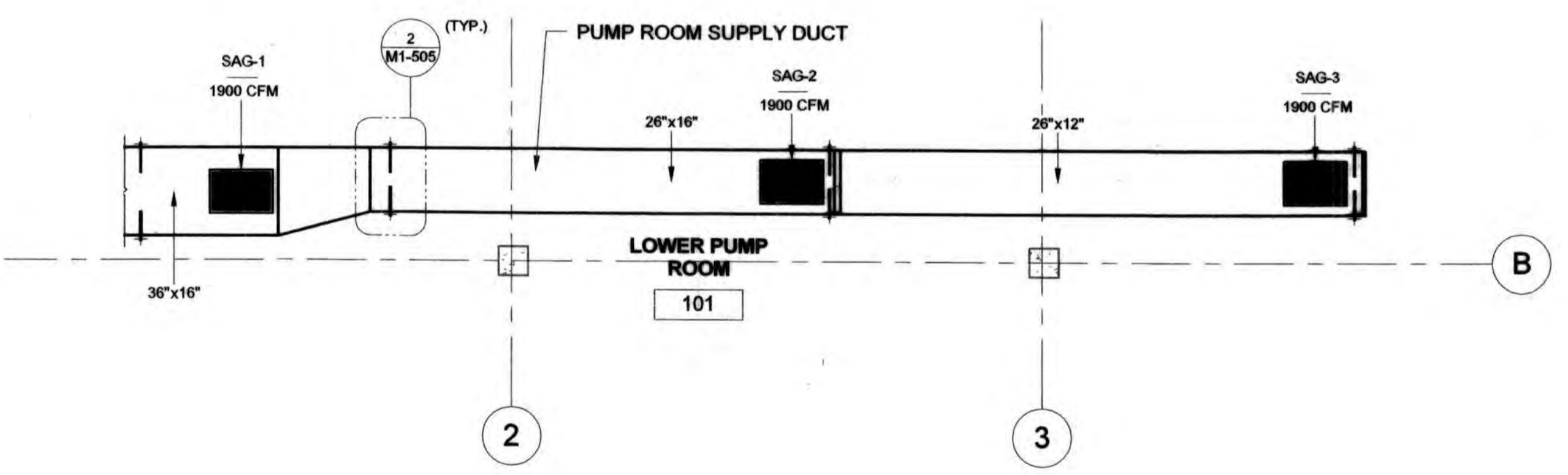
1. SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.
2. PROVIDE TRAP PRIMING SYSTEM FOR FLOOR DRAINS ON FIRST FLOOR. MOUNT TRAP PRIMING VALVE NEAR TOILET FIXTURE SUPPLY LINE.
3. PROVIDE FRP HANGERS AND SUPPORTS IN CHEMICAL FEED ROOM.



1 LOWER LEVEL PARTIAL PLAN
SCALE: 1/2" = 1'-0"

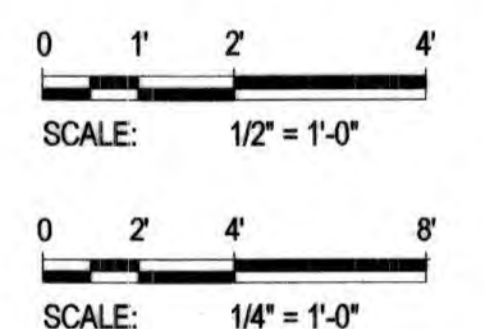


2 FIRST FLOOR PARTIAL PLAN
SCALE: 1/2" = 1'-0"



3 PUMP ROOM SUPPLY DUCT PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE



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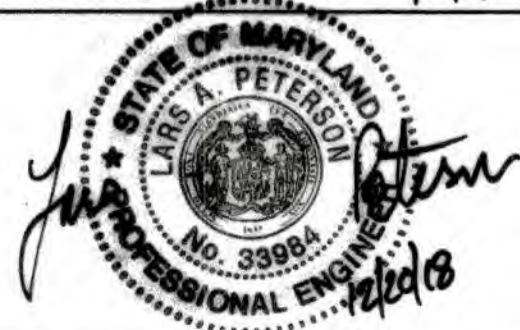
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. A. Van der Kolk
DIRECTOR OF PUBLIC WORKS
DATE: 12-26-18

James L. Stuller
CHIEF, BUREAU OF ENGINEERING
DATE: 12-26-18

Dave
CHIEF, UTILITY DESIGN DIVISION
DATE: 12-26-18

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BY:	NO.				
REVISION:					
DATE:	7/2021				

ENLARGED VIEWS

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

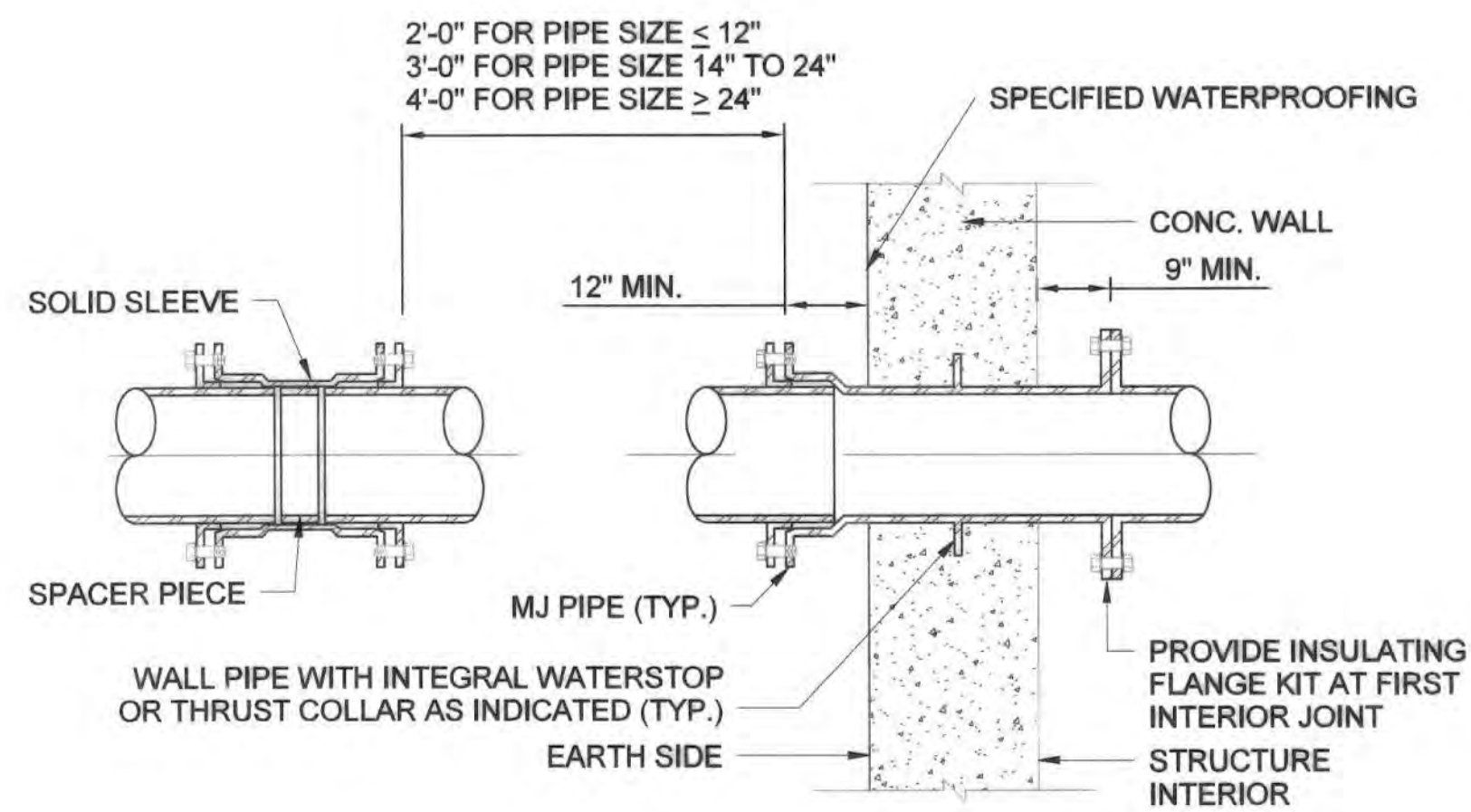
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GENERAL SHEET NOTES

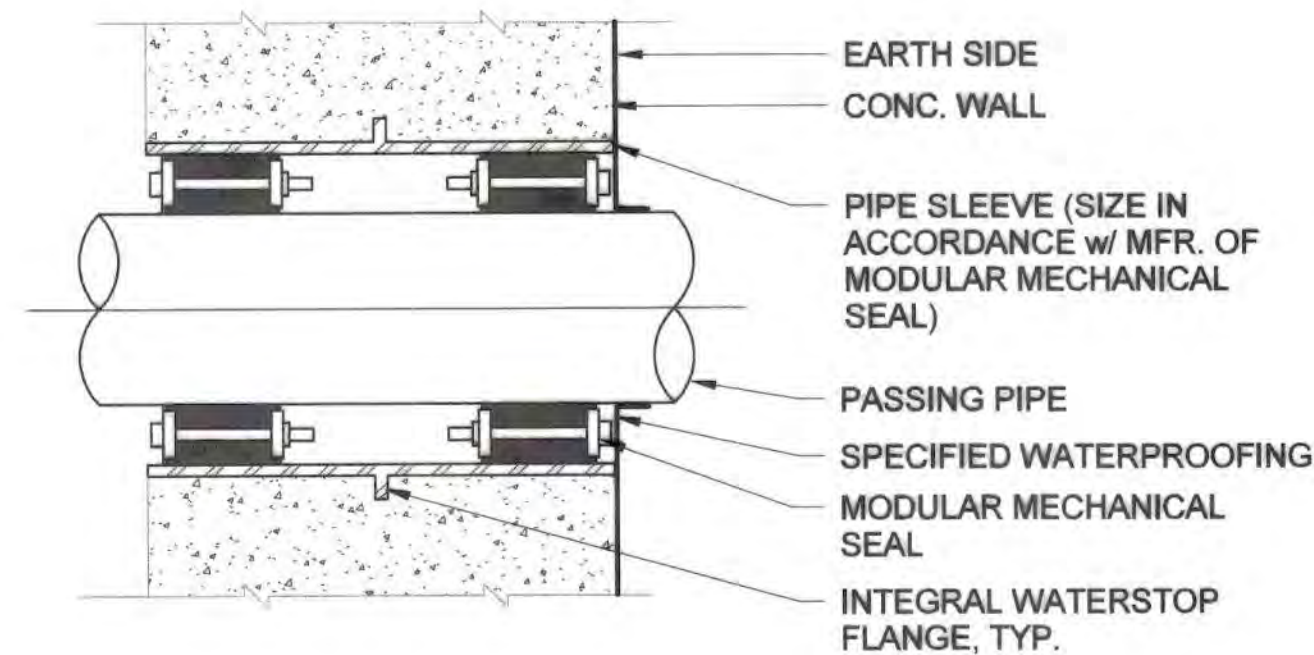
- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.



- NOTES:**
- UNLESS OTHERWISE NOTED, WATERSTOP COLLARS SHALL BE CENTERED IN WALL.

1 MJ BY FLANGE WALL PIPE DETAIL

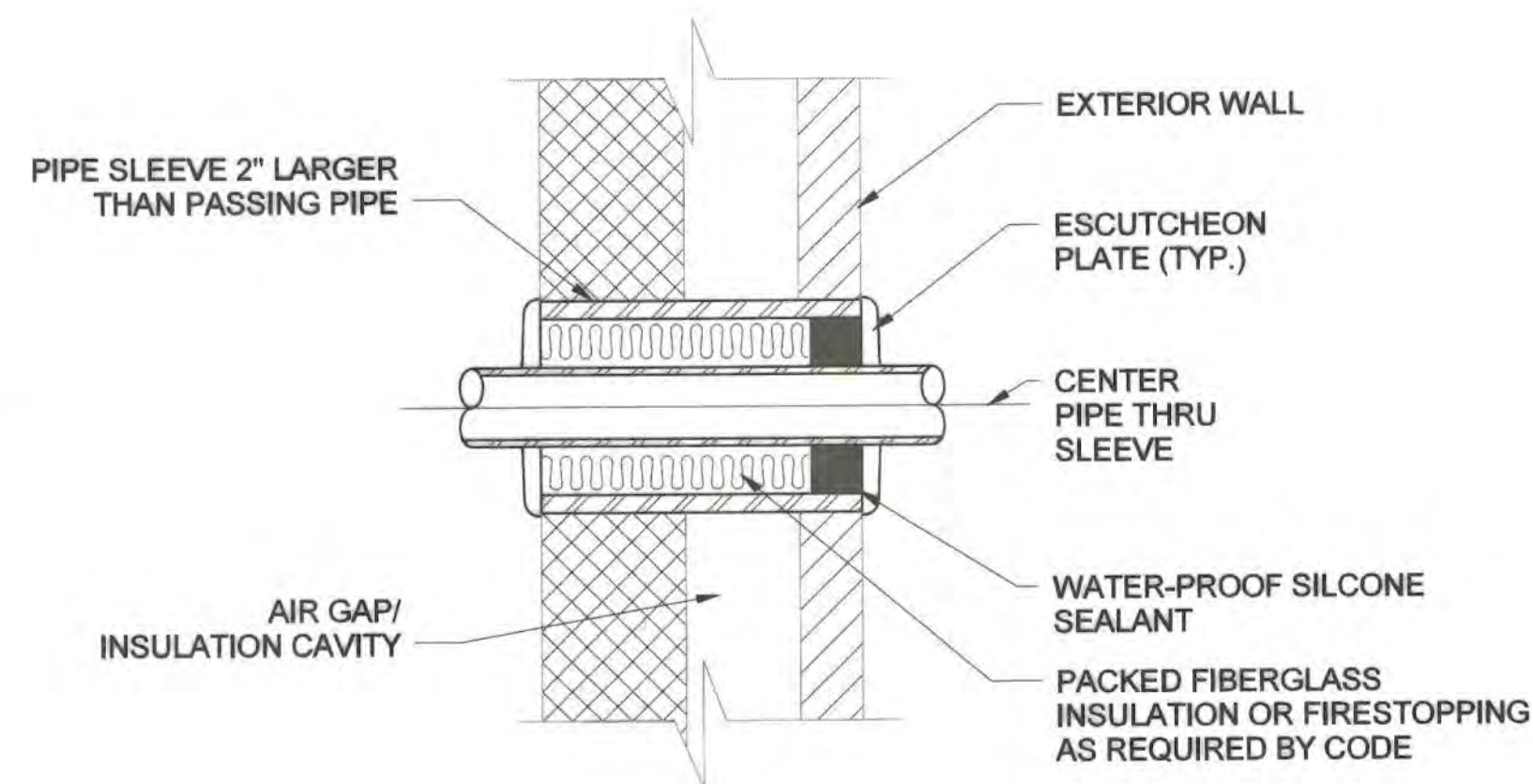
SCALE: NONE



- NOTES:**
- EXTEND PIPE SLEEVE BEYOND THE FACE OF THE WALL IF NECESSARY TO ACCOMMODATE SECOND MODULAR MECHANICAL SEAL.
 - FOR FLOOR APPLICATIONS, EXTEND WALKWAY SIDE OF SLEEVE 4 INCHES ABOVE FINISHED SURFACE OF WALKWAY.
 - FOR EXISTING WALLS, CORE DRILL WALL TO SUIT INSTALLATION REQUIREMENTS OF MECHANICAL SEAL. CONCRETE SURFACE SHALL BE MADE SMOOTH WITH NON-SHRINK GROUT, MACHINE AND COAT EXPOSED REBAR.

2 PIPE SLEEVE DUAL SEAL DETAIL

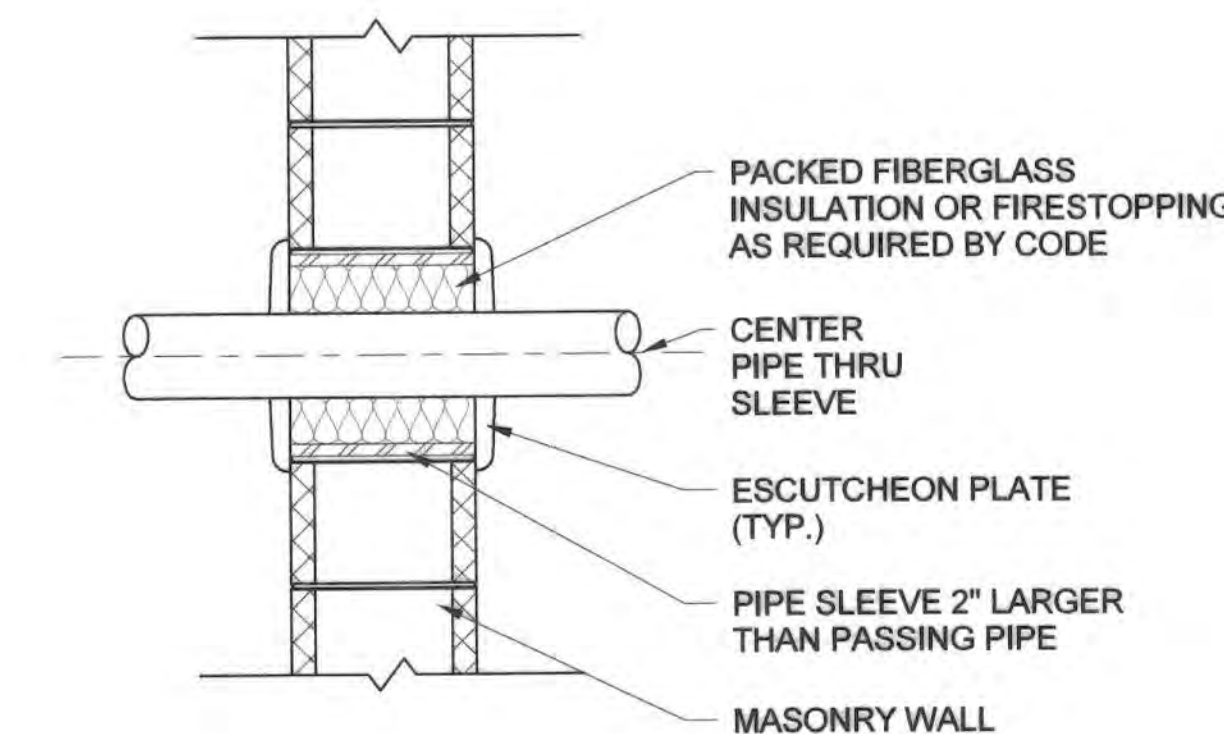
SCALE: NONE



- NOTES:**
- SET SLEEVE IN WALL AS WORK PROGRESSES.
 - SLEEVE LENGTH TO SUIT WALL CONSTRUCTION.

3 PIPE SLEEVE EXTERIOR MASONRY DETAIL

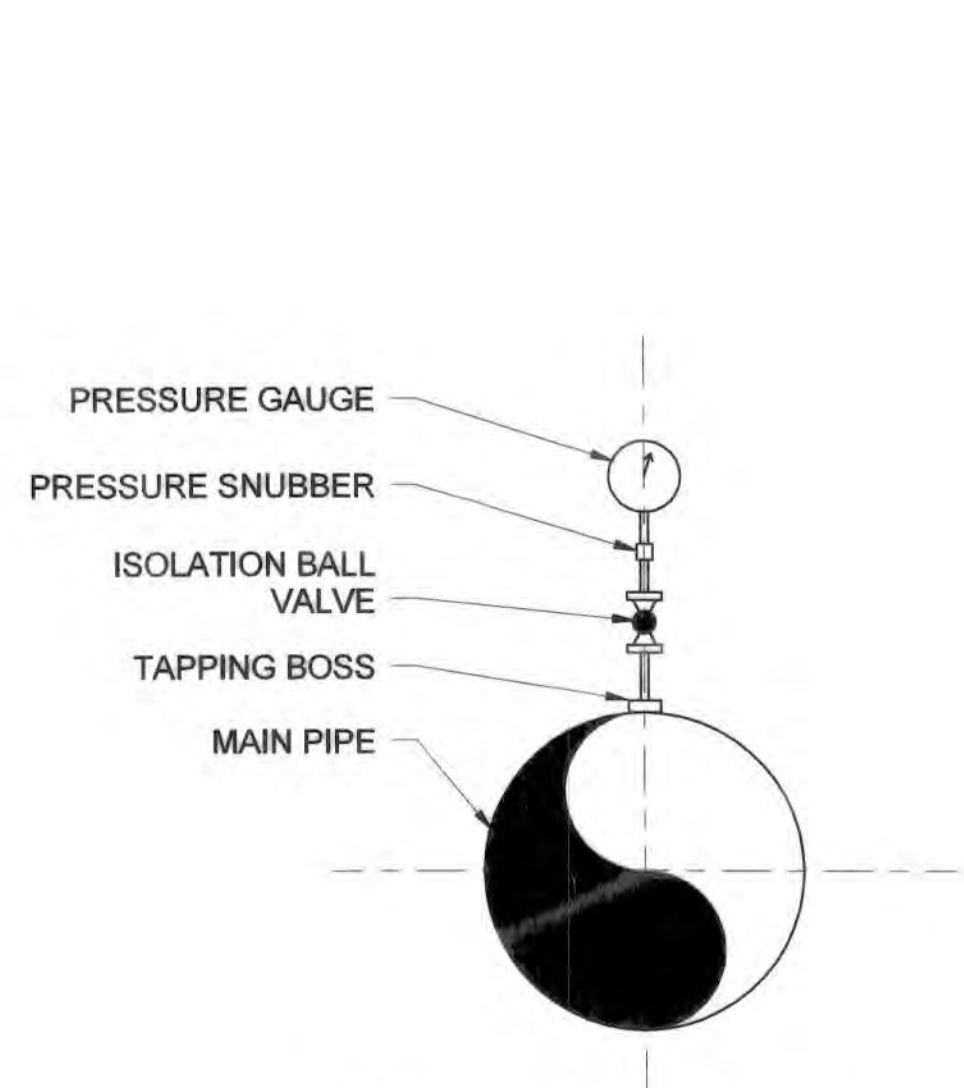
SCALE: NONE



- NOTES:**
- SET SLEEVE IN WALL AS WORK PROGRESSES.
 - SLEEVE LENGTH TO SUIT WALL CONSTRUCTION.
 - NOT FOR USE WITH HIGH TEMPERATURE PIPING.

4 PIPE SLEEVE INTERIOR MASONRY DETAIL

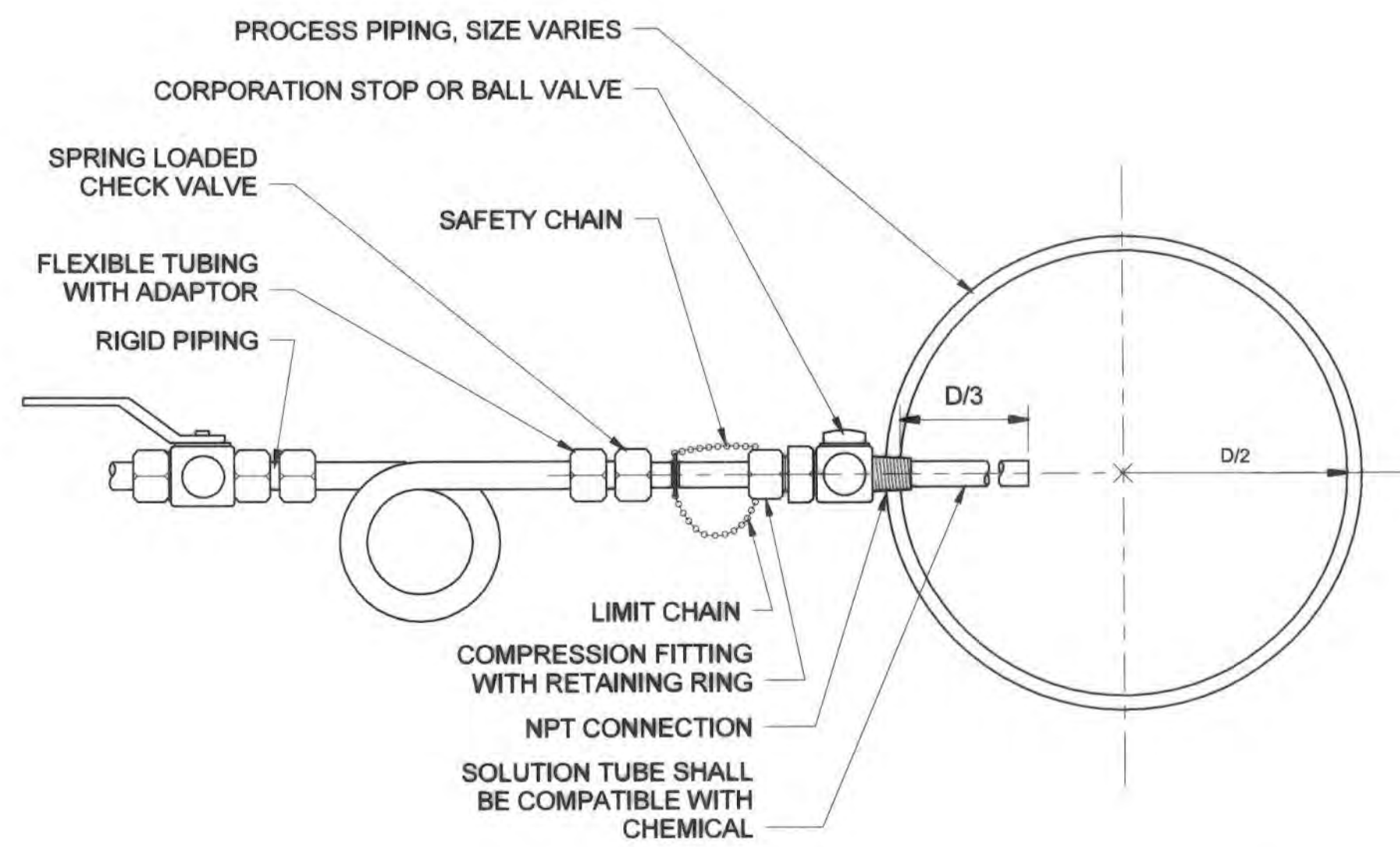
NOT TO SCALE



- NOTES:**
- SEE SCHEMATICS FOR GAUGE RANGE.
 - SERVICE SADDLE MAY BE USED IN LIEU OF TAPPING BOSS.

5 PRESSURE GAUGE DETAIL

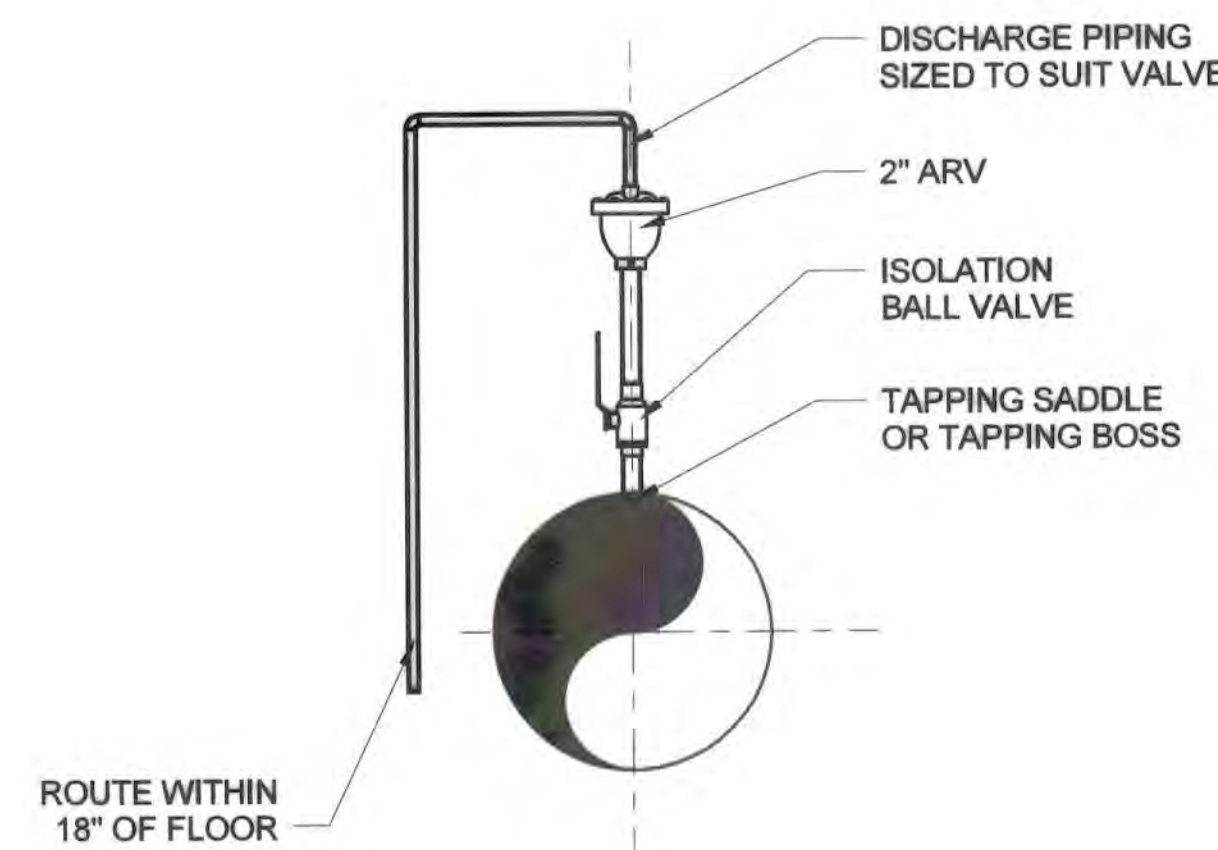
SCALE: NONE



- NOTES:**
- WHERE DIRECT TAP CAN NOT BE USED, A SERVICE SADDLE SHALL BE USED FOR CONNECTION.

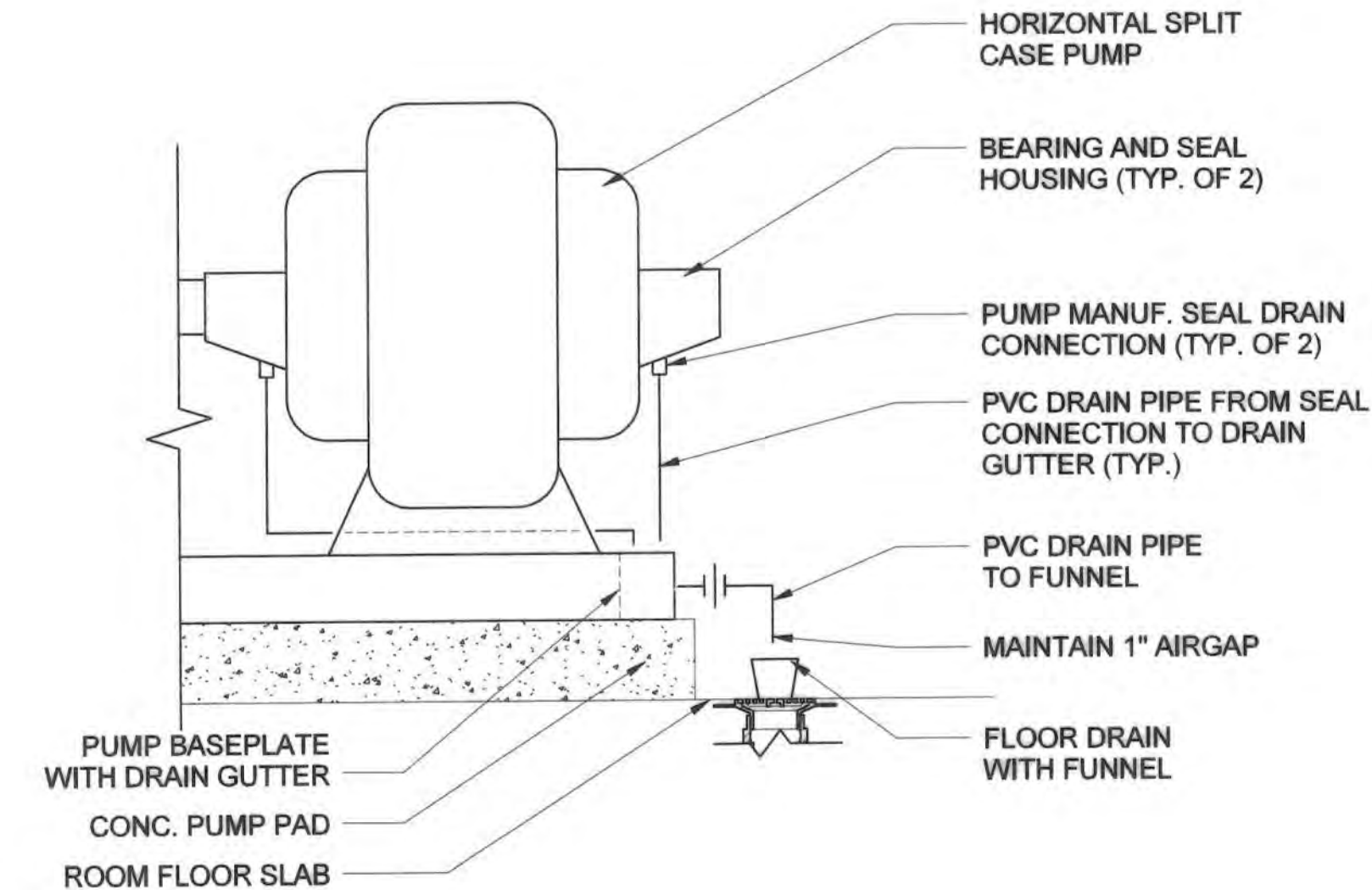
6 CHEMICAL INJECTION QUILL DETAIL

SCALE: NONE



7 ARV DETAIL

SCALE: NONE



8 MECHANICAL SEAL DRAIN DETAIL

SCALE: NONE

AS-BUILT
DATE 9/2021

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. 33984, Expiration Date 1/15/19.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/20/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/20/18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/20/18
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

KCI
TECHNOLOGIES

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SPARKS, MD 21152
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STATE OF MARYLAND
LARRY A. PETERSON
PROFESSIONAL ENGINEER
No. 8592

[Signature] 12/20/18

DES:	MM
DRN:	Author
CHK:	LP
DATE:	DEC 2018
BY:	NO.
REVISION:	

600' SCALE MAP NO.:	35
BLOCK NO.:	17, 11

CEDAR LANE WATER PUMPING STATION

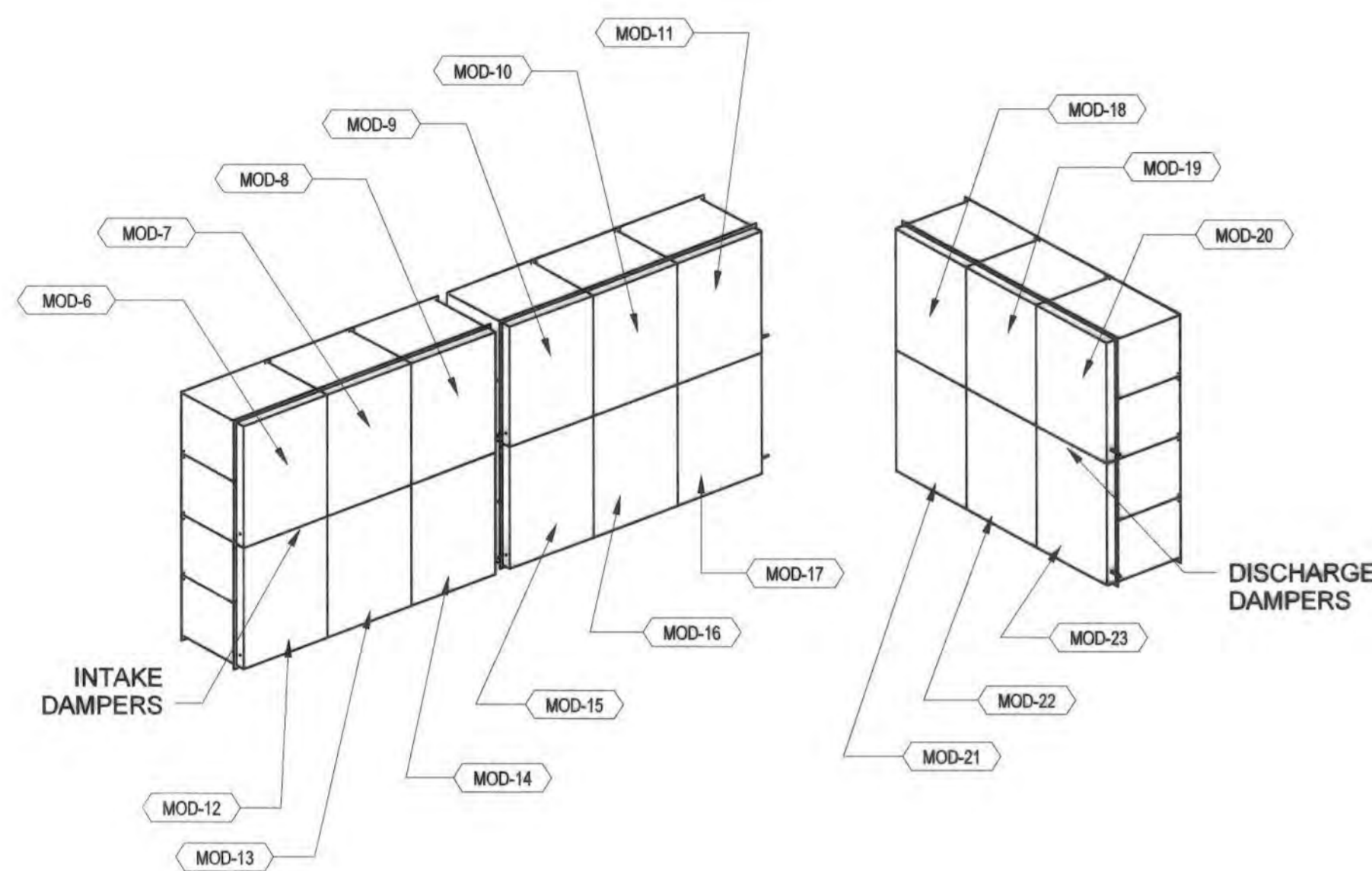
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

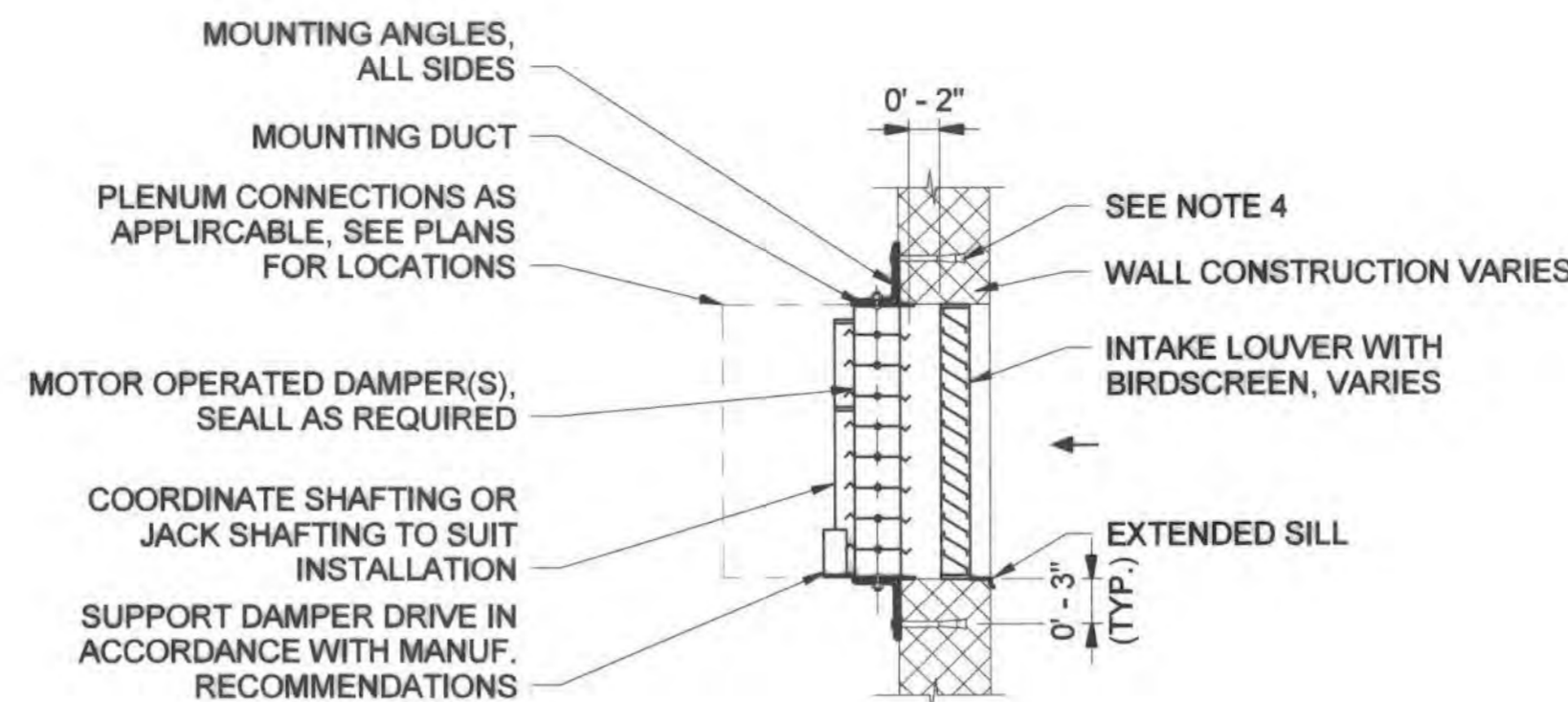
DRAWING	M1-501
SCALE	AS SHOWN
SHEET	47 OF 81

GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.

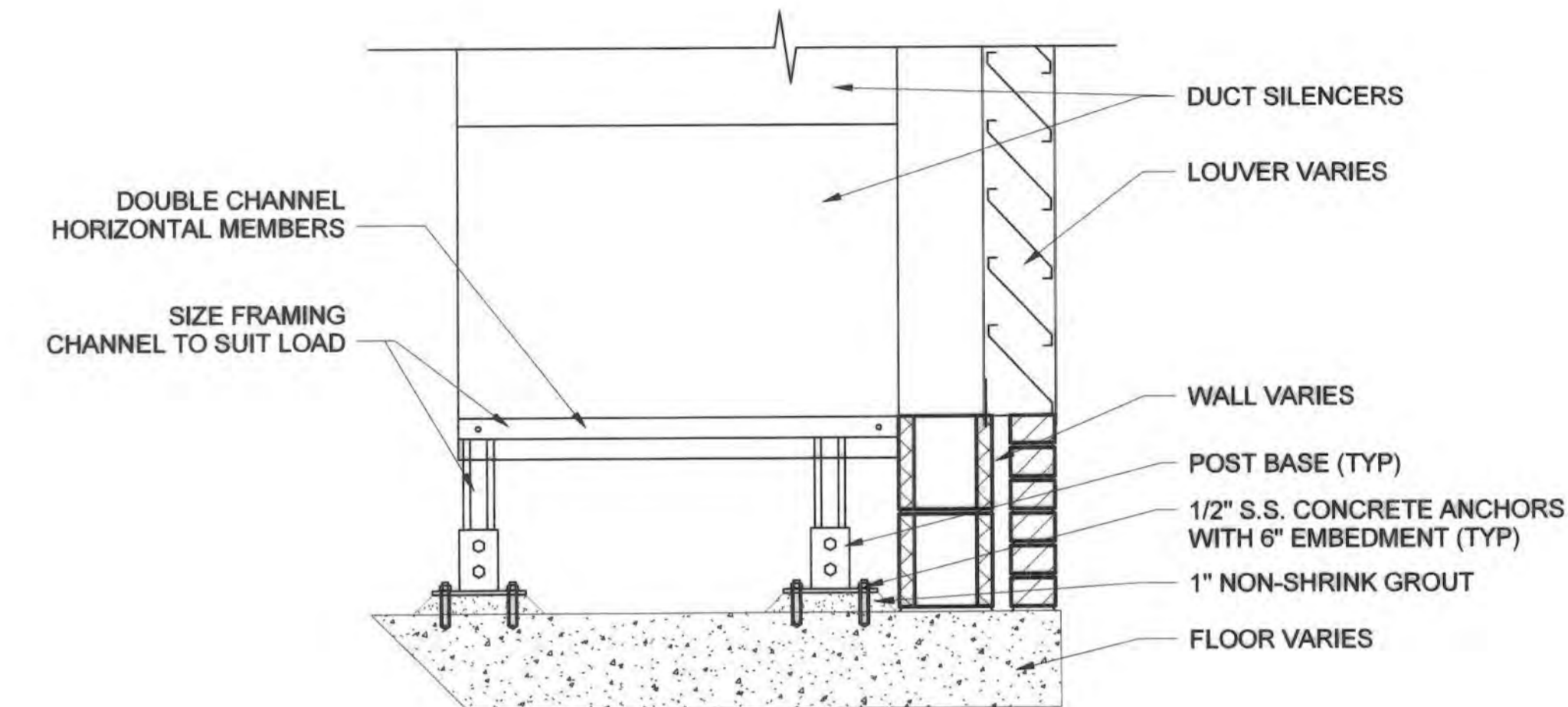


1 GENERATOR MOD ARRANGEMENT DETAIL
SCALE: NONE



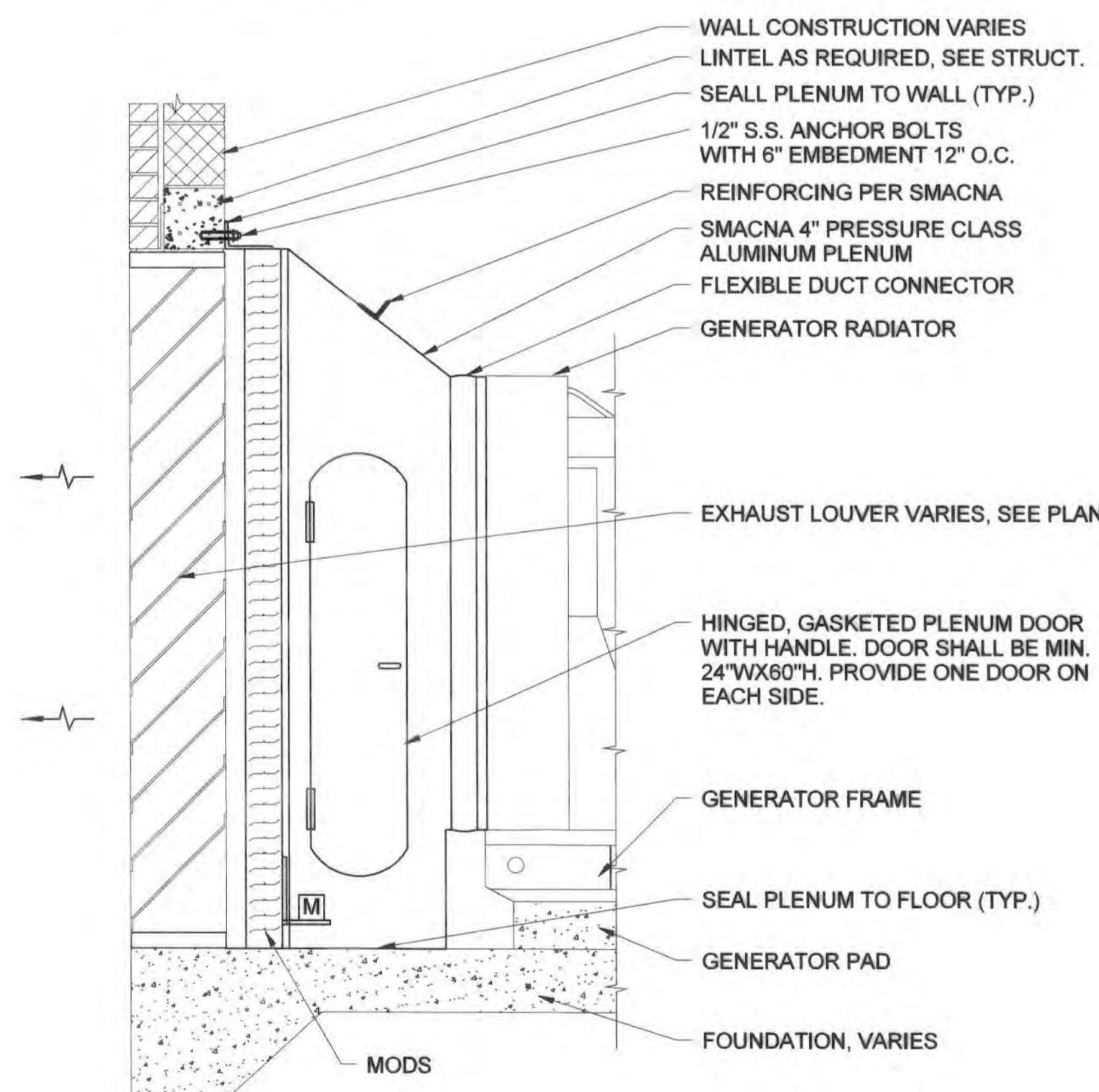
- NOTES:**
- MOUNTING DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION FOR 4" STATIC PRESSURE CLASS, REGARDLESS OF OPERATING PRESSURE.
 - DAMPER, DUCT AND MOUNTING ANGLE SHALL BE CONSTRUCTED OF THE SAME MATERIAL.
 - DAMPER DRIVE LOCATION SHOWN IS GENERAL ARRANGEMENT. DRIVE LOCATION SHALL BE ADJUSTED AS NECESSARY TO AVOID INTERFERENCE WITH OTHER EQUIPMENT AND WALKWAYS.
 - USE 1/2" S.S. ADHESIVE ANCHORS, WITH 6-INCH EMBEDMENT SPACED AT 12-INCHES ON CENTER. ANCHOR TYPE TO SUIT WALL CONSTRUCTION.
 - ALL DAMPERS SHALL MATCH IN NOMINAL SIZE WITH THEIR RESPECTIVE LOUVERS, UNLESS OTHERWISE NOTED. WHERE MULTIPLE DAMPERS SHARE A LOUVER, THE DAMPERS SHALL BE PARTITIONED FOR EACH RESPECTIVE SERVICE. SEAL AS REQUIRED.

2 MASONRY INTAKE MOD DETAIL
SCALE: NONE



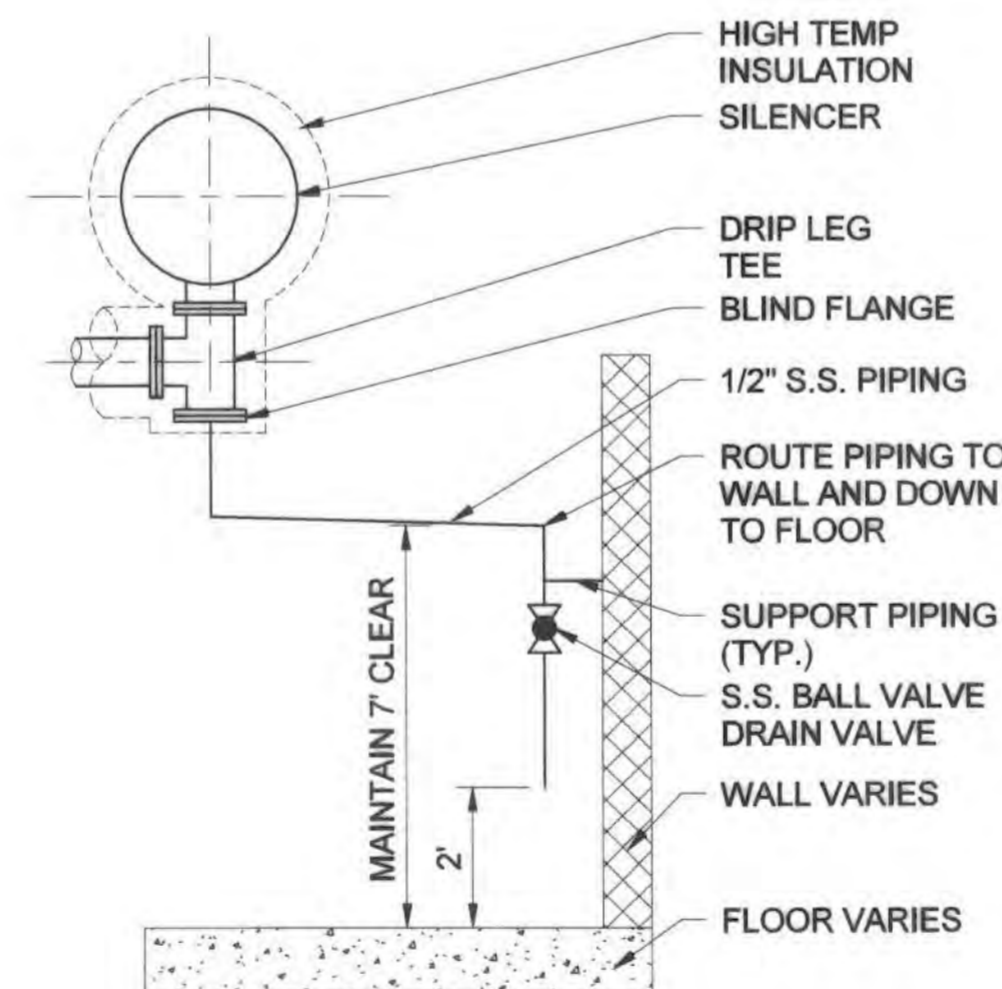
- NOTES:**
- NOT ALL DUCT ACCESSORIES SHOWN.
 - SIZE POST BASES TO DISTRIBUTE LOAD TO FLOOR
 - SUPPORTS MATERIALS TO BE SIMILAR WITH DUCT CONSTRUCTION

3 DUCT SILENCER SUPPORT DETAIL
SCALE: NONE



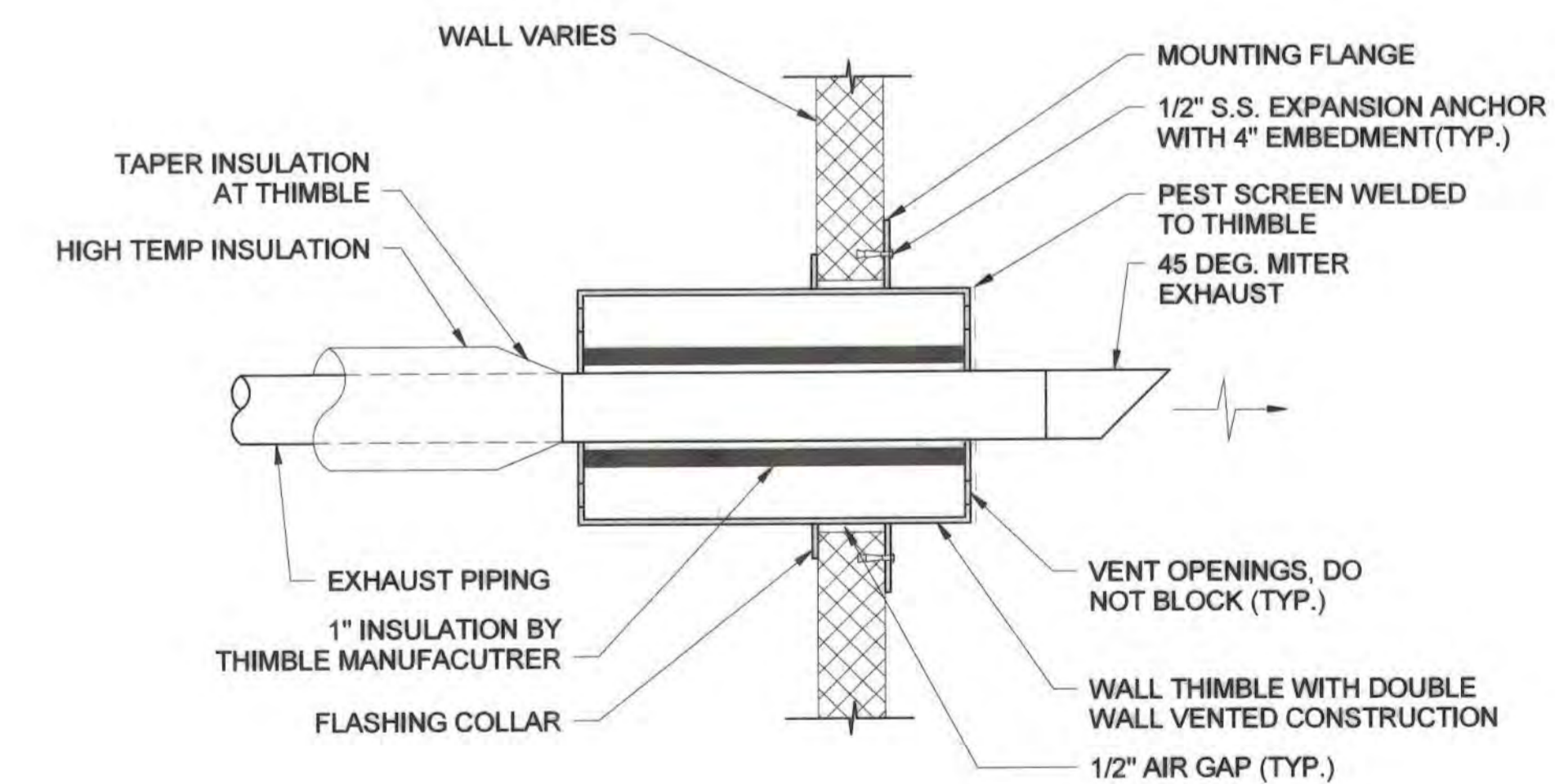
- NOTES:**
- GENERAL ARRANGEMENT SHOWN. ADJUST PLENUM TO BUILDING SPECIFIC REQUIREMENTS.
 - NOT ALL DUCT ACCESSORIES SHOWN.

4 GENERATOR DISCHARGE PLENUM DETAIL
SCALE: NONE



- NOTES:**
- SUPPORT PIPING AS REQUIRED.

5 GENERATOR EXHAUST DRIPLEG DETAIL
SCALE: NONE



6 WALL THIMBLE DETAIL
SCALE: NONE

AS-BUILT
DATE 9/2021

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STATE OF MARYLAND
JAMES A. PETERSON
PROFESSIONAL ENGINEER

DES:	MM				
DRN:	Author				
CHK:	LP				
DATE:	DEC 2018	BY:	NO.	REVISION	DATE

600' SCALE MAP NO.:	35	BLOCK NO.:	17, 11
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James A. Peterson 12/26/18
DIRECTOR OF PUBLIC WORKS DATE

Thomas R. Butler 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

John Smith 12-26-18
CHIEF, BUREAU OF UTILITIES DATE

John Smith 12-26-18
CHIEF, UTILITY DESIGN DIVISION DATE

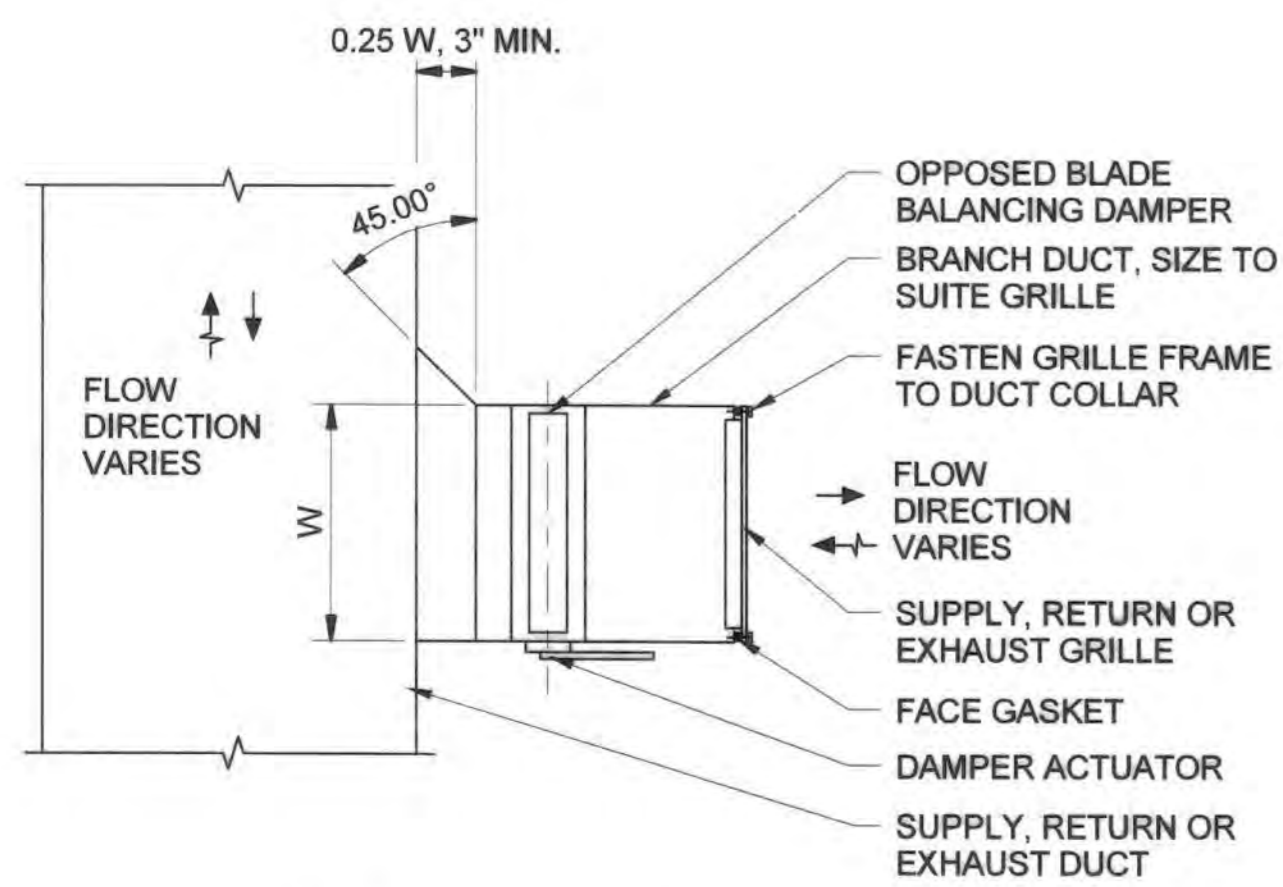
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING	M1-502
SCALE	AS SHOWN
SHEET	48 OF 81

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GENERAL SHEET NOTES

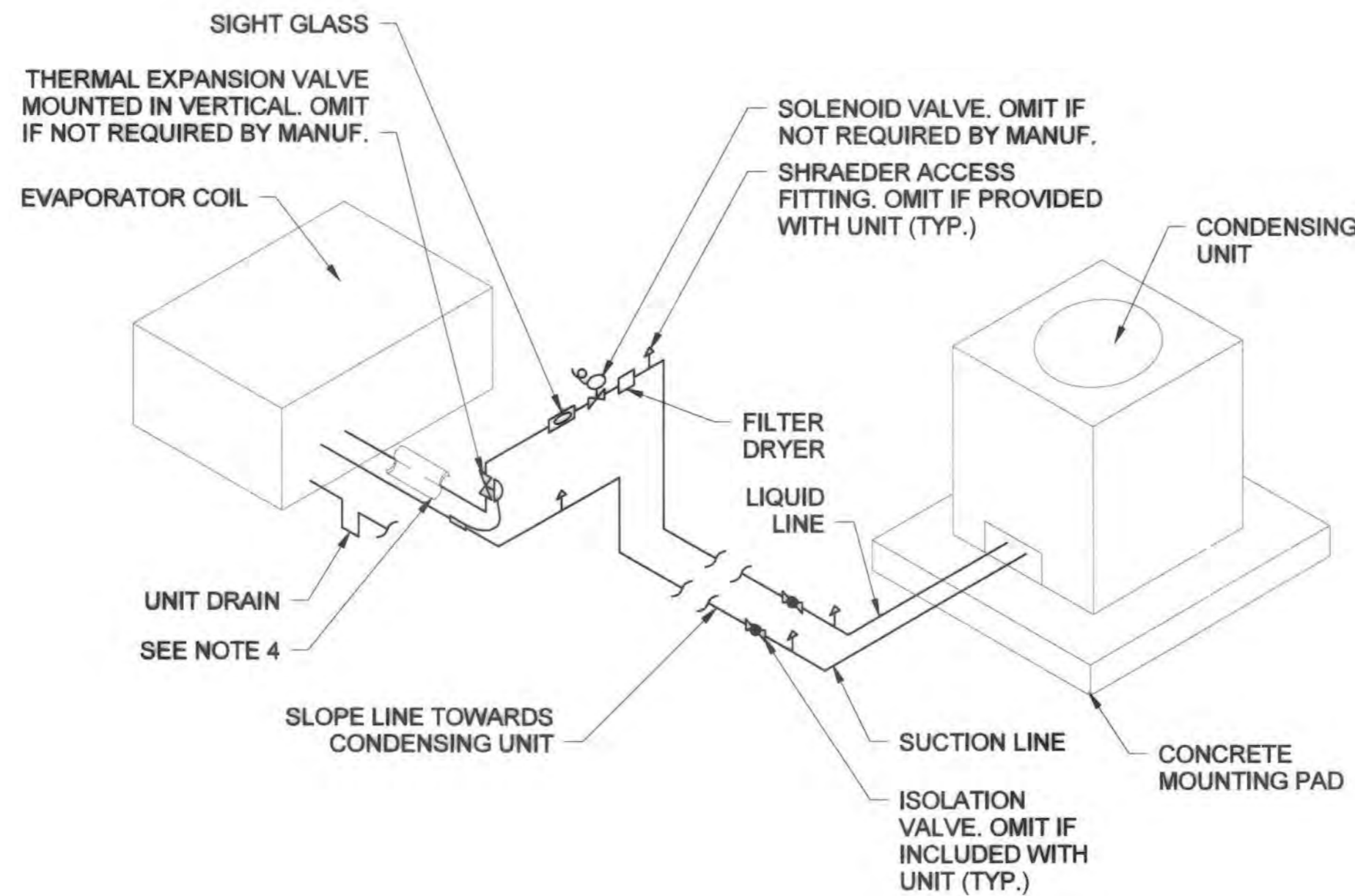
- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.



- NOTES:
- IN LIEU OF SEPERATE DAMPER, GRILLES MAY BE SUPPLIED WITH INTEGRAL DAMPER.

1 DUCT MOUNTED GRILLE DETAIL

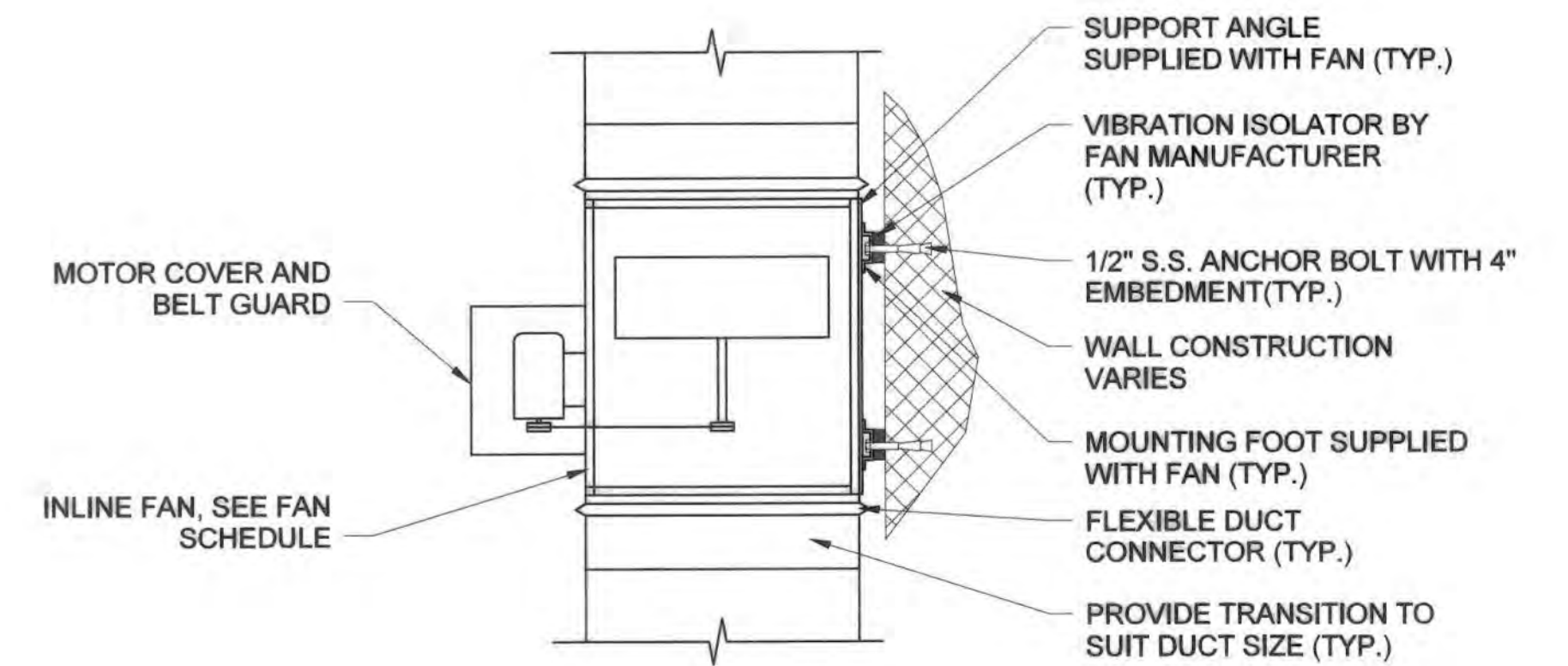
SCALE: NONE



- NOTES:
- OMIT ANY VALVES OR MATERIALS THAT ARE FURNISHED WITH THE UNIT.
 - REFRIGERANT PIPING SHALL BE SIZED BY SYSTEM MANUFACTURER.
 - PROVIDE RISER TRAPS WHEN CONDENSOR IS ABOVE EVAPORATOR.
 - INSULATE LIQUID LINE.

2 REFRIGERANT PIPING

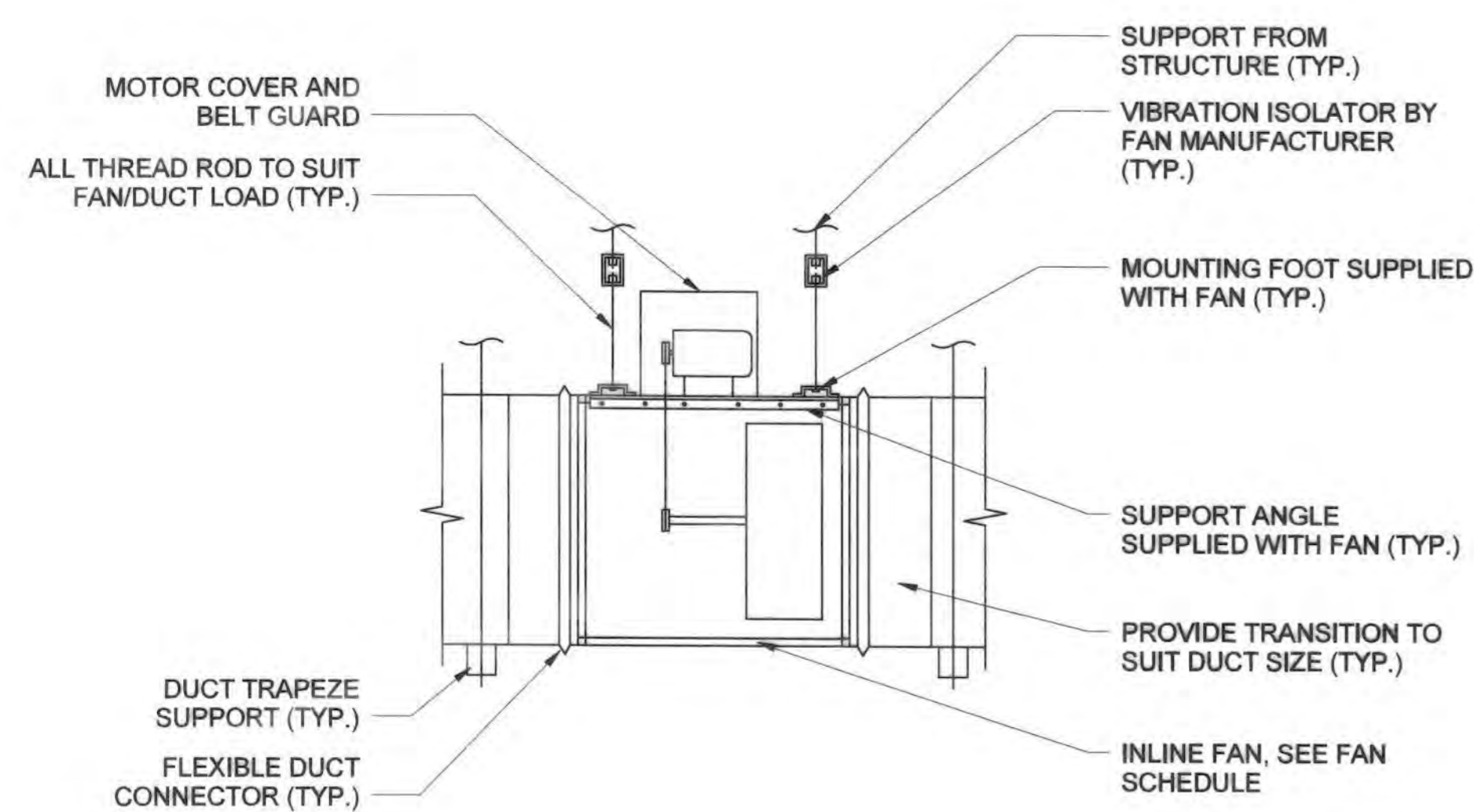
SCALE: NONE



- NOTES:
- FOR MASONRY WALL ANCHORING USE 1/2" DIA S.S. EXPANSION ANCHORS SUITABLE FOR HOLLOW CORE WITH MIN. 4" EMBEDMENT SPACED AT 8" ON CENTER.
 - FOR CONCRETE WALL ANCHORING USE 1/2" DIA. S.S. ADHESIVE ANCHORS WITH MIN 6" EMBEDMENT SPACED AT 12" ON CENTER.
 - PROVIDE SPACER FRAMING CHANNEL BETWEEN MOUNTING FEET AND VIBRATION ISOLATORS AS REQUIRED TO ACHIEVE SPACING FROM WALL.

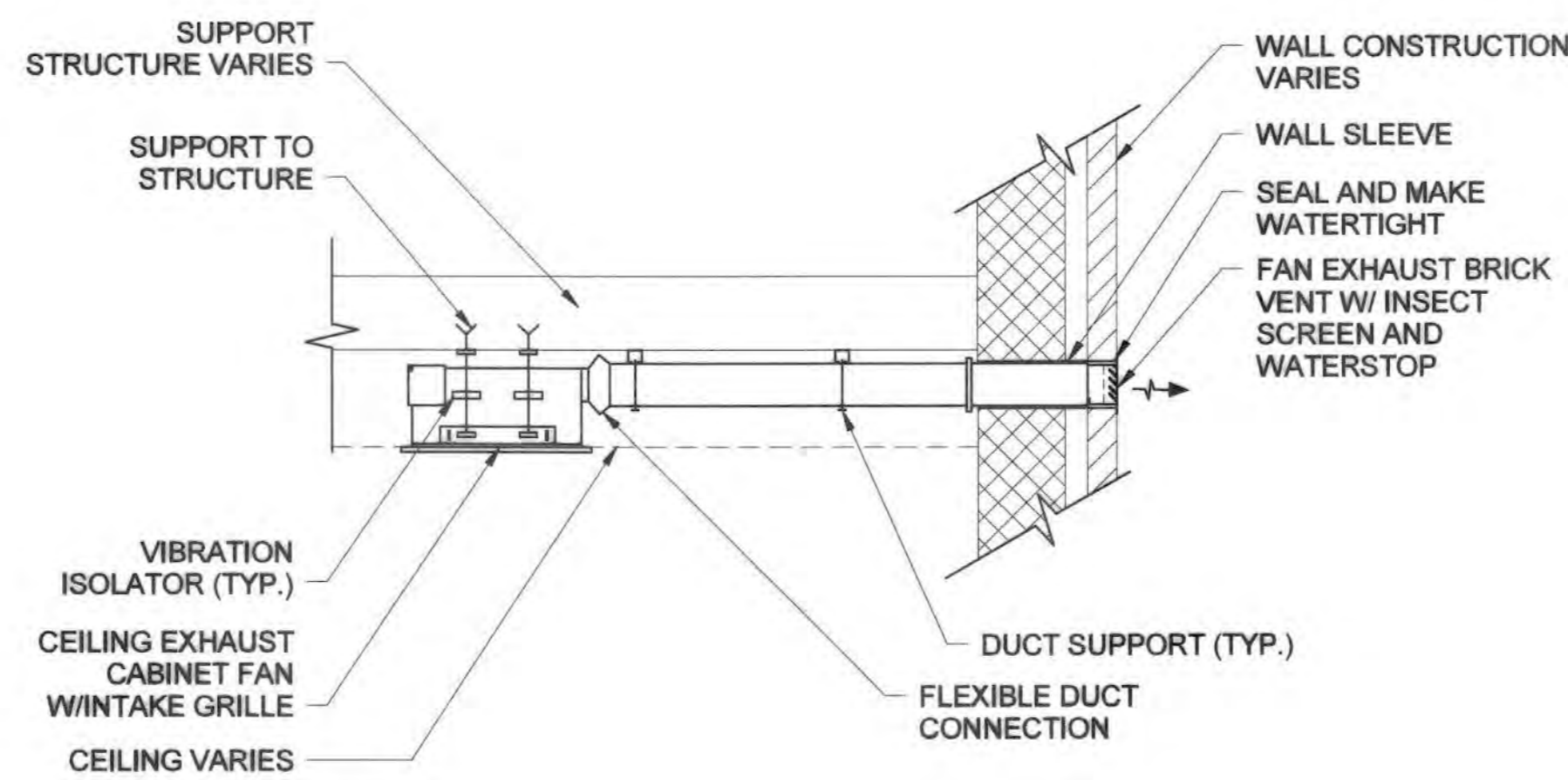
3 VERTICAL INLINE FAN

SCALE: NONE



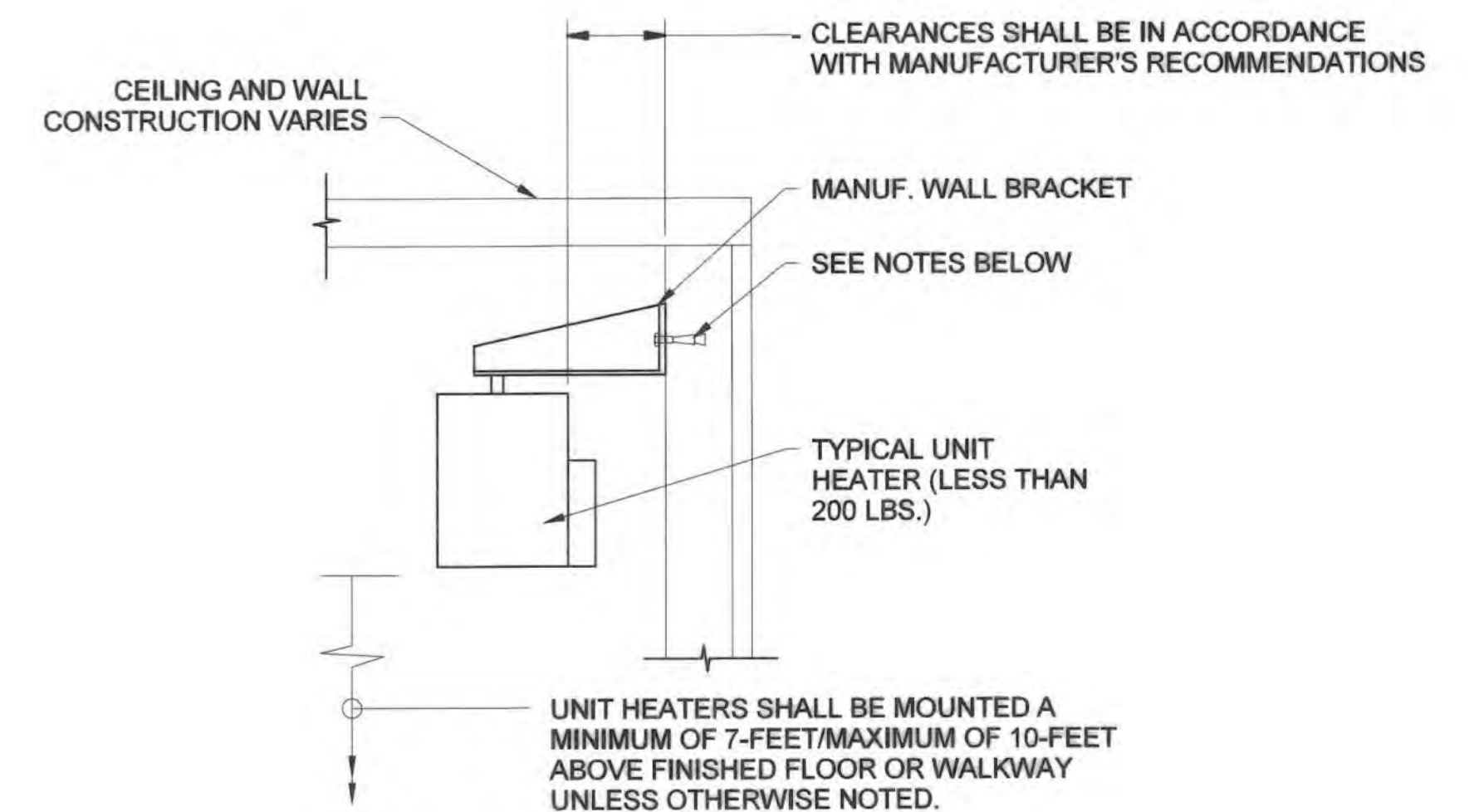
4 HORIZONTAL INLINE FAN

SCALE: NONE



5 CABINET FAN DETAIL

SCALE: NONE



- NOTES:
- FOR MASONRY WALL ANCHORING USE 1/2" DIA S.S. EXPANSION ANCHORS SUITABLE FOR HOLLOW CORE WITH MIN. 4" EMBEDMENT SPACED AT 8" ON CENTER.
 - FOR CONCRETE WALL ANCHORING USE 1/2" DIA. S.S. ADHESIVE ANCHORS WITH MIN 6" EMBEDMENT SPACED AT 12" ON CENTER.

6 WALL MOUNTED UNIT HEATER DETAIL

SCALE: NONE

AS-BUILT
DATE 9/2021

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. 33984 Expiration Date 11/5/19

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jay K. Nobile 12/20-18
DIRECTOR OF PUBLIC WORKS DATE

Thomas B. Steller 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE

John Stapp 12-20-18
CHIEF, BUREAU OF UTILITIES DATE

John Stapp 12/20/18
CHIEF, UTILITY DESIGN DIVISION DATE

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STATE OF MARYLAND
LIRA A. PETERSON
PROFESSIONAL ENGINEER
No. 33984

DES:	MM
DRN:	Author
CHK:	LP
DATE:	DEC 2018
BY:	NO.
REVISION:	

HVAC DETAILS

600' SCALE MAP NO.: 35
BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING
M1-503

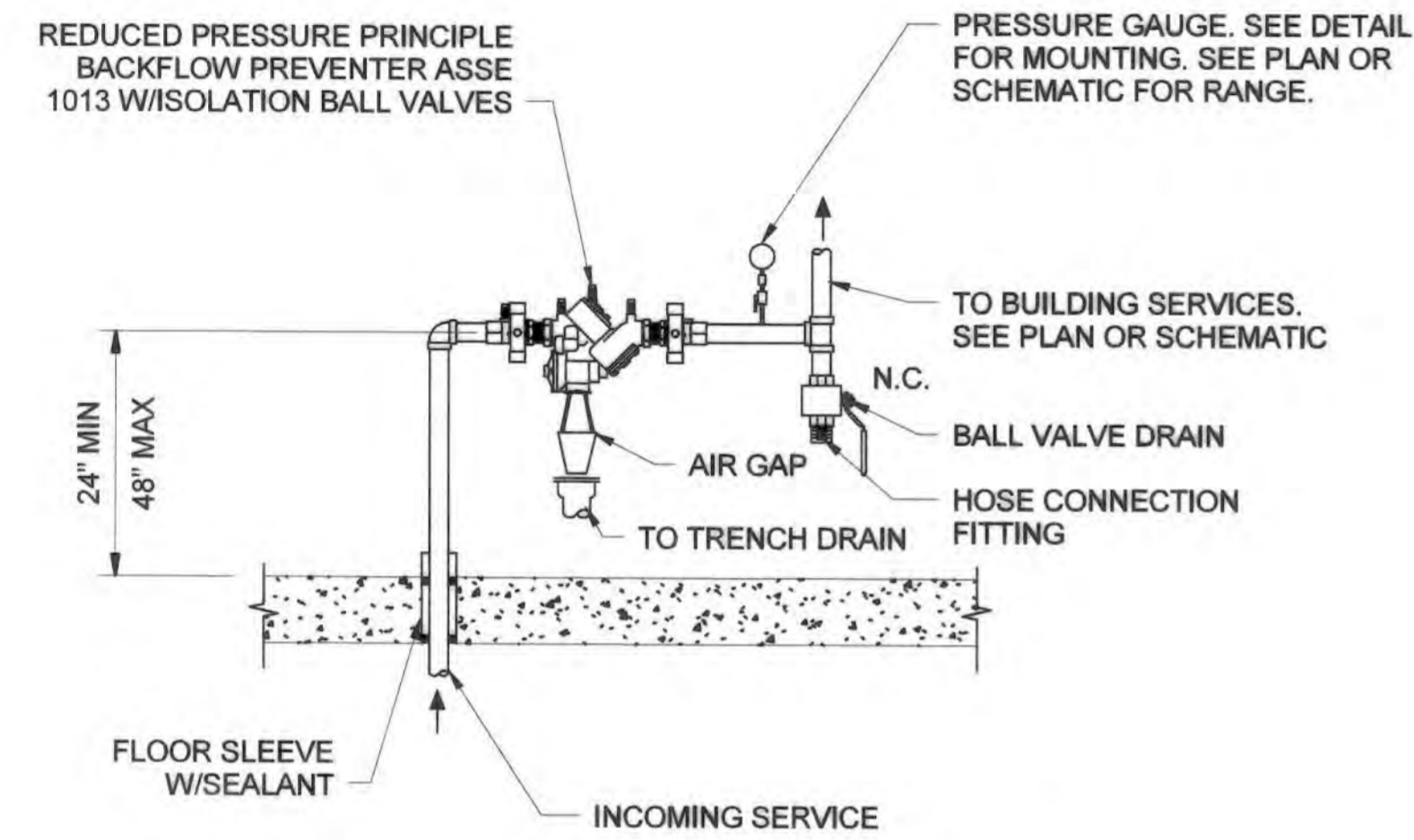
SCALE
AS SHOWN

SHEET
49 OF 81

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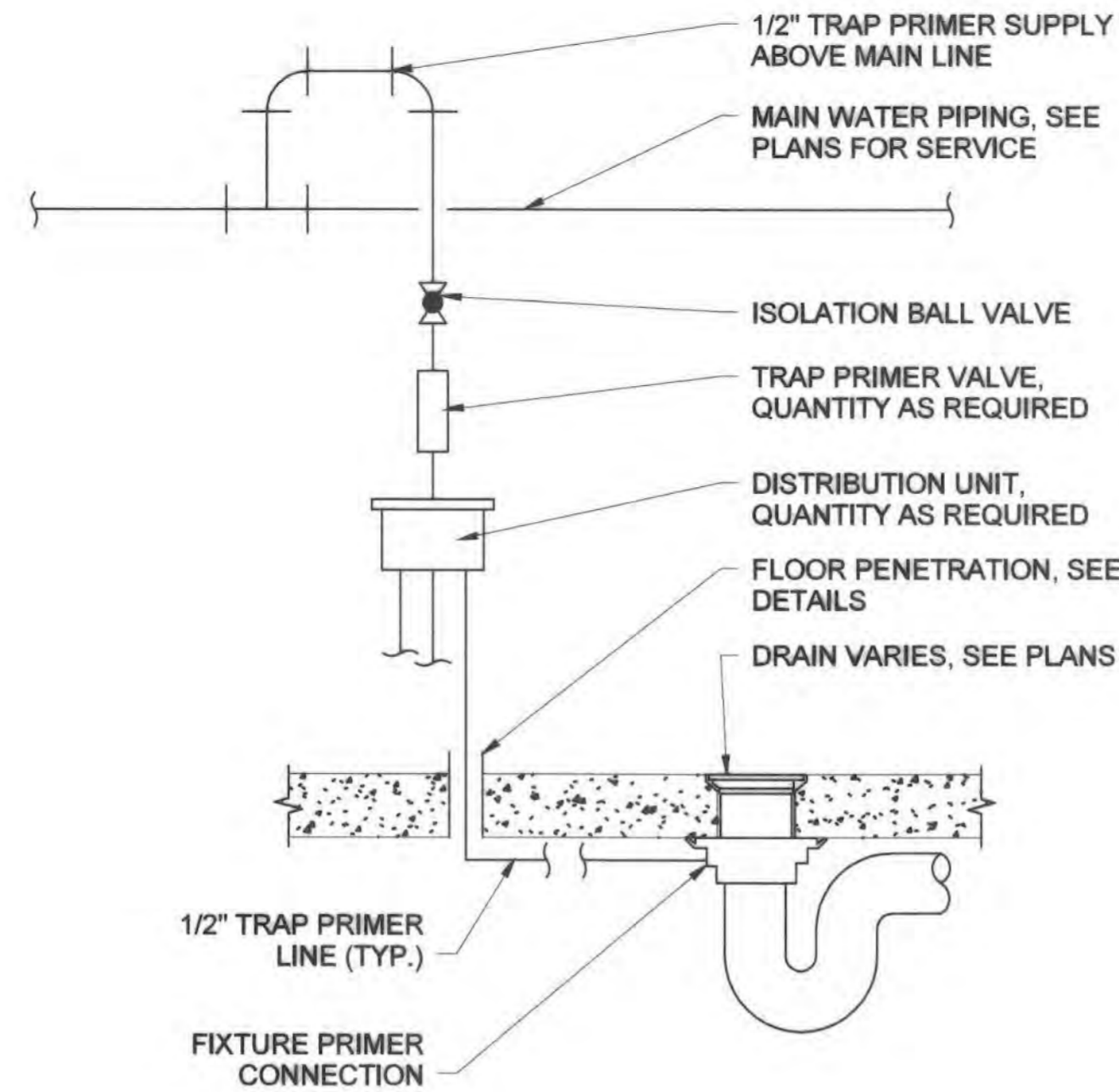
GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.



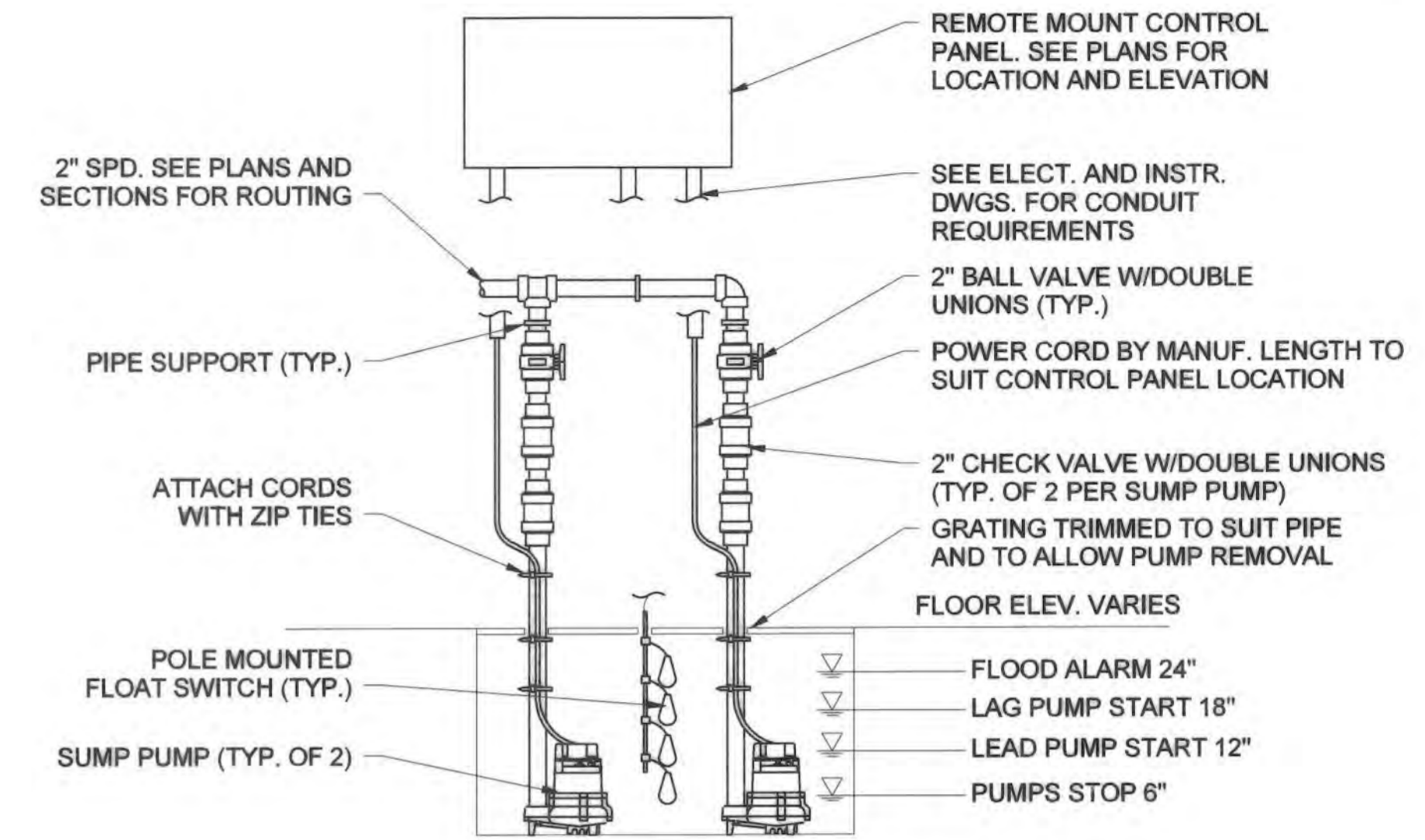
1 BACKFLOW PREVENTER DETAIL

SCALE: NONE



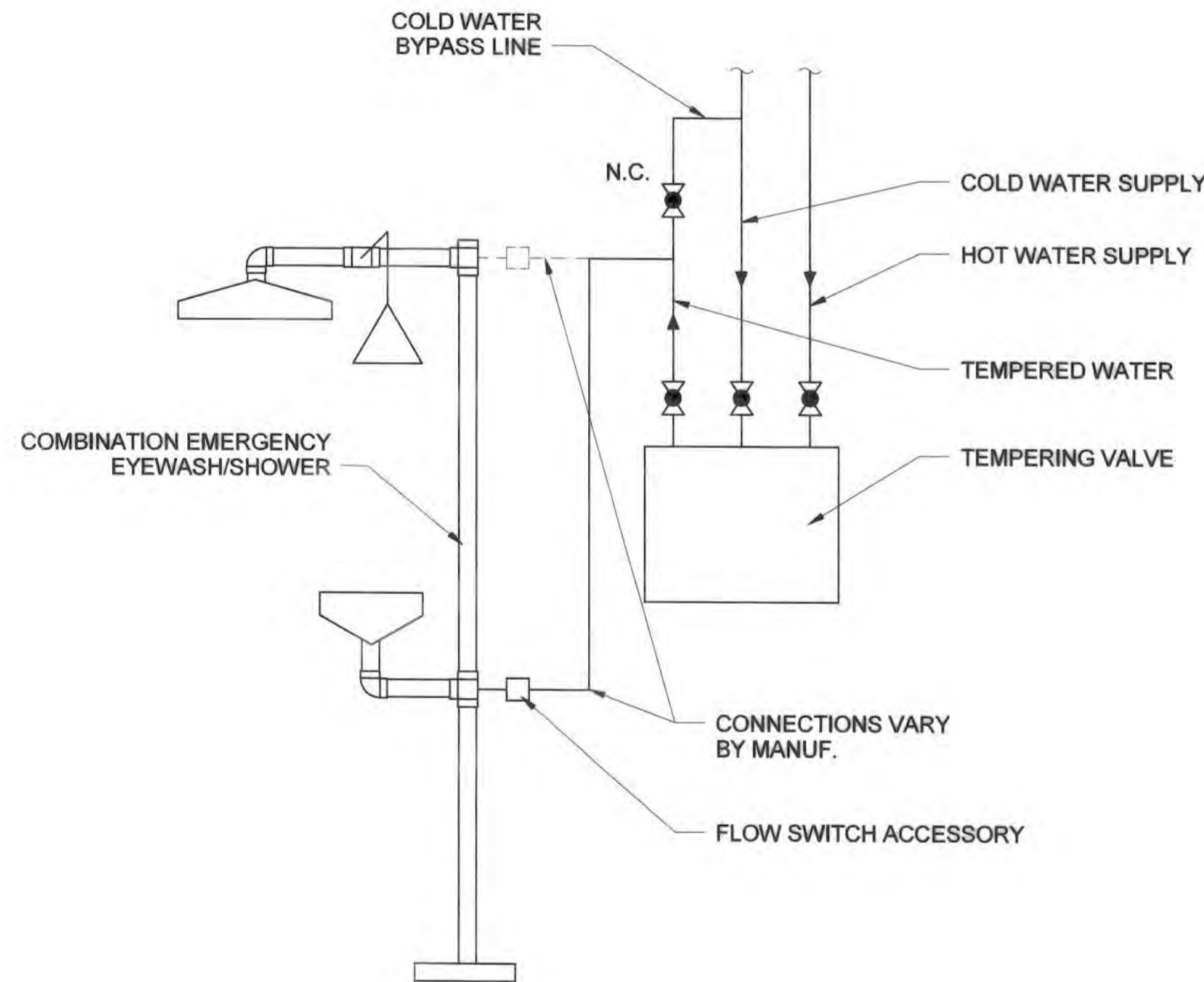
2 TRAP PRIMER DETAIL

SCALE: NONE



3 DUPLEX SUMP PUMP DETAIL

SCALE: NONE



- NOTES:
- VALVES SHALL BE LOCATED WITHIN 6 FEET OF FINISHED FLOOR.

4 EMERGENCY EYEWASH/SHOWER DETAIL

SCALE: NONE

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AS-BUILT
DATE 9/2021

DRAWING
M1-504

SCALE
AS SHOWN

SHEET

50 OF 81

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 12-28-18
Chief, Bureau of Engineering: *[Signature]* DATE:
Chief, Bureau of Utilities: *[Signature]* DATE:
Chief, Utility Design Division: *[Signature]* DATE:

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
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SPARKS, MD 21152
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DES:	MM				
DRN:	MM				
CHK:	LP				
DATE:	DEC 2018	BY:	NO.	REVISION	DATE

PLUMBING DETAILS

600' SCALE MAP NO.: 35 BLOCK NO.: 17.11

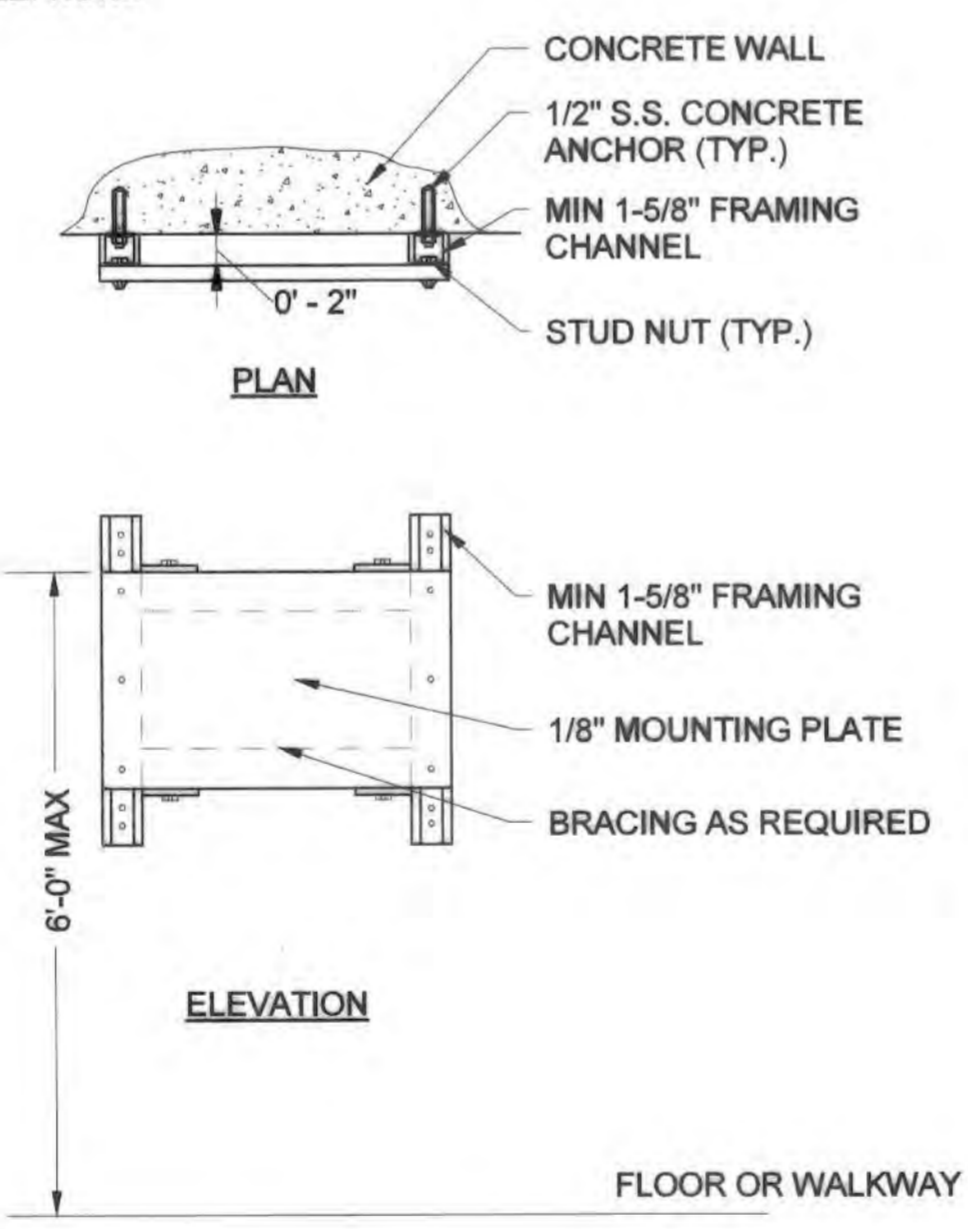
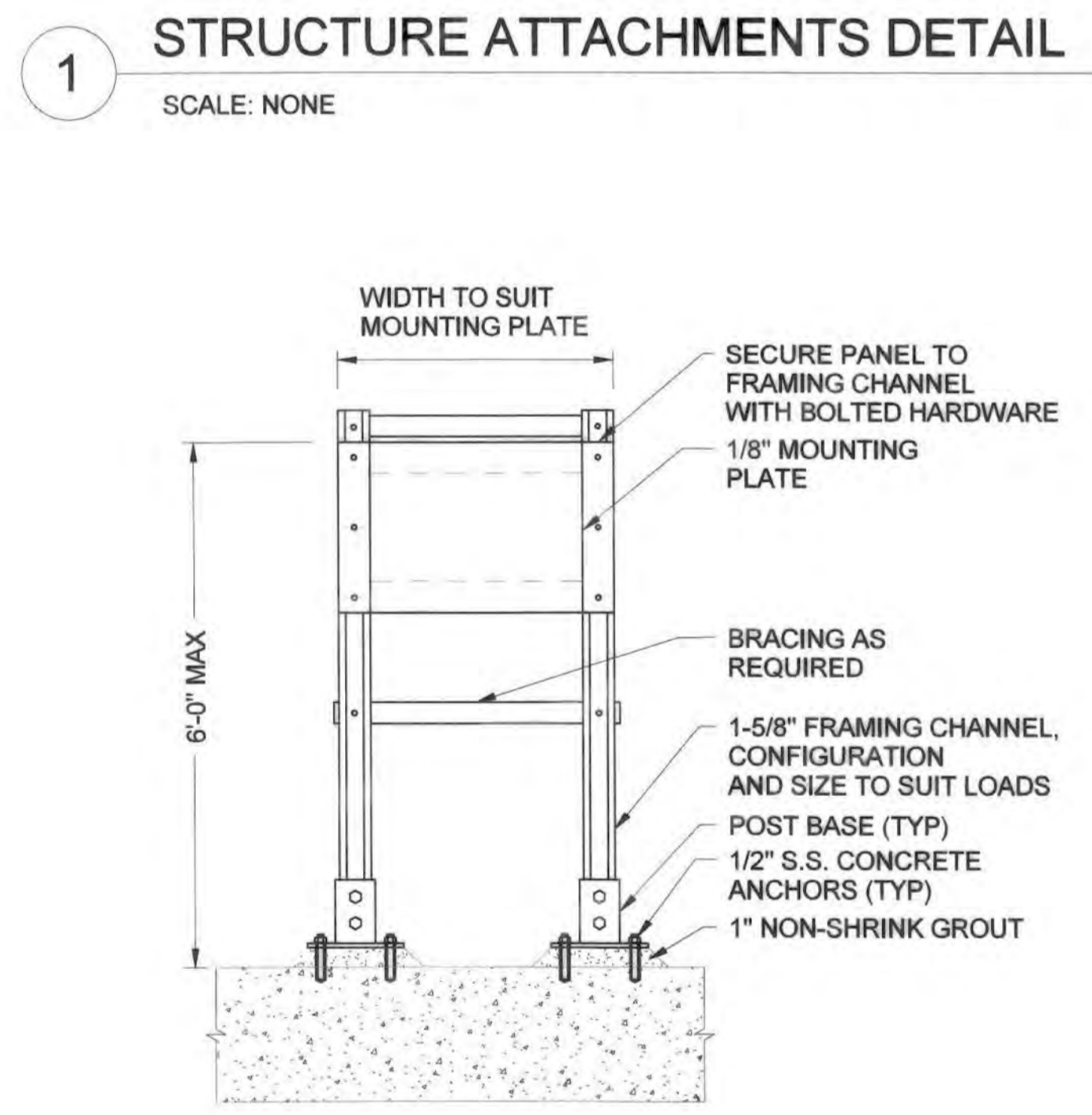
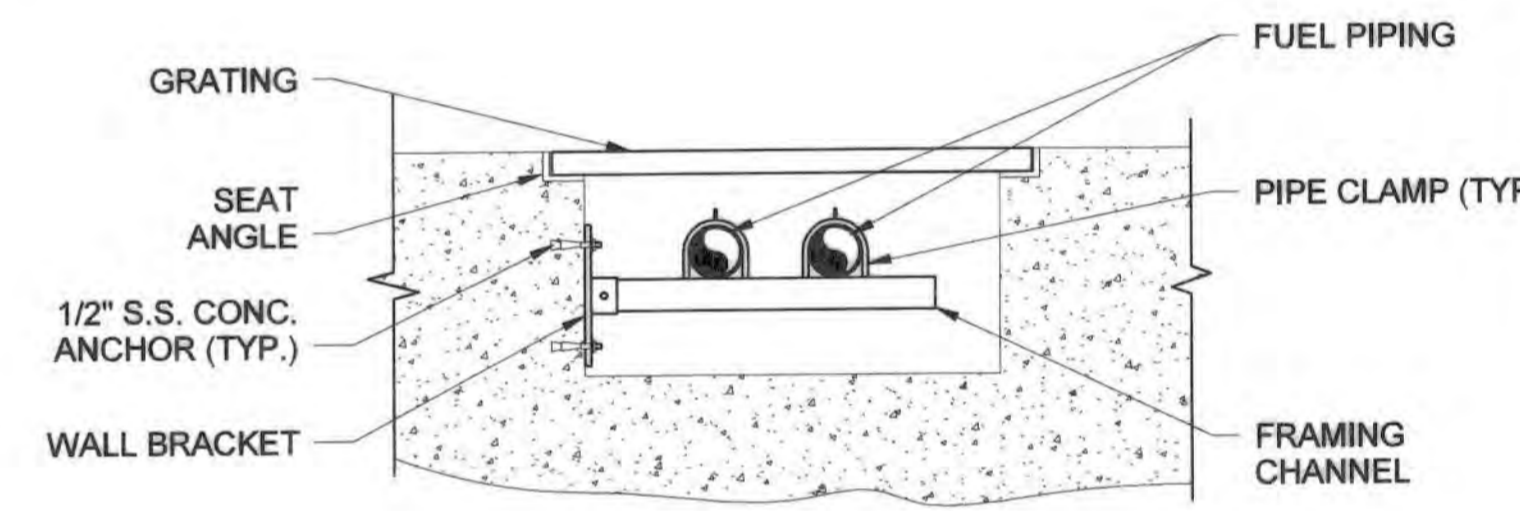
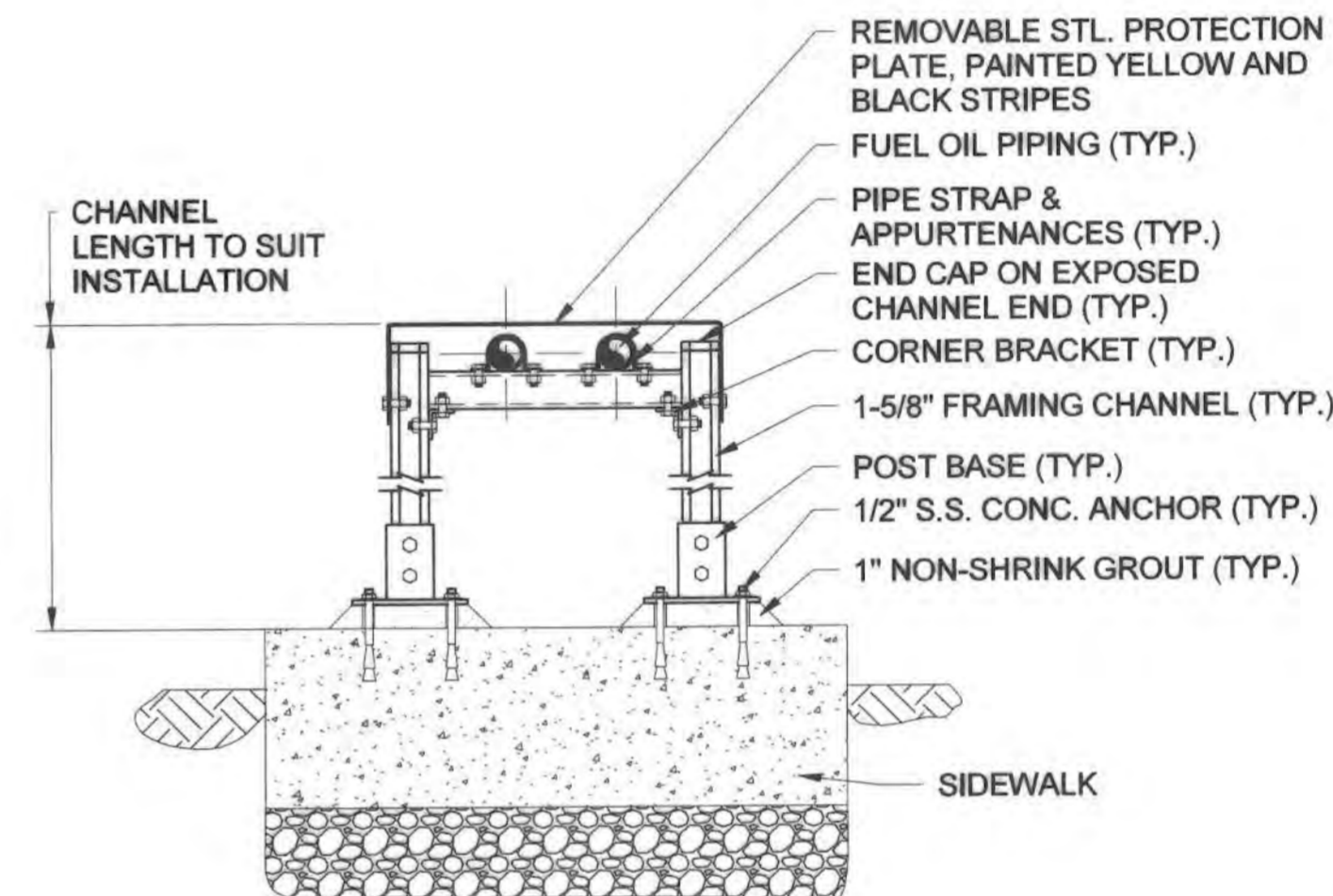
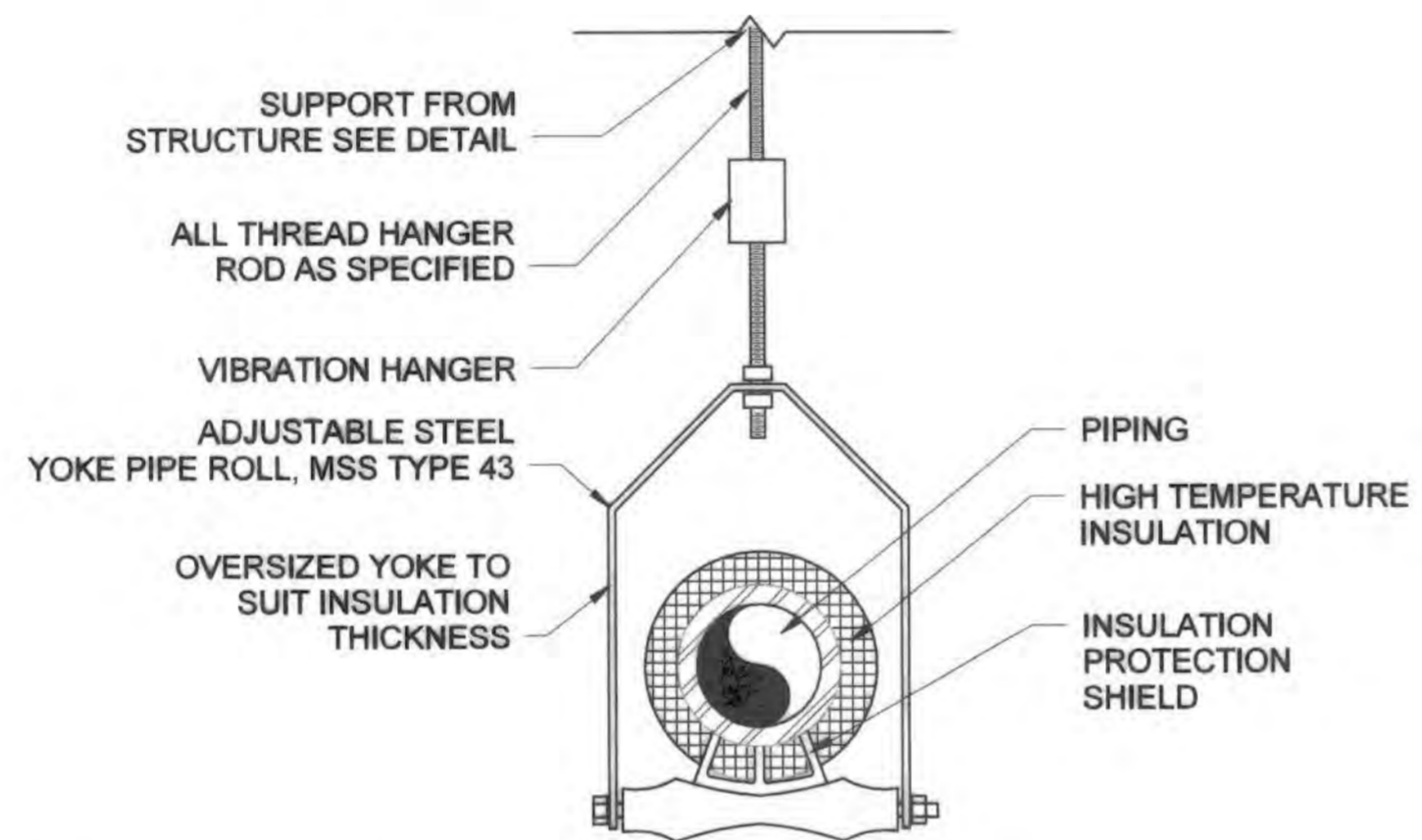
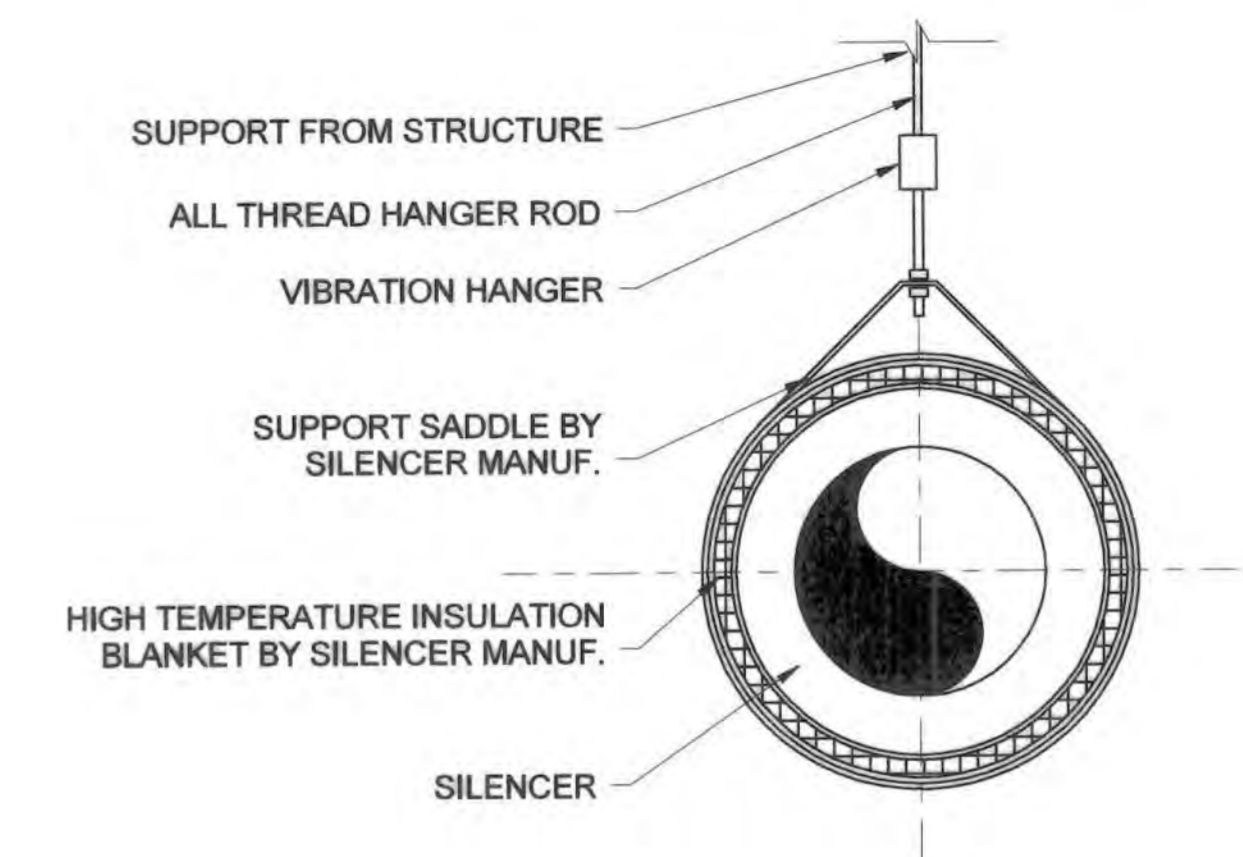
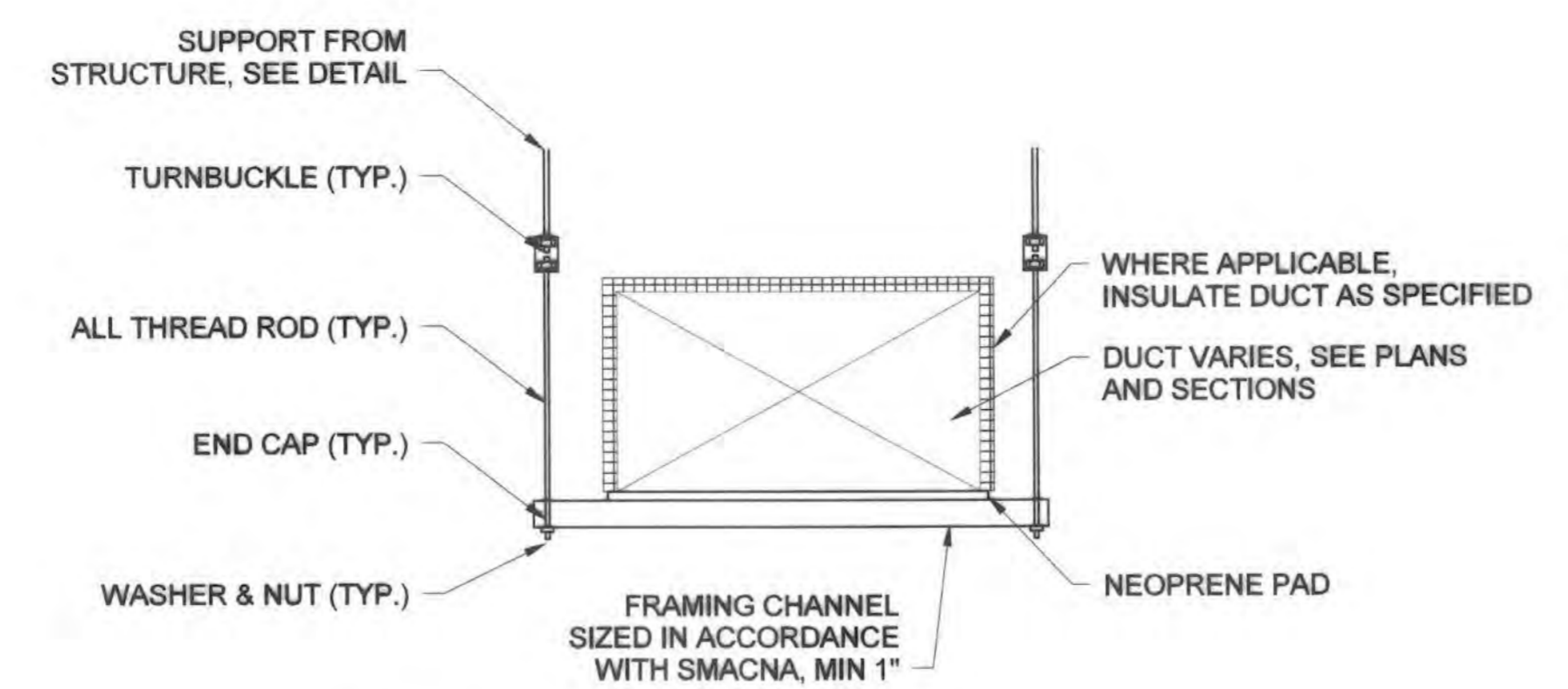
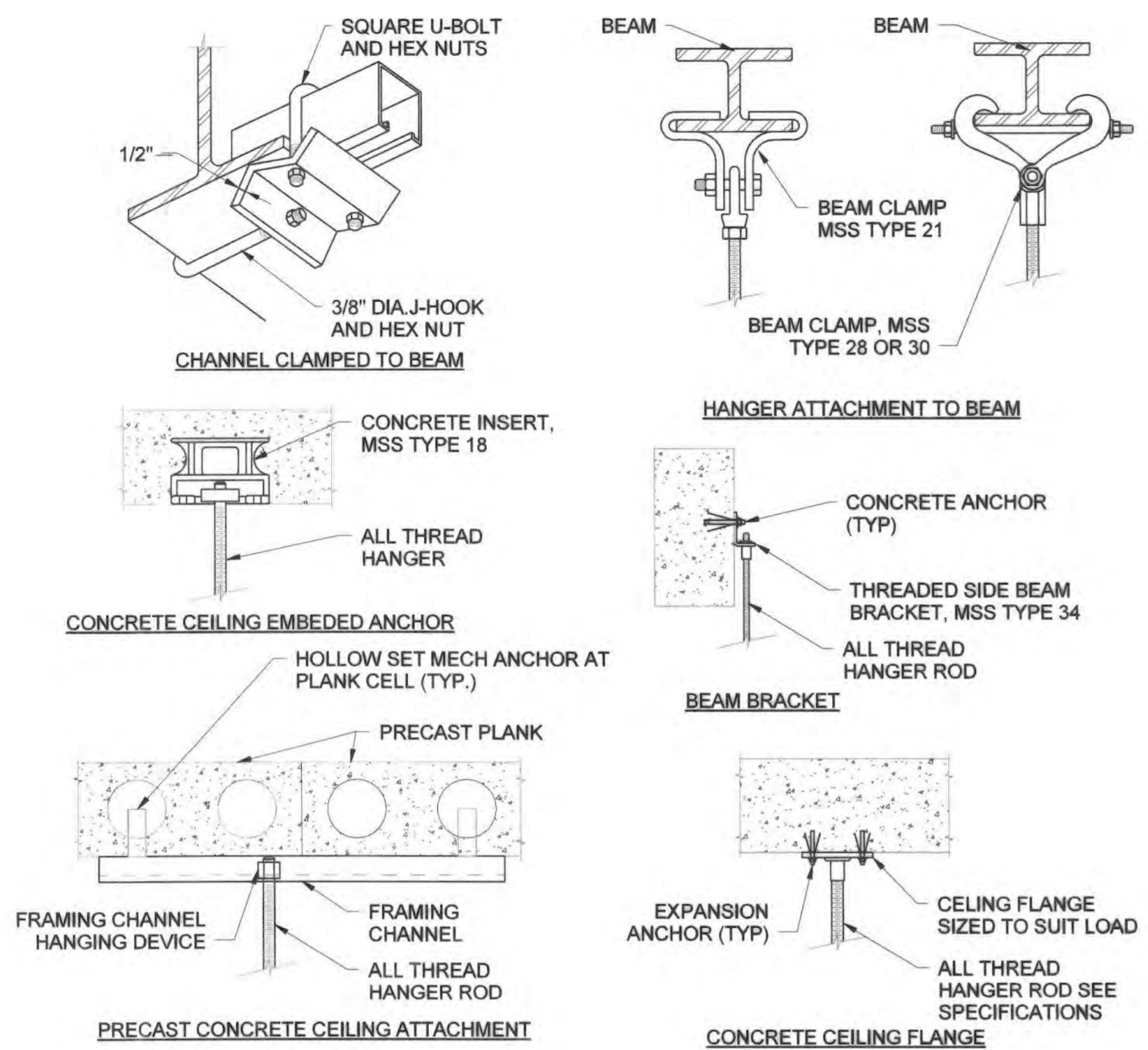
**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.
- HOLLOW SET MECH ANCHORS SHALL BE POWERS HOLLOW-SET DROPIN ANCHOR OR EQUAL. QUANTITY TO SUIT LOAD.



NOTES:
1. MATERIALS OF CONSTRUCTION: 316 STAINLESS STEEL.

AS-BUILT
DATE 9/2021

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STATE OF MARYLAND
LARS A. PETERSON
PROFESSIONAL ENGINEER
No. 33984
12/15/18

DES:	MM				
DRN:	Author				
CHK:	LP				
DATE:	DEC 2018	BY:	NO.	REVISION	DATE

600' SCALE MAP NO.:	35	BLOCK NO.:	17, 11
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CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

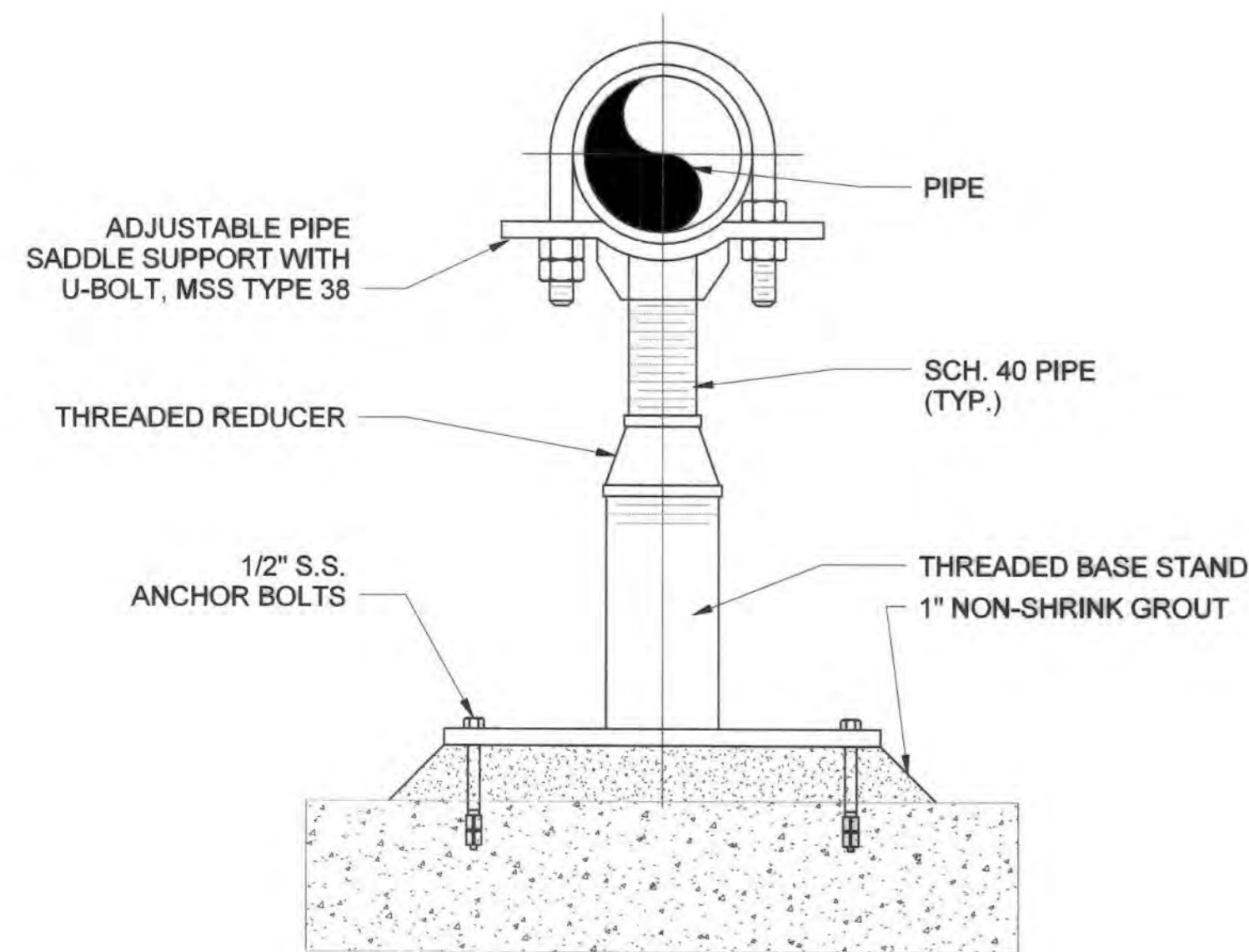
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SCALE	AS SHOWN
SHEET	51 OF 81

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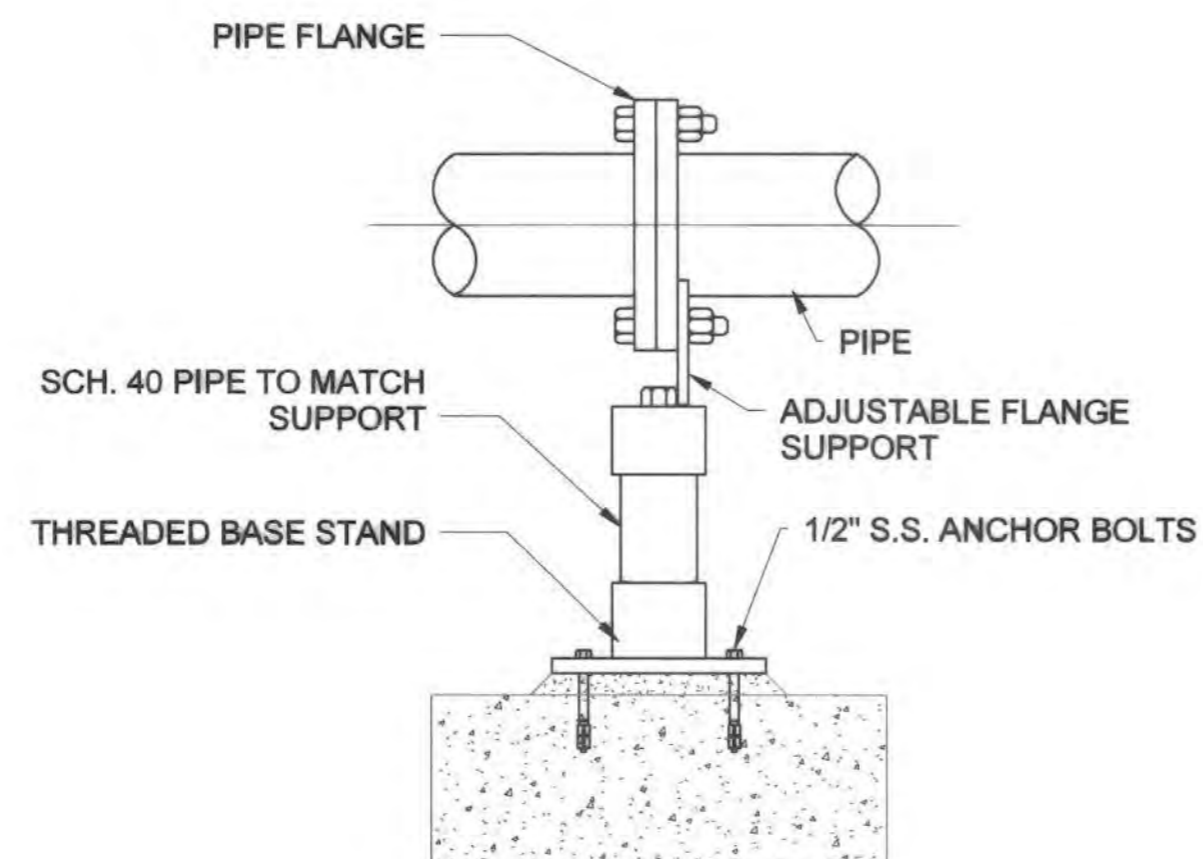
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF UTILITIES DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, UTILITY DESIGN DIVISION DATE

GENERAL SHEET NOTES

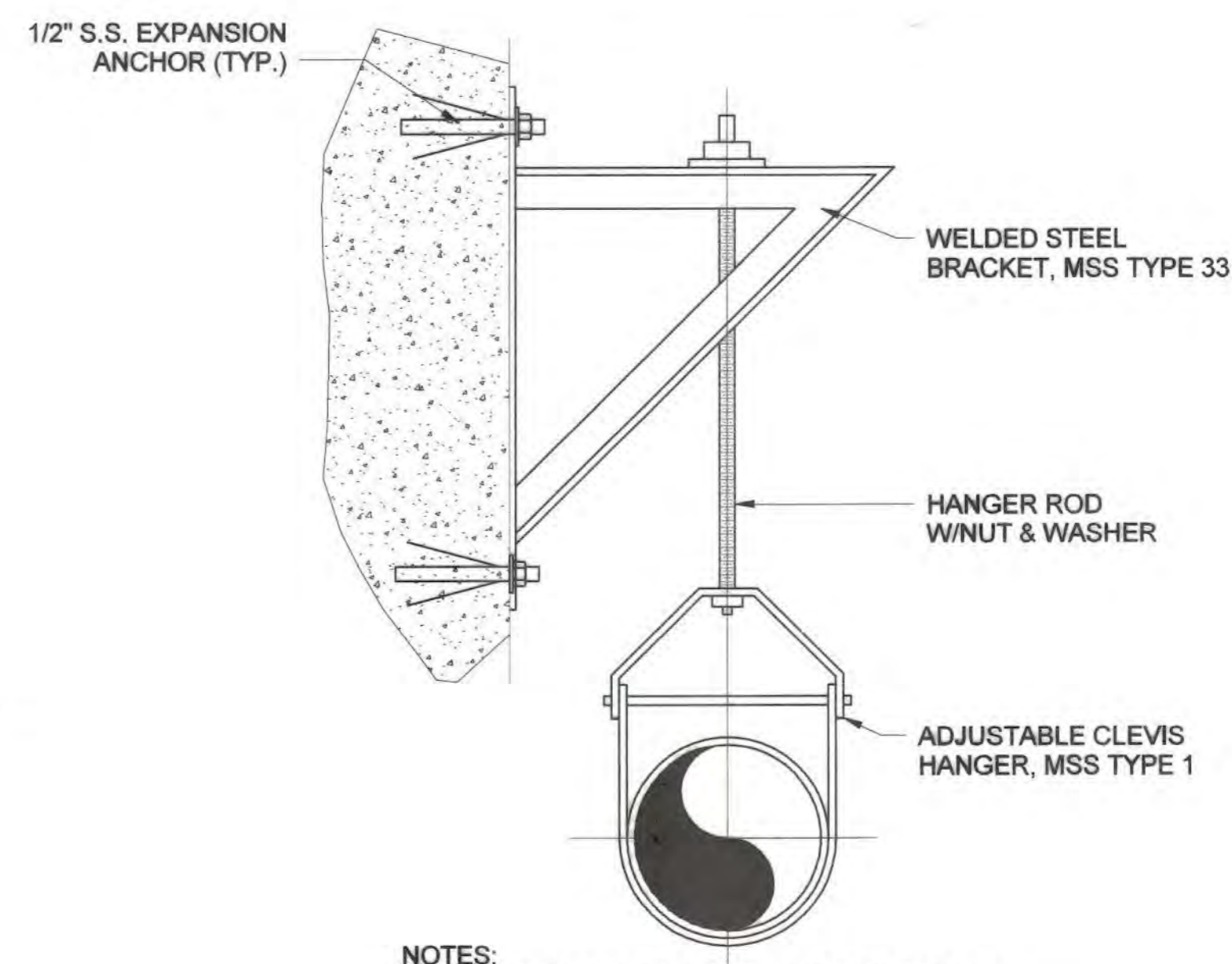
- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.



1 ADJUSTABLE SADDLE SUPPORT DETAIL
SCALE: NONE

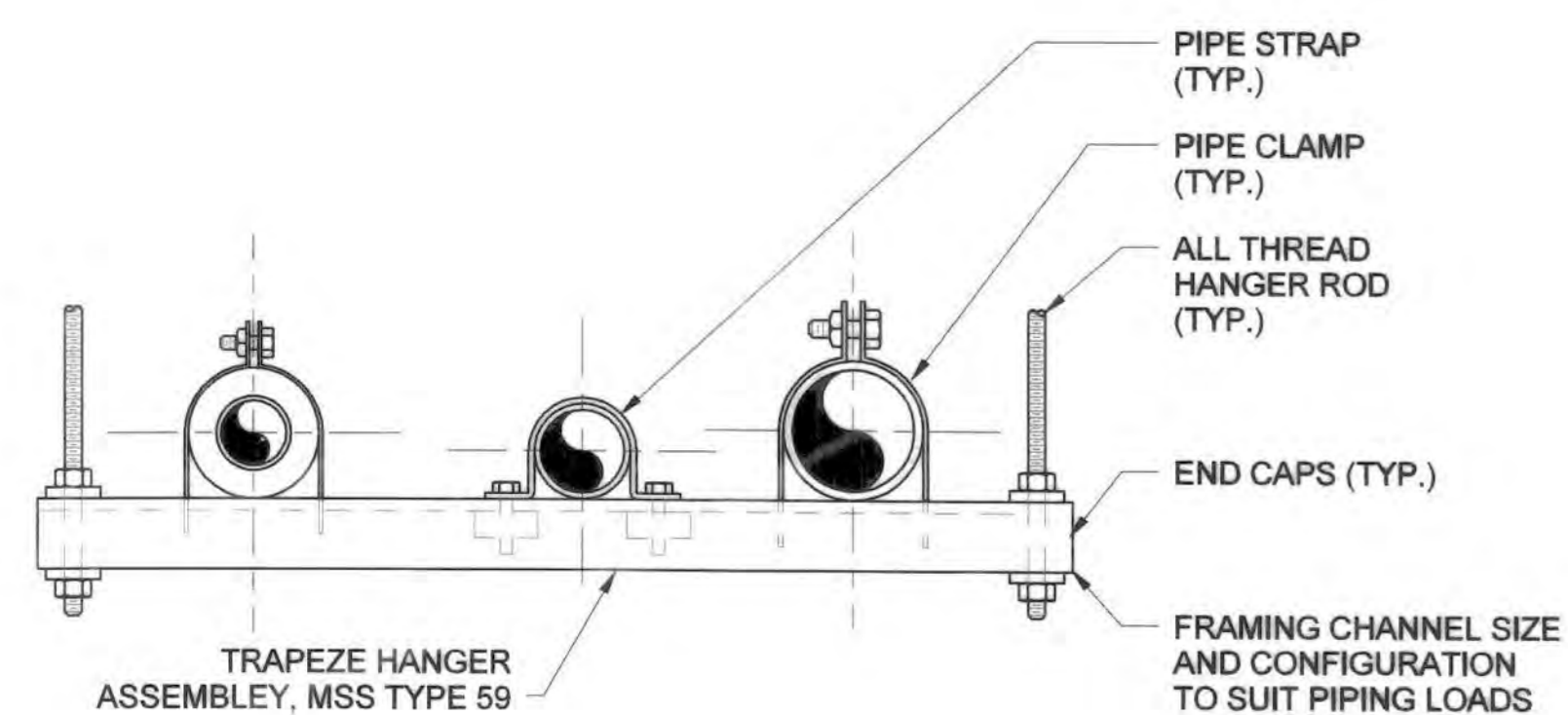


2 FLANGE SUPPORT DETAIL
SCALE: NONE

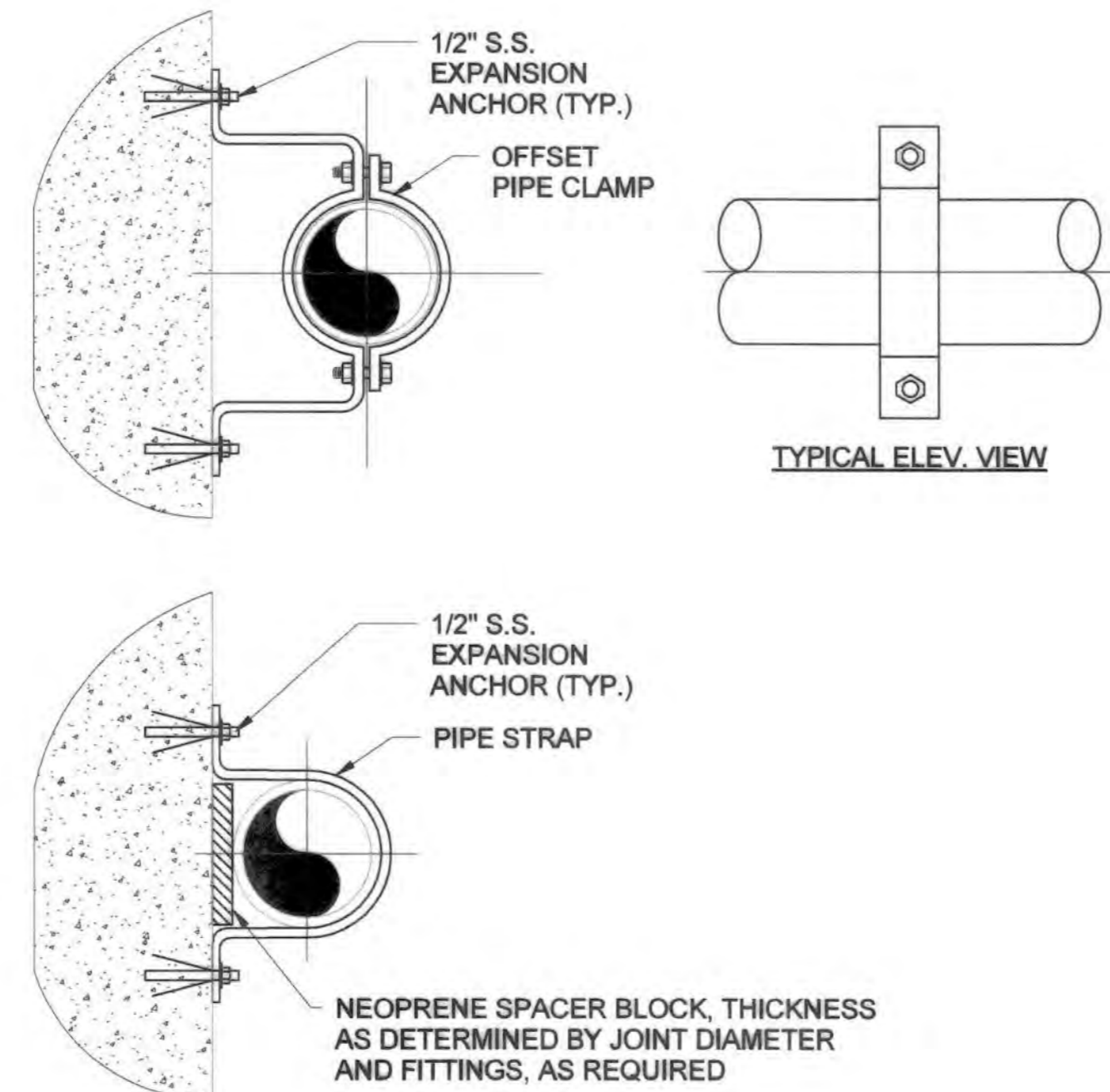


3 CLEVIS HANGER DETAIL
SCALE: NONE

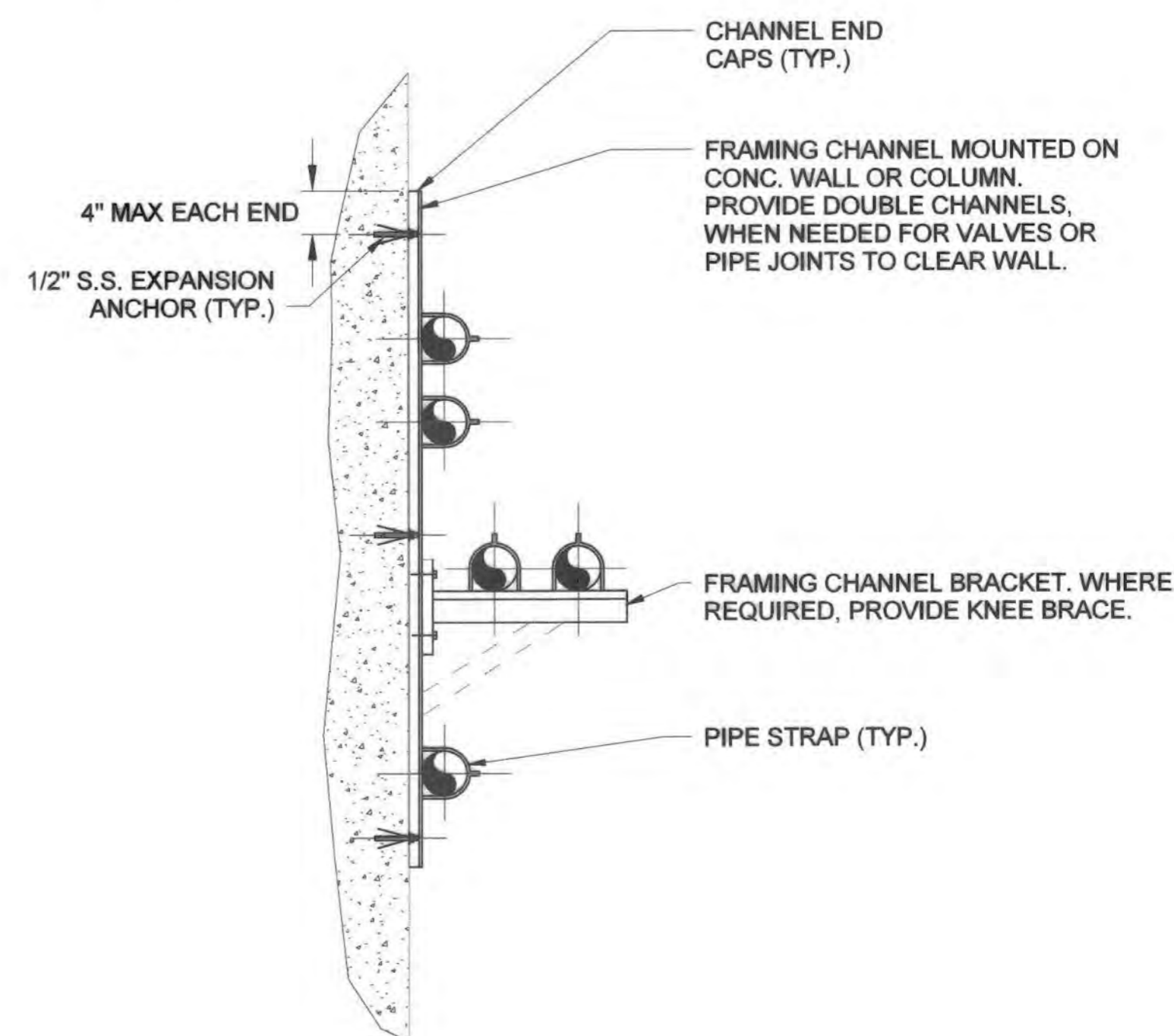
- NOTES:**
- MAY BE USED WITH OTHER STRUCTURE ATTACHMENTS.



4 PIPE TRAPEZE DETAIL
SCALE: NONE



5 OFFSET PIPE CLAMP DETAIL
SCALE: NONE



6 PIPE RACK SUPPORT DETAIL
SCALE: NONE

- NOTES:**
- CONFIGURATION SHOWN IS SUITABLE FOR PIPING 4 INCHES AND SMALLER.
 - CUT EDGES OF CHANNEL SHALL BE MACHINED SMOOTH.

AS-BUILT
DATE 9/2021

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. 33994, Expiration Date 1/10/19.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE 10/20/19
Chief, Bureau of Engineering: *[Signature]* DATE 10/20/19
Chief, Bureau of Utilities: *[Signature]* DATE 10/20/19
Chief, Utility Design Division: *[Signature]* DATE 10/20/19

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ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
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SPARKS, MD 21152
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FAX: (410)316-7817
WWW.KCI.COM

STATE OF MARYLAND
LANCE A. PETERSON
PROFESSIONAL ENGINEER
[Signature] DATE 10/20/19

DES:	Designer				
DRN:	Author				
CHK:	Checker				
DATE:	DEC 2018	BY:	NO.		
		REVISION		DATE	

PIPE SUPPORT DETAILS

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

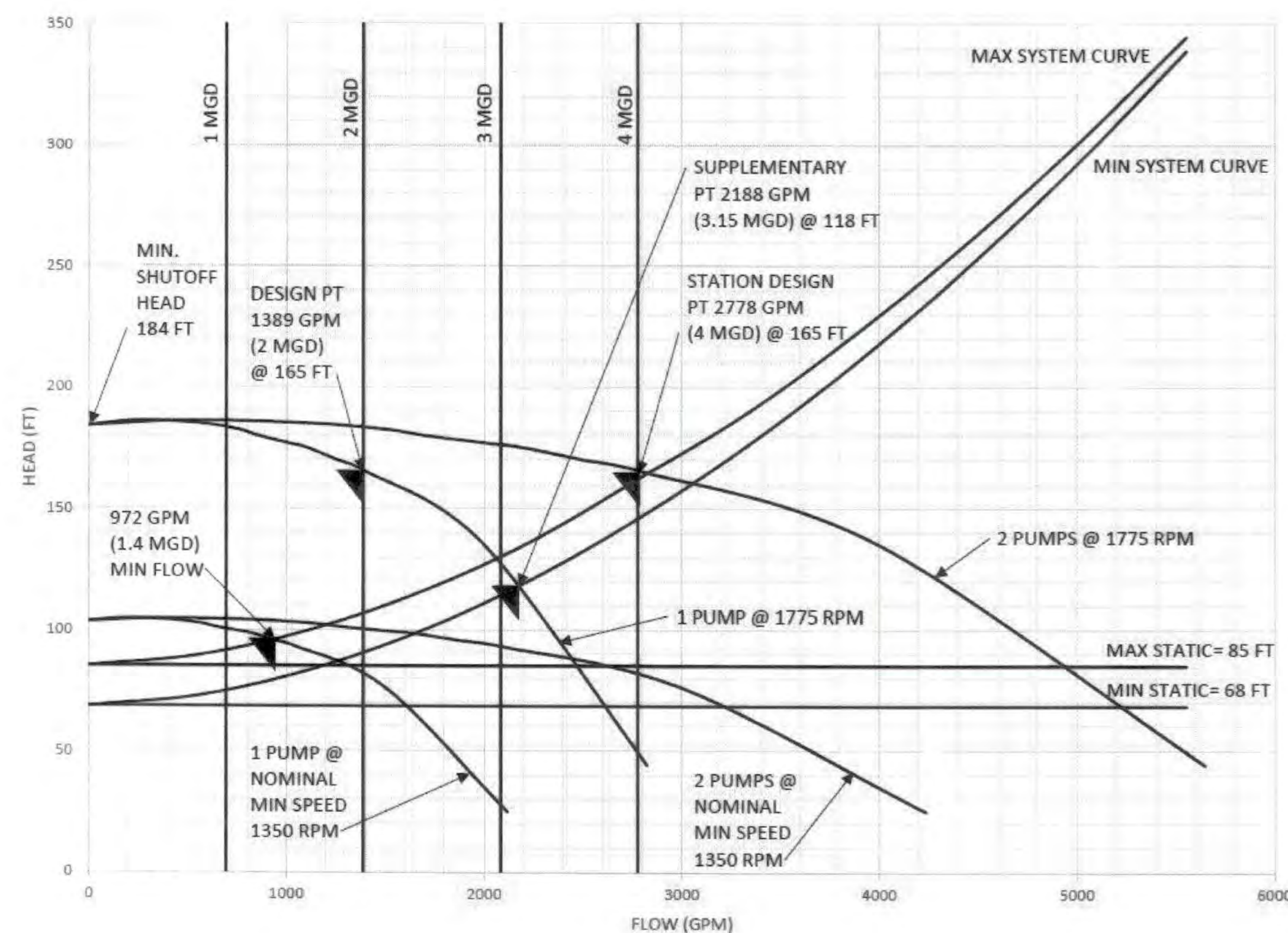
CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING M1-506
SCALE AS SHOWN
SHEET 52 OF 81

GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.

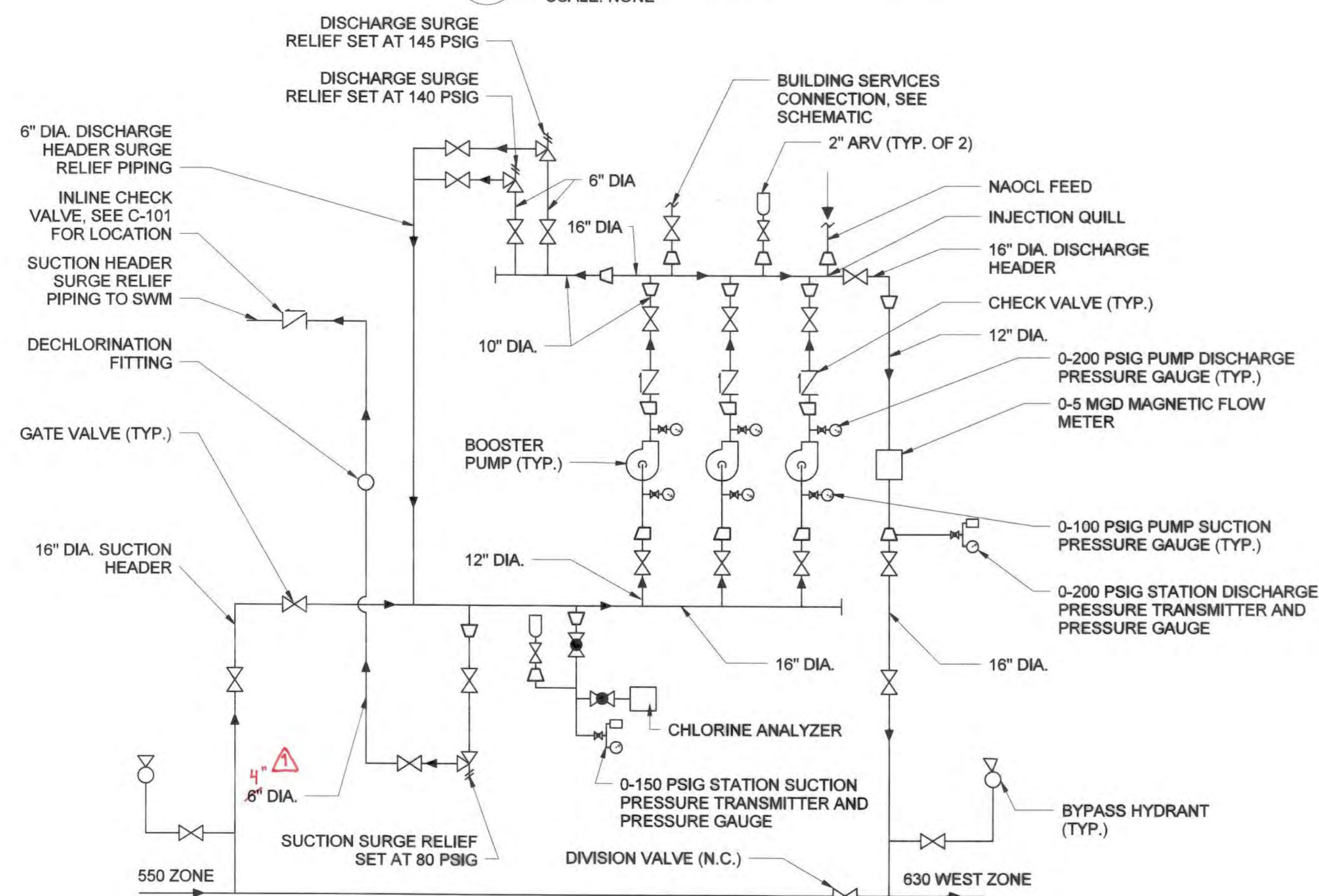


DESIGN CRITERIA

STATION SAFE PUMPING CAPACITY	4 MGD
NUMBER OF INSTALLED PUMPS	3
NUMBER OF OPERATING PUMPS	2
PUMP DATA	
DESIGN CAPACITY	1,388 GPM (2 MGD)
DESIGN TDH	165 FT
DESIGN EFFICIENCY (MIN)	77%
DESIGN NPSHR (MAX)	16 FT
PUMP/MOTOR OPERATION	VARIABLE SPEED
MOTOR HP (MAX)	100 HP
MOTOR NOMINAL SPEED	1800 RPM
MOTOR NOMINAL MINIMUM SPEED	1350 RPM

1 PUMP & SYSTEM CURVES

SCALE: NONE

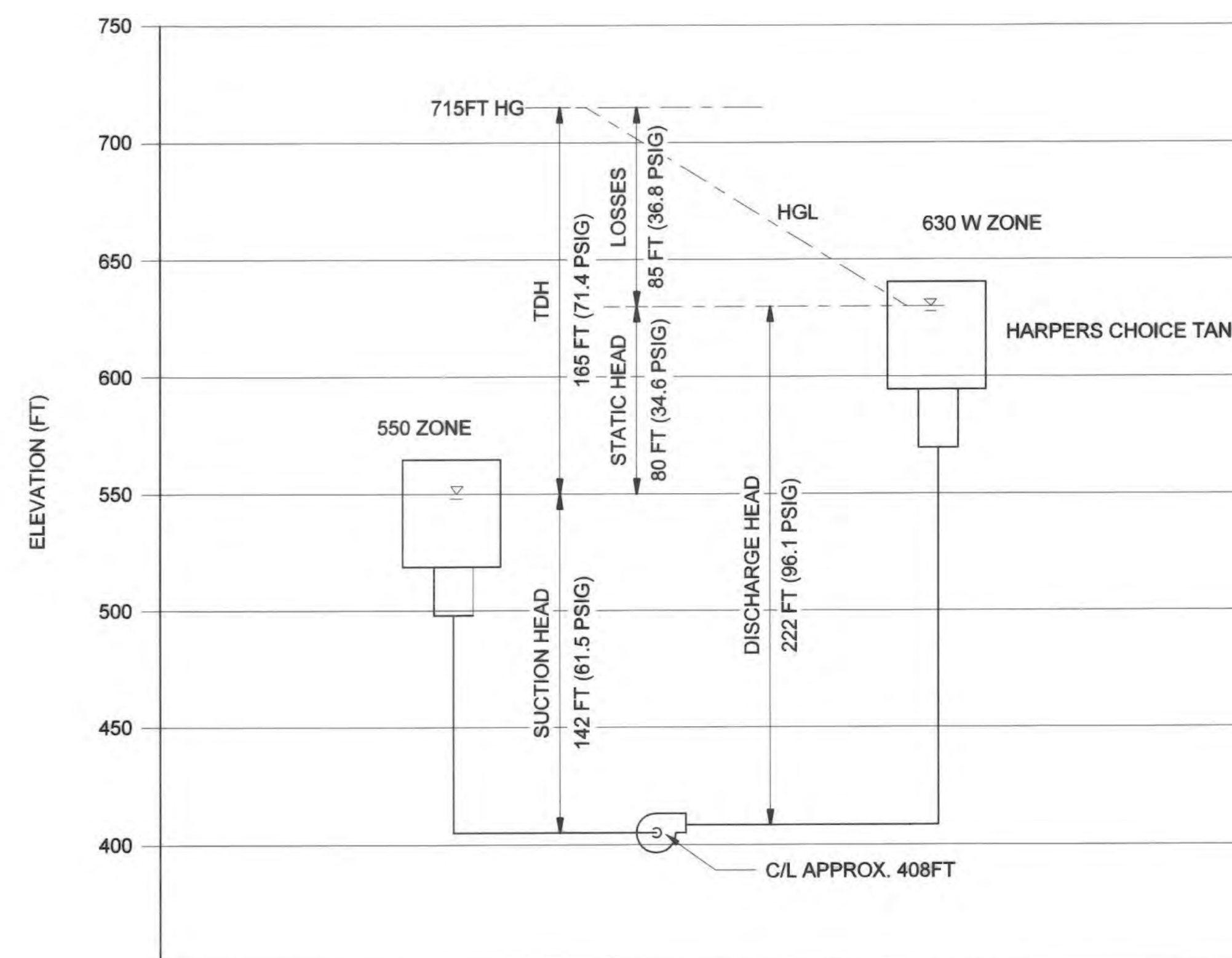


- NOTES:
 1. SUCTION HEADER GAUGE RANGE: 0-100 PSIG
 2. DISCHARGE HEADER GAUGE RANGE: 0-200 PSIG

2 PIPING SCHEMATIC

SCALE: NONE

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. 33994, Expiration Date 1/5/19.



3 HYDRAULIC DIAGRAM

SCALE: NONE

AS-BUILT
 DATE 9/2021

DRAWING
 M1-601

SCALE
 AS SHOWN
 SHEET
 53 OF 81

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Jay S. ...
 DIRECTOR OF PUBLIC WORKS DATE 11-26-11
James P. ...
 CHIEF, BUREAU OF ENGINEERING DATE
...
 CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS
KCI
 TECHNOLOGIES
 938 RIDGEBROOK ROAD
 SPARKS, MD 21152
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DES:	MM			
DRN:	MM			
CHK:	LP			
DATE:	DEC 2018	BY:	AG	NO. 1
			AS-BUILTS	REVISION

PROCESS SCHEMATICS

DATE 600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

12/18/2018 2:25:38 PM

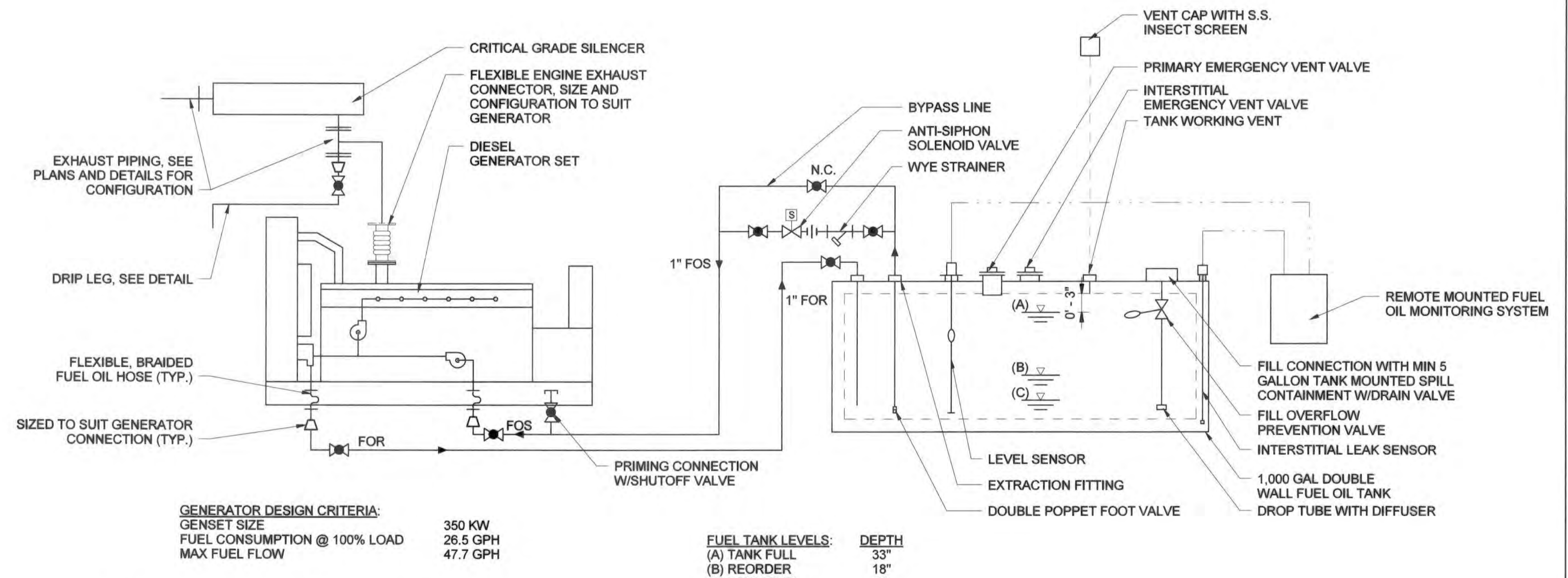
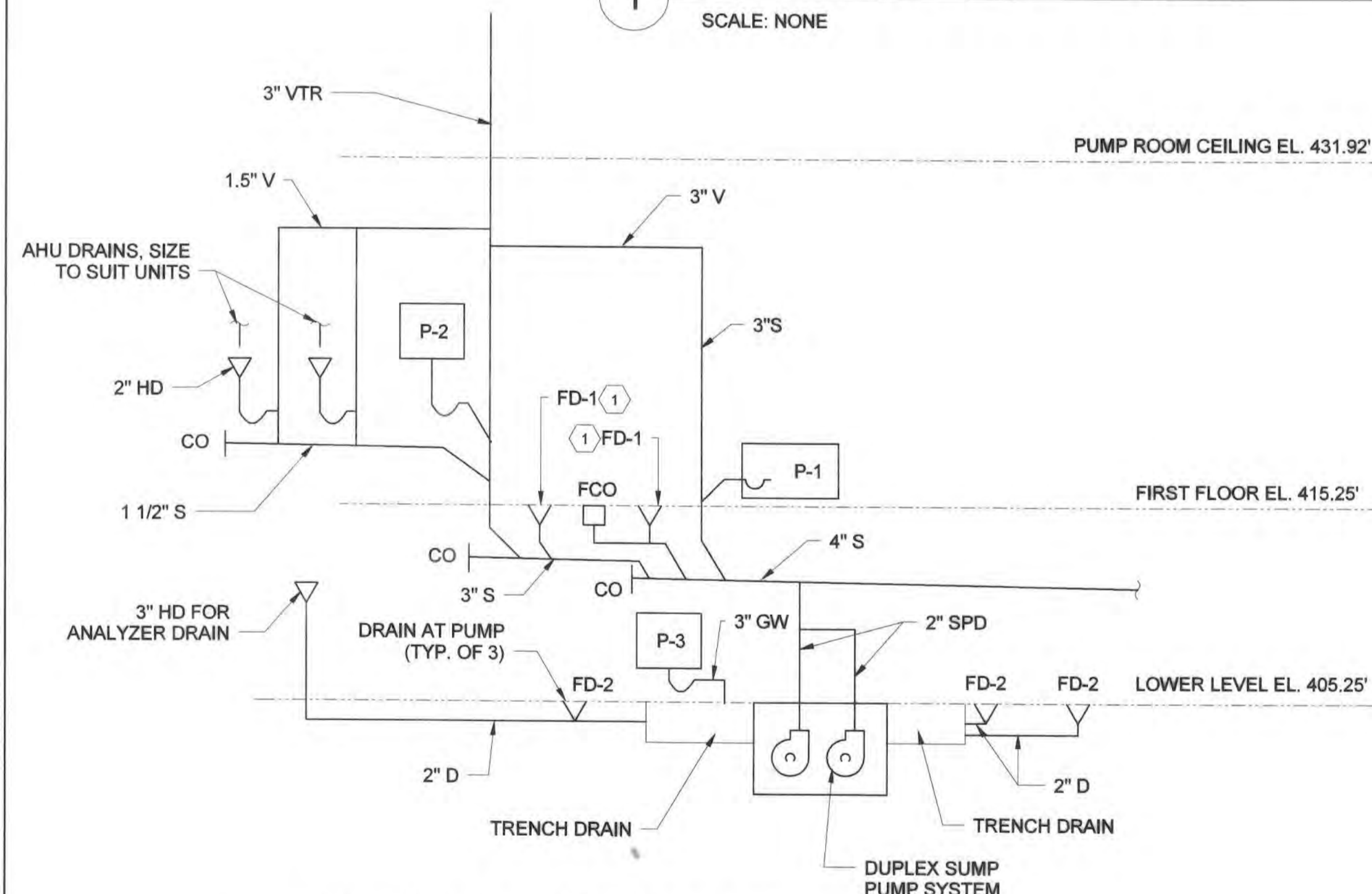
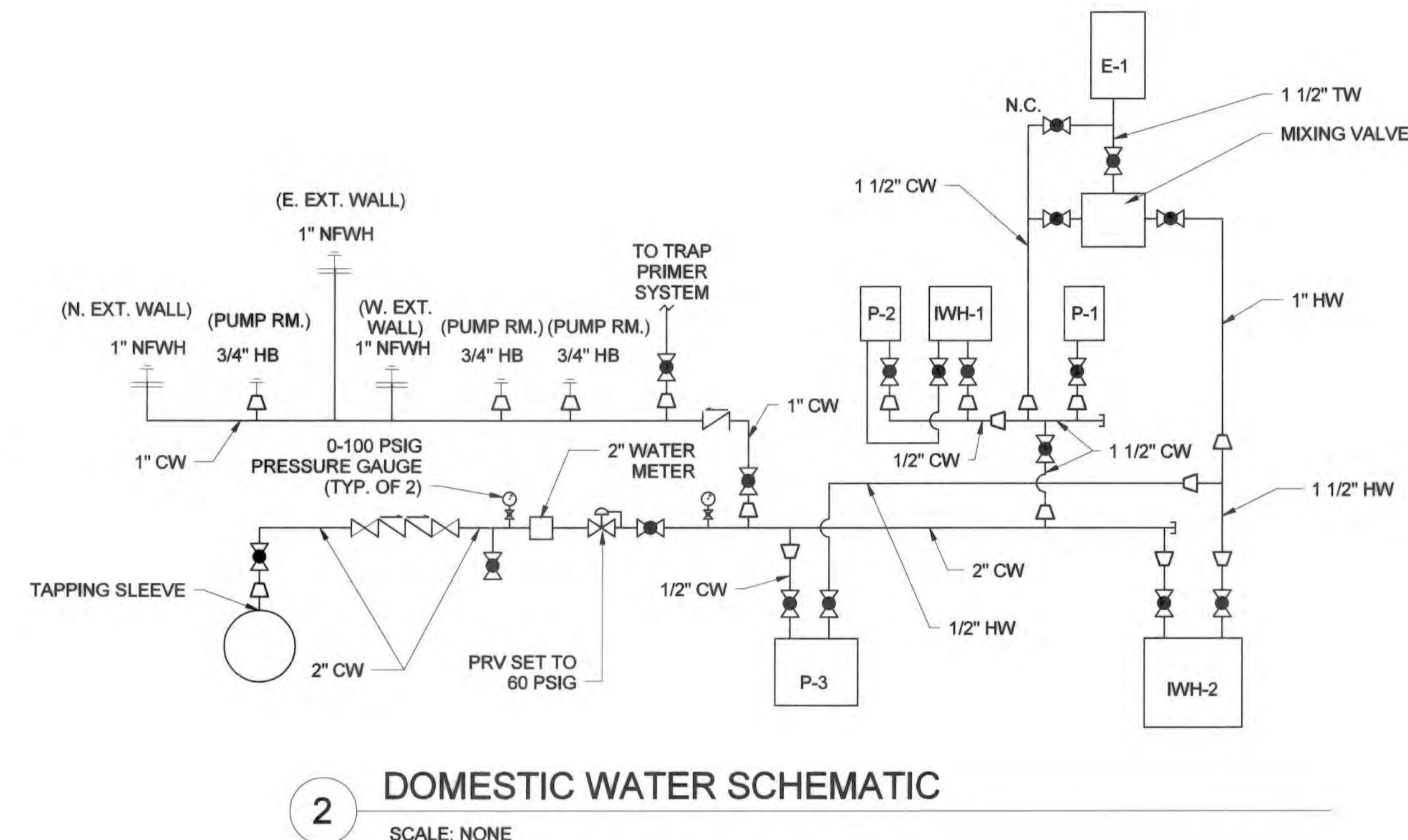
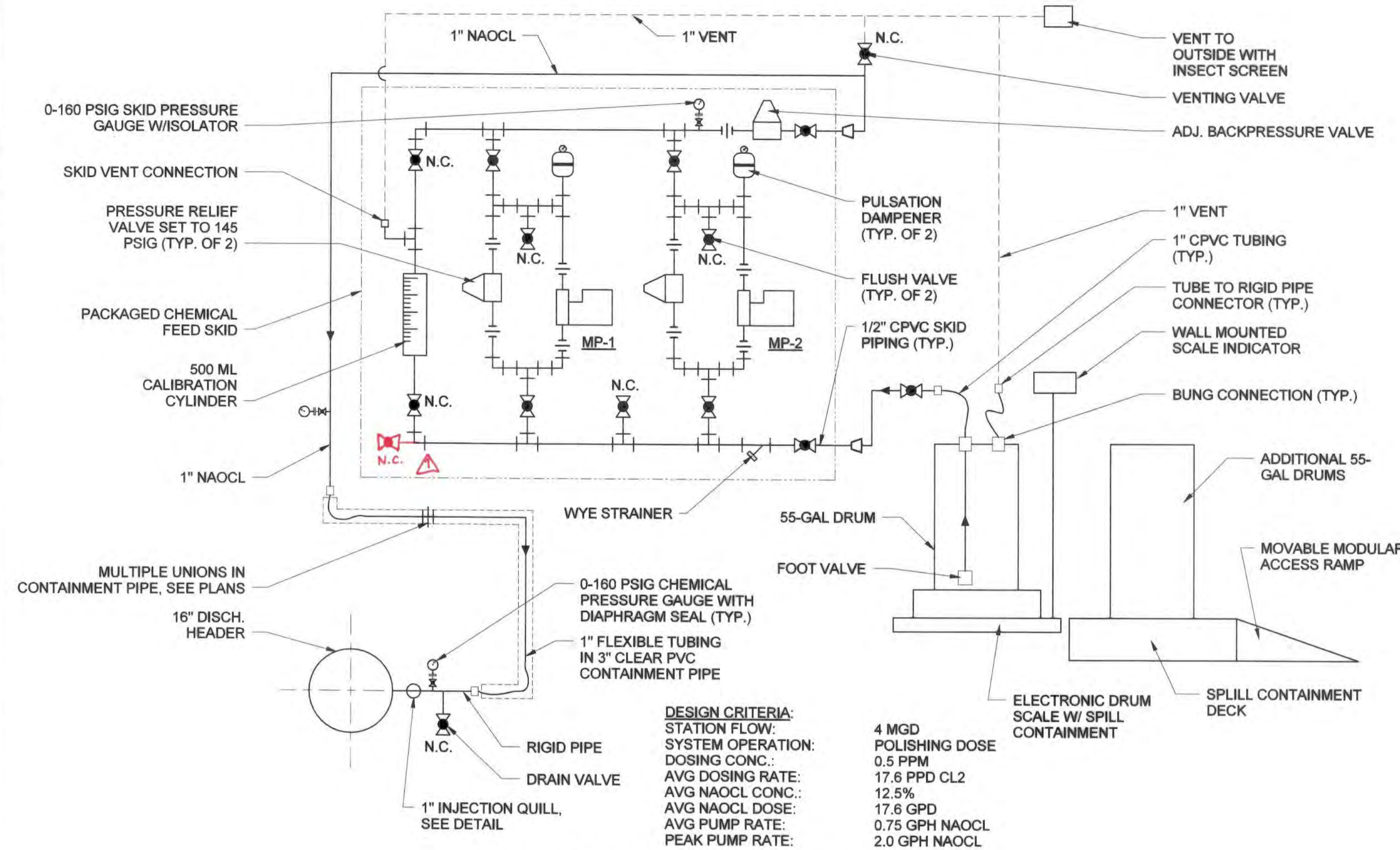
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GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.
- HOSE BIBBS AND WALL HYDRANTS SHALL HAVE VACUUM BREAKERS

SHEET KEY NOTES

- PROVIDE TRAP PRIMING AS DETAILED.



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DATE 9/2021

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 12-20-18
Chief, Bureau of Utilities: *[Signature]* DATE: *[Signature]*

Chief, Bureau of Engineering: *[Signature]* DATE: *[Signature]*
Chief, Utility Design Division: *[Signature]* DATE: *[Signature]*

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS

KCI TECHNOLOGIES
936 RIDGEBROOK ROAD
SPARKS, MD 21152
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FAX: (410)316-7817
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STATE OF MARYLAND PROFESSIONAL ENGINEERS

[Signature]
Professional Engineer
No. 35981
Expiration Date 1/15/19

DES: Designer					
DRN: Author					
CHK: Checker					
DATE: DEC 2018	AG	1	AS-BUILTS	12/2021	
BY	NO.	REVISION	DATE	600' SCALE MAP NO.:	35
				BLOCK NO.:	17, 11

SCHEMATICS

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING M1-602
SCALE AS SHOWN
SHEET 81
54 OF 81

GENERAL SHEET NOTES

- SEE SHEET M-001 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.

FAN SCHEDULE													
MARK	FAN TYPE	AIRFLOW	ESP	FAN RPM	FAN DRIVE TYPE	MOTOR HP	VOLTAGE	PHASE	HERTZ	MOTOR ENCLOSURE	DAMPER TYPE	BASIS OF DESIGN	COMMENTS
EF-1	IC	5700 CFM	0.70 in-wg	1176	B	3.00 hp	480 V	3	60 Hz	TEFC	N/A	GREENHECK BSQ-200	SIDE OUTLET
EF-2	IC	240 CFM	0.25 in-wg	1196	D	0.10 hp	120 V	1	60 Hz	TEFC	BDD	GREENHECK SQ-85-VG	
EF-3	IC	565 CFM	0.25 in-wg	1355	D	0.25 hp	120 V	1	60 Hz	ODP	BDD	GREENHECK SQ-95-VG	
EF-4	CE	75 CFM	0.41 in-wg	935	D	0.01 hp	120 V	1	60 Hz	ODP	BDD	GREENHECK SP-80-VG	
SF-1	IC	5700 CFM	0.70 in-wg	1176	B	3.00 hp	480 V	3	60 Hz	TEFC	N/A	GREENHECK BSQ-200	

UNIT HEATER SCHEDULE											
MARK	HEATER POWER	HEATING CAPACITY	HEATER TYPE	AIRFLOW	AIR THROW	VOLTAGE	PHASE	HERTZ	NEMA RATING	BASIS OF DESIGN	COMMENTS
CH-1	1.7 kW	0.0 Btu/h	ELECTRIC	0 CFM	0' - 0"	208 V	1	60 Hz	12	CHROMALOX CCAS-12	INTEGRAL T-STAT & DISCONNECT
CH-2	0.5 kW	0.0 Btu/h	ELECTRIC	0 CFM	0' - 0"	208 V	1	60 Hz	12	CHROMALOX CAF-6	INTEGRAL T-STAT & DISCONNECT
EUH-1	5.0 kW	0.0 Btu/h	ELECTRIC	405 CFM	12' - 0"	480 V	3	60 Hz	4X	CHROMALOX HD3D	INTEGRAL T-STAT & DISCONNECT
EUH-2	5.0 kW	0.0 Btu/h	ELECTRIC	405 CFM	12' - 0"	480 V	3	60 Hz	4X	CHROMALOX HD3D	INTEGRAL T-STAT & DISCONNECT
EUH-3	5.0 kW	0.0 Btu/h	ELECTRIC	405 CFM	12' - 0"	480 V	3	60 Hz	4X	CHROMALOX HD3D	INTEGRAL T-STAT & DISCONNECT
EUH-4	5.0 kW	0.0 Btu/h	ELECTRIC	405 CFM	12' - 0"	480 V	3	60 Hz	4X	CHROMALOX HD3D	INTEGRAL T-STAT & DISCONNECT
EUH-5	2.0 kW	0.0 Btu/h	ELECTRIC	405 CFM	12' - 0"	208 V	1	60 Hz	4X	CHROMALOX HD3D	INTEGRAL T-STAT & DISCONNECT
EUH-6	5.0 kW	0.0 Btu/h	ELECTRIC	380 CFM	12' - 0"	480 V	3	60 Hz	12	CHROMALOX LUH	INTEGRAL T-STAT & DISCONNECT

PLUMBING FIXTURE SCHEDULE							
TYPE MARK	DESCRIPTION	CW	HW	TW	SAN	VENT	COMMENTS
E-1	EMERGENCY EYEWASH/SHOWER COMBINATION			1 1/2"	1 1/2"		
P-1	TOILET	3/8"			2 1/2"	3"	BACK OUTLET
P-2	LAVATORY	3/8"	3/8"		1 1/4"	1 1/2"	
P-3	SERVICE SINK	1/2"	1/2"		3"	0"	

WATER HEATER SCHEDULE										
Mark	WH TYPE	RECOVERY RATE	GALLONS	NUMBER OF HEATERS	VOLTAGE	PHASE	HERTZ	HEATER POWER	FLA	COMMENTS
IWH-1	INST.	0.5 GPM AT 41 DEG F	0	1	208 V	1	60 Hz	3 kW	15 A	
IWH-2	INST.	13 GPM AT 28 DEG F	0	1	480 V	3	60 Hz	39 kW	47 A	NEMA 4X

DUCTLESS SPLIT SYSTEM SCHEDULE										
MARK	MATCHING INDOOR UNIT ID	INDOOR UNIT TYPE	TOTAL COOLING CAPACITY	HEATING CAPACITY	VOLTAGE	PHASE	HERTZ	MIN SEER	REFRIGERANT	COMMENTS
AC-1	AHU-1	WALL MOUNT	24000.0 Btu/h	0.0 Btu/h	208 V	1	60 Hz	20	410A	REMOTE TSTAT/ CONTROLLER
AC-2	AHU-2	WALL MOUNT	24000.0 Btu/h	0.0 Btu/h	208 V	1	60 Hz	20	410A	REMOTE TSTAT/ CONTROLLER

- NOTES:
- INTERIOR DESIGN: 75 DEG F, 40% RH
 - COOLING AMBIENT: 95 DEG F

Air Terminal Schedule		
MARK	FLOW	SIZE
EAG-1	1900 CFM	24"x16"
EAG-2	1900 CFM	24"x16"
EAG-3	1900 CFM	24"x16"
SAG-1	1900 CFM	24"x16"
SAG-2	1900 CFM	24"x16"
SAG-3	1900 CFM	24"x16"

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. 33904, Expiration Date 1/15/19.

AS-BUILT
DATE 9/2021

DRAWING
M1-701
SCALE
AS SHOWN
SHEET
55 OF 81

DES: MM					
DRN: Author					
CHK: LP					
DATE: DEC 2018	BY	NO.	REVISION	DATE	

600' SCALE MAP NO.: 35	BLOCK NO.: 17, 11
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MECHANICAL SCHEDULES

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 12-22-18
Chief, Bureau of Utilities: [Signature] DATE: 12-22-18

Chief, Bureau of Engineering: [Signature] DATE: 12/22/18
Chief, Utility Design Division: [Signature] DATE: 12/22/18

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS

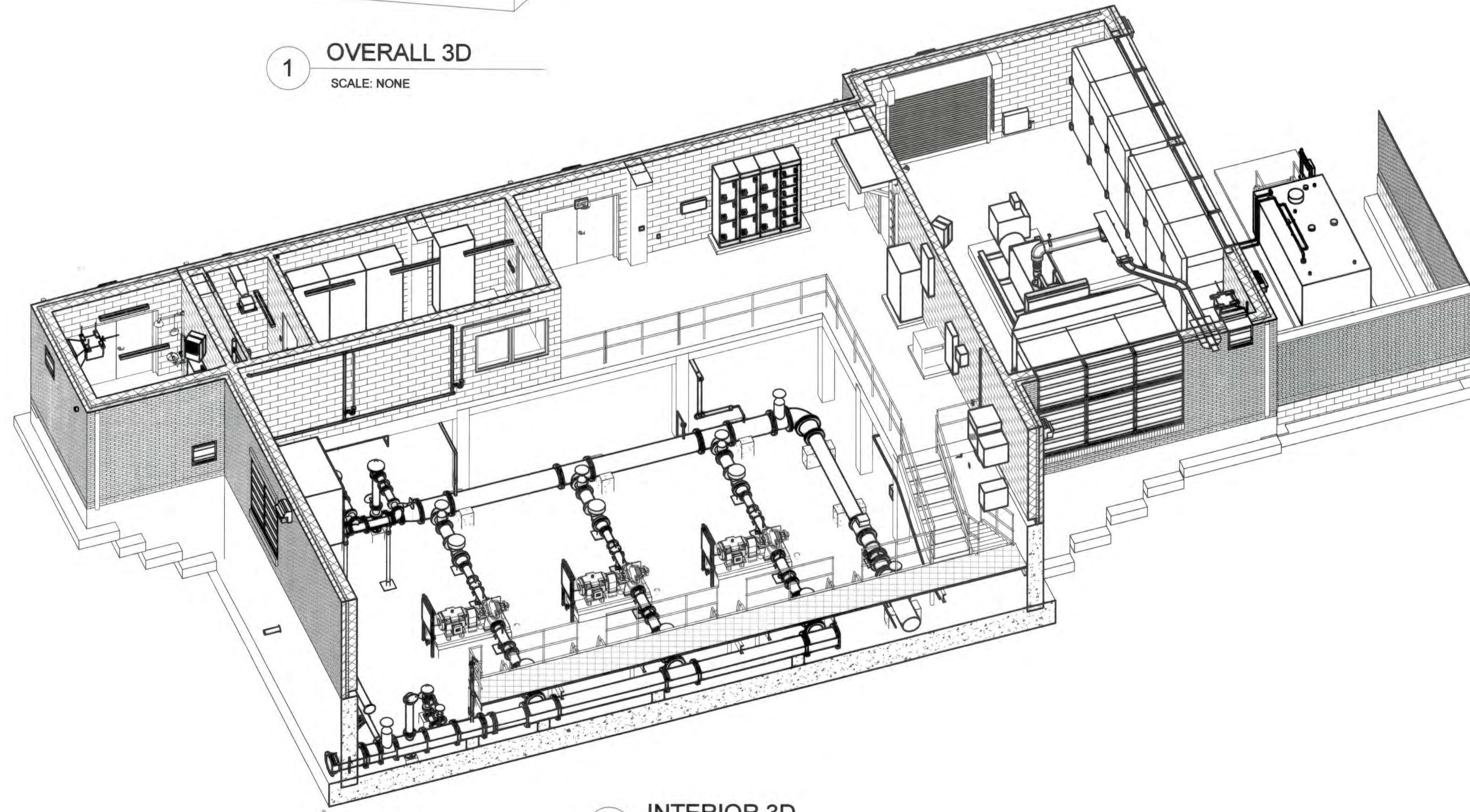
KCI TECHNOLOGIES

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FAX: (410)316-7817
WWW.KCI.COM

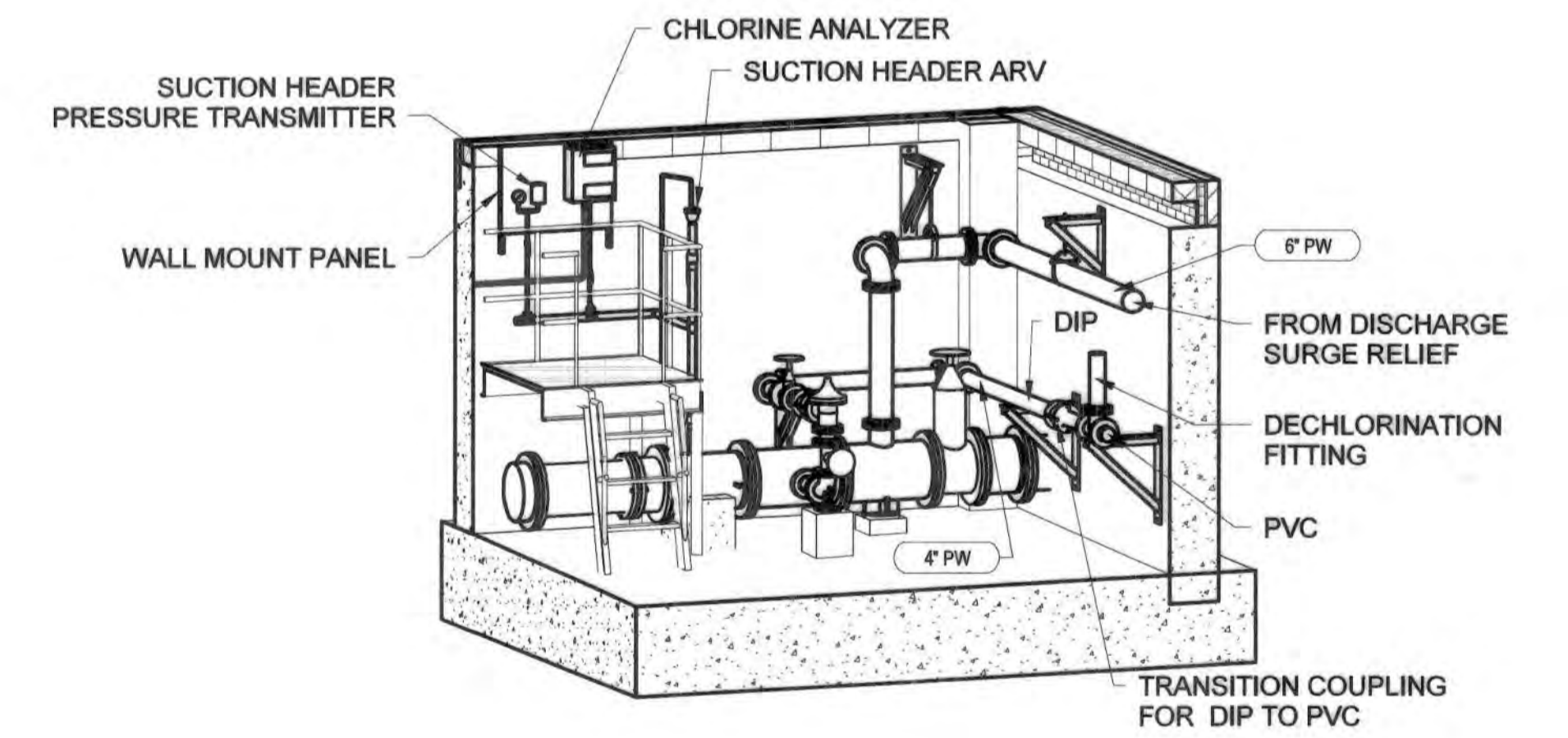




1 OVERALL 3D
SCALE: NONE



2 INTERIOR 3D
SCALE: NONE



3 SUCTION SURGE RELIEF 3D
SCALE: NONE

AS-BUILT
DATE 9/2021

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12-26-18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/26/18
CHIEF, BUREAU OF UTILITIES DATE

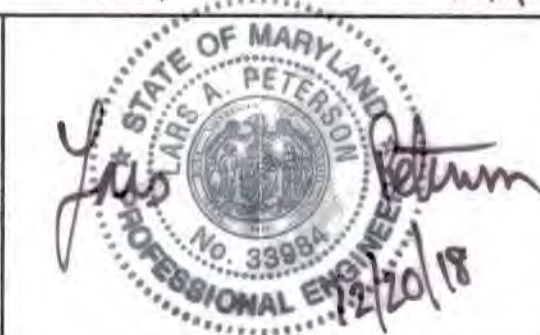
[Signature] 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

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DES:	MM				
DRN:	MM/LP				
CHK:	LP				
DATE:	DEC 2018	BY	NO.	REVISION	DATE

PUMPING STATION 3D
VIEWS

600' SCALE MAP NO.: 35
BLOCK NO.: 17.11

CEDAR LANE
WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING
M1-901

SCALE
AS SHOWN

SHEET

56 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

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ELECTRICAL SYMBOLS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	20A, 1 POLE, 120V MANUAL MOTOR STARTER (TOGGLE SWITCH TYPE) WITH THERMAL OVERLOAD PROTECTION		MOTORIZED EQUIPMENT
	20A, 2 POLE, 240V MANUAL MOTOR STARTER (TOGGLE SWITCH TYPE) WITH THERMAL OVERLOAD PROTECTION		MOTOR OPERATED DAMPER
	20A, 3 POLE, 600V MANUAL MOTOR STARTER (TOGGLE SWITCH TYPE) WITH THERMAL OVERLOAD PROTECTION		CIRCUIT BREAKER
	EQUIPMENT (SURFACE MOUNTED AND RECESSED)		FULL VOLTAGE MAGNETIC, NON-REVERSING, 3 PHASE MOTOR STARTER
	CONDUIT ROUTING		SURGE PROTECTION DEVICE
	CONDUIT ROUTING: UNDERGROUND		GROUNDING CONNECTION
	HOMERUN TO PANELBOARD, NOTATION INDICATES PANEL AND CIRCUIT		CURRENT TRANSFORMER CONNECTIONS AT PHASE CONDUCTORS
	RACEWAY-CONDUIT TURNED DOWN		DELTA-WYE POWER TRANSFORMER
	RACEWAY-CONDUIT TURNED UP		TRANSFER SWITCH
	RACEWAY-CHANGE IN ELEVATION		ENCLOSED CIRCUIT BREAKER
	PLUG AND CORD CONNECTION		GENERATOR
	DUPLEX RECEPTACLE, 20A, NEMA 5-20R GFI: GROUND FAULT CIRCUIT INTERRUPTER WP: WEATHER PROOF COVER		UTILITY POLE
	EXIT SIGN, SEE LIGHT FIXTURE SCHEDULE		SINGLE POLE LIGHTING CONTROL TOGGLE SWITCH, 20A, 2P, 3W
	LIGHT FIXTURES, SEE LIGHT FIXTURE SCHEDULE		THREE-WAY LIGHTING CONTROL TOGGLE SWITCH, 20A, 2P, 3W
	JUNCTION BOX		DUAL TECHNOLOGY WALL MOUNTED OCCUPANCY SENSOR WITH SWITCH, COVERAGE SHALL BE IN ACCORDANCE WITH ROOM SQUARE FOOTAGE
	DUAL TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR, COVERAGE SHALL BE IN ACCORDANCE WITH ROOM SQUARE FOOTAGE		DISCONNECT SWITCH AND COMBINATION MOTOR STARTER/DISCONNECT SWITCH
	LIMIT SWITCH (INTRUSION DETECTION)		ALARM KEY SWITCH
	ALARM KEY SWITCH		

ELECTRICAL ABBREVIATIONS			
ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
A	AMPERE	KCMIL	THOUSAND CIRCULAR MILS
ACT	ABOVE COUNTER TOP	KV	KILOVOLT
AF	AMPERE FRAME	KVA	KILOVOLT AMPERE
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
AFG	ABOVE FINISHED GRADE	LRA	LOCKED ROTOR AMPS
AIC	AMPERE INTERRUPTING CAPACITY	LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND FAULT
ATS	AUTOMATIC TRANSFER SWITCH	MDP	MAIN DISTRIBUTION PANEL
AWG	AMERICAN WIRE GAUGE	MCA	MINIMUM CIRCUIT AMPACITY
C	CONDUIT	MCB	MAIN CIRCUIT BREAKER
CB	CIRCUIT BREAKER	MOPD	MAXIMUM OVERCURRENT PROTECTIVE DEVICE
CT	CURRENT TRANSFORMER	NEC	NATIONAL ELECTRICAL CODE
DP	DISTRIBUTION PANEL	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
DWG	DRAWINGS	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
EX	EXISTING TO REMAIN	P	POLE
ELEC	ELECTRICAL	PH OR Ø	PHASE
ELEV	ELEVATION	PRI	PRIMARY
FLA	FULL LOAD AMPS	SEC	SECONDARY
FVNR	FULL VOLTAGE NON-REVERSING	S/N	SOLID NEUTRAL
G, GND, GRD	GROUND	U.L.	UNDERWRITER'S LABORATORIES
GFI	GROUND FAULT INTERRUPTING	V	VOLTS
XFMR	TRANSFORMER	VA	VOLTAMPERES
HP	HORSEPOWER	W	WIRE

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. 49788, Expiration Date 08-15-2020.

OVERCURRENT PROTECTION STUDIES

- CONTRACTOR SHALL UTILIZE THE SERVICES OF A LICENSED PROFESSIONAL ENGINEER (P.E.) TO GENERATE THE FOLLOWING OVERCURRENT PROTECTION DEVICE REPORTS:
 - SHORT CIRCUIT STUDY
 - COORDINATION STUDY
 - ARC FLASH STUDY
- THE STUDIES SHALL ORIGINATE AT THE PROPOSED UTILITY COMPANY ELECTRICAL SERVICE CONNECTION POINT AND INCLUDE ALL DOWNSTREAM ELECTRICAL DISTRIBUTION EQUIPMENT, LARGE MOTORS AND FEEDERS AS REFLECTED IN THE SINGLE LINE POWER DISTRIBUTION DIAGRAM. THE STUDIES SHALL ALSO INCLUDE THE GENERATOR AND ASSOCIATED EQUIPMENT. DETERMINE OPTIMAL SETTINGS FOR ALL BREAKERS AT MOTOR CONTROL CENTER AND ASSOCIATED FEEDER SIZES. SEE ELECTRICAL SPECIFICATION SECTIONS 260572, 260573 AND 260574 FOR ADDITIONAL INFORMATION. PROVIDE ALL REQUIRED WARNING AND HAZARD LABELS AT PROPOSED MOTOR CONTROL CENTER AND PANELS, IN ACCORDANCE WITH ARC FLASH STUDY TO BE PERFORMED.
- PRIOR TO ANY POTENTIAL FIELD ADJUSTMENTS AS A RESULT OF THE STUDIES, GENERATE A REPORT OF SUGGESTED FIELD ADJUSTMENTS FOR OWNER AND ENGINEER REVIEW AND APPROVAL.

LIGHTNING PROTECTION SYSTEM

- CONTRACTOR SHALL PROVIDE LIGHTNING PROTECTION SYSTEM FOR BUILDING STRUCTURE IN ACCORDANCE WITH NFPA 780 AND LOCAL CODES. SEE LIGHTNING PROTECTION SPECIFICATION SECTION 264113 FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL INCLUDE ABOVE GRADE GENERATOR FUEL TANK IN LIGHTNING PROTECTION SYSTEM CALCULATIONS (ZONE OF PROTECTION) TO DETERMINE THE EXTENT OF LIGHTNING PROTECTION REQUIRED.
- CONTRACTOR SHALL ENGAGE AN EXPERIENCED LIGHTNING PROTECTION DESIGNER AND INSTALLER. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL LIGHTNING PROTECTION SYSTEM COMPONENTS AND CONNECTIONS FOR ENGINEER'S REVIEW. SHOP DRAWINGS SHALL INCLUDE AIR TERMINAL LOCATIONS, CONDUCTOR ROUTINGS, CONNECTION DETAILS, BONDING AND GROUNDING PROVISIONS. COORDINATE INSTALLATION OF SYSTEM WITH OTHER BUILDING SYSTEMS, INCLUDING ELECTRICAL WIRING, SUPPORTING STRUCTURES AND BUILDING MATERIALS, METAL BODIES REQUIRING BONDING TO LIGHTNING PROTECTION COMPONENTS AND FINISHES. PROVIDE UL MASTER LABEL AND LP1 CERTIFICATIONS OF SYSTEM. PROVIDE ETL MASTER LABEL.

MOUNTING HEIGHT SCHEDULE	
INTERIOR RECEPTACLES	18" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE
EXTERIOR RECEPTACLES	24" ABOVE FINISHED GRADE
LIGHT SWITCHES	48" ABOVE FINISHED FLOOR
PANELBOARDS	TOP OF PANEL TO BE 72" ABOVE FINISHED FLOOR
LIGHT FIXTURES AND EXIT SIGNS	SEE LIGHT FIXTURE SCHEDULE

- NOTES (FOR MOUNTING HEIGHT SCHEDULE):
- UNLESS INDICATED OTHERWISE, DEVICE MOUNTING HEIGHTS ARE TO CENTER LINE OF DEVICE.
 - REFER TO FLOOR PLANS FOR DEVICES MOUNTED AT HEIGHTS DIFFERING FROM HEIGHTS SCHEDULED.
 - MOUNTING HEIGHTS OF ALL DEVICES SHALL COMPLY WITH ICC/ANSI A117.1-2003.

REQUIREMENTS FOR BRANCH CIRCUIT CONDUCTORS AND CONDUITS FOR VOLTAGE DROP	
PROVIDE 120V-1PH AND 208V-1PH BRANCH CIRCUIT CONDUCTORS AND CONDUIT AS FOLLOWS FOR ALL 20A BRANCH CIRCUIT LENGTHS AS INDICATED:	
1.	120V-1PH BRANCH CIRCUITS: <ul style="list-style-type: none"> a. 56' AND LESS: (2)#12,(1)#12G-3/4"C. b. 57' TO 92': (2)#10,(1)#10G-3/4"C. c. 93' TO 146': (2)#8,(1)#8G-3/4"C. d. 147' TO 232': (2)#6,(1)#6G-1"C. e. 233' TO 370': (2)#4,(1)#4G-1"C.
WHERE #8 AWG OR LARGER IS REQUIRED FOR A 20A-120V BRANCH CIRCUIT, PROVIDE #8 AWG (OR LARGER SIZE AS INDICATED) IN HORIZONTAL CONDUIT RUN AND #10 IN VERTICAL DROP TO DEVICES.	
2.	208V-1PH BRANCH CIRCUITS (WITHOUT NEUTRAL): <ul style="list-style-type: none"> a. 100' AND LESS: (2)#12,(1)#12G-3/4"C. b. 101' TO 159': (2)#10,(1)#10G-3/4"C. c. 160' TO 253': (2)#8,(1)#8G-3/4"C. d. 254' TO 403': (2)#6,(1)#6G-1"C.

GENERAL ELECTRICAL NOTES:

- PROVIDE MATERIALS THAT ARE NEW AND WITHOUT IMPERFECTIONS OR BLEMISHES, AND PROTECTED FROM THE ELEMENTS PRIOR TO CONSTRUCTION.
- COMPLY WITH OWNER'S USE OF PREMISES AND SAFETY REGULATIONS.
- COORDINATE LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTINGS OF ALL ELECTRICAL FEEDERS (AND ASSOCIATED PULLBOXES) AND BRANCH CIRCUITS WITH ALL OTHER UTILITIES (EXISTING AND NEW), WITH STRUCTURE, AND WITH BUILDING ELEMENTS.
- UNLESS NOTED OTHERWISE, EVERY CONDUIT CONTAINING 120V RATED WIRING AND GREATER, SHALL CONTAIN A SEPARATE INSULATED GROUND WIRE RATED FOR 600V.
- PROVIDE SEPARATE UNSHARED NEUTRAL CONDUCTOR(S) FOR ALL BRANCH CIRCUITS UTILIZING A NEUTRAL (I.E. 120V, 277V, ETC). PROVIDE SEPARATE UNSHARED NEUTRAL CONDUCTOR(S) FOR ALL FEEDERS REQUIRING A NEUTRAL (I.E. 1 PHASE-3 WIRE, 3 PHASE-4 WIRE FEEDERS). SHARING OF NEUTRAL CONDUCTORS BETWEEN ANY CIRCUIT (BRANCH OR FEEDER) IS NOT PERMITTED. MULTI-WIRE BRANCH CIRCUITS ARE NOT PERMITTED.
- PROVIDE STRUCTURAL FRAME SUPPORTS AS REQUIRED FOR DISCONNECT SWITCHES, PANELBOARDS, TRANSFORMERS, CONTACTORS, ETC. (IF DISCONNECT SWITCHES OR STARTERS ARE LOCATED ON EQUIPMENT HOUSINGS, COORDINATE LOCATIONS WITH EQUIPMENT SUPPLIER TO ENSURE SWITCHES ARE NOT INSTALLED ON EQUIPMENT ACCESS PANELS). MAINTAIN PROPER NATIONAL ELECTRICAL CODE CLEARANCES. IN ADDITION, MAINTAIN PROPER MECHANICAL WORKING CLEARANCES FOR SERVICING OF EQUIPMENT.
- PROVIDE ALL CUTTING, PATCHING, AND ACCESS PANELS REQUIRED FOR ELECTRICAL WORK. REPAIR AND REFINISH DISTURBED FINISH MATERIALS AND OTHER SURFACES TO MATCH ADJACENT UNDISTURBED SURFACES.
- ALL WORK AND EQUIPMENT SHALL COMPLY WITH ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL MECHANICAL CODE, THE LOCAL FIRE MARSHALL, UNDERWRITERS LABORATORY (UL), IRI, FM, OSHA, AND THE NATIONAL ELECTRICAL CODE (NEC). MODIFICATIONS REQUIRED BY THE ABOVE SAID AUTHORITIES TO BRING THE SPACE UNDER CONTRACT UP TO CODE SHALL BE MADE WITHOUT ADDITIONAL CHARGE WHERE CONTRACT DOCUMENT REQUIREMENTS ARE IN EXCESS OF CODE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
- CONTRACTOR SHALL VERIFY ALL POINTS OF CONNECTION BEFORE COMMENCING WORK. CONTRACTOR SHALL REMOVE ALL WASTE MATERIALS, DEBRIS, AND RUBBISH FROM THE SITE AND LEGALLY DISPOSE OF IT.
- A SET OF ELECTRICAL RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED AT THE JOB SITE. ACTUAL LOCATIONS OF ALL EQUIPMENT, CONDUIT, ETC., AND ALL DEVIATIONS OF THE WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS SHALL BE MARKED ON THE RECORD/COORDINATION DRAWINGS. EACH TRADE SHALL REVIEW THE COORDINATION DRAWINGS AND RESOLVE ANY POTENTIAL CONFLICTS WITH OTHER TRADES PRIOR TO INSTALLING ANY PORTION OF THESE WORK.
- WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR ALL COORDINATION OF WORK UNDER THIS CONTRACT. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY.
- CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM.
- ARRANGE CONDUIT, WIRING, EQUIPMENT AND OTHER WORK GENERALLY AS SHOWN, PROVIDING PROPER CLEARANCE AND ACCESS. CAREFULLY EXAMINE ALL CONTRACT DRAWINGS AND COORDINATE THE WORK WITH ALL TRADES. WHERE DEPARTURES ARE PROPOSED BECAUSE OF FIELD CONDITIONS OR OTHER CAUSES, PREPARE AND SUBMIT DETAILED DRAWINGS FOR ACCEPTANCE.
- THE CONTRACT DRAWINGS ARE DIAGRAMMATIC. ALL OFFSETS, BENDS, FITTINGS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. PROVIDE ALL SUCH ITEMS AS REQUIRED FOR COMPLETE OPERATIONAL SYSTEM.
- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, PLAN REVIEWS AND CERTIFICATES OF INSPECTION REQUIRED BY THE AUTHORITIES HAVING JURISDICTION OVER THIS WORK.
- COST INCURRED FROM DAMAGES AS A RESULT OF THE CONTRACTOR'S WORK WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. DAMAGES WILL NOT WARRANT COST OR DELAY CLAIMS.
- CONTRACTOR SHALL COMPLY WITH LOCAL AND APPLICABLE CODES. IN THE EVENT OF A CONFLICT, THE MOST STRINGENT SHALL GOVERN. SHOULD A CONFLICT ARISE BETWEEN CONSTRUCTION DOCUMENTS AND APPLICABLE CODES, WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE ENFORCING CODE AUTHORITIES.
- WHERE EVER POSSIBLE, THE CONTRACTOR SHALL OBTAIN ACTUAL ROUGH-IN DRAWINGS FOR THE ACTUAL ITEM OF EQUIPMENT TO BE INSTALLED PRIOR TO ROUGH-IN. THIS SHALL APPLY TO ALL EQUIPMENT, WHETHER IT IS TO BE INSTALLED BY THE CONTRACTOR OR BY OTHERS.
- ANY EXISTING ELECTRICAL WORK SHOWN ON THESE DRAWINGS IS INDICATED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE OWNER AND ENGINEER IN NO WAY WARRANT OR GUARANTEE EITHER THE ACCURACY OR COMPLETENESS OF THIS INFORMATION. FINAL LOCATIONS AND QUANTITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR TO THEIR OWN SATISFACTION.
- THE CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK. ROUTINGS SHOWN ON DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL VERIFY THAT INTERFERENCES WILL NOT BE ENCOUNTERED. IF ANY DISCREPANCY IS DETECTED, THE CONTRACTOR SHALL BRING IT TO THE OWNER'S ATTENTION WITH RECOMMENDATIONS FOR OWNER'S APPROVAL.

AS-BUILT
DATE 9/2021

DRAWING NO. E-001
SCALE AS SHOWN
SHEET
57 of 81

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Robert Wilkins
DIRECTOR OF PUBLIC WORKS DATE 12-20-18

Thomas J. Ketter
CHIEF, BUREAU OF ENGINEERING DATE 12-20-18

Robert Wilkins
CHIEF, BUREAU OF UTILITIES DATE 12-20-18

Robert Wilkins
CHIEF, UTILITY DESIGN DIVISION DATE 12-20-18

ENGINEERS
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SCIENTISTS
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DRN:	REW				
CHK:	WDM				
DATE:	DEC 2018	BY:	NO.	REVISION	DATE

ELECTRICAL LEGEND AND GENERAL NOTES

600' SCALE MAP NO. 35 BLOCK NO. 17, 11

ELECTION DISTRICT NO. 5

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

HOWARD COUNTY, MARYLAND

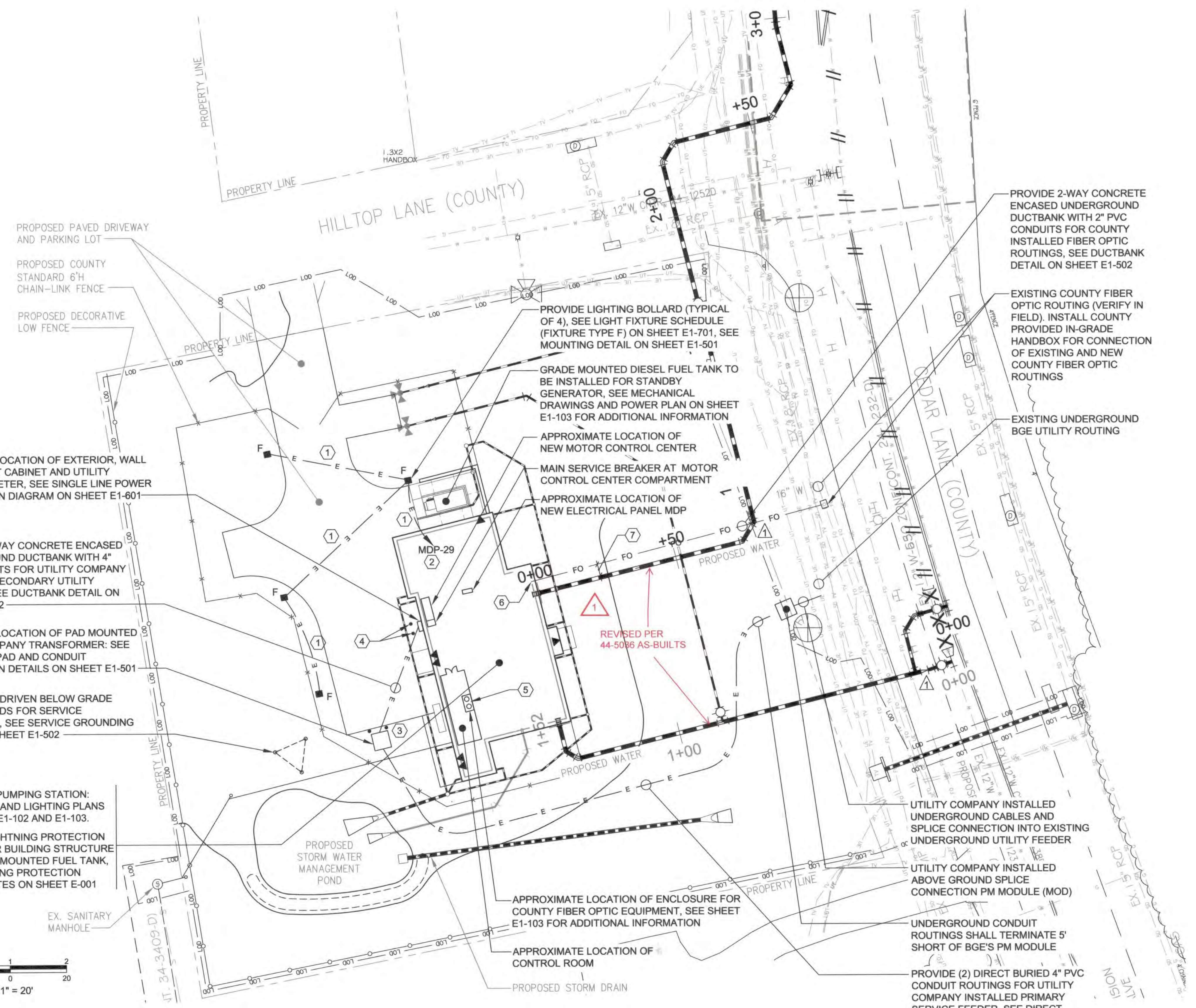


SITE LEGEND				
---	LOO	LIMIT OF DISTURBANCE	▬▬▬▬▬	PROP. WATER MAIN
---	S	EX. SEWER	---	PROP. SEWER
---	---	EX. WATER	---	PROP. WATER
---	SD	EX. STORM DRAIN	---	PROP. STORM DRAIN
---	UE	EX. UNDERGROUND ELECTRIC	---	PROP. UNDERGROUND ELECTRIC
⊕	---	EX. UTILITY POLE	⊕	PROP. UTILITY POLE
---	OE	EX. OVERHEAD ELECTRIC	---	PROP. OVERHEAD ELECTRIC
---	FO	EX. UNDERGROUND FIBER OPTIC	---	PROP. UNDERGROUND FIBER OPTIC
---	UT	EX. UNDERGROUND TELEPHONE	F	PROP. LIGHTING BOLLARD
---	X	PROP. CHAIN LINK FENCE	●	PROP. PROTECTION BOLLARD

- ELECTRICAL UTILITY NOTES:**
- CONDUIT SWEEP BENDS SHALL HAVE A MINIMUM RADIUS OF 36 INCHES.
 - NYLON PULL CABLES SHALL BE INSTALLED IN CONDUITS AND DUCTBANK FOR EXTENSION OF UTILITY COMPANY INSTALLED FEEDERS.
 - DIRECT BURIED CONDUITS AND UNDERGROUND DUCTBANK FOR PRIMARY AND SECONDARY UTILITY FEEDERS SHALL BE PROVIDED WITH A MINIMUM COVER OF 48 INCHES.
 - UTILITY COMPANY (BGE) SHALL INSTALL PRIMARY AND SECONDARY FEEDERS AND MAKE ALL FINAL CONNECTIONS TO UTILITY TRANSFORMER, CT CABINET AND SERVICE METERING.
 - CONTRACTOR SHALL FIELD COORDINATE WITH UTILITY COMPANY PRIOR TO INSTALLING TRANSFORMER PAD, METERING, CT CABINET AND PROTECTION BOLLARDS FOR CT/METERING EQUIPMENT AND SERVICE TRANSFORMER.
 - PRIOR TO UTILITY COMPANY INSTALLATIONS, CONTRACTOR SHALL LOCATE AND CLEARLY MARK PROPOSED PROPERTY/CURB LINES ON THE JOB SITE.
 - PRIOR TO UTILITY COMPANY INSTALLATIONS, SITE MUST BE WITHIN 6 INCHES OF FINAL GRADE.
 - CONTRACTOR SHALL PROVIDE MARKINGS IN 3 FEET INTERVALS FOR EXISTING AND/OR PROPOSED WATER, SEWER, STORM DRAIN AND ALL OTHER NON-BGE UNDERGROUND UTILITIES.
 - INSTEAD OF PROVIDING POURED CONCRETE PAD FOR UTILITY COMPANY TRANSFORMER MOUNTING, CONTRACTOR HAS OPTION OF PURCHASING AND HAVING DELIVERED A PRECAST CONCRETE PAD FROM CHOCTAW-KAUL DISTRIBUTION COMPANY (302-292-2660).
 - ALL WORK AND MATERIALS RELATED TO INCOMING ELECTRICAL SERVICE SHALL BE COMPLIANT WITH BALTIMORE GAS AND ELECTRICAL (BGE) STANDARDS AND SPECIFICATIONS.
 - PRIOR TO ANY CONSTRUCTION FOR THE UNDERGROUND ELECTRICAL SERVICE, CONTRACTOR SHALL CONTACT JOE BOSSE (410-470-6974) FOR ELECTRIC METERING.

- GENERAL ELECTRICAL SITE NOTES:**
- MAINTAIN A MINIMUM VERTICAL CLEARANCE OF 12 INCHES BETWEEN UNDERGROUND ROUTINGS THAT CROSS EACH OTHER.
 - OTHER PROPOSED UNDERGROUND UTILITY ROUTINGS (GAS, WATER, SEWER, STORM DRAIN, ETC.) ARE SHOWN ON ELECTRICAL SITE PLAN FOR COORDINATION PURPOSES.
 - UNLESS NOTED OTHERWISE, ALL EXTERIOR UNDERGROUND CONDUIT ROUTINGS SHALL BE SCHEDULE 40 PVC CONDUIT.
 - UNLESS NOTED OTHERWISE, ALL EXTERIOR ABOVE GRADE EXPOSED CONDUIT ROUTINGS SHALL BE RIGID GALVANIZED STEEL.
 - CONDUITS INSTALLED THROUGH A BUILDING WALL SHALL HAVE INTERNAL AND EXTERNAL SEALANT APPLIED. SEALANT SHALL MATCH FIRE RATING (2 HOUR MINIMUM) OF WALL TO BE PENETRATED. SEE WALL PENETRATION DETAIL ON SHEET E1-503 FOR ADDITIONAL INFORMATION.

- ELECTRICAL KEYED NOTES:**
- PROVIDE BRANCH CIRCUIT ROUTING FOR EXTERIOR LIGHTING BOLLARDS: 2#10, 1#10 GROUND IN DIRECT BURIED 1" PVC CONDUIT ROUTING, SEE DIRECT BURIED CONDUIT DETAIL ON SHEET E1-502.
 - PROVIDE HOMERUN BACK TO PANEL AND CIRCUIT INDICATED.
 - PROVIDE PROTECTION BOLLARDS FOR UTILITY COMPANY TRANSFORMER, IN ACCORDANCE WITH BGE REQUIREMENTS. SEE PROTECTION BOLLARD DETAIL ON SHEET E1-501.
 - PROVIDE PROTECTION BOLLARDS FOR CT CABINET AND UTILITY METERING INSTALLATIONS, IN ACCORDANCE WITH BGE REQUIREMENTS. SEE PROTECTION BOLLARD DETAIL ON SHEET E1-501.
 - TERMINATE (2) 2" CONDUIT STUB-UPS WITH PULL CABLE AT PROPOSED COUNTY FIBER OPTIC ENCLOSURE. SEE FIRST FLOOR POWER PLAN ON SHEET E1-103 FOR ADDITIONAL INFORMATION.
 - EXTEND CONDUIT ROUTINGS THROUGH BUILDING INTERIOR (TRANSITION TO ALUMINUM CONDUIT) TO ENCLOSURE AT CONTROL ROOM FOR COUNTY FIBER OPTIC EQUIPMENT. SEE LOWER LEVEL POWER PLAN ON SHEET E1-102 FOR ADDITIONAL INFORMATION.
 - PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 5'-0" BETWEEN NEAREST EDGE OF PROPOSED UNDERGROUND FIBER OPTIC DUCTBANK AND NEAREST EDGE OF PROPOSED UNDERGROUND WATER PIPE.



1 ELECTRICAL SITE PLAN
SCALE: 1" = 20'-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. 49788, Expiration Date 08-15-2020.

KCI TECHNOLOGIES PROJECT No.: 131601306.01

DATE: 12-28-18
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CHECKED BY: [Signature]
DATE: 1/2/2019

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
DIRECTOR OF PUBLIC WORKS DATE

[Signature]
CHIEF, BUREAU OF ENGINEERING DATE

[Signature]
CHIEF, BUREAU OF UTILITIES DATE

[Signature]
CHIEF, UTILITY DESIGN DIVISION DATE

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CHK:	WDM				
DATE:	DEC 2018				
BY:	NO.	AS-BUILT	7/2021		
REVISION					

ELECTRICAL SITE PLAN

800' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

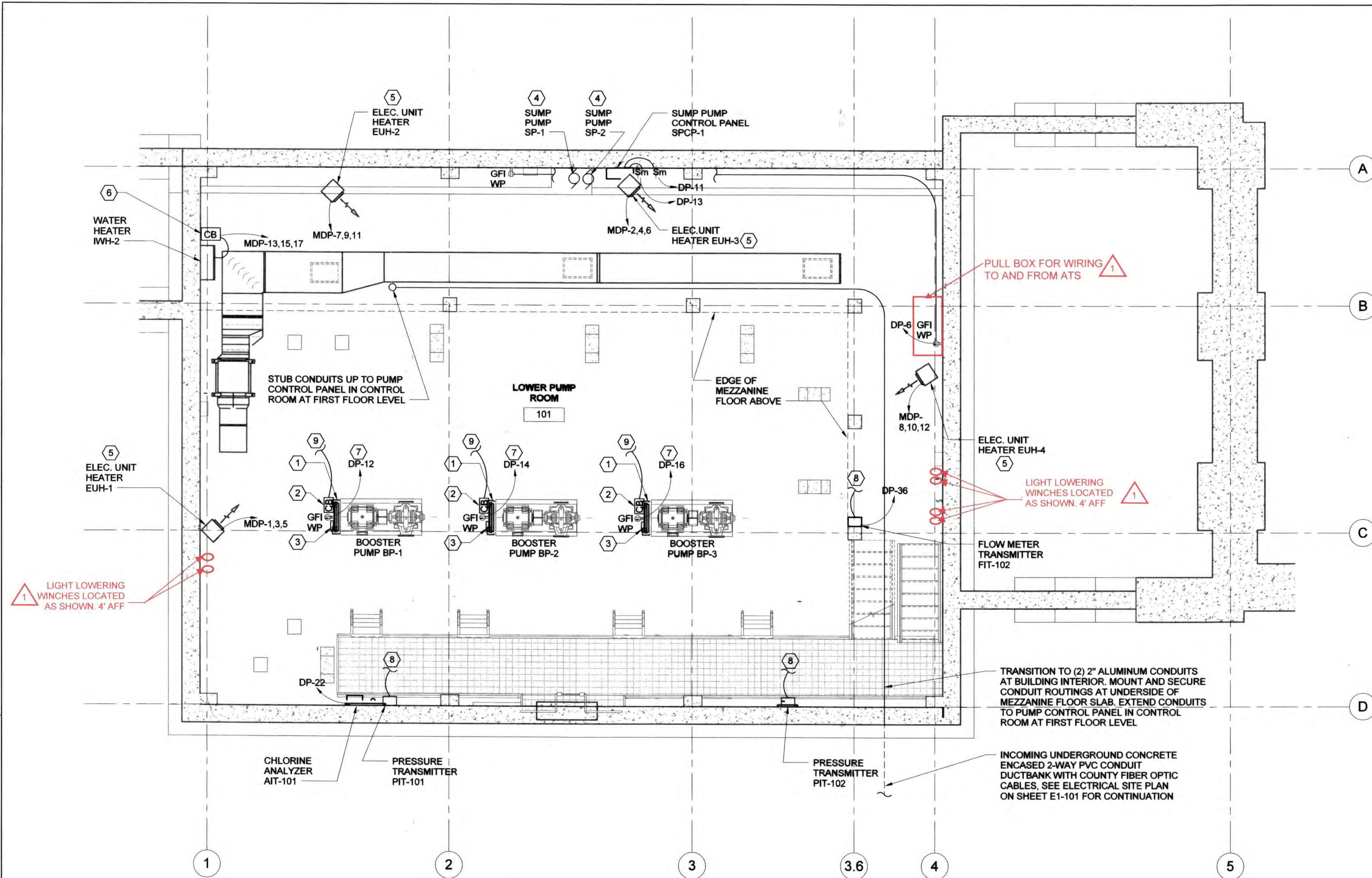
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SCALE AS SHOWN
SHEET 58 of 81

GENERAL ELECTRICAL NOTES

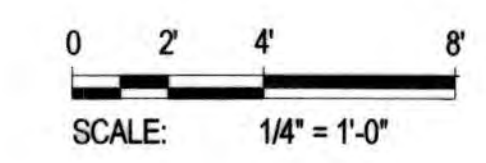
- SEE SHEET E-001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
- ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE ALL ELECTRICAL INSTALLATIONS WITH ALL DISCIPLINES.
- SEE PANEL AND MCC SCHEDULES ON SHEET E1-701 FOR BRANCH CIRCUIT CONDUIT AND WIRING SIZES.
- SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601 FOR ADDITIONAL INFORMATION.
- AT EACH ENCLOSED BREAKER, DISCONNECT SWITCH AND CONTROL ENCLOSURE INDICATED, PROVIDE NAME PLATE DATA REFLECTING PANEL SOURCE AND CIRCUIT NUMBER.
- SEE SHEET E1-601 FOR NEMA RATING OF ENCLOSURES FOR SPECIFIC AREAS.
- UNLESS NOTED OTHERWISE, ALL CONDUIT ROUTINGS AT BUILDING INTERIOR SHALL BE ALUMINUM (RIGID AND FLEXIBLE WHERE APPLICABLE).
- ALL CONDUIT ROUTINGS IN LOWER LEVEL FLOOR SLAB SHALL BE SCHEDULE 40 PVC CONDUIT AND TRANSITION TO ALUMINUM CONDUIT WHEN EXTENDED ABOVE SLAB FOR EQUIPMENT CONNECTION.
- PROVIDE ADDITIONAL CONTROL DEVICES (CONTACTORS, RELAYS, CONTROL TRANSFORMERS, ETC. IN ACCORDANCE WITH INSTRUMENTATION DRAWINGS AT ENCLOSED BREAKERS AND SWITCHES THAT REFLECT A CONTROL CONNECTION.

ELECTRICAL KEYED NOTES

- PROVIDE UNISTRUT CHANNEL SUPPORT STRUCTURE FOR MOUNTING OF INDICATED EQUIPMENT. SEE EQUIPMENT MOUNTING AT PUMP DETAIL ON SHEET E1-503.
- PROVIDE 600 V, 175 A, 3P ENCLOSED CIRCUIT BREAKER FOR BOOSTER PUMP. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-701. ROUTE ASSOCIATED CONDUITS IN LOWER LEVEL FLOOR SLAB.
- EMERGENCY STOP STATION TO BE INSTALLED. SEE INSTRUMENTATION DRAWINGS. PROVIDE 3/4" CONDUIT ROUTING (IN LOWER LEVEL FLOOR SLAB) AND CONTROL WIRING FROM LOCAL CONTROL STATION TO VFD AT CONTROL ROOM. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- EQUIPMENT POWERED AND CONTROLLED FROM SUMP PUMP CONTROL PANEL SPCP-1. EQUIPMENT PROVIDED WITH VENDOR SUPPLIED PRE-WIRED CABLE SYSTEMS FOR FLOAT SWITCHES AND PUMPS. MAKE ALL FINAL CONNECTIONS TO SPCP-1.
- EQUIPMENT TO BE PROVIDED WITH MANUFACTURER SUPPLIED DISCONNECT SWITCH.
- PROVIDE 600V, 60A, 3P ENCLOSED CIRCUIT BREAKER.
- ROUTE CONDUIT IN LOWER LEVEL FLOOR SLAB.
- EQUIPMENT CONTROLLED FROM PUMP CONTROL PANEL PCP AT CONTROL ROOM. PROVIDE 3/4" CONDUIT ROUTING AND CONTROL WIRING. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- PROVIDE 3/4" CONDUIT ROUTING WITH CONTROL WIRING FROM ENCLOSED BREAKER TO CORRESPONDING VFD. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS. ROUTE CONDUIT IN LOWER LEVEL FLOOR SLAB.



1 LOWER LEVEL POWER PLAN
SCALE: 1/4" = 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. 49788. Expiration Date 08-15-2020

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James S. Buller 12/20/18
DIRECTOR OF PUBLIC WORKS DATE

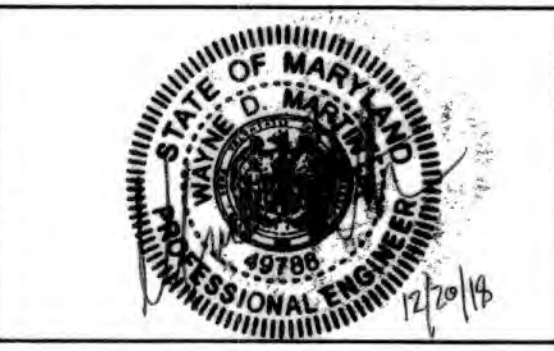
Thomas S. Buller 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE

John D. ... 12-20-18
CHIEF, BUREAU OF UTILITIES DATE

...
CHIEF, UTILITY DESIGN DIVISION DATE

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DATE:	DEC 2018	AG	1	AS-BUILT	8/2021
BY:	NO.			REVISION	DATE

POWER PLAN - LOWER LEVEL

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

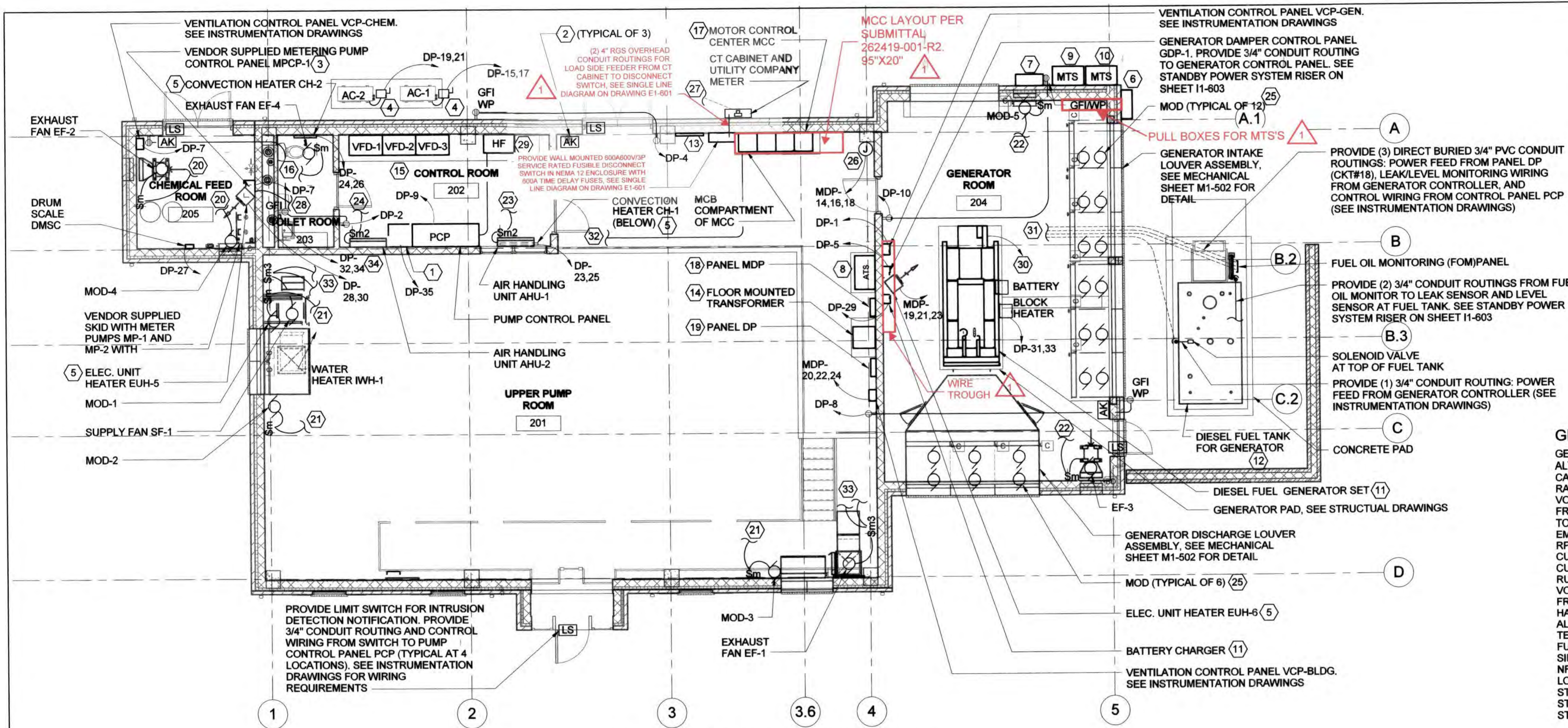
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING
E1-102

SCALE
AS SHOWN

SHEET
59 OF 81

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- ### GENERAL ELECTRICAL NOTES
- SEE SHEET E-001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE ALL ELECTRICAL INSTALLATIONS WITH ALL DISCIPLINES.
 - SEE PANEL AND MCC SCHEDULES ON SHEET E1-701 FOR BRANCH CIRCUIT CONDUIT AND WIRING SIZES.
 - SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601 FOR ADDITIONAL INFORMATION.
 - AT EACH ENCLOSED BREAKER, DISCONNECT SWITCH AND CONTROL ENCLOSURE INDICATED, PROVIDE NAME PLATE DATA REFLECTING PANEL SOURCE AND CIRCUIT NUMBER.
 - SEE SHEET E1-601 FOR NEMA RATING OF ENCLOSURES FOR SPECIFIC AREAS.
 - UNLESS NOTED OTHERWISE, ALL CONDUIT ROUTINGS AT BUILDING INTERIOR SHALL BE ALUMINUM (RIGID AND FLEXIBLE WHERE APPLICABLE).
 - ALL CONDUIT ROUTINGS BELOW LOWER LEVEL FLOOR SLAB (IN GRADE) SHALL BE SCHEDULE 40 PVC CONDUIT.
 - MAINTAIN A MINIMUM CLEARANCE OF 48" BETWEEN GENERATOR FRAME AND OTHER EQUIPMENT AND WALLS.
 - IN ACCORDANCE WITH NEC 358.26, THERE SHALL BE NO MORE THAN A TOTAL OF 360 DEGREES OF BENDS IN A CONDUIT ROUTING BETWEEN PULL POINTS (BOXES).
 - PROVIDE ADDITIONAL CONTROL DEVICES (CONTACTORS, RELAYS, CONTROL TRANSFORMERS, ETC. IN ACCORDANCE WITH INSTRUMENTATION DRAWINGS AT ENCLOSED BREAKERS AND SWITCHES THAT REFLECT A CONTROL CONNECTION.

GENERATOR DESIGN CRITERIA

GENERATOR:	KOHLER MODEL 350REOZJB
ALTERNATOR:	KOHLER MODEL 4M4021
CAPACITY:	350KW
RATING:	STANDBY
VOLTAGE:	277/480 VAC, 3PH, 4W
FREQUENCY:	60HZ
TOTAL AMP OUTPUT:	526
EMISSIONS:	EPA STATIONARY EPA TIER 3
RPM:	1800
CUMULATIVE STEP KVA:	302.39
CUMULATIVE STEP KW:	274.02
RUNNING KW:	274.02
VOLTAGE DIP LIMIT:	20%(PEAK)
FREQUENCY DIP LIMIT:	10%(PEAK)
HARMONICS:	5%(PEAK)
ALTERNATOR TEMPERATURE RISE:	130°C STANDBY
FUEL TANK:	STAND ALONE
SILENCER:	CRITICAL GRADE
NFPA COMPLIANT:	NFPA 110 WITH UL 220 CERTIFIED
LOAD SEQUENCE:	
STEP 1:	LINEAR AND SMALL MOTOR LOADS (146 KW)
STEP 2:	LEAD BOOSTER PUMP (100 HP)
STEP 3:	LAG BOOSTER PUMP (100 HP)

NOTE: IF ALTERNATE GENERATOR MANUFACTURER IS SUBMITTED FOR REVIEW, CONTRACTOR SHALL RUN GENERATOR MODEL IN ACCORDANCE WITH CRITERIA LISTED ABOVE AND INSTALLATIONS REFLECTED ON SINGLE LINE POWER DISTRIBUTION DIAGRAM. PROVIDE (2) SEPARATE MODELS: ONE REFLECTING VFD INSTALLATION AND OTHER REFLECTING SOFT START REDUCED VOLTAGE STARTER.

1 FIRST FLOOR POWER PLAN
SCALE: 3/16" = 1'-0"

ELECTRICAL KEYED NOTES

- PROVIDE ENCLOSURE FOR MOUNTING OF COUNTY FIBER OPTIC EQUIPMENT. SEE ELECTRICAL SITE PLAN ON SHEET E1-101 FOR INCOMING FIBER OPTIC ROUTING. PROVIDE CONDUIT FROM ENCLOSURE TO ADJACENT PUMP CONTROL PANEL PCP. SEE INSTRUMENTATION DRAWINGS.
- PROVIDE ALARM KEY MOUNTED ADJACENT TO LIGHT SWITCH CONTROL. PROVIDE 3/4" CONDUIT ROUTING AND CONTROL WIRING FROM ALARM KEY TO PUMP CONTROL PANEL PCP. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- PROVIDE 2#12, 1#12 GROUND IN 3/4" CONDUIT FROM CONTROL PANEL MPCP-1 TO VENDOR SUPPLIED TERMINATION BOX WITH DUPLEX RECEPTACLE FOR PLUG-IN CONNECTION OF METER PUMPS MP-1 & MP-2 MOUNTED ON SKID. SEE INSTRUMENTATION DRAWINGS FOR CONTROL WIRING REQUIREMENTS.
- PROVIDE 240V, 30A, 2P NON-FUSED DISCONNECT SWITCH. PROVIDE STAINLESS STEEL UNISTRUT CHANNEL SUPPORT STRUCTURE AS REQUIRED FOR MOUNTING OF DISCONNECT.
- EQUIPMENT TO BE PROVIDED WITH MANUFACTURER SUPPLIED DISCONNECT SWITCH.
- PROVIDE CONNECTION BOX FOR EXTERIOR PORTABLE GENERATOR. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601.
- PROVIDE CONNECTION BOX FOR EXTERIOR LOAD BANK. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601.
- PROVIDE AUTOMATIC TRANSFER SWITCH FOR TRANSFER TO STANDBY GENERATOR UPON LOSS OF NORMAL POWER. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601. PROVIDE 3/4" CONDUIT ROUTING FROM ATS TO GENERATOR CONTROL PANEL. PROVIDE 3/4" CONDUIT ROUTING FROM ATS TO CONTROL PANEL PCP. SEE STANDBY POWER SYSTEM RISER ON SHEET I1-603.
- PROVIDE MANUAL TRANSFER SWITCH FOR EXTERIOR LOAD BANK CONNECTION. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601.
- PROVIDE MANUAL TRANSFER SWITCH FOR EXTERIOR PORTABLE GENERATOR CONNECTION. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601.
- PROVIDE DIESEL FUEL GENERATOR SET. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601. PROVIDE 3/4" CONDUIT ROUTING FROM BATTERY CHARGER TO CONTROL PANEL PCP. SEE STANDBY POWER SYSTEM RISER ON SHEET I1-603.
- EXTERIOR, GRADE MOUNTED DIESEL FUEL TANK TO BE INSTALLED. SEE KEY NOTE #10 ON SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601 AND MECHANICAL DRAWINGS.
- PROVIDE WALL MOUNTED GROUNDING BAR. SEE SERVICE GROUNDING DETAIL AND GROUND BAR DETAIL ON SHEET E1-502.
- PROVIDE FLOOR MOUNTED 30KVA, 3PH TRANSFORMER. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601. SEE INTERIOR TRANSFORMER DETAILS ON SHEET E1-502.
- (3) VARIABLE FREQUENCY DRIVES TO BE INSTALLED FOR BOOSTER PUMPS. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601. PROVIDE 3/4" CONDUIT ROUTING AND CONTROL WIRING FROM EACH VFD TO CONTROL PUMP CONTROL PANEL PCP. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- CONNECT EXHAUST FAN EF-4 TO 120V LIGHTING CIRCUIT AND ASSOCIATED LIGHTING CONTROL SERVING TOILET ROOM 203. PROVIDE 2#12, 1#12 GROUND IN 3/4" CONDUIT.
- PROVIDE MOTOR CONTROL CENTER MCC. SEE MCC SCHEDULE ON SHEET E1-701. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601. SEE MCC ELEVATION ON SHEET E1-502. SEE SERVICE GROUNDING DETAIL ON SHEET E1-502.
- PROVIDE PANEL MDP. SEE PANEL SCHEDULE ON SHEET E1-701. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601.
- PROVIDE PANEL DP. SEE PANEL SCHEDULE ON SHEET E1-701. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601.
- EQUIPMENT CONTROLLED FROM VENTILATION CONTROL PANEL VCP-CHEM. PROVIDE 3/4" CONDUIT ROUTING AND WIRING. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- EQUIPMENT CONTROLLED FROM VENTILATION CONTROL PANEL VCP-BLDG. PROVIDE 3/4" CONDUIT ROUTING AND WIRING. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- EQUIPMENT CONTROLLED FROM VENTILATION CONTROL PANEL VCP-GEN. PROVIDE 3/4" CONDUIT ROUTING AND WIRING. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- EQUIPMENT POWERED FROM EXTERIOR MOUNTED AIR CONDITIONING UNIT AC-1, PROVIDE 2#10, 1#10 GROUND IN 3/4" CONDUIT.
- EQUIPMENT POWERED FROM EXTERIOR MOUNTED AIR CONDITIONING UNIT AC-2, PROVIDE 2#10, 1#10 GROUND IN 3/4" CONDUIT.
- EACH RESPECTIVE MOD POWERED AND CONTROLLED FROM GENERATOR DAMPER CONTROL PANEL GDP-1. PROVIDE CONTROL WIRING AND 3/4" CONDUIT ROUTINGS. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS. PROVIDE (3) DAMPER CIRCUITS IN 3/4" CONDUIT ROUTING. CONTRACTOR SHALL DERATE CONDUIT/WIRING IF (4) OR MORE DAMPER CIRCUITS ARE PLACED IN A CONDUIT ROUTING.
- PROVIDE JUNCTION BOX CONNECTION FOR MOTORIZED BRIDGE CRANE/TROLLEY/HOIST SYSTEM. MOUNT JUNCTION BOX ABOVE BRIDGE CRANE SERVICE PLATFORM AT UPPER LEVEL. CONDUIT AND WIRING INSTALLATIONS FROM JUNCTION BOX TO BRIDGE CRANE PROVIDED BY VENDOR.
- INCOMING ELECTRICAL SERVICE (4-WAY CONCRETE ENCASED UNDERGROUND DUCTBANK). SEE ELECTRICAL SITE PLAN ON SHEET E1-101 FOR CONTINUATION.
- EQUIPMENT CONTROLLED FROM PUMP CONTROL PANEL PCP. PROVIDE 3/4" CONDUIT ROUTING AND WIRING. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- HARMONIC FILTER TO BE INSTALLED. SEE SINGLE LINE POWER DISTRIBUTION DIAGRAM ON SHEET E1-601. PROVIDE 3/4" CONDUIT ROUTING TO PUMP CONTROL PANEL. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- PROVIDE (2) BRANCH CIRCUIT ROUTINGS FROM PANEL DP FOR GENERATOR BLOCK HEATER AND BATTERY CHARGER. SEE PANEL SCHEDULE DP ON SHEET E1-701.
- EXTEND CONDUIT AND WIRING (UNDER FLOOR SLAB) TO NOTED EQUIPMENT AND STUB-UP. PROVIDE ALL FINAL CONNECTIONS.
- PROVIDE 1" CONDUIT ROUTING FROM POWER MONITORING COMPARTMENT OF MCC TO PUMP CONTROL PANEL PCP FOR COMMUNICATION AND ALARM INTERFACE.
- EQUIPMENT POWERED AND CONTROLLED FROM VENTILATION CONTROL PANEL VCP-BLDG. PROVIDE (2) 3/4" CONDUIT ROUTINGS FOR RESPECTIVE POWER AND CONTROL WIRING INSTALLATIONS. SEE INSTRUMENTATION DRAWINGS FOR WIRING REQUIREMENTS.
- PROVIDE BRANCH CIRCUIT ROUTING FOR INSTANT HOT WATER HEATER IWH-1 AT TOILET ROOM. PROVIDE WATER HEATER WITH 20A, 2P, 240V MANUAL MOTOR STARTER (TOGGLE SWITCH TYPE) WITH THERMAL OVERLOAD PROTECTION FOR DISCONNECTING MEANS.

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. 49788, Expiration Date 08-15-2020

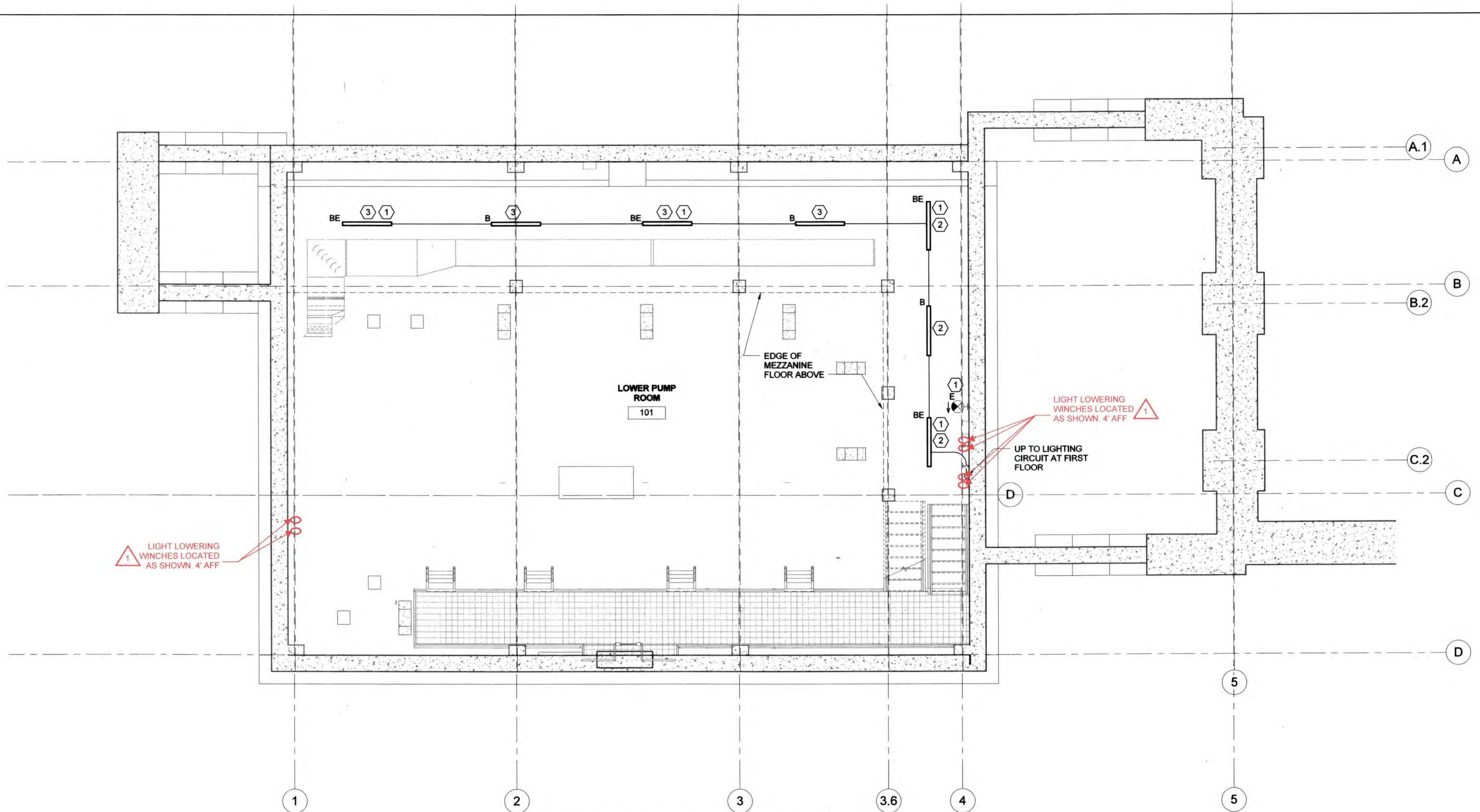
AS-BUILT REPLACEMENT SHEET 9/2021
SCALE: 3/16" = 1'-0"

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: [Signature] DATE: 12-20-18 Chief, Bureau of Utilities: [Signature] DATE:		KCI TECHNOLOGIES ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS 936 RIDGEBROOK ROAD SPARKS, MD 21152 PHONE: (410)316-7800 FAX: (410)316-7817 WWW.KCI.COM		DES: REW DRN: REW CHK: WDM DATE: DEC 2018 BY: AG NO. 1		POWER PLAN - FIRST FLOOR AS-BUILT 8/2021 REVISION: [Blank] DATE: [Blank]		CEDAR LANE WATER PUMPING STATION CAPITAL PROJECT NO. W-8328 CONTRACT NO. 44-5036 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND		DRAWING: E1-103 SCALE: AS SHOWN SHEET: 60 OF 81
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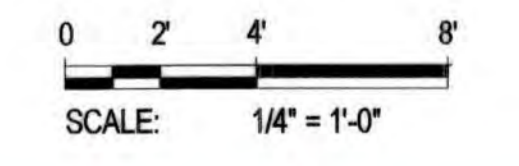
1 LOWER LEVEL LIGHTING PLAN
SCALE: 1/4" = 1'-0"

GENERAL ELECTRICAL NOTES

1. SEE SHEET E-001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. SEE OCCUPANCY SENSOR DETAILS ON SHEET E1-503.
3. ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE ALL ELECTRICAL INSTALLATIONS WITH ALL DISCIPLINES.
4. SEE PANEL SCHEDULE MDP ON SHEET E1-701 FOR LIGHTING BRANCH CIRCUIT CONDUIT AND WIRING SIZES.
5. SEE LIGHT FIXTURE SCHEDULE ON SHEET E1-701 FOR ADDITIONAL INFORMATION.
6. UNLESS NOTED OTHERWISE, ALL CONDUIT ROUTINGS AT BUILDING INTERIOR SHALL BE ALUMINUM (RIGID AND FLEXIBLE WHERE APPLICABLE)

ELECTRICAL KEYED NOTES

1. EXIT SIGNS AND BATTERY PACKS AT EMERGENCY FIXTURES SHALL BE CONNECTED TO 277V, SINGLE PHASE LIGHTING CIRCUIT SERVING AREA AHEAD OF ANY LIGHTING CONTROL.
2. MOUNT AND SECURE LIGHT FIXTURE AT UNDERSIDE OF MEZZANINE FLOOR SLAB.
3. STEM SUSPEND LIGHT FIXTURE FROM BOTTOM OF MEZZANINE FLOOR SLAB, SUCH THAT BOTTOM OF LIGHT FIXTURE IS AT SAME LEVEL OF BOTTOM OF ADJACENT DUCT INDICATED.



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. 49788, Expiration Date 08-15-2020

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jay W. Nelson 12-26-11
DIRECTOR OF PUBLIC WORKS DATE

Thomas S. Butler 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

KCI
TECHNOLOGIES

936 RIDGEBROOK ROAD
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PHONE: (410)316-7800
FAX: (410)316-7817
WWW.KCI.COM



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DRN:	REW				
CHK:	WDM				
DATE:	DEC 2018	LP	1	AS-BUILT	8/2021
		BY	NO.	REVISION	DATE

LIGHTING PLAN - LOWER LEVEL

600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION

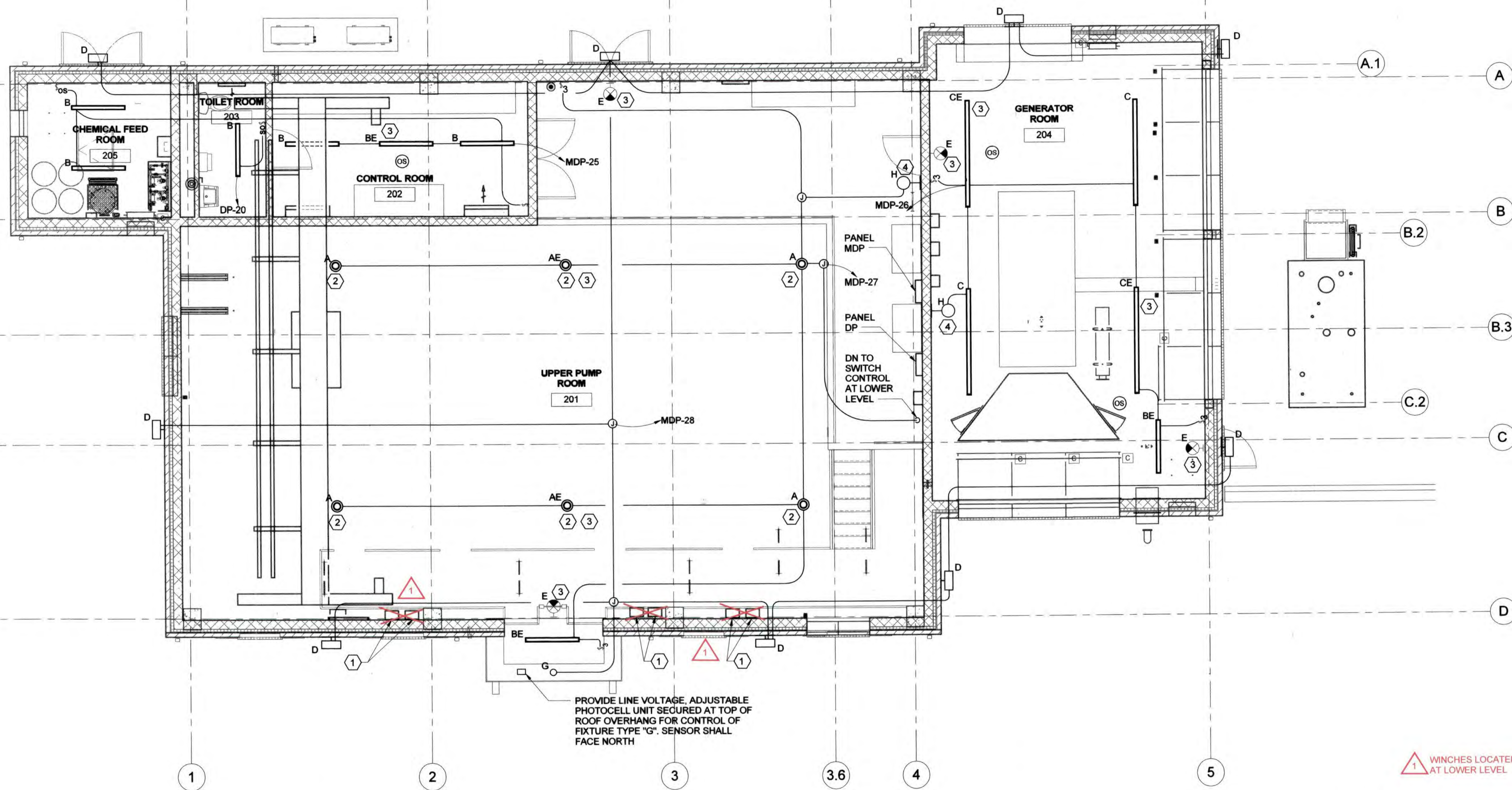
CAPITAL PROJECT NO. W-8328
CONTRACT NO. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING
E1-104

SCALE
AS SHOWN

SHEET
81 OF 81



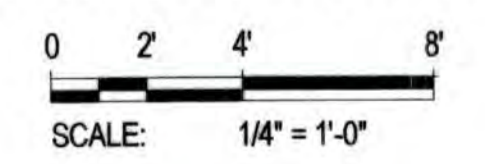
1 FIRST FLOOR LIGHTING PLAN
 SCALE: 1/4" = 1'-0"

PROVIDE LINE VOLTAGE, ADJUSTABLE PHOTOCELL UNIT SECURED AT TOP OF ROOF OVERHANG FOR CONTROL OF FIXTURE TYPE "G". SENSOR SHALL FACE NORTH

- GENERAL ELECTRICAL NOTES**
- SEE SHEET E-001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE OCCUPANCY SENSOR DETAILS ON SHEET E1-503.
 - ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE ALL ELECTRICAL INSTALLATIONS WITH ALL DISCIPLINES.
 - SEE PANEL SCHEDULE MDP ON SHEET E1-701 FOR LIGHTING BRANCH CIRCUIT CONDUIT AND WIRING SIZES.
 - SEE LIGHT FIXTURE SCHEDULE ON SHEET E1-701 FOR ADDITIONAL INFORMATION.
 - UNLESS NOTED OTHERWISE, ALL CONDUIT ROUTINGS AT BUILDING INTERIOR SHALL BE ALUMINUM (RIGID AND FLEXIBLE WHERE APPLICABLE)

- ELECTRICAL KEYED NOTES**
- PROVIDE PERMANENT WINCHING MECHANISM FOR MANUAL LOWERING OF FIXTURE TYPES "A" & "AE" VIA CABLE SYSTEM. SEE LIGHT FIXTURE MANUAL LOWERING DETAIL ON SHEET E1-503.
 - CONNECT LIGHT FIXTURE TO CABLE LOWERING SYSTEM FOR ACCESSIBLE MAINTENANCE PURPOSES. SEE LIGHT FIXTURE MANUAL LOWERING DETAIL ON SHEET E1-503.
 - EXIT SIGNS AND BATTERY PACKS AT EMERGENCY FIXTURES SHALL BE CONNECTED TO 277V, SINGLE PHASE LIGHTING CIRCUIT SERVING AREA AHEAD OF ANY LIGHTING CONTROL.
 - WALL MOUNT LIGHT FIXTURE ADJACENT TO ATTIC ACCESS DOOR, SEE ARCHITECTURAL DRAWINGS A1-103 AND A1-301 FOR DOOR LOCATION.

WINCHES LOCATED AT LOWER LEVEL



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12/18/2018 11:07:39 AM C:\DMS\Revit_Projects\13160130601-ELEC-1_Robert.Williams.rvt

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Jan 7, 2019
 DIRECTOR OF PUBLIC WORKS DATE

Roman P. Secker 12/20/18
 CHIEF, BUREAU OF ENGINEERING DATE

[Signature]
 CHIEF, BUREAU OF UTILITIES DATE

[Signature]
 CHIEF, UTILITY DESIGN DIVISION DATE

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LIGHTING PLAN - FIRST FLOOR

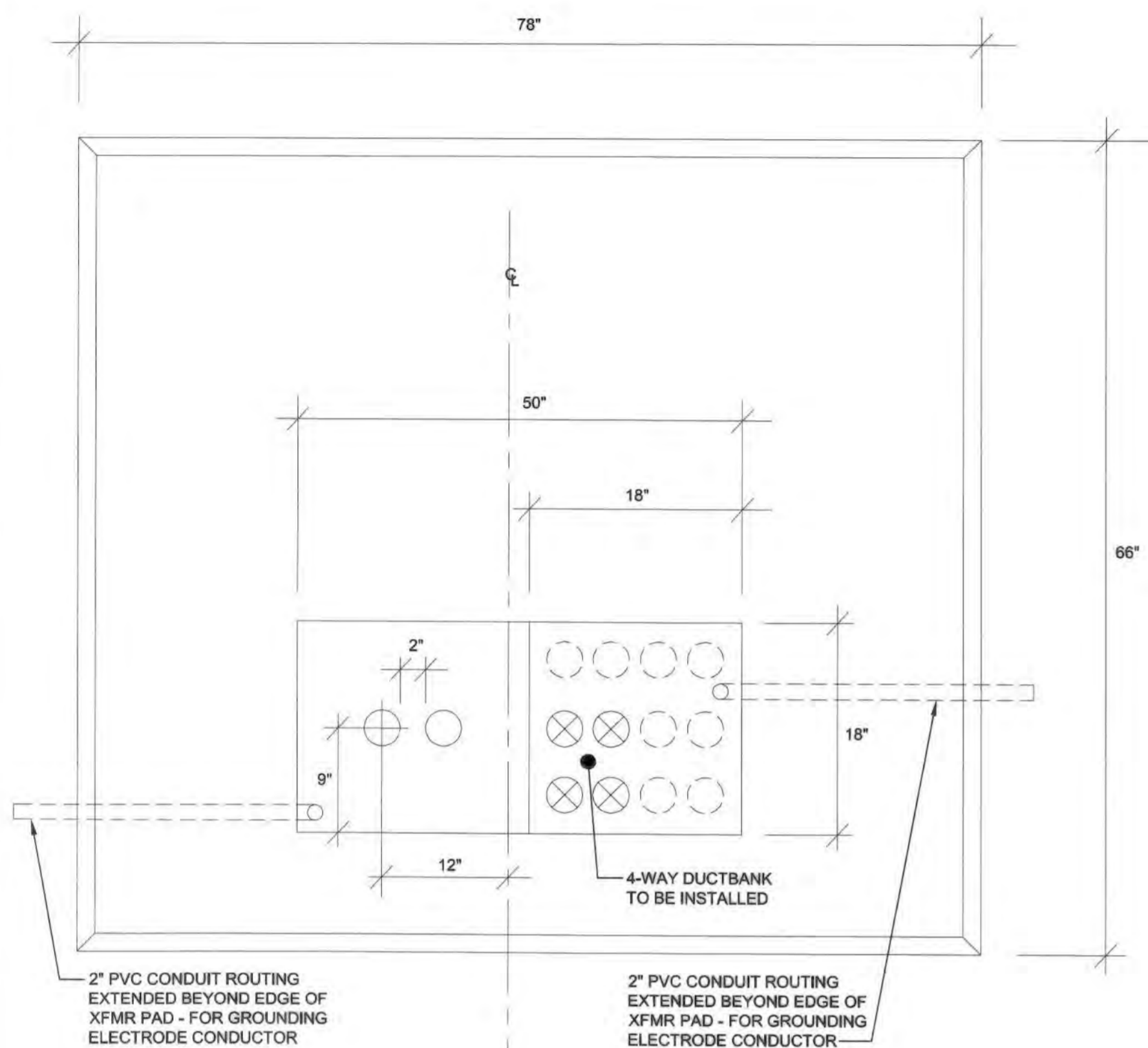
600' SCALE MAP NO.: 35 BLOCK NO.: 17, 11

CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT NO. W-8328
 CONTRACT NO. 44-5036
 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

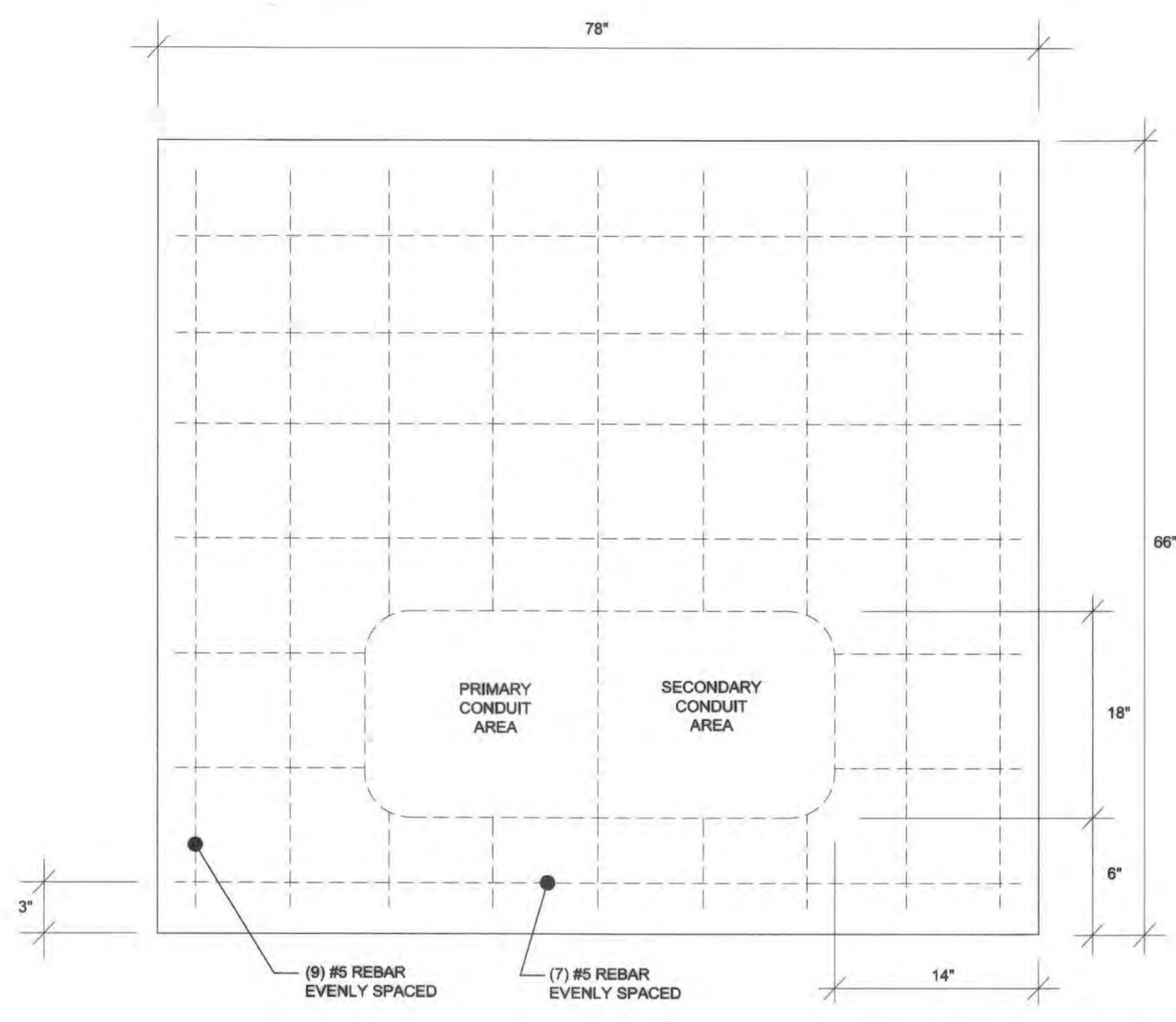
DRAWING E1-105
 SCALE AS SHOWN
 SHEET 52 OF 81

AS-BUILT REPLACEMENT SHEET 9/2021

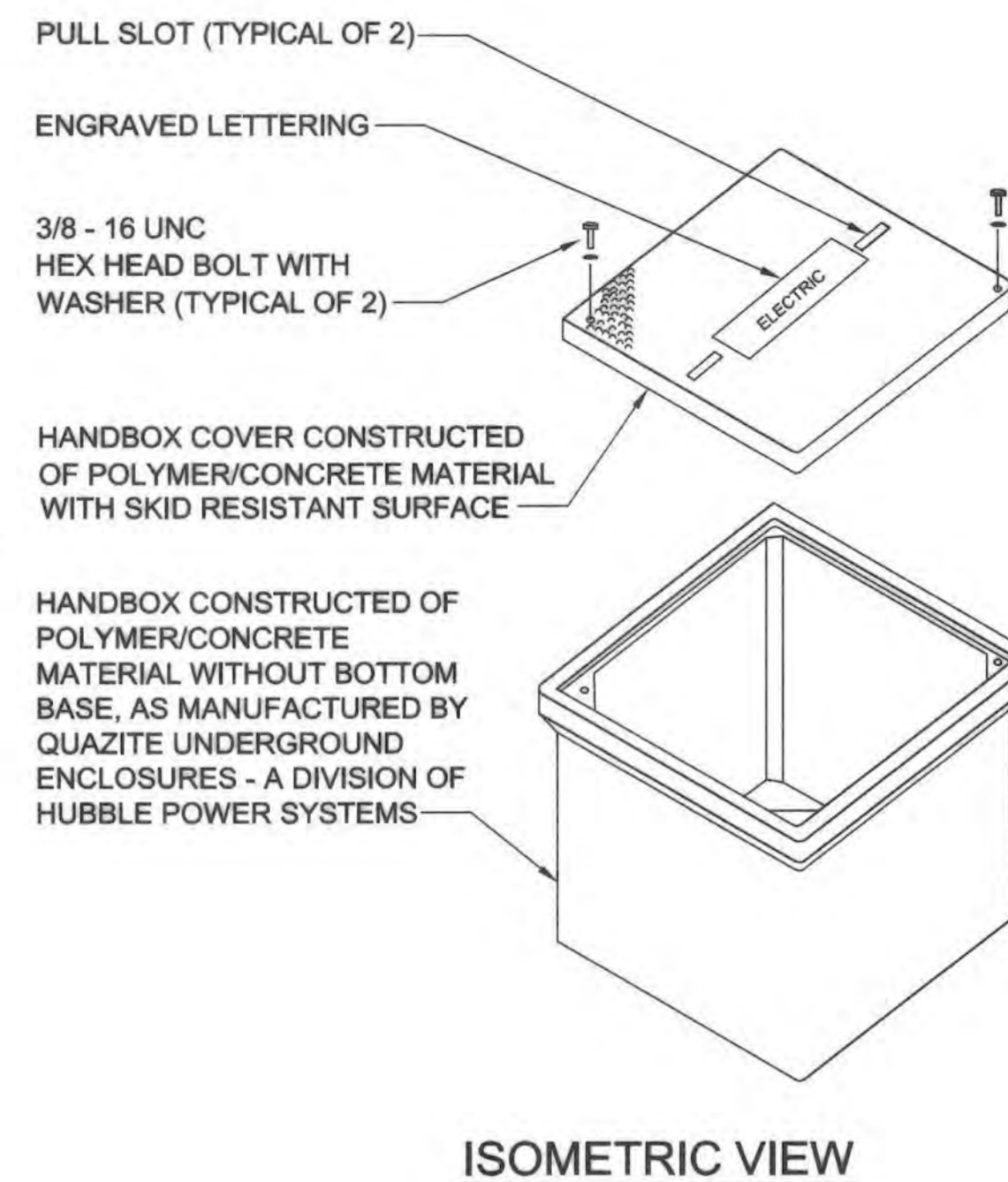
KCI TECHNOLOGIES PROJECT No.: 131601306.01



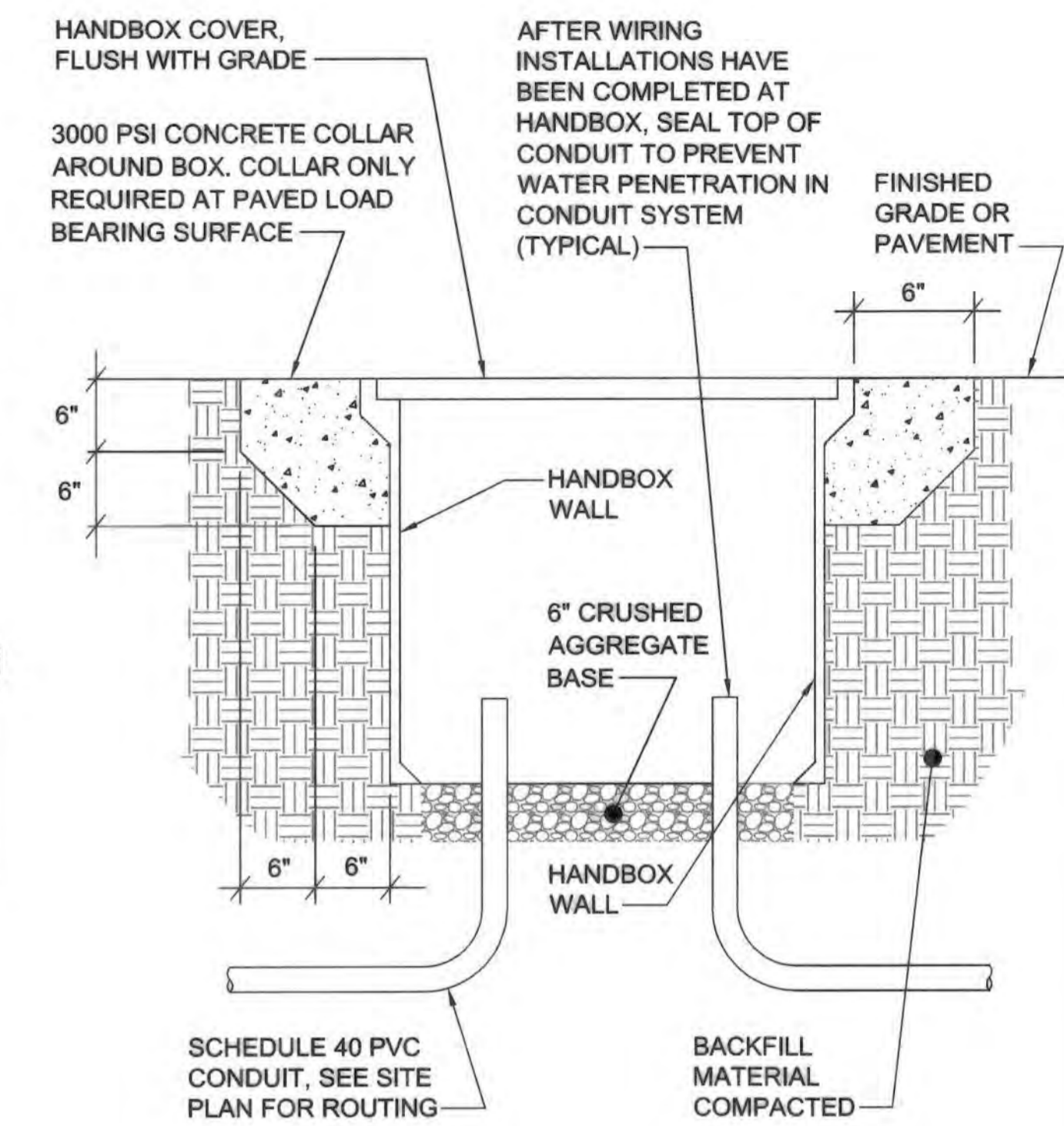
1 PRECAST CONCRETE PAD DETAIL
SCALE: NONE



2 POURED-IN-PLACE CONCRETE PAD DETAIL
SCALE: NONE

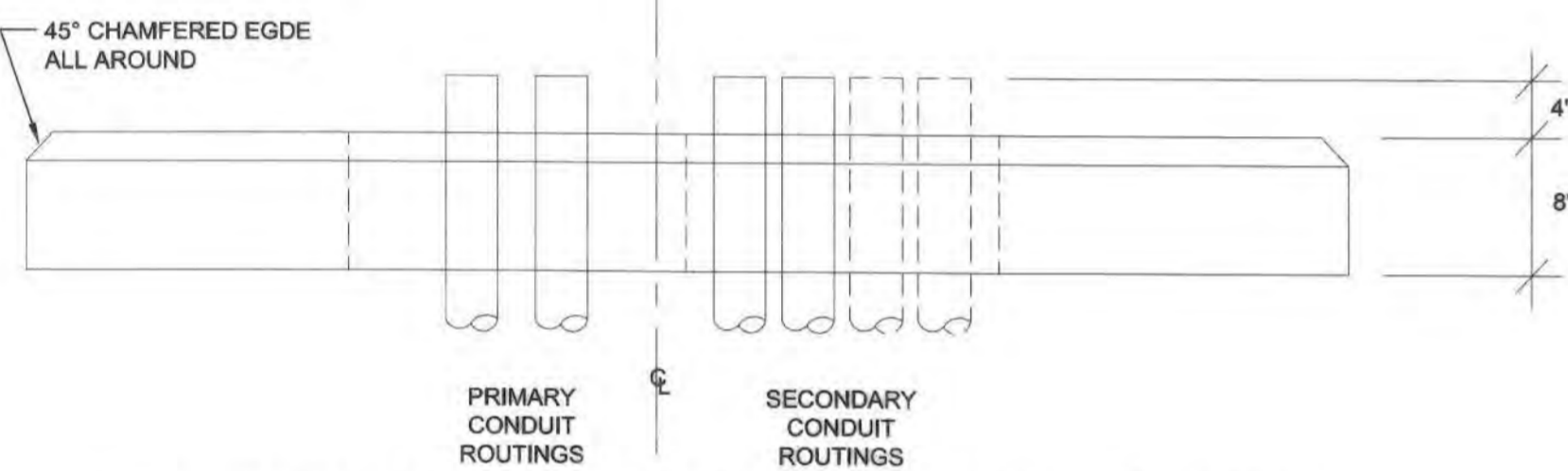


ISOMETRIC VIEW



CROSS-SECTION VIEW

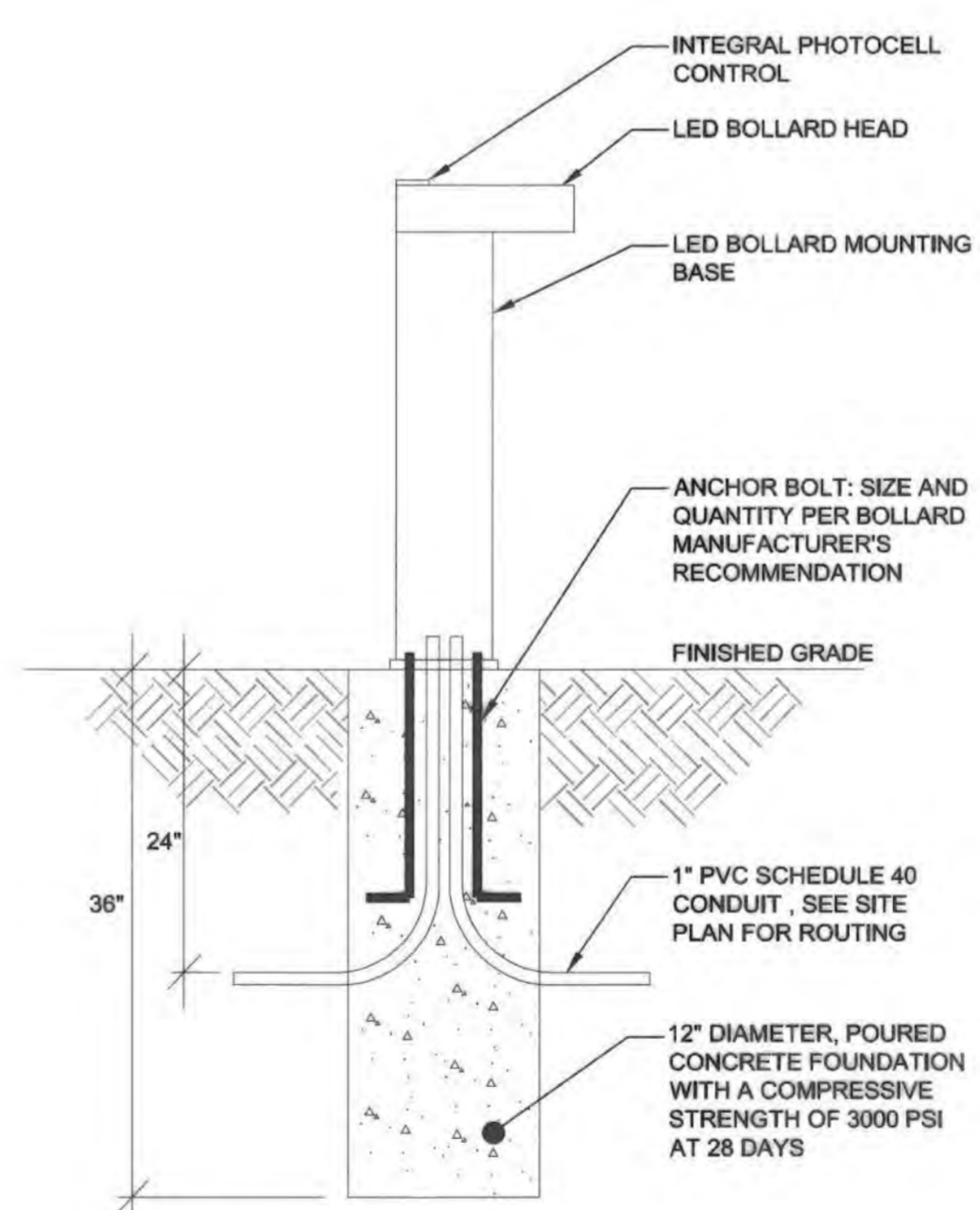
4 HANDBOX INSTALLATION DETAILS
SCALE: NONE



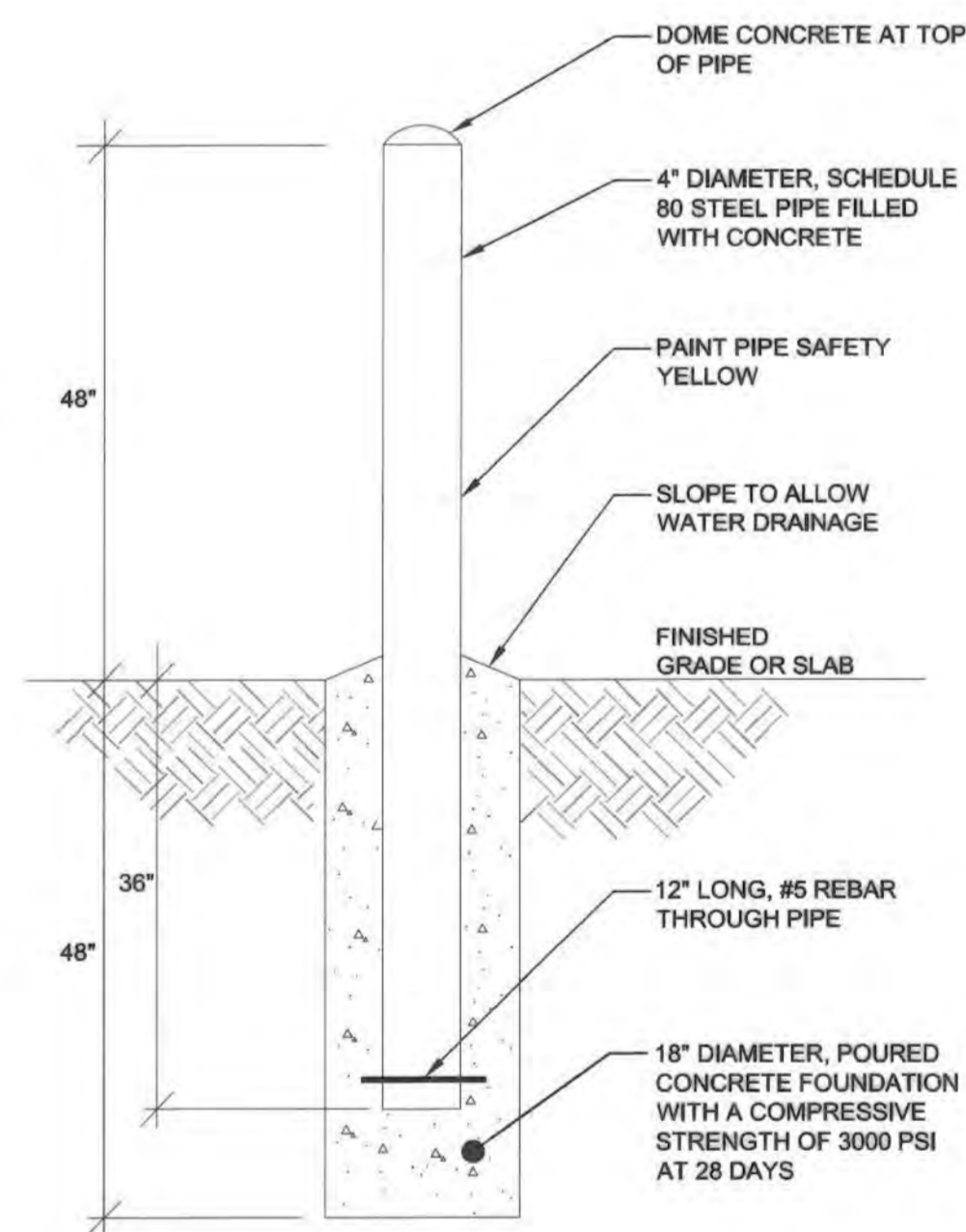
4 CONDUIT TERMINATION AT UTILITY XFMR PAD DETAIL
SCALE: NONE

- CONCRETE PAD NOTES:**
- APPROXIMATE WEIGHT OF PRECAST PAD IS 2200 POUNDS FOR 500 KVA AND SMALLER TRANSFORMERS OR 3900 POUNDS FOR 750 KVA AND LARGER TRANSFORMERS.
 - THE NUMBER OF SECONDARY CONDUIT ROUTINGS SHALL NOT EXCEED 12 TOTAL.
 - SECONDARY CONDUITS SHALL BE CENTERED SYMMETRICALLY WITHIN 18" X 18" AREA.
 - CONTRACTOR SHALL INSTALL GROUNDING ELECTRODE CONNECTIONS FROM TRANSFORMER'S GROUNDING TERMINAL TO GROUND RODS IN SUCH A MANNER THAT AVOIDS INCOMING CONDUITS.
 - PAD DETAILS SHOWN ARE REFERENCED FROM BGE DESIGN GUIDE. CONTRACTOR SHALL COORDINATE WITH BGE ON LATEST PAD DETAILS AVAILABLE.

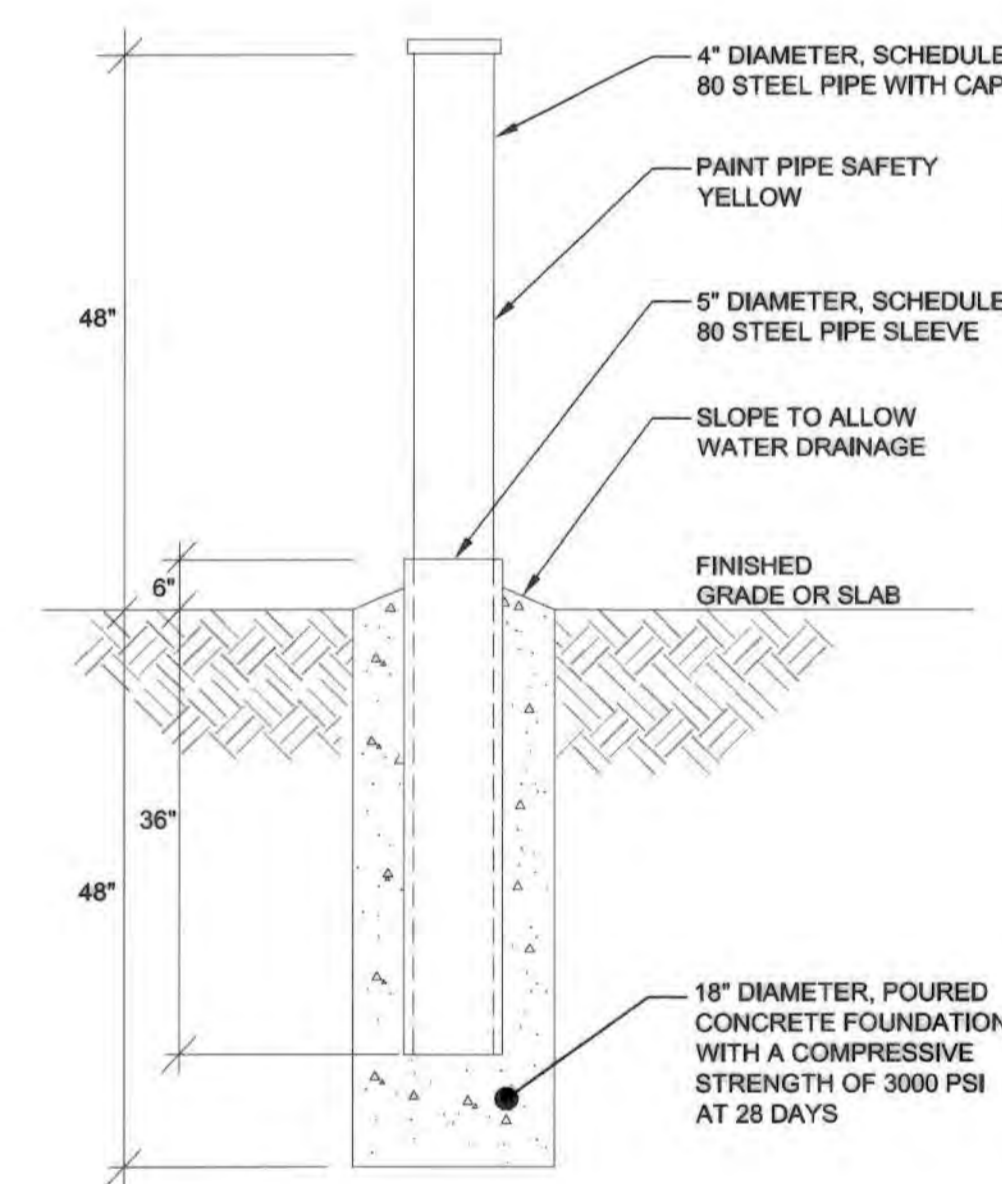
- GENERAL ELECTRICAL NOTES:**
- SEE ELECTRICAL SITE PLAN ON SHEET E1-101 FOR PROPOSED LOCATIONS OF PROTECTION BOLLARDS, LIGHTING BOLLARDS AND PAD MOUNTED UTILITY TRANSFORMER.



5 LIGHTING BOLLARD MOUNTING DETAIL
SCALE: NONE



STATIONARY GUARD PIPE WHERE REQUIRED (COORDINATE WITH UTILITY COMPANY)



REMOVABLE GUARD PIPE WHERE REQUIRED (COORDINATE WITH UTILITY COMPANY)

6 UTILITY COMPANY PROTECTION BOLLARD DETAILS
SCALE: NONE

AS-BUILT
DATE: 9/2021

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Dec 18, 2018 - 11:00am User: Robert Williams
M: 2018\131601306.01\Drawings\E1-501 ELECTRICAL DETAILS I.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: Robert Williams
Chief, Bureau of Utilities: Robert Williams
Chief, Bureau of Engineering: Thomas E. Butler
Chief, Utility Design Division: Robert Williams

KCI TECHNOLOGIES
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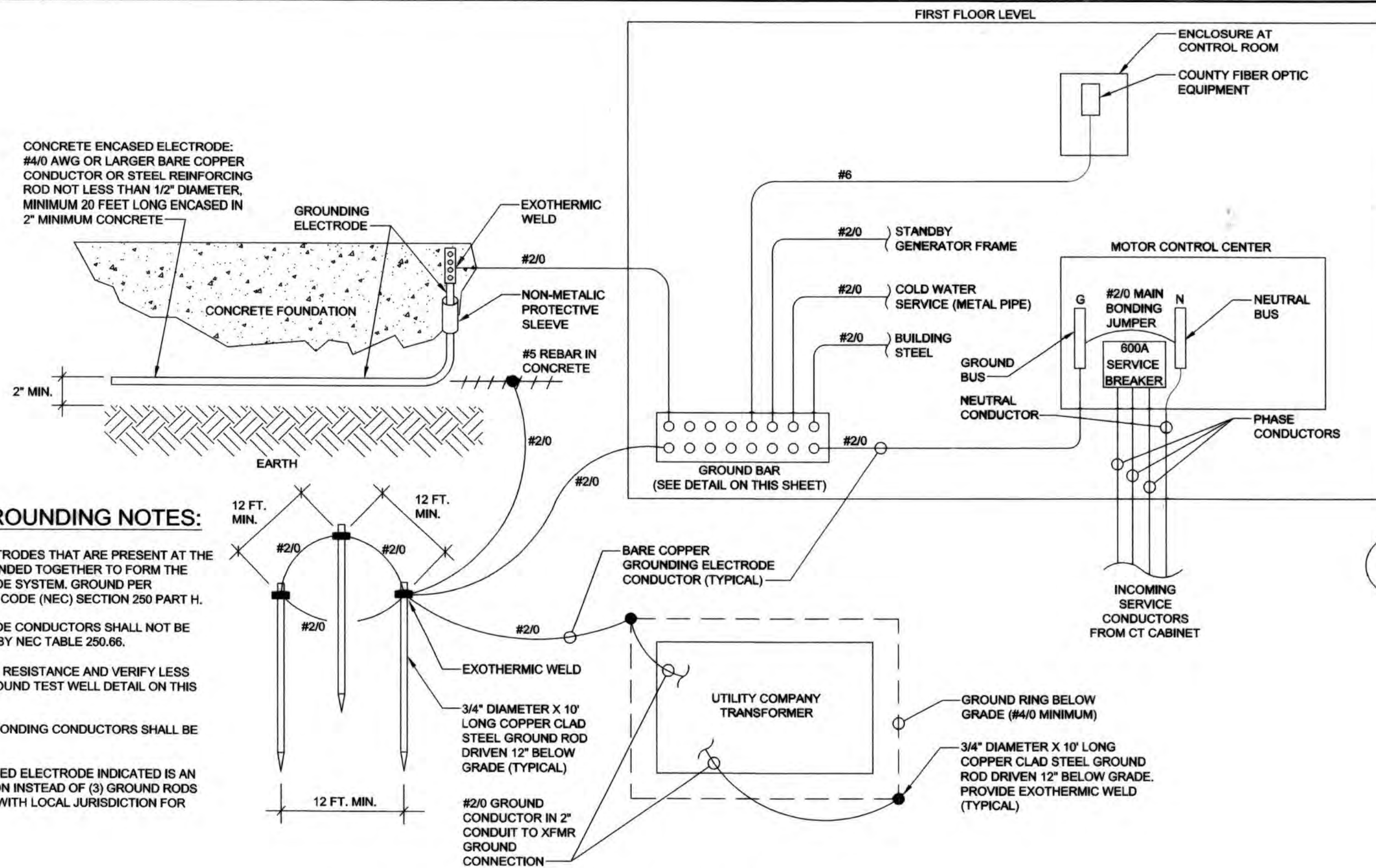
ELECTRICAL DETAILS I
600' SCALE MAP NO. 35
BLOCK NO. 17-11

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

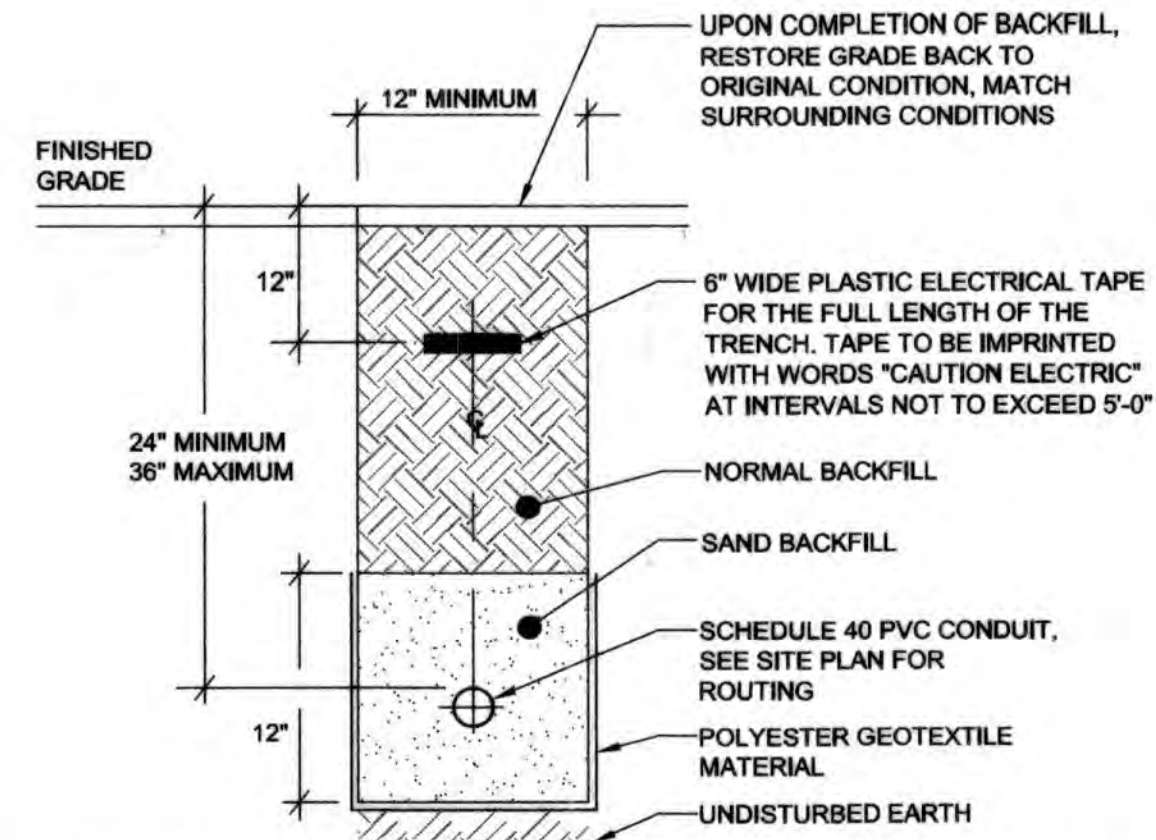
DRAWING NO. E1-501
SCALE AS SHOWN
SHEET 63 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

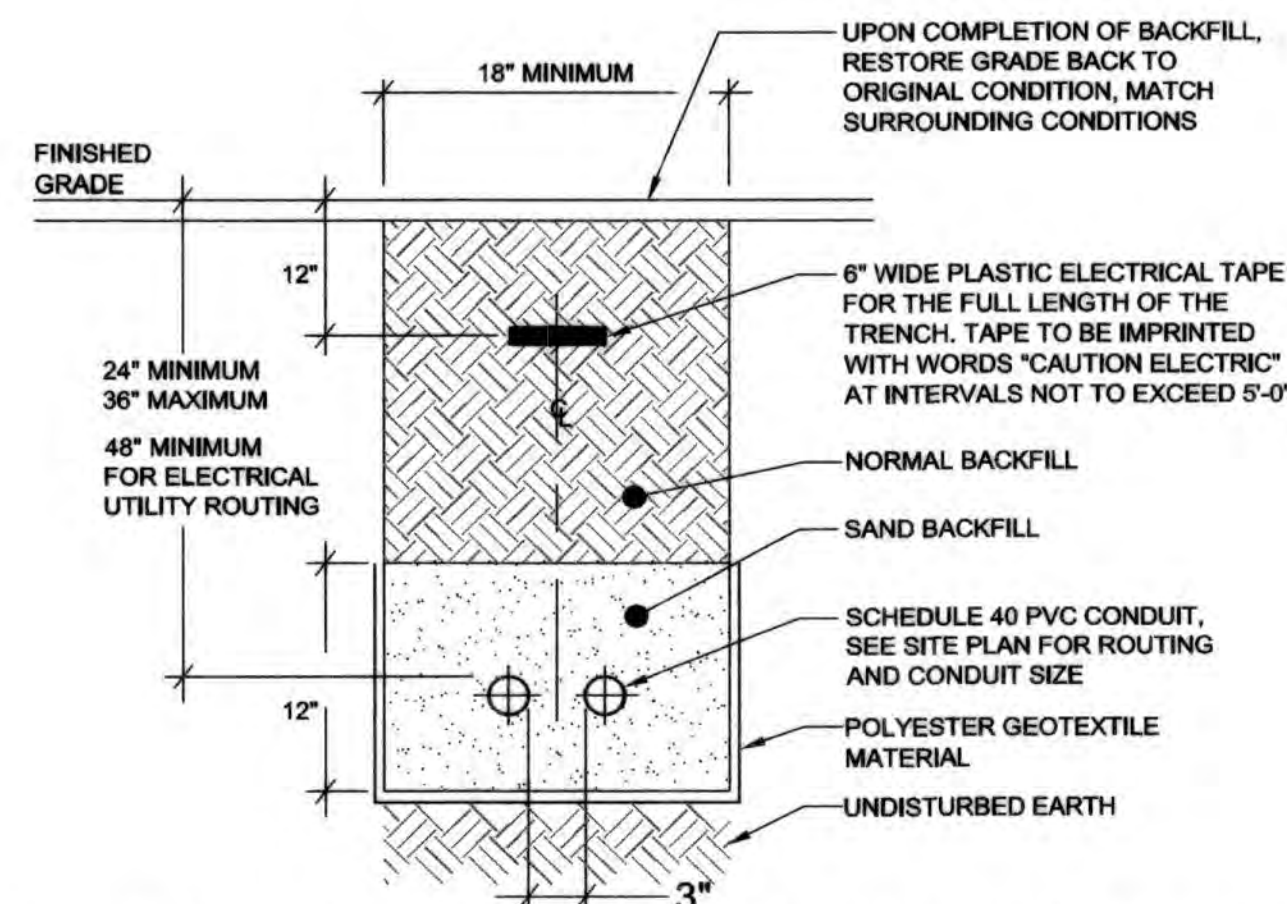
DATE: 10/18/2018 11:01 AM USER: Robert Williams
C:\Users\Robert Williams\Documents\131601306\131601306-02-ELECTRICAL DETAILS.rvt



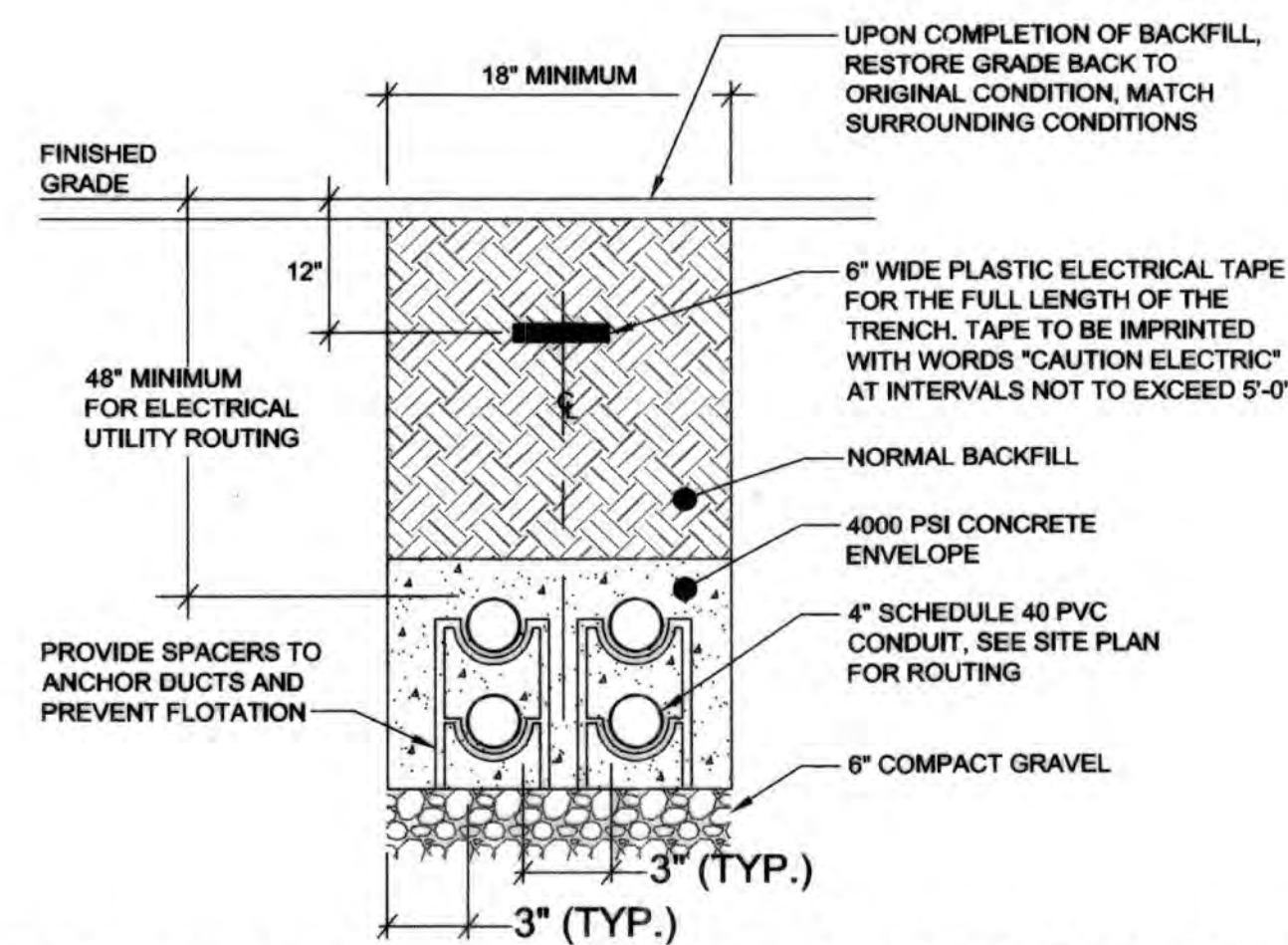
1 SERVICE GROUNDING DETAIL
SCALE: NONE



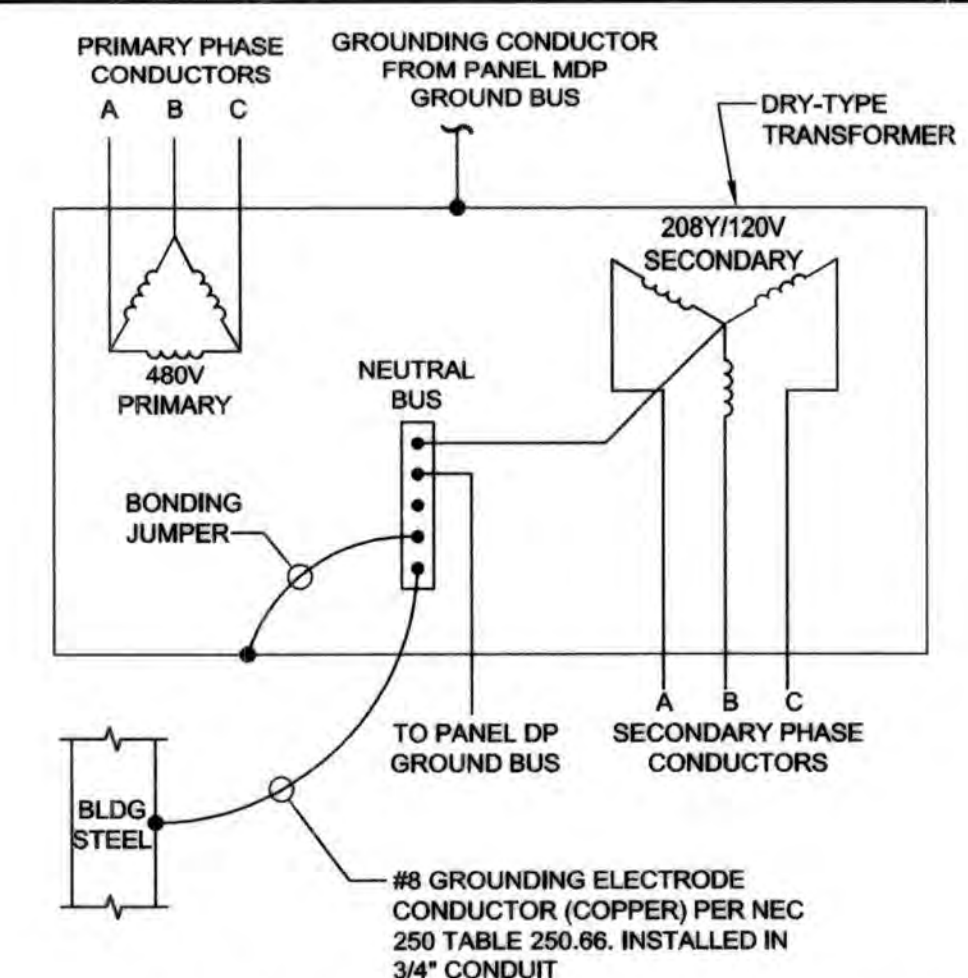
4 (1) DIRECT BURIED CONDUIT DETAIL
SCALE: NONE



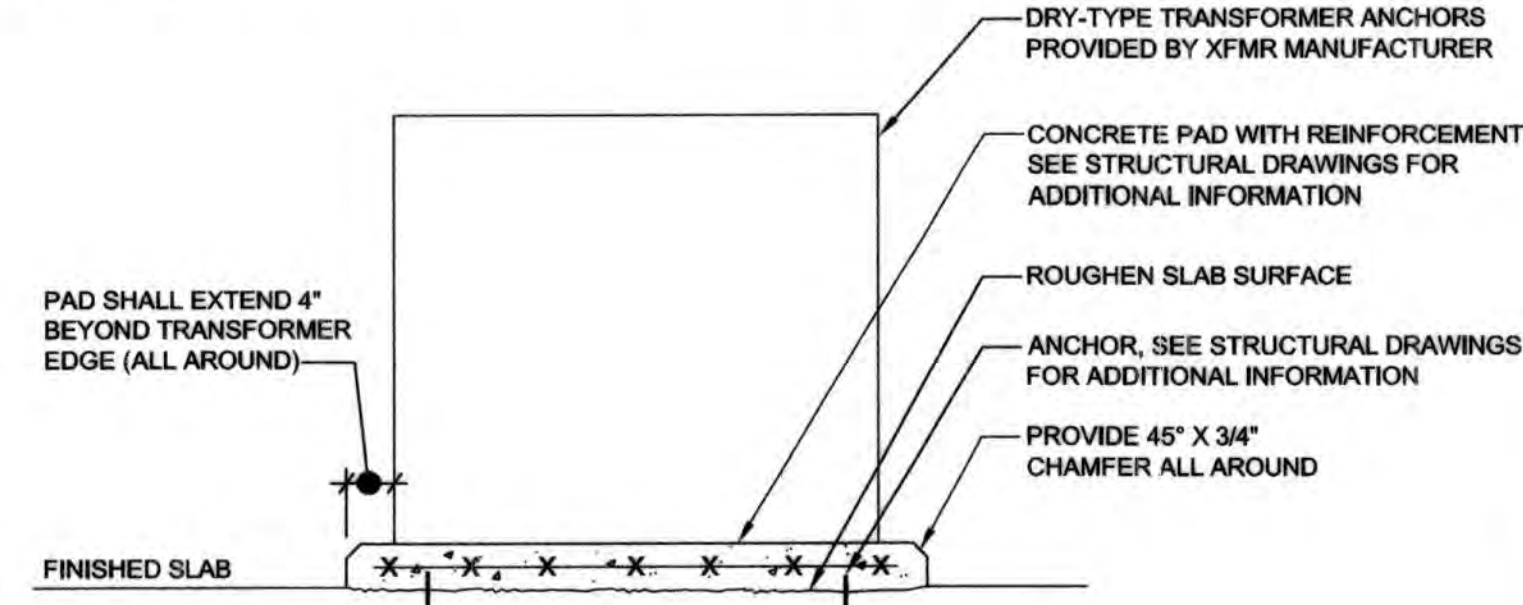
5 (2) DIRECT BURIED CONDUITS DETAIL
SCALE: NONE



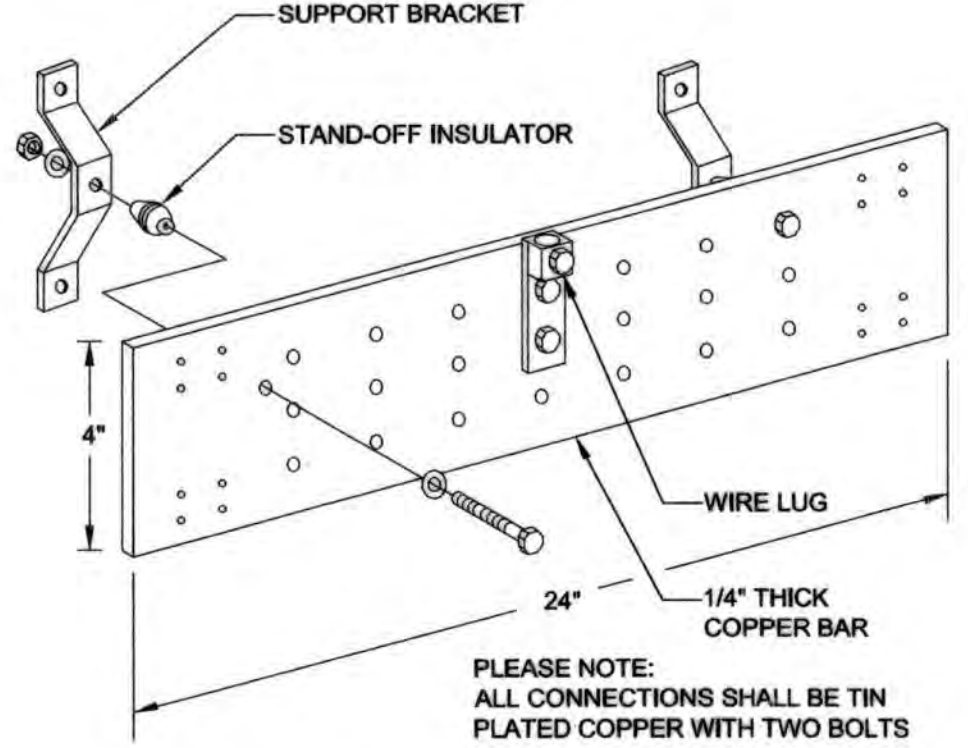
6 4-WAY CONCRETE ENCASED DUCTBANK DETAIL
SCALE: NONE



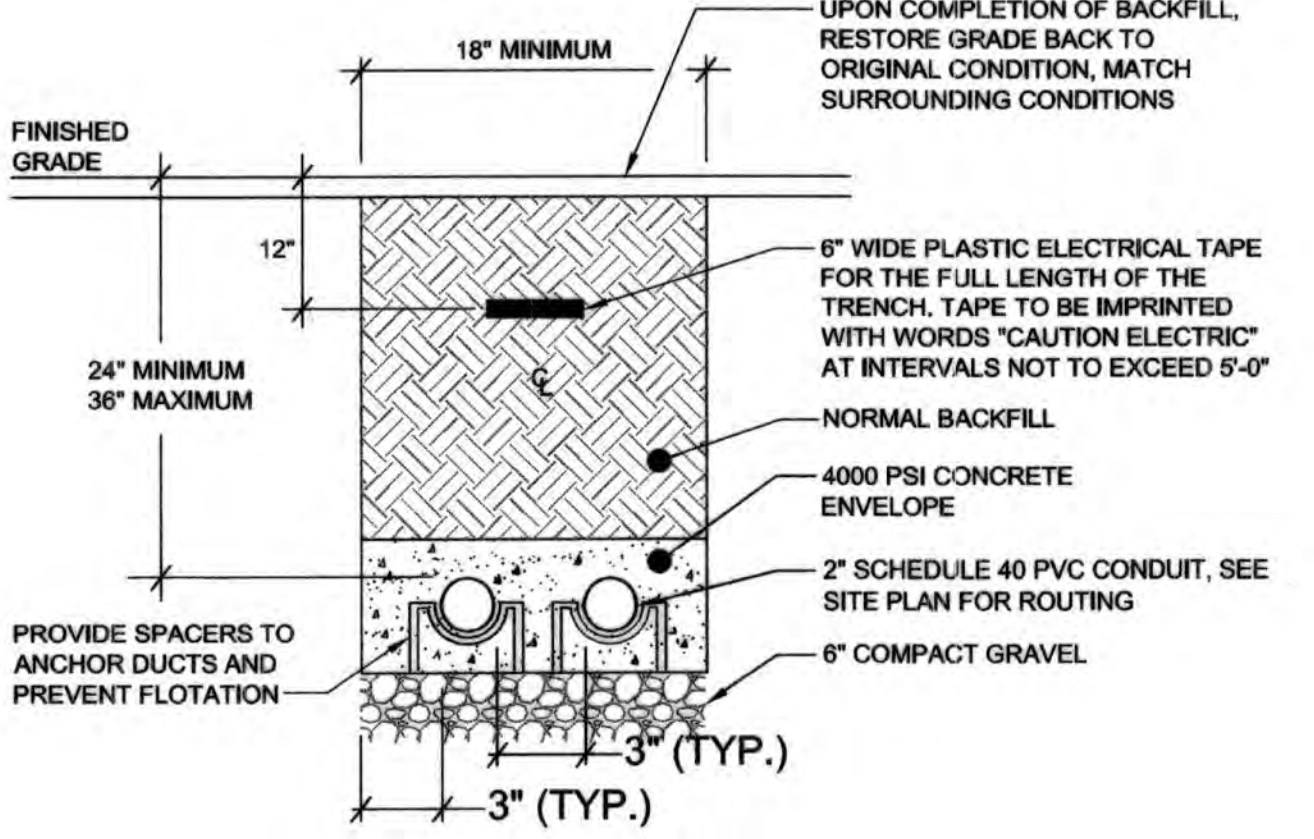
7 INTERIOR FLR. MTD. XFMR GROUNDING DETAIL
SCALE: NONE



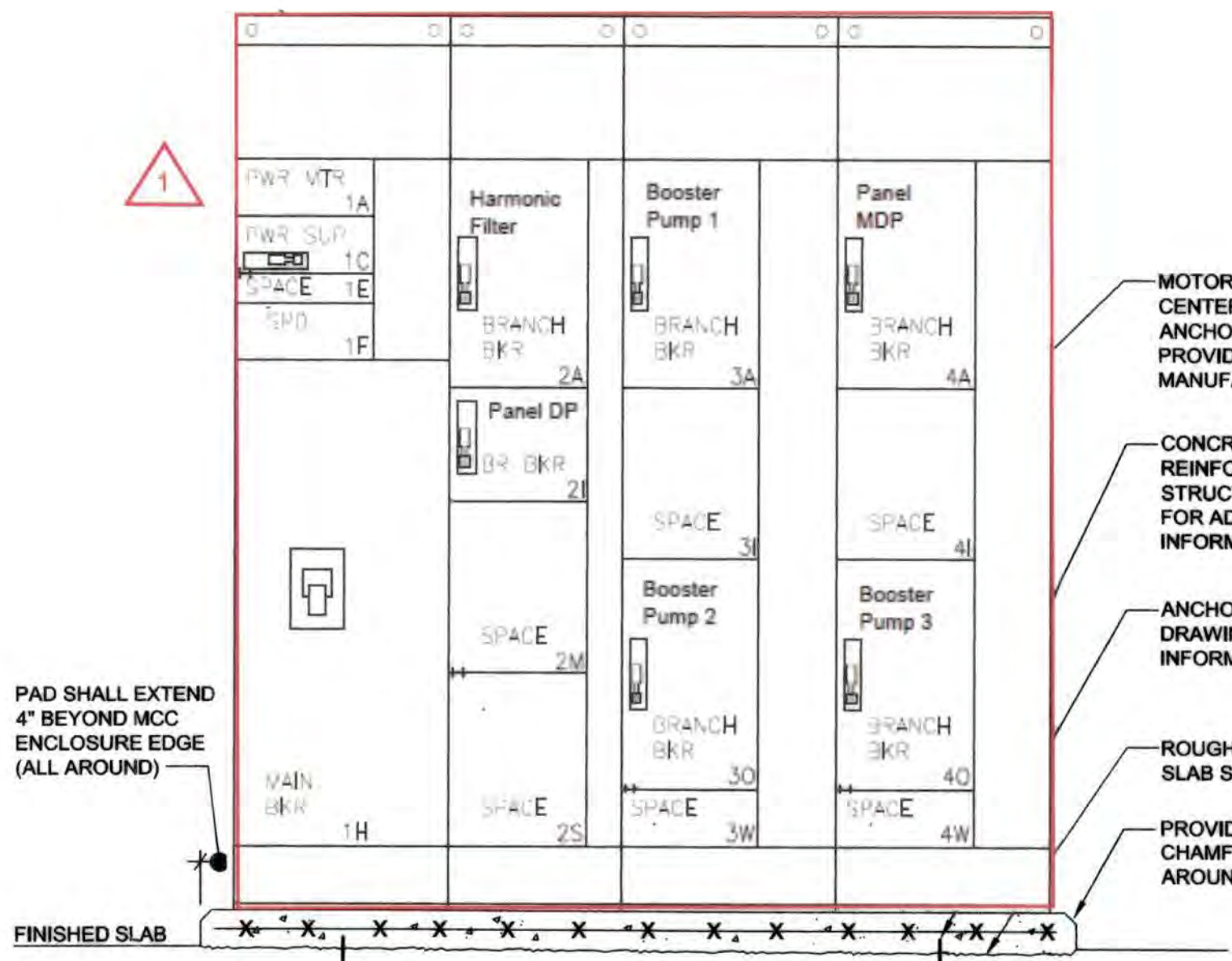
8 INTERIOR FLR. MTD. XFMR PAD DETAIL
SCALE: NONE



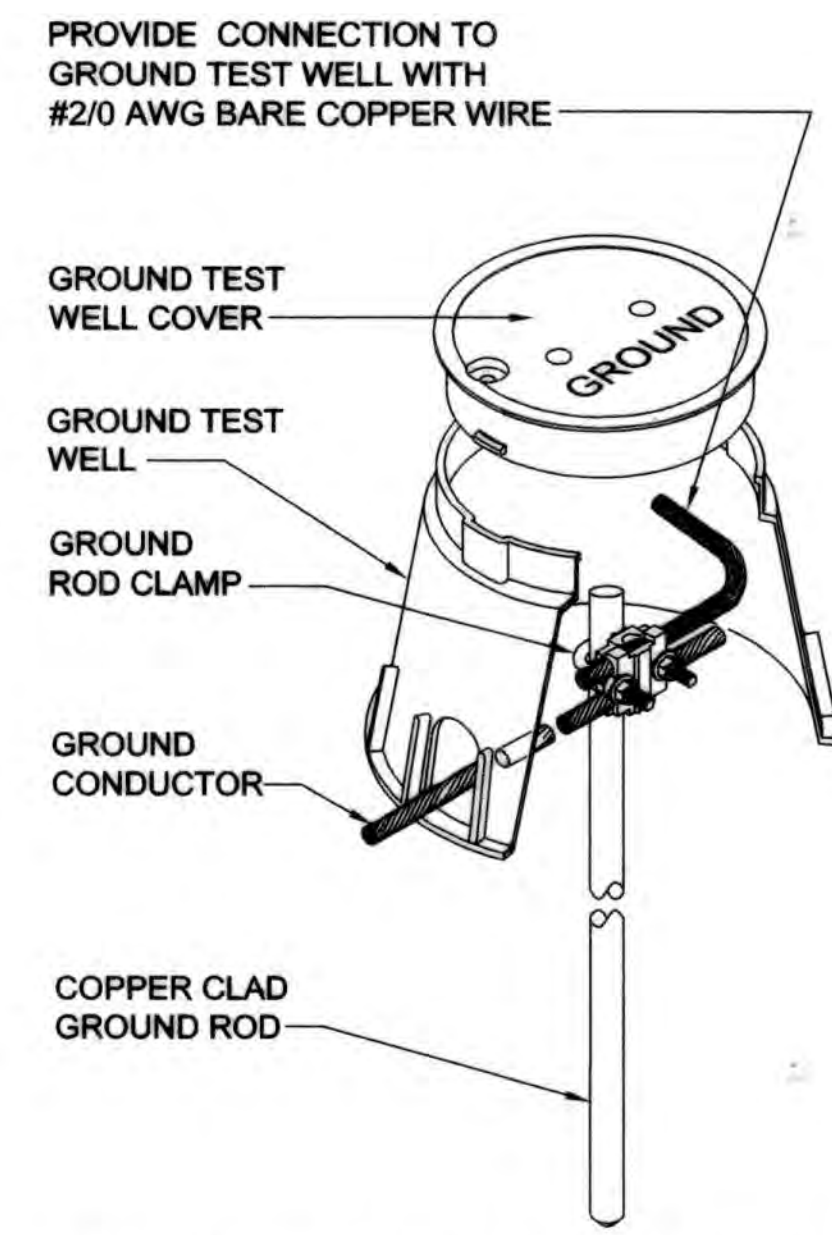
9 GROUND BAR DETAIL
SCALE: NONE



10 2-WAY CONCRETE ENCASED DUCTBANK DETAIL
SCALE: NONE



2 MOTOR CONTROL CENTER ELEVATION
SCALE: NONE



3 GROUND TEST WELL DETAIL
SCALE: NONE

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. 49788, Expiration Date 08-15-2020.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 12/20/18

Chief, Bureau of Engineering: [Signature] DATE: 12/20/18

Chief, Bureau of Utilities: [Signature] DATE: 12/20/18

KCI TECHNOLOGIES

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS

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DRN:	REW
CHK:	WDM
DATE:	DEC 2018
BY:	LP
NO.:	1
REVISION:	AS-BUILT
DATE:	8/2021

ELECTRICAL DETAILS II

600' SCALE MAP NO. 35

BLOCK NO. 17, 11

AS-BUILT REPLACEMENT SHEET 9/2021

CEEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

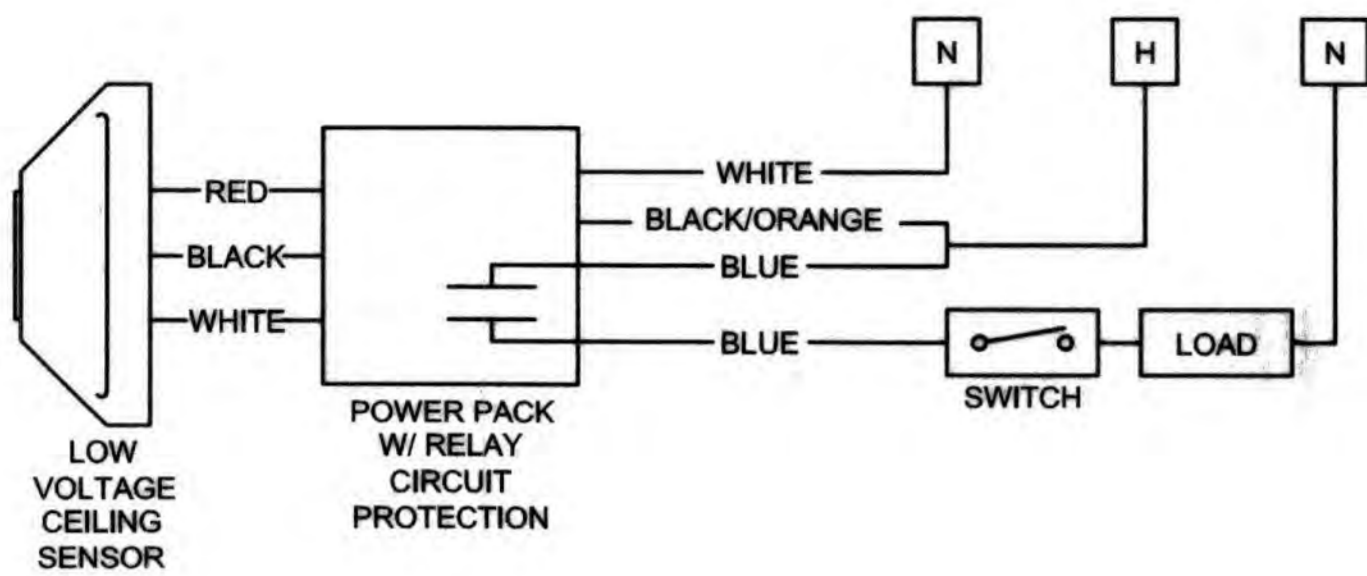
ELECTION DISTRICT NO. 5

HOWARD COUNTY, MARYLAND

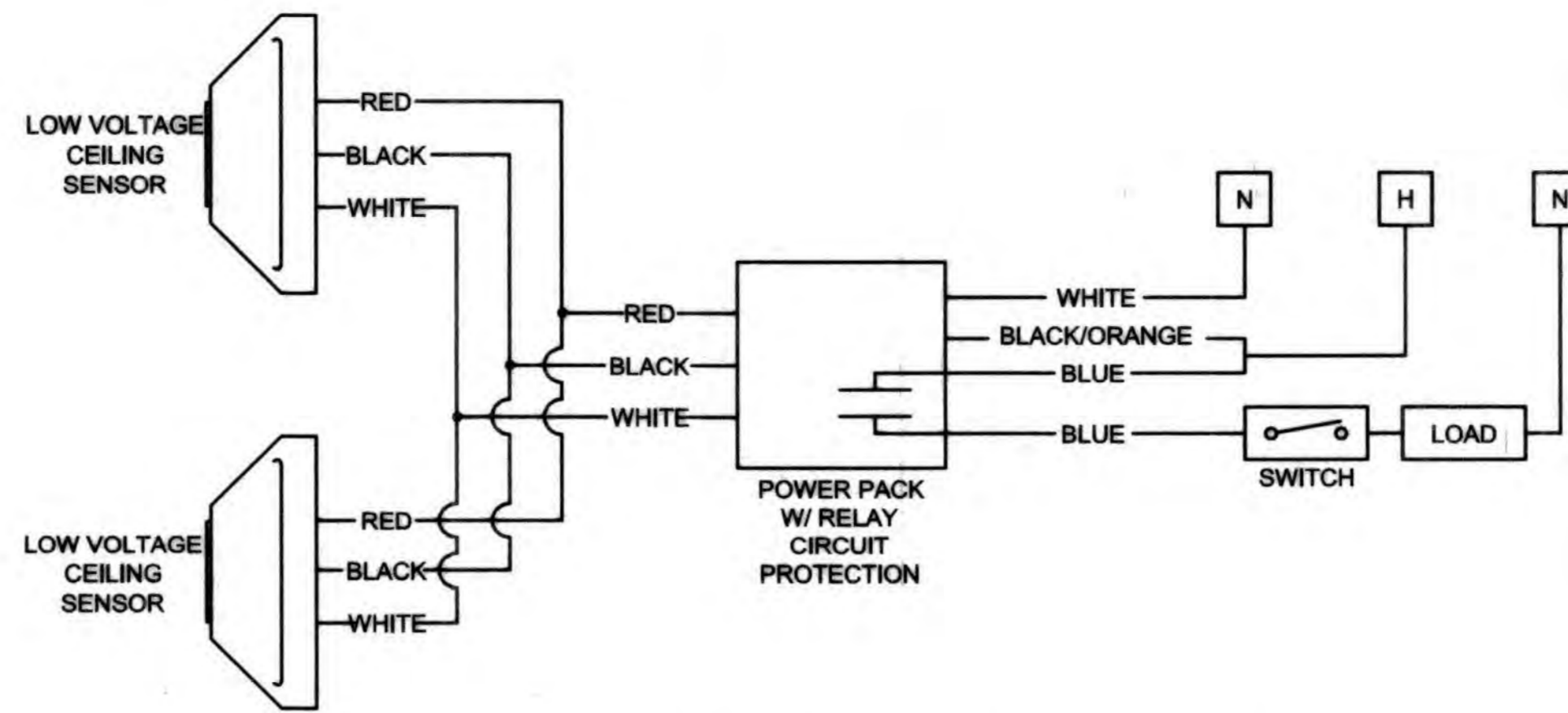
DRAWING NO. E1-502

SCALE AS SHOWN

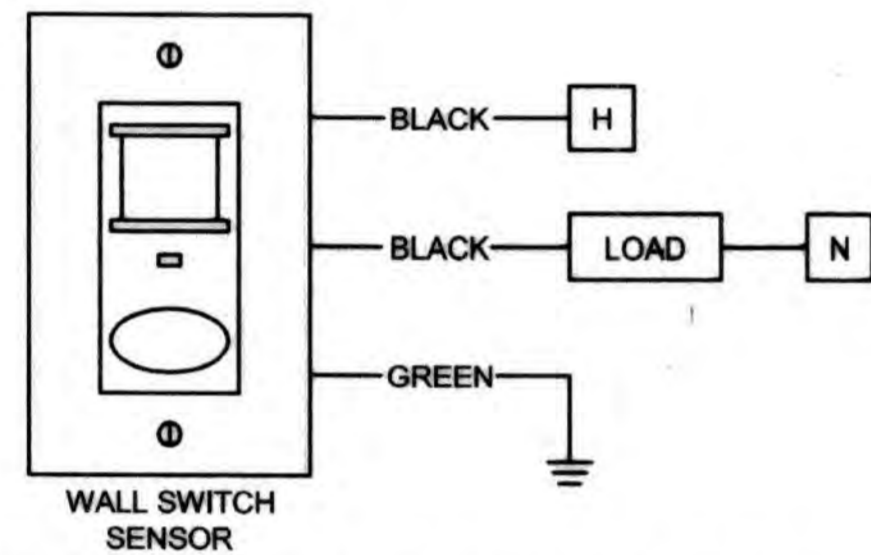
SHEET 64 of 81



1 LOW VOLTAGE CEILING SENSOR
SCALE: NONE



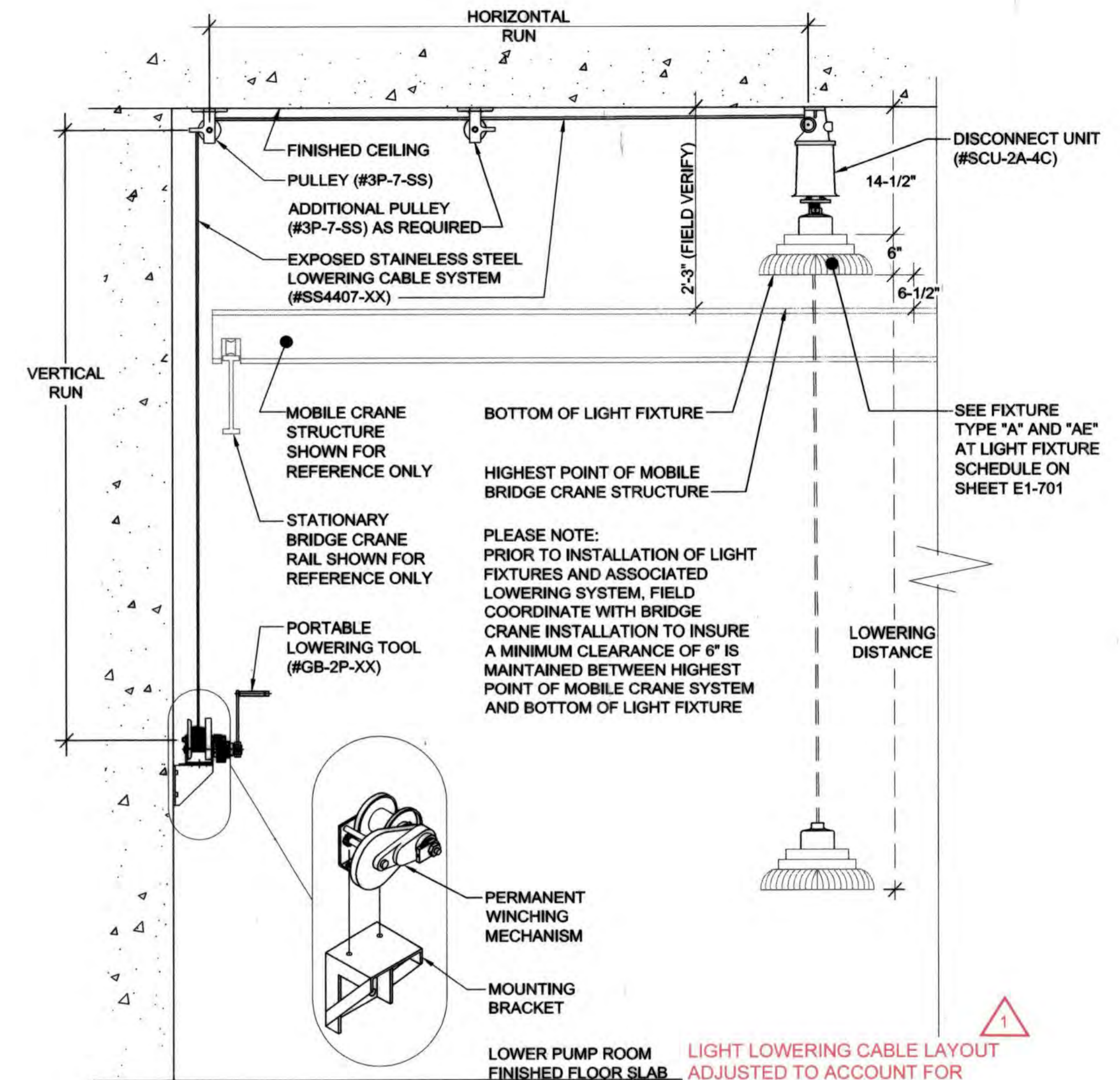
2 MULTIPLE LOW VOLTAGE CEILING SENSORS
SCALE: NONE



3 WALL MOUNTED SWITCH SENSOR
SCALE: NONE

GENERAL LIGHTING CONTROL SENSOR NOTES:

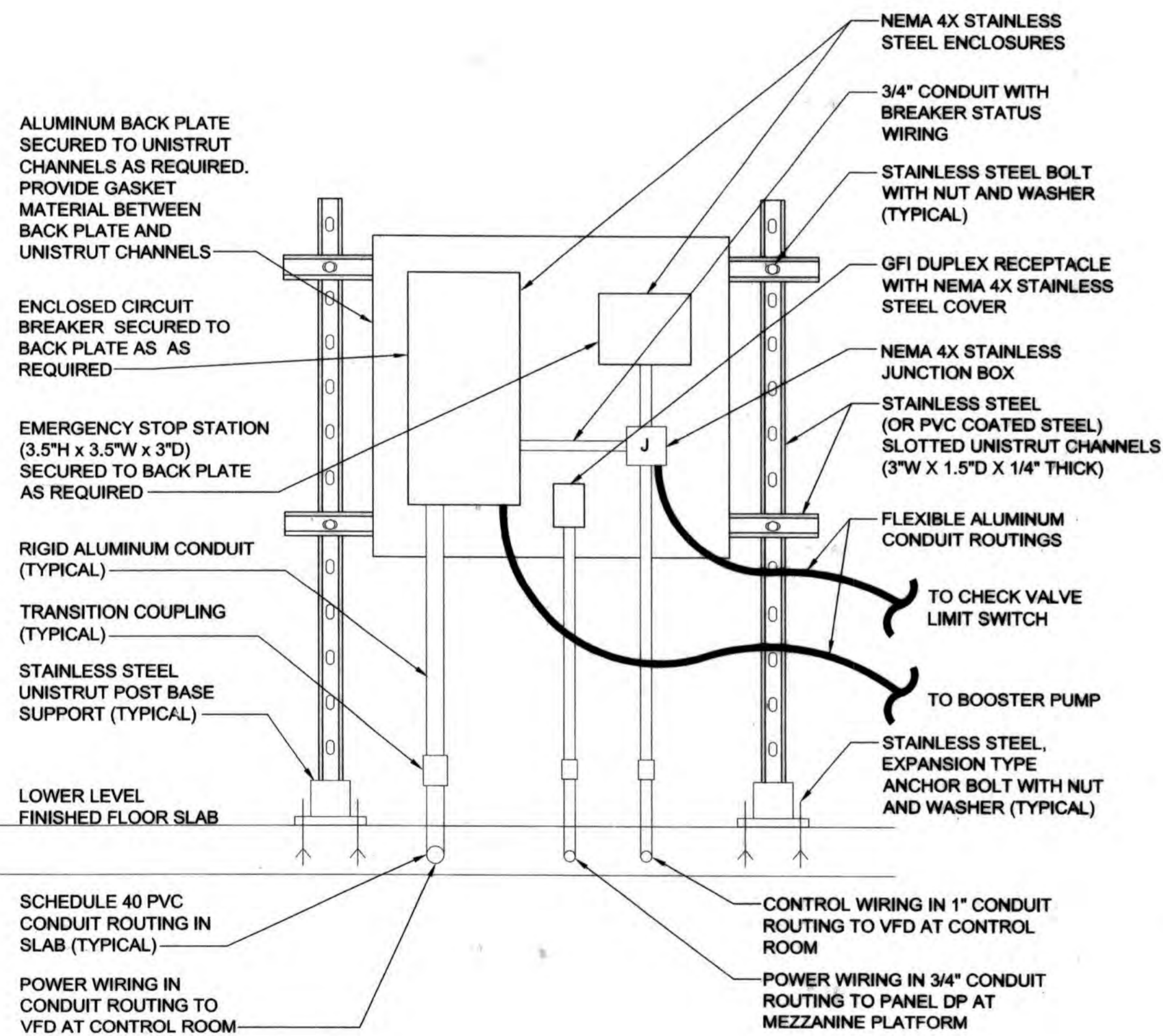
1. THESE DETAILS ARE FOR DIAGRAMMATIC PURPOSES ONLY AND SHALL NOT BE USED AS A BILL OF MATERIAL. THE CONTRACTOR SHALL COORDINATE EXACT EQUIPMENT QUANTITIES AND REQUIREMENTS WITH LIGHTING CONTROL SYSTEMS MANUFACTURER.
2. PROVIDE ALL OCCUPANCY SENSORS, POWER PACKS, MOUNTING HARDWARE, WIRING, ETC. REQUIRED FOR A COMPLETE AND OPERATIONAL LIGHTING CONTROL SYSTEM. INSTALLATION AND WIRING SHALL BE PER MANUFACTURER'S REQUIREMENTS.
3. COMMISSION THE SETTINGS OF THE SENSORS: DUAL TECHNOLOGY SHALL BE SET TO "TURN ON" WHEN BOTH TECHNOLOGIES SENSE MOTION AND MAINTAIN "ON" WITH EITHER TECHNOLOGY. SET SENSOR TO MID-RANGE SENSITIVITY WITH A 15 MINUTE DELAY TO "TIME OFF".
4. MANUFACTURER'S REPRESENTATIVE SHALL RE-VISIT THE SITE AS REQUESTED TO PERFORM ADJUSTMENTS TO SATISFY THE OWNER AND ENGINEERING SERVICES.



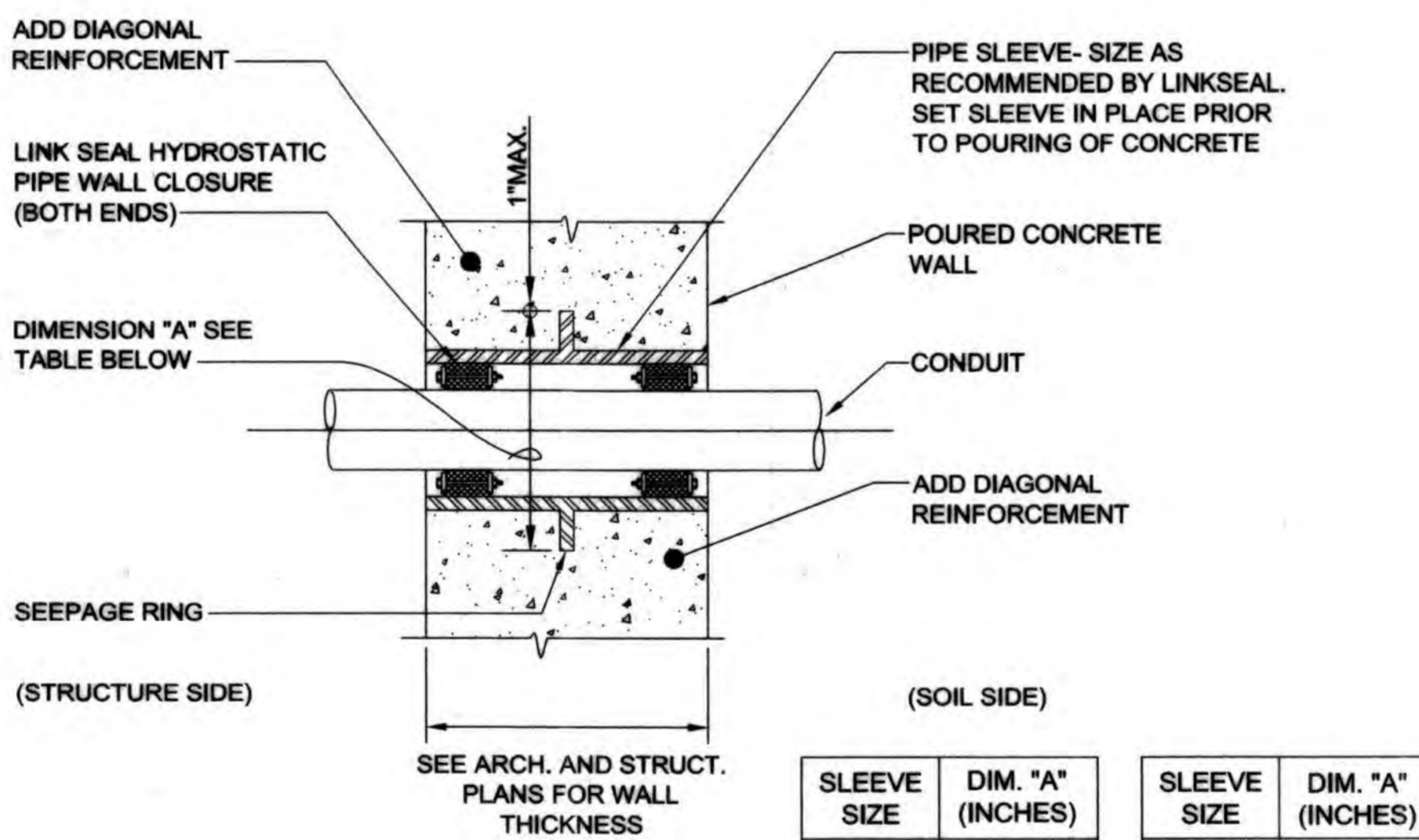
6 MANUAL LIGHT FIXTURE LOWERING SYSTEM DETAIL
SCALE: NONE

LIGHT FIXTURE LOWERING SYSTEM NOTES:

1. DETAIL SHOWN IS INTENDED AS AN APPLICATION EXAMPLE FOR A MANUAL LOWERING SYSTEM FOR EACH LIGHT FIXTURE TYPE "A" AND "AE" REFLECTED ON FIRST FLOOR LIGHTING PLAN. AN ALTERNATE LOWERING SYSTEM MAY BE SUBMITTED FOR REVIEW AND APPROVAL. DETAIL SHOWN IS REFERENCED FROM THE FOLLOWING MANUFACTURER: "LIGHTING AND LOWERING SYSTEMS" (MODEL #PWE-400) WITH EXPOSED WINCH CABLE SYSTEM AND PORTABLE LOWERING TOOL.
2. PRINCIPAL COMPONENTS OF THE PWE-400 LOWERING SYSTEM CONSISTS OF:
-ELECTRICAL DISCONNECT UNIT ASSEMBLY (MODEL #SCU-2A-4C)
-STAINLESS STEEL RAISING AND LOWER CABLE (MODEL #SS4407-XX)
-STAINLESS STEEL PULLEY (MODEL #3P-7-SS)
-PORTABLE LOWER TOOL (MODEL #GB-2P-XX)
3. PROVIDE ALL REQUIRED HARDWARE (CORROSION RESISTANT STAINLESS STEEL) FOR A COMPLETE AND OPERABLE SYSTEM.
4. CONTACT MANUFACTURER'S REPRESENTATIVE OR FACTORY FOR SPECIFIC DETAILS ABOUT SPECIAL INSTALLATION APPLICATION AND OTHER INFORMATION.
5. THE PWE-400 SYSTEM HAS A MAXIMUM LIFTING CAPACITY OF 400 POUNDS FOR EACH RESPECTIVE LIGHT FIXTURE. UPON LOWERING, THE LIGHT FIXTURE IS DISCONNECTED FROM THE POWER SOURCE FOR MAINTENANCE PURPOSES.
6. THE DISCONNECT UNIT (#SCU-2A-4C) AND PULLEYS (#3P-6) MUST BE MOUNTED TO A STRUCTURE CAPABLE OF SUPPORTING 5X THE LOAD OF THE FIXTURE IN THE VERTICAL AND HORIZONTAL DIRECTION. DISCONNECT UNIT MUST BE MOUNTED TO A SUPPORT STRUCTURE HORIZONTALLY LEVEL ON TWO 90 DEGREE PLANES.
7. THE SYSTEM CAN BE USED WITH AN INCLINED CEILING STRUCTURE PROVIDED THE HORIZONTAL SUPPORT FOR THE DISCONNECT UNIT FULFILLS ALL THE REQUIREMENTS NOTED ABOVE. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING LEVEL SUPPORT STRUCTURE AS REQUIRED.



4 EQUIPMENT MOUNTING AT PUMP DETAIL
SCALE: NONE
(TYPICAL OF 3 INSTALLATIONS)



- NOTES:
1. PRIOR TO POURING OF CONCRETE WALLS, ELECTRICAL CONTRACTOR SHALL SET IN PLACE ALL REQUIRED CONDUIT SLEEVES AND DIAGONAL REINFORCEMENT, FIELD COORDINATE AS REQUIRED.
 2. DETAIL APPLICABLE FOR FLOOR PENETRATIONS AS WELL.

5 WALL PENETRATION DETAIL
SCALE: NONE

SLEEVE SIZE	DIM. "A" (INCHES)	SLEEVE SIZE	DIM. "A" (INCHES)
2	6	14	21
2 1/2	7	16	23 1/2
3	7 1/2	18	25
3 1/2	8 1/2	20	27 1/2
4	9	24	32
6	11	30	38 1/2
8	13 1/2	36	46
10	16	42	53
12	19	48	59 1/2

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KCI TECHNOLOGIES PROJECT No.: 131601306.01

Dec 18, 2018 - 11:02am User: Robert Williams
Dr: 2018/131601306.01 Drawing: E1-503 ELECTRICAL DETAILS III.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. Angelo White 12/20/18
DIRECTOR OF PUBLIC WORKS DATE

Roman E. Sells 12/20/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/20/18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/20/18
CHIEF, UTILITY DESIGN DIVISION DATE

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DRN:	REW				
CHK:	WDM				
DATE:	DEC 2018				
BY:	NO.	AG	1	AS-BUILT	8/2021
REVISION:					

600' SCALE MAP NO.	35	BLOCK NO.	17, 11
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AS-BUILT REPLACEMENT SHEET 9/2021

**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

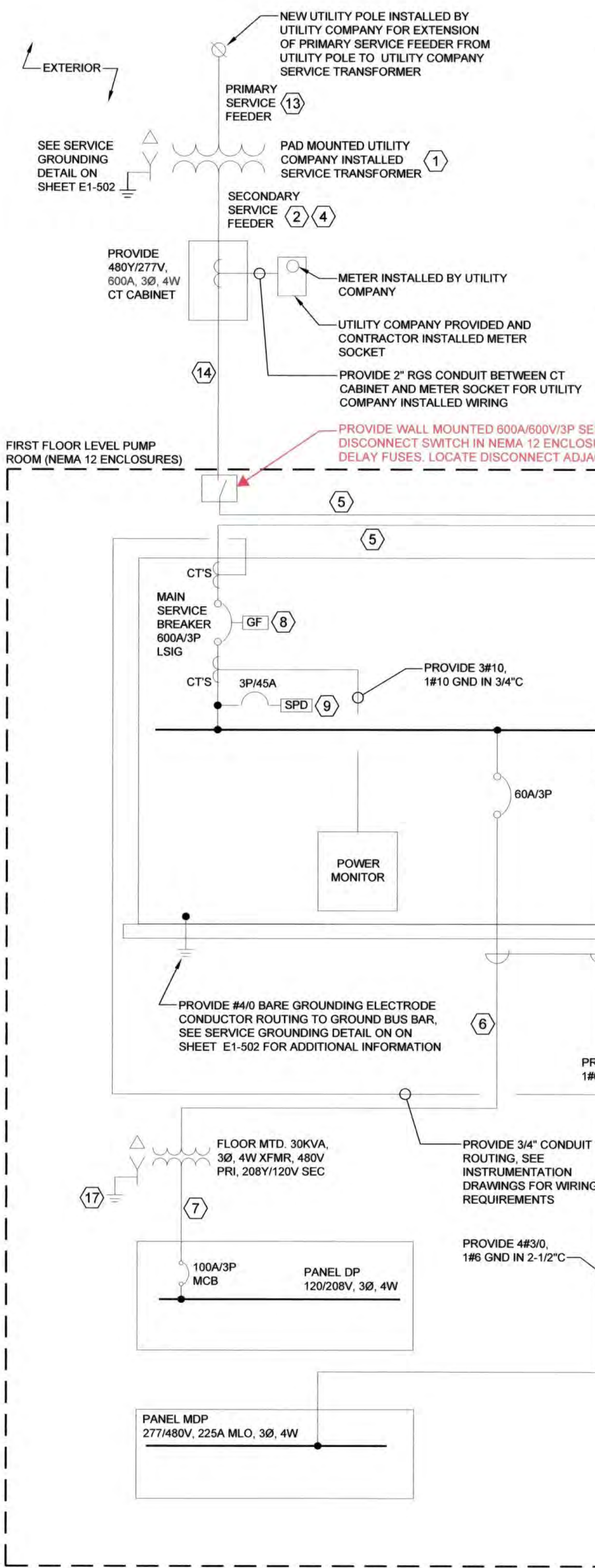
DRAWING NO.
E1-503

SCALE
AS SHOWN

SHEET
85 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Dec 18, 2018 - 11:02am User: Robert.Williams
M:\2018\131601306.01\Drawings\1-601 SINGLE LINE DIAGRAM.dwg

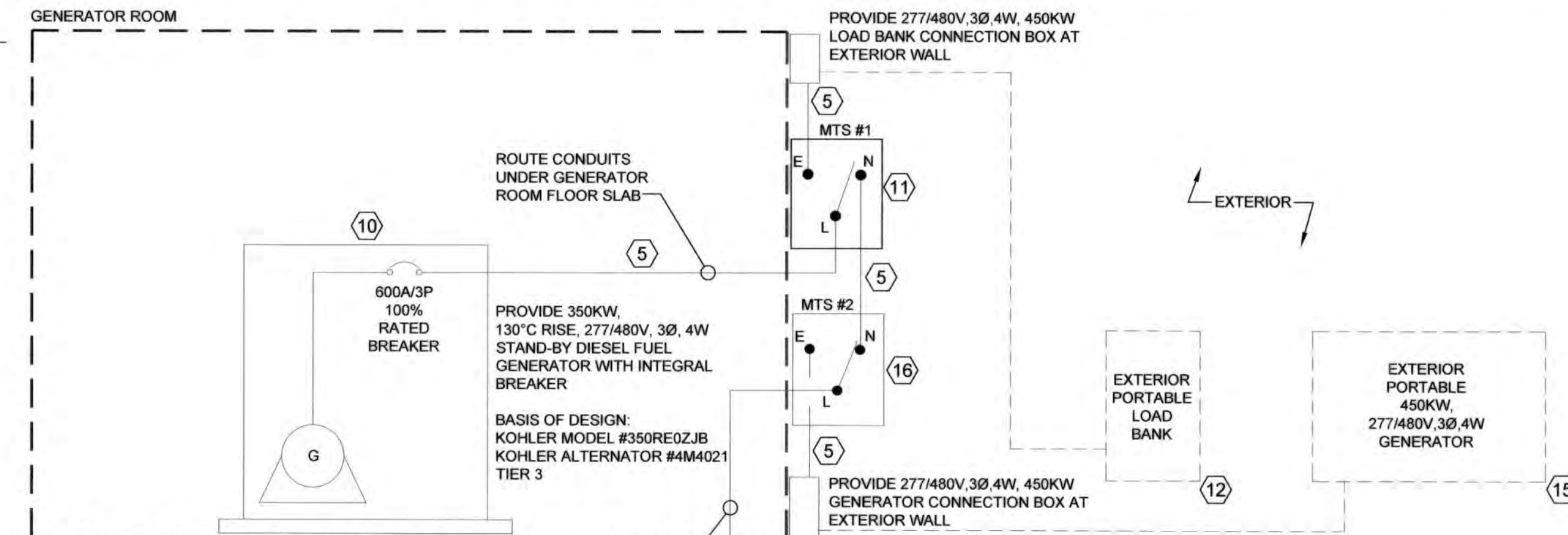


GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL PANELBOARDS, ENCLOSED BREAKERS, VFD'S, BOXES, ETC. SHALL BE PROVIDED WITH PERMANENT LABELS INDICATING THEIR RESPECTIVE POWER SOURCE.
2. ALL CONDUCTORS SHALL BE COPPER, UNLESS NOTED OTHERWISE.
3. THE TRANSFER SWITCHES DO NOT SWITCH THE NEUTRAL, THE SYSTEM IS NOT SEPARATELY DERIVED.
4. ALL CONDUIT ROUTINGS AT BUILDING INTERIOR SHALL BE ALUMINUM.
5. SEE MCC AND PANEL SCHEDULES ON SHEET E1-701 FOR ADDITIONAL INFORMATION ON BRANCH CIRCUIT CONDUIT AND WIRING REQUIREMENTS FOR EQUIPMENT.
6. IN ACCORDANCE WITH NEC ARTICLE 701.12, STANDBY GENERATOR POWER SHALL BE AVAILABLE WITHIN 60 SECONDS UPON LOSS OF NORMAL POWER SUPPLY.
7. FINAL PRIMARY AND SECONDARY CONNECTIONS TO INTERIOR FLOOR MOUNTED TRANSFORMER SHALL BE IN FLEXIBLE ALUMINUM CONDUIT.

NEMA RATING OF ENCLOSURES:

- NEMA ENCLOSURE TYPES FOR MISCELLANEOUS BOXES, PANELS, TRANSFORMERS, GENERATOR, MCC, ATS, MTS, ENCLOSED BREAKERS AND ALL OTHER ELECTRICAL EQUIPMENT ENCLOSURES NOT SPECIFICALLY INDICATED SHALL BE RATED IN ACCORDANCE WITH THE FOLLOWING:
- EXTERIOR: NEMA 4X (STAINLESS STEEL), NEMA 3R (STAINLESS STEEL) WHERE NOTED
 - GENERATOR ROOM: NEMA 12
 - FIRST FLOOR LEVEL PUMP ROOM: NEMA 12
 - LOWER LEVEL PUMP ROOM: NEMA 4X (STAINLESS STEEL)
 - CONTROL ROOM: NEMA 1
- THE ENCLOSURE TYPE REFLECTED FOR EXTERIOR APPLICATIONS IS NOT APPLICABLE TO UTILITY COMPANY PROVIDED SERVICE EQUIPMENT.



1 SINGLE LINE POWER DISTRIBUTION DIAGRAM
SCALE: NONE

ELECTRICAL KEYED NOTES:

- 1) SEE CONCRETE PAD AND CONDUIT TERMINATION DETAILS ON SHEET E1-501 FOR ADDITIONAL INFORMATION.
- 2) SEE DUCTBANK INSTALLATION DETAIL ON SHEET E-101 FOR ADDITIONAL INFORMATION.
- 3) PROVIDE 600A, 600V, 3P, 42 KAIC AUTOMATIC TRANSFER SWITCH IN NEMA 12 ENCLOSURE FOR AUTOMATIC TRANSFER FROM NORMAL INCOMING POWER SOURCE TO INTERIOR STANDBY GENERATOR.
- 4) PROVIDE 4-WAY 4" PVC SCHEDULE 40 CONDUITS, CONCRETE ENCASED DUCTBANK FOR EXTENSION OF UTILITY COMPANY INSTALLED SECONDARY FEEDERS.
- 5) PROVIDE 2 SETS OF (4-350 KCMIL, 1#4/0 GROUND IN 4" CONDUIT).
- 6) PROVIDE 3#4, 1#10 GROUND IN 1" CONDUIT.
- 7) PROVIDE 4#2, 1#6 GROUND IN 1-1/2" CONDUIT.
- 8) PROVIDE BREAKER WITH GROUND FAULT PROTECTION FEATURE IN ACCORDANCE WITH NEC REQUIREMENTS.
- 9) PROVIDE MOTOR CONTROL CENTER WITH INTEGRALLY MOUNTED SURGE PROTECTION DEVICE (SPD) BY MCC MANUFACTURER. SURGE RATING SHALL BE 160KA MINIMUM.
- 10) IN ACCORDANCE WITH OWNER'S REQUIREMENTS, THE GENERATOR DIESEL FUEL TANK HAS BEEN SIZED TO OPERATE THE GENERATOR AT FULL CAPACITY FOR A MINIMUM OF 24 HOURS AT FULL LOAD. THE GENERATOR HAS BEEN SIZED TO OPERATE ONLY (2) BOOSTER PUMPS AT FULL LOAD CAPACITY AND ALL OTHER MISCELLANEOUS LOADS.
- 11) PROVIDE 600A, 600V, 3P, 42 KAIC MANUAL TRANSFER SWITCH IN NEMA 3R STAINLESS STEEL ENCLOSURE AT EXTERIOR WALL, FOR MANUAL TRANSFER FROM INTERIOR STANDBY GENERATOR TO EXTERIOR LOAD BANK CONNECTION. PROVIDE PERMANENT LABEL INDICATING FUNCTION.
- 12) PORTABLE GENERATOR LOAD BANK AND ASSOCIATED CABLE ROUTINGS TO BE PROVIDED (BY OTHERS) ON A PERIODIC BASIS FOR EXERCISING AND TESTING OF GENERATOR. LOAD BANK SHALL BE CAPABLE OF PROVIDING LOAD UP TO 75% OF GENERATOR'S TOTAL LOAD CAPACITY.
- 13) PROVIDE (2) DIRECT BURIED 4" PVC SCHEDULE 40 CONDUITS WITH PULL CABLE FOR UTILITY COMPANY INSTALLED PRIMARY FEEDER. STUB UP CONDUITS 4" AFG AT BASE OF UTILITY POLE. SEE DIRECT BURIED CONDUIT DETAIL ON SHEET E1-101 FOR ADDITIONAL INFORMATION.
- 14) PROVIDE 2 SETS OF (4-350 KCMIL CONDUCTORS IN 4" RGS CONDUIT).
- 15) PORTABLE GENERATOR AND ASSOCIATED CABLE ROUTINGS TO BE PROVIDED (BY OTHERS) IN CASE OF FAILURE OF PERMANENT INTERIOR GENERATOR INSTALLATION.
- 16) PROVIDE 600A, 600V, 3P, 42 KAIC MANUAL TRANSFER SWITCH IN NEMA 3R STAINLESS STEEL ENCLOSURE AT EXTERIOR WALL, FOR MANUAL TRANSFER FROM INTERIOR STANDBY GENERATOR TO EXTERIOR PORTABLE GENERATOR CONNECTION. PROVIDE PERMANENT LABEL INDICATING FUNCTION.
- 17) PROVIDE #8 GROUNDING ELECTRODE CONDUCTOR IN 3/4" CONDUIT CONNECTED TO BUILDING STEEL, SEE INTERIOR MOUNTED TRANSFORMER GROUNDING DETAIL ON SHEET E1-502 FOR ADDITIONAL INFORMATION.

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. 49788, Expiration Date 08-15-2020.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/26/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/26/18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

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DRN:	REW		
CHK:	WDM		
DATE:	DEC 2018		
BY:	AG 1	NO.	
REVISION:	AS-BUILT	DATE:	8/2021

SINGLE LINE DIAGRAM

600' SCALE MAP NO. 35 BLOCK NO. 17, 11

AS-BUILT REPLACEMENT SHEET 9/2021

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. **E1-601**
SCALE AS SHOWN
SHEET **86** OF **81**

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Dec 18, 2018 - 11:03am User: Robert.Williams
J:\2018\131601306.01\Drawings\E-701 ELECTRICAL SCHEDULES.dwg

LIGHT FIXTURE SCHEDULE table with columns: SYMBOL, DESCRIPTION, MOUNTING, LAMPS, BALLAST, VOLTAGE, MANUFACTURER & CATALOG NUMBER, REMARKS. Includes items A through H.

MOTOR CONTROL CENTER MCC SCHEDULE table with columns: CKT #, SERVING, POLE, FRAME (A), TRIP (A), PHASE KVA (A, B, C), REMARKS. Includes details for 277/480V - 3 PH - 4 W.

PANEL DESIGNATION: MDP. VOLTAGE: 277/480 VOLT, 3 PHASE, 4 WIRE. MIN. AIC: 42,000. Includes detailed circuit schedule with columns for CKT NO., DESCRIPTION, BREAKER, LOAD (KVA), WIRE, GND., COND., and CT NO.

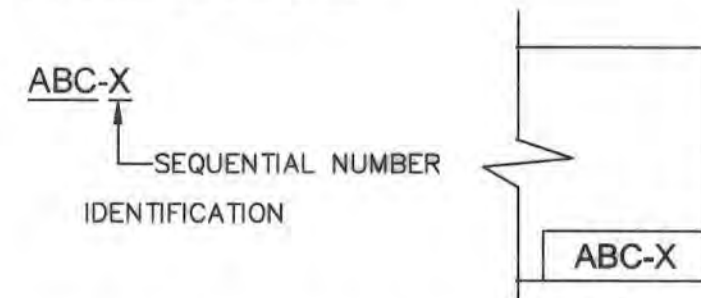
PANEL DESIGNATION: DP. VOLTAGE: 120/208 VOLT, 3 PHASE, 4 WIRE. MIN. AIC: 42,000. Includes detailed circuit schedule with columns for CKT NO., DESCRIPTION, BREAKER, LOAD (KVA), WIRE, GND., COND., and CT NO.

- GENERAL NOTES:
1. PROVIDE TYPED WRITTEN SCHEDULES FOR PANELBOARD CIRCUITS.
2. PANELBOARD SCHEDULES SHALL REFLECT POWER SOURCE FOR PANEL.
3. AIC RATING OF BREAKER INSTALLATIONS SHALL MATCH AIC RATING OF DISTRIBUTION EQUIPMENT IN WHICH BREAKERS ARE TO BE INSTALLED.

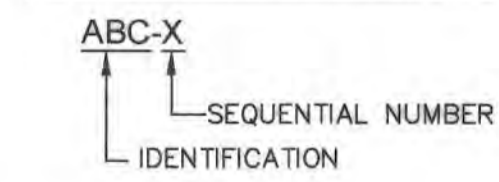
Professional certification and project information section including: DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MARYLAND; KCI TECHNOLOGIES logo and contact info; CEDAR LANE WATER PUMPING STATION; CAPITAL PROJECT No. W-8328; CONTRACT No. 44-5036; ELECTION DISTRICT NO. 5; HOWARD COUNTY, MARYLAND.

KCI TECHNOLOGIES PROJECT No.: 131601306 01

P & I LEGEND



EQUIPMENT LEGEND



PANEL LEGEND

- ATS = AUTOMATIC TRANSFER SWITCH
- BC = BATTERY CHARGER
- FOM = FUEL-OIL MONITOR
- G = GENERATOR (EMERGENCY STANDBY)
- GCP = GENERATOR CONTROL PANEL
- GDP = GENERATOR DAMPER PANEL
- HF = HARMONIC FILTER
- HMI = HUMAN MACHINE INTERFACE
- JH = JACKET HEATER
- LC = LOCAL PANEL
- MTS = MANUAL TRANSFER SWITCH
- OIT = OPERATOR INTERFACE
- PCP = PUMP CONTROL PANEL
- PDP = POWER DISTRIBUTION PANEL
- SCADA = SUPERVISORY CONTROL AND DATA ACQUISITION
- SSRVS = SOLID STATE REDUCED VOLTAGE STARTER
- VCP-X = VENTILATION CONTROL PANEL
- VFD = VARIABLE FREQUENCY DRIVE

GENERAL ABBREVIATIONS

- ARV = AIR RELEASE VALVE
- CB = CIRCUIT BREAKER
- ECD = ELECTRICAL CONTROL DIAGRAM
- EST = ELEVATED STORAGE TANK
- ETM = ELAPSED TIME METER
- GND = GROUND
- I/O = INPUT/OUTPUT
- MFR = MANUFACTURER
- P&ID = PROCESS AND INSTRUMENTATION DIAGRAM
- PM = PHASE MONITOR
- SPD = SURGE PROTECTION DEVICE
- TB = TERMINAL BLOCK
- VAC = VOLTS / ALTERNATING CURRENT
- VDC = VOLTS / DIRECT CURRENT
- XFMR = TRANSFORMER
- XMTR = TRANSMITTER

HAND SWITCHES

- (XXX) SELECTOR SWITCH OR PUSH BUTTON (MAINTAINED CONTACTS)
- (XXX) HAND CONTROL STATION
- (XXX) MOMENTARY SELECTOR SWITCH

PROCESS AND INSTRUMENTATION SYMBOLS

- DIGITAL SIGNALS
- EQUIPMENT PANELS
- POWER CONNECTION
- ELECTRICAL SIGNAL
- REMOTE I/O
- SOFTWARE OR COMMUNICATIONS DATA SIGNAL
- ANALOG SIGNALS
- TELEPHONE LINE
- PROCESS FLOW
- ANALOG INPUT
- ANALOG OUTPUT
- DIGITAL INPUT
- DIGITAL OUTPUT
- X = A DESIGNATED CONTINUATION OF A SPECIFIC SIGNAL
- FIELD-MOUNTED DEVICE
- PANEL-MOUNTED DEVICE
- INDICATING LAMP - X INDICATES LENS COLOR:
R = RED G = GREEN
W = WHITE A = AMBER
B = BLUE Y = YELLOW
- PLC OR REMOTE INPUT/OUTPUT
- SCADA INPUT/OUTPUT
- PANEL INPUT/OUTPUT TERMINATION
- ULTRASONIC LEVEL INDICATOR

HAND SWITCH-NOTES (XXX)

- ACK = ACKNOWLEDGE PUSHBUTTON
- ES = EMERGENCY STOP (PUSHBUTTON)
- HOA = HAND/OFF/AUTOMATIC (SELECTOR SWITCH)
- LO = LOCKOUT STOP (PUSHBUTTON)
- LR = LOCAL/REMOTE (SELECTOR SWITCH)
- MA = MANUAL/AUTOMATIC (SELECTOR SWITCH)
- POT = POTENTIOMETER (HAND CONTROL)
- RES = RESET (PUSHBUTTON)
- SEL = SELECTOR
- SP = STOP (PUSHBUTTON)
- ST = START (PUSHBUTTON)
- VS = VFD/SOLID STATE REDUCED VOLTAGE STARTER

ELECTRICAL CONTROL DIAGRAM (ECD) SYMBOLS

- INCOMING LINE
- OUTGOING LINE
- CIRCUIT BREAKER
- CONTACTS - NORMALLY CLOSED
- CONTACTS - NORMALLY OPEN
- CONTROL POWER TRANSFORMER
- CONTROL RELAY (SEQUENTIAL)
- DISCONNECT SWITCH
- ELAPSED TIME METER
- FLOAT SWITCH - NORMALLY OPEN, CLOSE ON LEVEL DROP
- FLOAT SWITCH - NORMALLY OPEN, CLOSE ON LEVEL RISE
- FUSE
- GROUND (GND)
- HAND-OFF-AUTOMATIC SWITCH
- LOCAL-REMOTE SWITCH
- OPEN-CLOSE SWITCH
- LIMIT SWITCH - NORMALLY OPEN
- MANUAL MOTOR STARTER, SINGLE-POLE
- OVERCURRENT ELEMENT THERMOSTAT
- PHASE MONITOR
- PLC OUTPUT (RTU OUTPUT)
- PRESSURE SWITCH - NORMALLY OPEN - CLOSURES ON PRESSURE DROP
- PRESSURE SWITCH - NORMALLY OPEN - CLOSURES ON PRESSURE RISE
- PUSH-BUTTON - MOMENTARY CONTACT
- PUSH-PULL BUTTON - MAINTAINED CONTACT
- PUSH-BUTTON - MOMENTARY CONTACT START/STOP
- PUSH TO TEST (TRANSFORMER TYPE) INDICATING LAMP - X INDICATES LENS COLOR:
R = RED (RUN) B = BLUE (POSITION)
G = GREEN (STOP) Y = YELLOW (POSITION)
W = WHITE (POWER) A = AMBER (ALARM)
- REPEAT CYCLE TIMER
- SOLENOID

ELECTRICAL CONTROL DIAGRAM (ECD) SYMBOLS

- STARTER OR CONTACT COIL - DESIGNATION AS INDICATED
- START-STOP PUSHBUTTON - MAINTAINED CONTACT
- THERMOSTAT, NORMALLY CLOSED
- TIMER
- TIMER - NORMALLY OPEN - TIMED TO CLOSE
- TIMER - NORMALLY CLOSED - TIMED TO OPEN

EQUIPMENT SYMBOLS

- AIR RELEASE VALVE (ARV)
- BALL VALVE
- BUTTERFLY VALVE
- CENTRIFUGAL PUMP
- CHECK VALVE
- DOUBLE DOOR CHECK VALVE
- ELECTRICAL DISCONNECT
- EXPLOSION PROOF SEAL-OFF
- FLOAT
- FLOW METER
- GATE VALVE
- JUNCTION BOX
- MOTOR
- MOTOR ACTUATOR
- MOTORIZED BUTTERFLY VALVE
- MOTORIZED GATE VALVE
- PRESSURE REGULATING VALVE
- PRESSURE RELIEF VALVE
- RECEPTACLE
- REDUCER OR INCREASER

CONDUIT LEGEND:

- A#14-B (C)
- A - QUANTITY OF CONDUCTORS
- B - SIZE OF CONDUIT (LARGER THAN 3/4-INCH)
- C - QUANTITY OF SPARE CONDUCTORS INCLUDED IN TOTAL COUNT (ITEM-A)

(ISA) INSTRUMENT IDENTIFICATION SCHEDULE

FIRST LETTER	VARIABLE	MODIFIER	SUCCEEDING LETTER		
			PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		AUTOMATIC
B	BREAKER		USER'S CHOICE	CLOSE OR STOP	BYPASS/REVERSE
C	COMMUNICATIONS			CONTROL	
D	DENSITY	DIFFERENTIAL		OPEN OR START	
E	VOLTAGE (EMF)		PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	RATIO	FAIL	FAIL	FAIL/INCOMPLETE
G	GAUGING		GLASS		LOCAL/MANUAL/HAND
H	HAND				HIGH OR OPEN
I	CURRENT		INDICATE		INTERMEDIATE
J	POWER	SCAN			
K	TIME	TIME RATE		CONTROL STATION	
L	LEVEL		LIGHT		LOW OR CLOSE
M	MOTOR	MOMENTARY		MOTOR	MIDDLE
N	STATUS		INPUT	FORWARD	ON OR OPERATE
O				OFF	OVERLOAD
P	PRESSURE	PNEUMATIC	POINT (TEST)		POSITION
Q	QUANTITY OR EVENT	TOTALIZE		EMERGENCY/ABNORMAL	
R	RADIOACTIVITY		RECORD OR PRINT	REMOTE	RUN/FORWARD
S	SPEED OR FREQUENCY	SUM	SWITCH	SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY			VALVE OR DAMPER	VFD/VALVE
W	WEIGHT OR FORCE	TORQUE	WELL		UNCLASSIFIED
X	MOD. LIGHT OR VALVE		UNCLASSIFIED	UNCLASSIFIED	RESET
Y	INTERLOCK			RELAY OR COMPUTE	
Z	POSITION			DRIVE OR ACTUATOR	

INSTRUMENT EXAMPLES

- FIT = FLOW INDICATING TRANSMITTER
- PIT = PRESSURE INDICATING TRANSMITTER
- ZS = POSITION SWITCH

P & I D NUMBERING SEQUENCE

- 100 SERIES = PUMP STATION
- 200 SERIES = WATER TANK
- 300 SERIES = GENERATOR
- 400 SERIES = COMMUNICATIONS

ELECTRICAL CONTROL DIAGRAM (ECD) LEGEND

- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL PANEL
- PANEL BOARD
- AT SYSTEM CONTROL PANEL
- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- PANEL CONNECTIONS
- REMOTE CONNECTIONS
- POWER SUPPLY CONNECTION

RISER DIAGRAM LEGEND

- NEW WORK
- EXISTING INSTRUMENTATION
- NEMA BOUNDARY
- DISCRETE SIGNAL CONDUIT
- ANALOG SIGNAL CONDUIT
- POWER CONNECTION
- ETHERNET

GENERAL SHEET NOTES

1. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR EQUIPMENT LOCATIONS.
 2. FOR POWER DISTRIBUTION AND DISCONNECT REQUIREMENTS, SEE ELECTRICAL DRAWINGS.
 3. ALL STATION EQUIPMENT AND CONTROLS SHALL BE DESIGNED AND FURNISHED BY THE SYSTEM MANUFACTURER SPECIFIED.
 4. ALL INSTRUMENTATION ASSEMBLIES, CIRCUITS AND CONTROLS SHALL BE IN ACCORDANCE WITH ISA STANDARDS AND SHALL BE LABELED AND TESTED IN ACCORDANCE WITH UL508.
 5. PROVIDE 60-INCHES SLACK WIRE AT EACH END OF ALL SPARE INSTRUMENTATION WIRES.
 6. THE PROJECT SYSTEMS INTEGRATOR SHALL VERIFY ALL APPROVED EQUIPMENT AND TERMINATIONS PRIOR TO INSTALLATION. THE PROJECT SYSTEMS INTEGRATOR SHALL VERIFY ALL WIRE COUNTS AND INCLUDE SPARES AS SHOWN HERE IN AND ASSEMBLE INSTRUMENT RISERS FOR CONSTRUCTION. THE RISERS SHALL BE SUBMITTED FOR APPROVAL AS A SHOP DRAWING.
 7. THE PROJECT SYSTEMS INTEGRATOR SHALL COORDINATE ANALOG SIGNAL CONDUIT QUANTITIES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
- CONSTRUCTION NOTES

PROGRAMMING NOTES

1. SEE SPECIFICATIONS FOR WRITTEN CONTROL DESCRIPTIONS. SCADA PROGRAMMING SHALL BE FURNISHED BY THE SCADA SYSTEM SUPPLIER. PACKAGED EQUIPMENT, CONTROLS, AND INSTRUMENTS SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER AND PROJECT SYSTEMS INTEGRATOR. SEE INTEGRATION PLAN AND SCOPE DESCRIBED ON DRAWING I-002.

AS-BUILT
DATE 9/2021

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. 33825, Expiration Date: 01/15/19.

Doc: 18_2018 - 9-03um User: Seth.Rong Date: 9/20/21 12:28:11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] DIRECTOR OF PUBLIC WORKS DATE 12-20-18

[Signature] CHIEF, BUREAU OF ENGINEERING DATE 12/20/18

[Signature] CHIEF, BUREAU OF UTILITIES DATE 12-20-18

[Signature] CHIEF, UTILITY DESIGN DIVISION DATE 12/20/18

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STATE OF MARYLAND
LICENSED PROFESSIONAL ENGINEER
12/20/18

DES: SDR			
DRN: SDR			
CHK: SEA			
DATE: DEC 2018	BY	NO.	
REVISION	DATE	600' SCALE MAP NO. <u>35</u>	BLOCK NO. <u>17_11</u>

LEGEND AND CONTROL DIAGRAM SYMBOLS

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. I-001

SCALE AS SHOWN

SHEET

8 of 81

INTEGRATION SCOPE

NOTE: THE FOLLOWING "SCOPE SUMMARY" IS A GENERALIZED LIST OF CONTRACTORS INTEGRATION SCOPE, AND IS NOT ALL INCLUSIVE TO THE ITEMS LISTED BELOW. SEE RESPECTIVE SPECIFICATIONS FOR COMPLETE SCOPE DESCRIPTIONS AND RESPONSIBILITIES.

1 SCADA SYSTEM SUPPLIER

- LC3000 INTEGRATION WPS
- LC2000 INTEGRATION EMT
- PRE-STARTUP TERMINATION VERIFICATIONS
- COORDINATE WITH PROJECT SYSTEM INTEGRATOR
- COUNTY FIBER ENCLOSURE
- COUNTY FIBER COORDINATION
- STARTUP AND TESTING
- TRAINING
- AS-BUILTS

2 PROJECT SYSTEMS INTEGRATOR

- COORDINATE WITH ALL SUPPLIERS
- BOOSTER PUMP SYSTEM VFD/SSRVS AND LOCAL CONTROLS
- DISCHARGE FLOW METER TRANSMITTER
- SUCTION AND DISCHARGE PRESSURE TRANSMITTERS
- CHLORINE ANALYZER
- VENTILATION SYSTEM AND CONTROLS (BUILDING, GENERATOR ROOM, CHEMICAL ROOM)
- PRE-STARTUP TERMINATION VERIFICATIONS
- STARTUP AND TESTING
- TRAINING
- COMPLETE PROJECT WIRING TERMINATION DRAWINGS
- COORDINATE AND FURNISH PROJECT AS-BUILTS

3 MECHANICAL CONTRACTOR

- PACKAGED SUMP PUMP SYSTEM
- FANS
- BOOSTER PUMPS
- ALL CHEMICAL SYSTEM PUMPS, TANKS, CONTAINMENTS, RAMPS, AND SYSTEM COMPONENTS
- GENERATOR FUEL-OIL TANK AND COMPONENTS
- CHECK VALVE WITH POSITION LIMIT SWITCH
- SODIUM HYPOCHLORITE SYSTEM
- AS-BUILTS

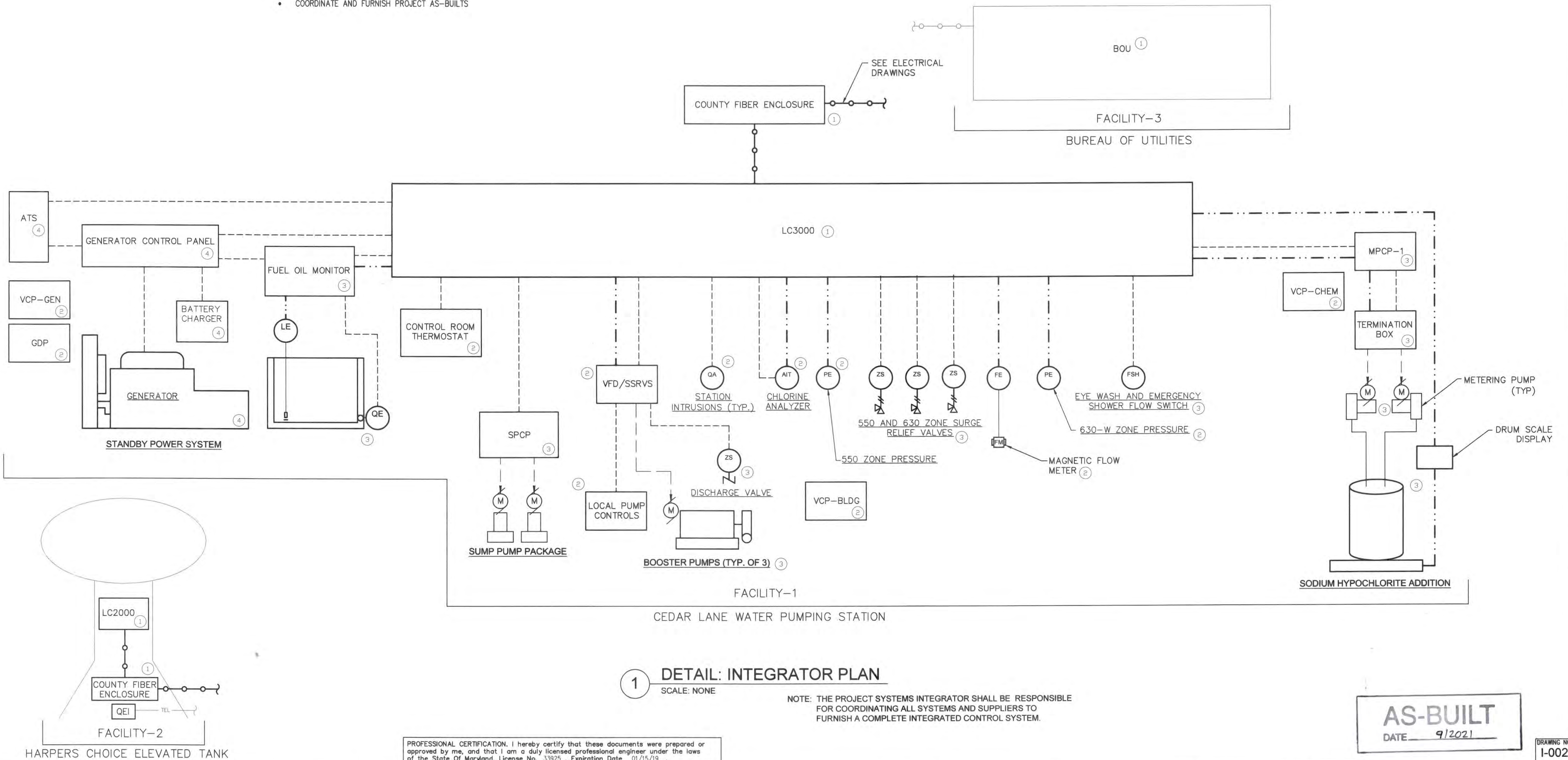
4 ELECTRICAL CONTRACTOR

- POWER
- LIGHTING
- STANDBY POWER GENERATOR
- ALL POWER AND SIGNAL CONDUIT AND CONDUCTORS
- AS-BUILTS

LEGEND

- POWER
- DIGITAL SIGNALS
- NEW FEATURES
- ANALOG SIGNALS
- COMM-LINK

KCI TECHNOLOGIES PROJECT No.: 131601306.01



1 DETAIL: INTEGRATOR PLAN
SCALE: NONE

NOTE: THE PROJECT SYSTEMS INTEGRATOR SHALL BE RESPONSIBLE FOR COORDINATING ALL SYSTEMS AND SUPPLIERS TO FURNISH A COMPLETE INTEGRATED CONTROL SYSTEM.

AS-BUILT
DATE: 9/2021

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. 33925, Expiration Date 01/15/19

User: Seth.Rong
At: 2016.11.16.10.06.07 (Drawing) - 002: INTEGRATOR INFORMATION.dwg
Date: 18, 2018 - 9:03am

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/16/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

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CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

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DES: SDR					
DRN: SDR					
CHK: SEA					
DATE: DEC 2018	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 35

INTEGRATOR INFORMATION

DATE	600' SCALE MAP NO. 35	BLOCK NO. 17, 11
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CEDAR LANE WATER PUMPING STATION

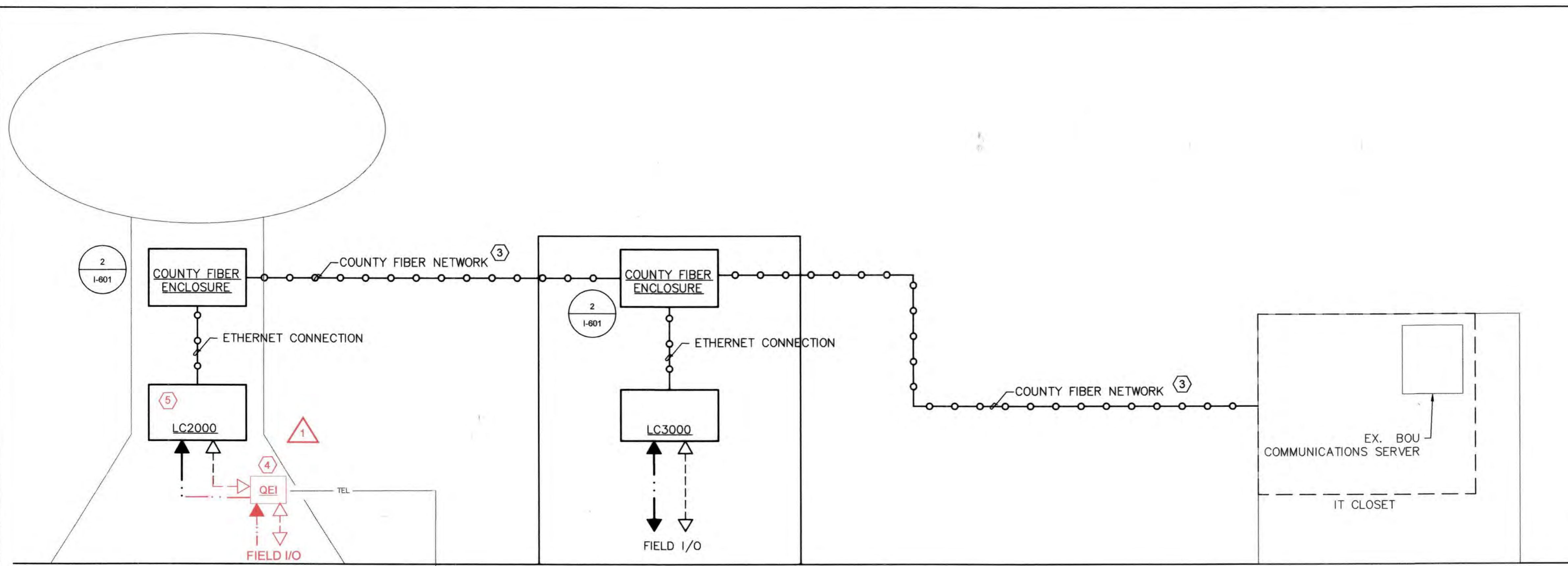
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING NO. I-002
SCALE AS SHOWN
SHEET
62 OF 81

(X) SHEET KEY NOTES

1. PHYSICAL WIRED COMMUNICATION BETWEEN SITES TO BE COORDINATED WITH COUNTY.
2. COMMUNICATIONS FIBER PATCH / CONNECTION HARDWARE AND NETWORK SWITCH AND FIBER UPS SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE COUNTY. THE SCADA SYSTEM SUPPLIER SHALL COORDINATE AND FURNISH THE COUNTY FIBER ENCLOSURE TO SUIT COUNTY FIBER HARDWARE AND NETWORK CONNECTIONS SHOWN ON THE I&C DRAWINGS AND TO SUIT FIBER UPS SYSTEM.
3. COUNTY WILL FURNISH AND INSTALL ALL FIBER OPTIC CABLE.
4. COUNTY TO REMOVE EXISTING QUINDAR UNIT FROM ENCLOSURE. EXISTING ENCLOSURE WILL BE REUSED, SEE I2-601. ABANDON EXISTING PHONE LINES IN PLACE.
5. SIGNALS FROM LC2000 WILL BE TRANSMITTED TO BUREAU OF UTILITIES VIA FIBER. THESE SIGNALS WILL THEN BE RETRANSMITTED FROM THE BUREAU OF UTILITIES TO BOTH THE CEDAR LANE AND COLUMBIA WATER PUMPING STATIONS.
6. REPROGRAMMING IS REQUIRED AT COLUMBIA TO ALLOW THIS STATION'S CONTROLLER TO ACCEPT HARPERS CHOICE TANK LEVEL AND OTHER SIGNALS FROM MASTER AT BUREAU OF UTILITIES IN LIEU OF QUINDAR. COUNTY TO COORDINATE THIS WORK UNDER A SEPARATE CONTRACT.



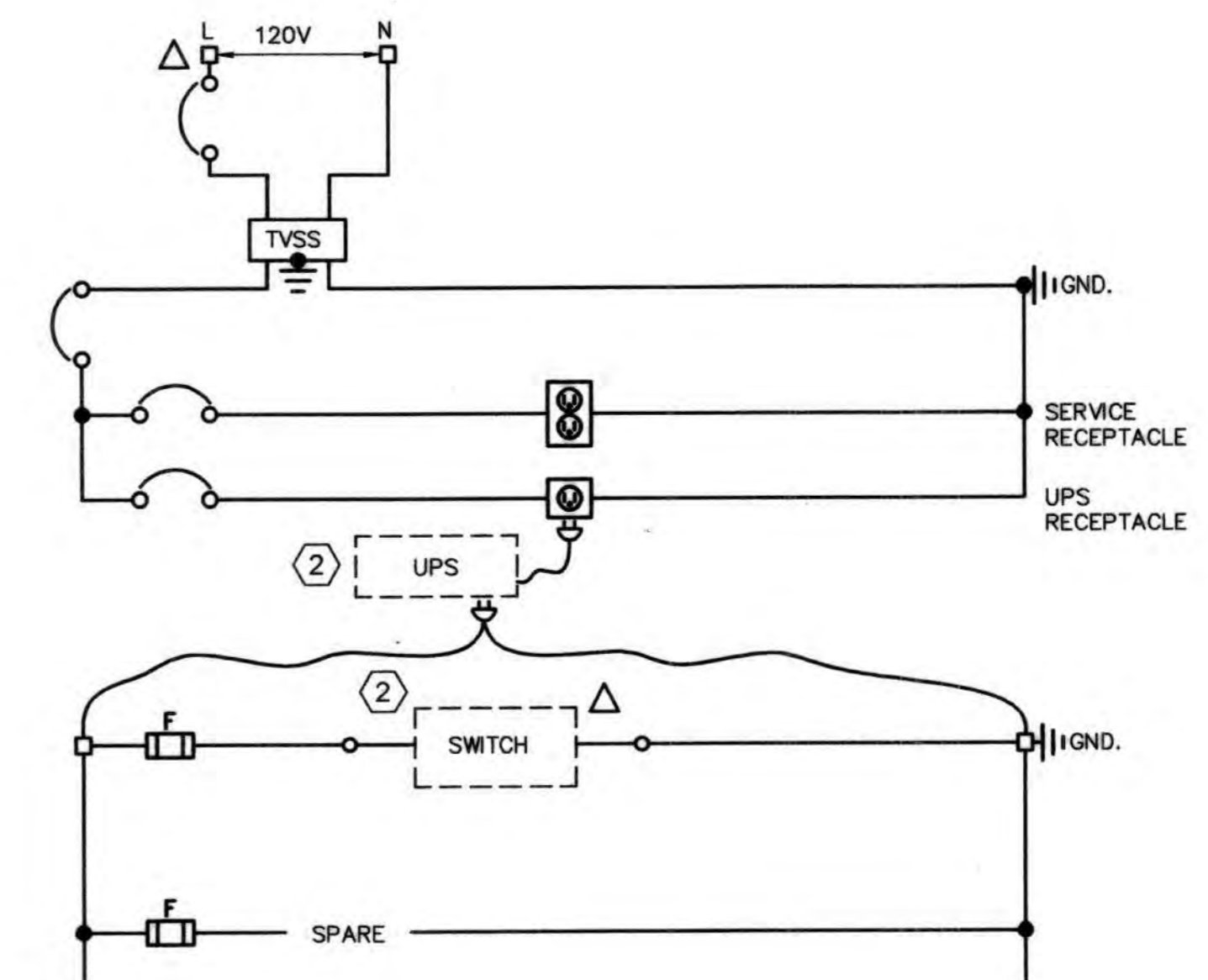
HARPERS CHOICE
ELEVATED TANK
(FACILITY-2)

CEDAR LANE WATER
PUMPING STATION
(FACILITY-1)

BUREAU OF
UTILITIES
(FACILITY-3)

COLUMBIA WATER
PUMPING STATION

1 **DETAIL: COMMUNICATIONS** (1)
SCALE: NONE



2 **ECD: COUNTY FIBER ENCLOSURE**
SCALE: NONE

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. 33922, Expiration Date: 01/15/19.

AS-BUILT REPLACEMENT SHEET 9/2021

DRAWING NO.
I-601

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Date: 12-26-18, 8:00am, User: Seth Berg, M:\2016\131601306.01\Drawings\I-601 COMMUNICATIONS DIAGRAM.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
DIRECTOR OF PUBLIC WORKS DATE 12-26-18
[Signature]
CHIEF, BUREAU OF UTILITIES DATE

KCI
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DES: SDR				
DRN: SDR				
CHK: SEA				
DATE: DEC 2018	SDR	1	AS-BUILT	8/2021
BY	NO.	REVISION	DATE	600' SCALE MAP NO. 35

COMMUNICATIONS DIAGRAM

**CEDAR LANE
WATER PUMPING STATION**
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

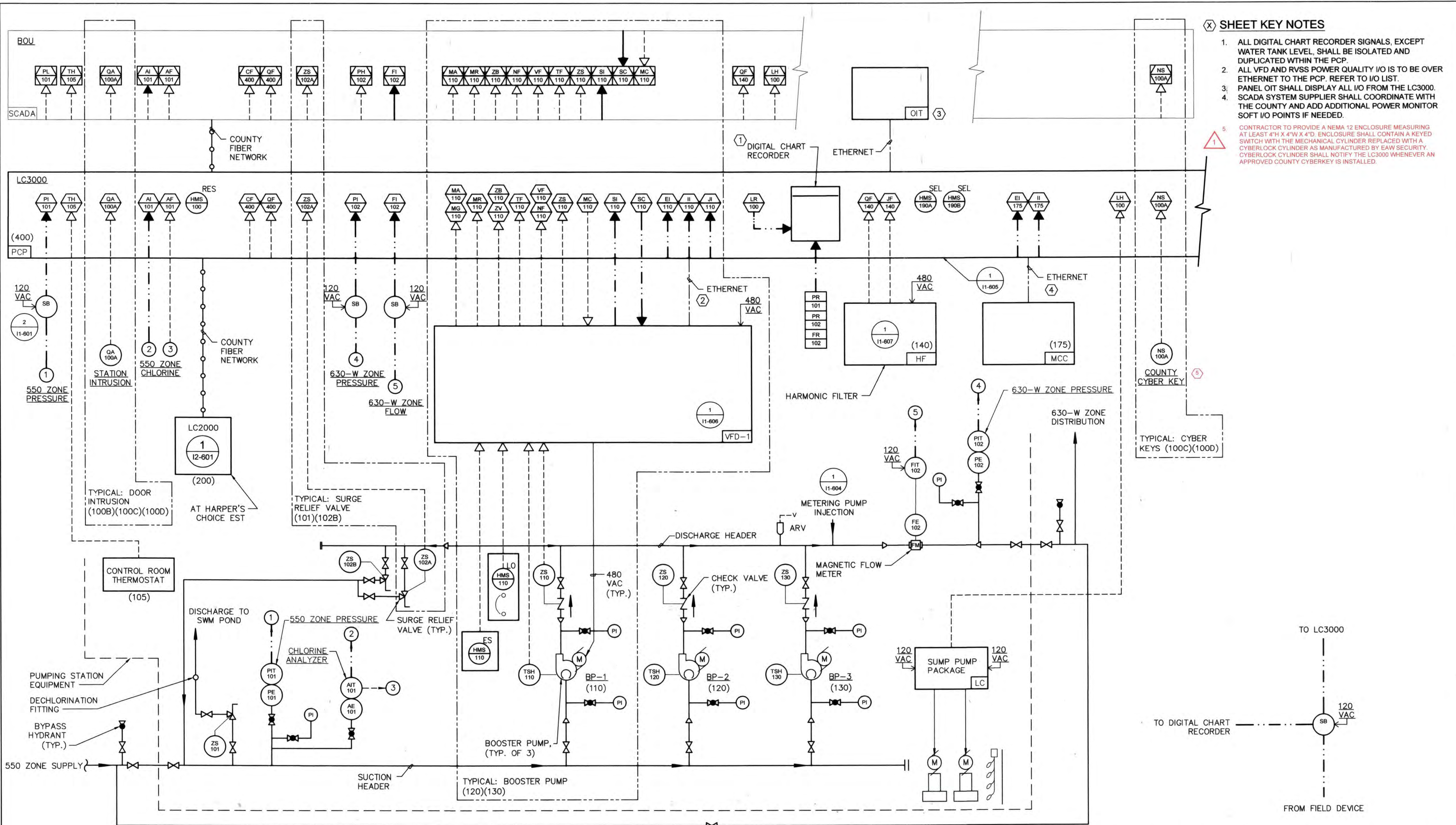
SCALE
AS SHOWN
SHEET
20 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Issue: Seth Berg
M: 2016 \131601306.01\Drawing\11-601_PUMPING_SYSTEM_P&ID.dwg
Date: 12/20/18

SHEET KEY NOTES

- ALL DIGITAL CHART RECORDER SIGNALS, EXCEPT WATER TANK LEVEL, SHALL BE ISOLATED AND DUPLICATED WITHIN THE PCP.
- ALL VFD AND RVSS POWER QUALITY I/O IS TO BE OVER ETHERNET TO THE PCP. REFER TO I/O LIST.
- PANEL OIT SHALL DISPLAY ALL I/O FROM THE LC3000.
- SCADA SYSTEM SUPPLIER SHALL COORDINATE WITH THE COUNTY AND ADD ADDITIONAL POWER MONITOR SOFT I/O POINTS IF NEEDED.
- CONTRACTOR TO PROVIDE A NEMA 12 ENCLOSURE MEASURING AT LEAST 4"H X 4"W X 4"D. ENCLOSURE SHALL CONTAIN A KEYED SWITCH WITH THE MECHANICAL CYLINDER REPLACED WITH A CYBERLOCK CYLINDER AS MANUFACTURED BY EAW SECURITY. CYBERLOCK CYLINDER SHALL NOTIFY THE LC3000 WHENEVER AN APPROVED COUNTY CYBERKEY IS INSTALLED.



1 P&ID: PUMPING SYSTEM
SCALE: NONE

2 DETAIL: SIGNAL ISOLATION / DUPLICATION
SCALE: NONE

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. 33925, Expiration Date: 01/15/19.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

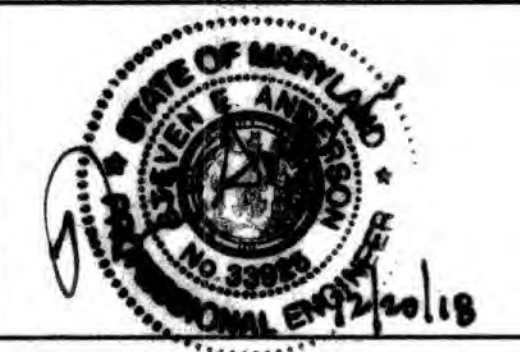
J. J. ...
DIRECTOR OF PUBLIC WORKS DATE: 12/20/18

...
CHIEF, BUREAU OF ENGINEERING DATE: 12/20/18

...
CHIEF, BUREAU OF UTILITIES DATE: 12/20/18

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DRN:	SDR				
CHK:	SEA				
DATE:	DEC 2018				
BY:	SDR 1	NO.	AS-BUILT	REVISION	8/2021

PUMPING SYSTEM P&ID

600' SCALE MAP NO. 35 BLOCK NO. 17, 11

CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

AS-BUILT REPLACEMENT SHEET 9/2021

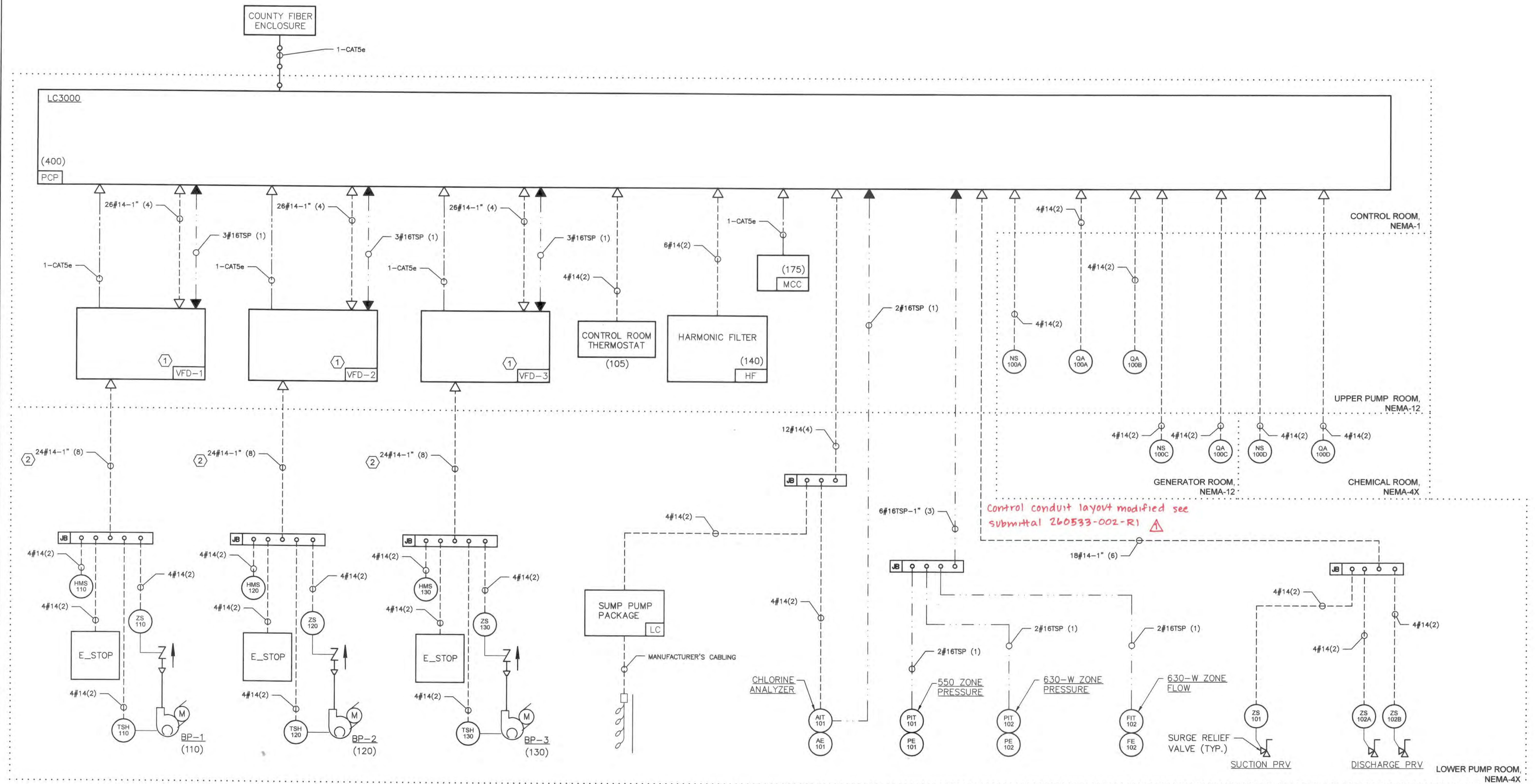
DRAWING NO. 11-601
SCALE AS SHOWN
SHEET 71 OF 81

(X) SHEET KEY NOTES

1. ALL VFD AND RVSS POWER QUALITY I/O IS TO BE OVER ETHERNET TO THE PCP. REFER TO I/O LIST.
2. CONDUIT TO BE INSTALLED IN FLOOR SLAB OR BELOW GRADE.

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Date: 10/2018 - 8/2021 User: Seth Berg
M: 2016 131601306.01 (Drawing) - 602 PUMPING SYSTEM RISER DIAGRAM.dwg



1 RISER DIAGRAM: PUMPING SYSTEM
SCALE: NONE

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AS-BUILT
DATE 9/2021

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HOWARD COUNTY, MARYLAND

[Signature] DIRECTOR OF PUBLIC WORKS DATE 12-28-11
[Signature] CHIEF, BUREAU OF UTILITIES DATE

[Signature] CHIEF, BUREAU OF ENGINEERING DATE
[Signature] CHIEF, UTILITY DESIGN DIVISION DATE

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DRN: SDR			
CHK: SEA			
DATE: DEC 2018	AG 1	AS-BUILTS	8/2021
BY NO.		REVISION	

PUMPING SYSTEM RISER DIAGRAM

600' SCALE MAP NO. 35 BLOCK NO. 17.11

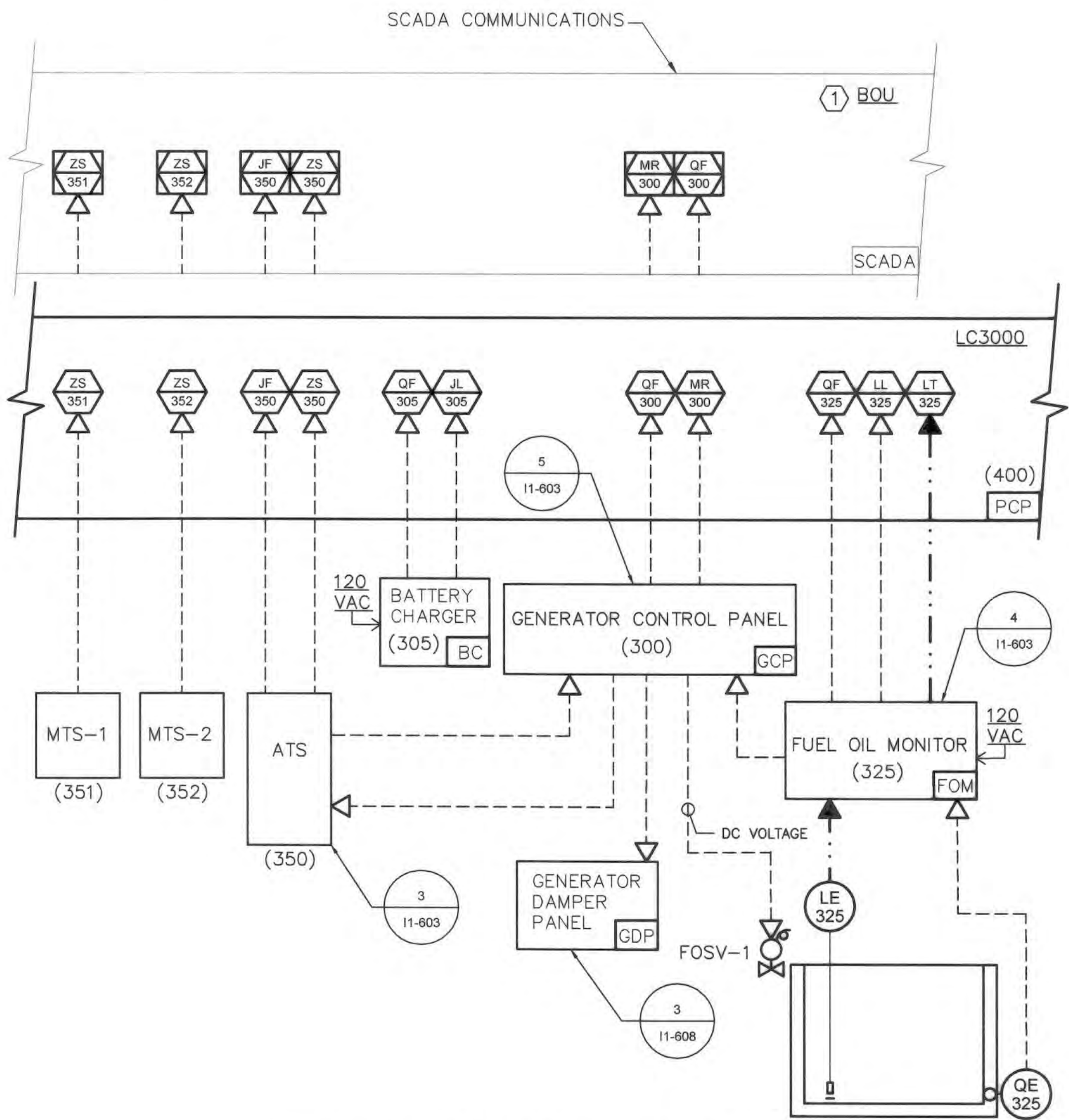
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

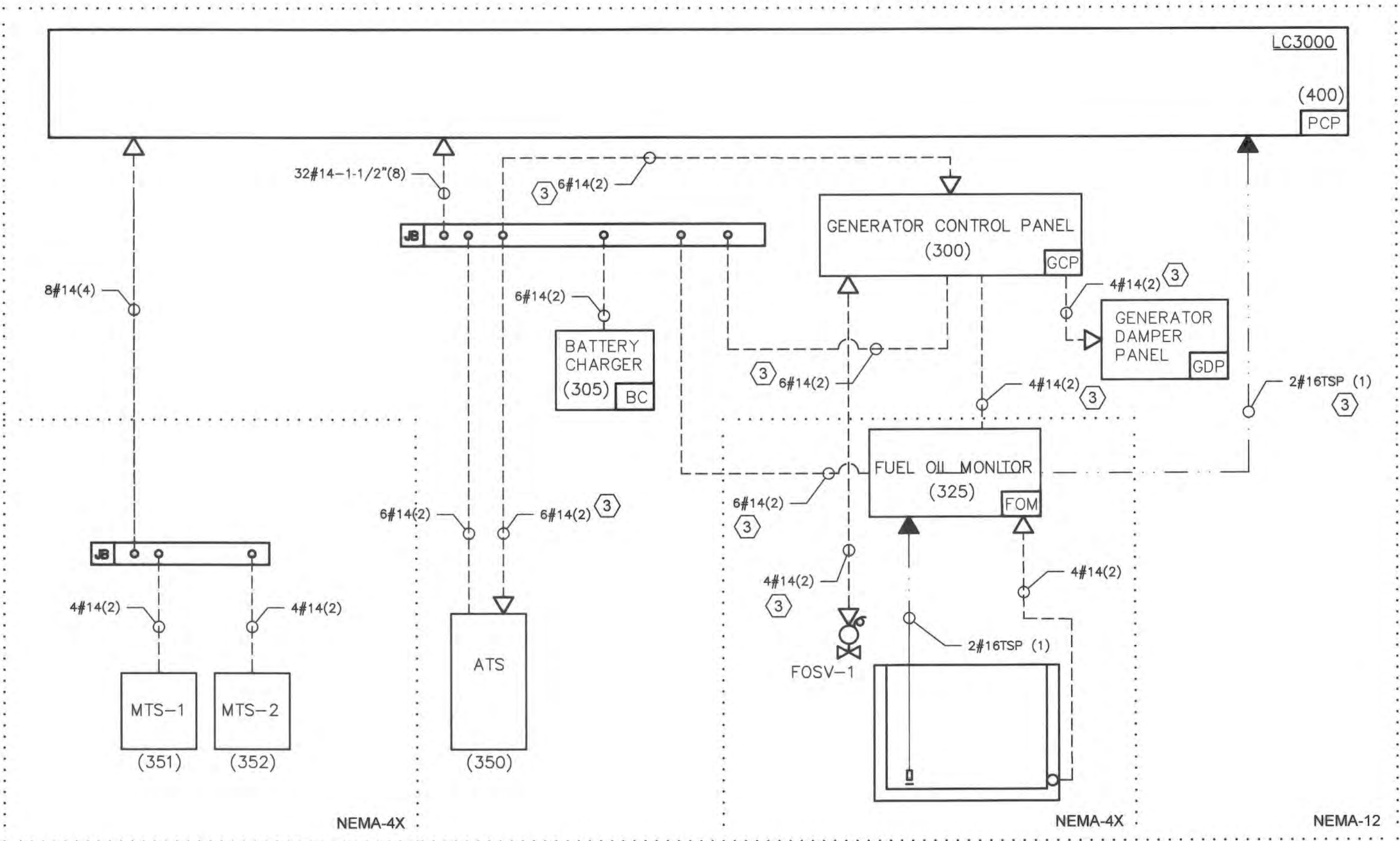
DRAWING NO. 11-602
SCALE AS SHOWN
SHEET 72 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

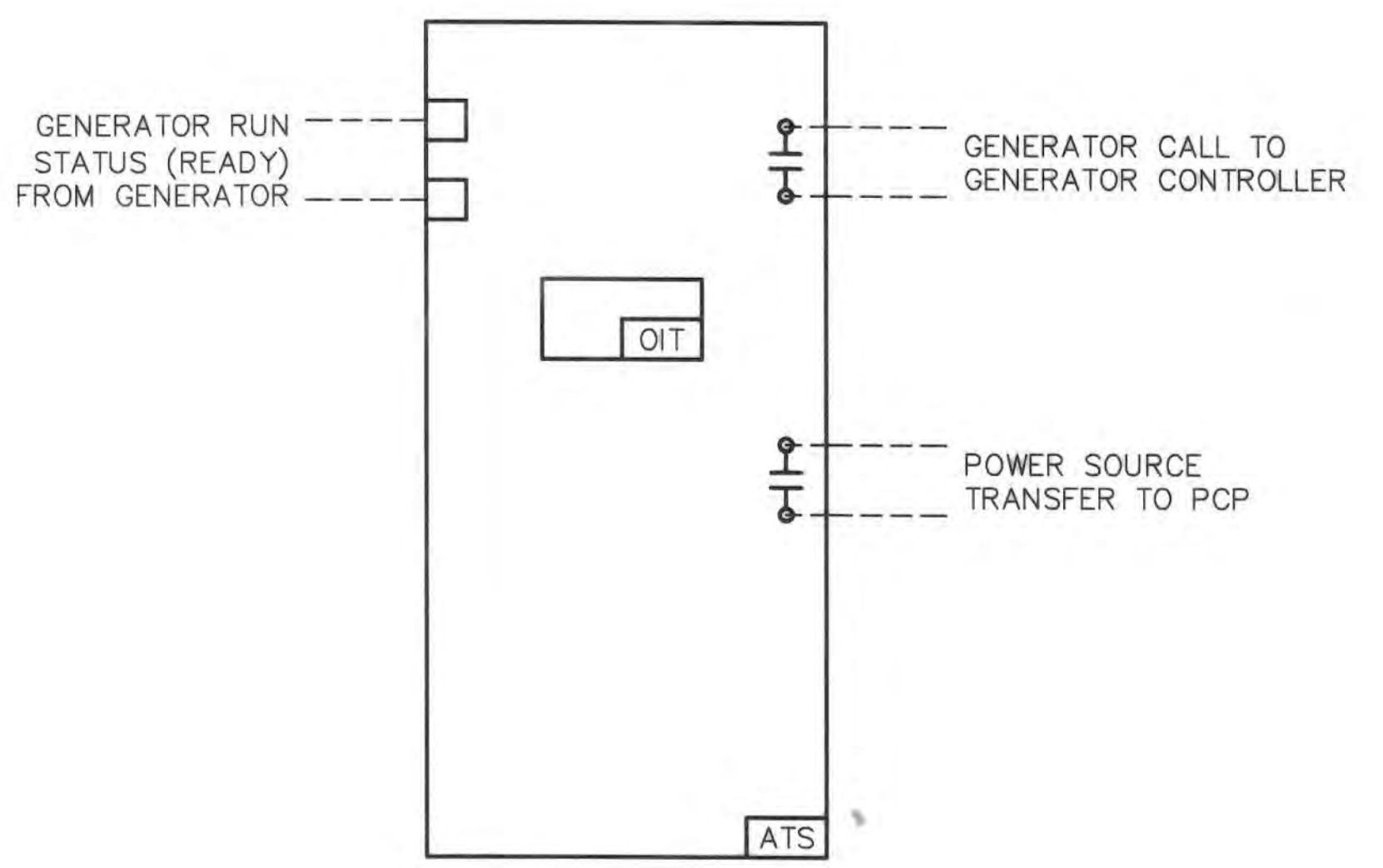
User: Seth.Rong
Date: 12/15/2018 9:04am
Path: \\s01131601306.01\Drawings\11-603 GENERATOR SYSTEM P&ID AND RISER DIAGRAM.dwg



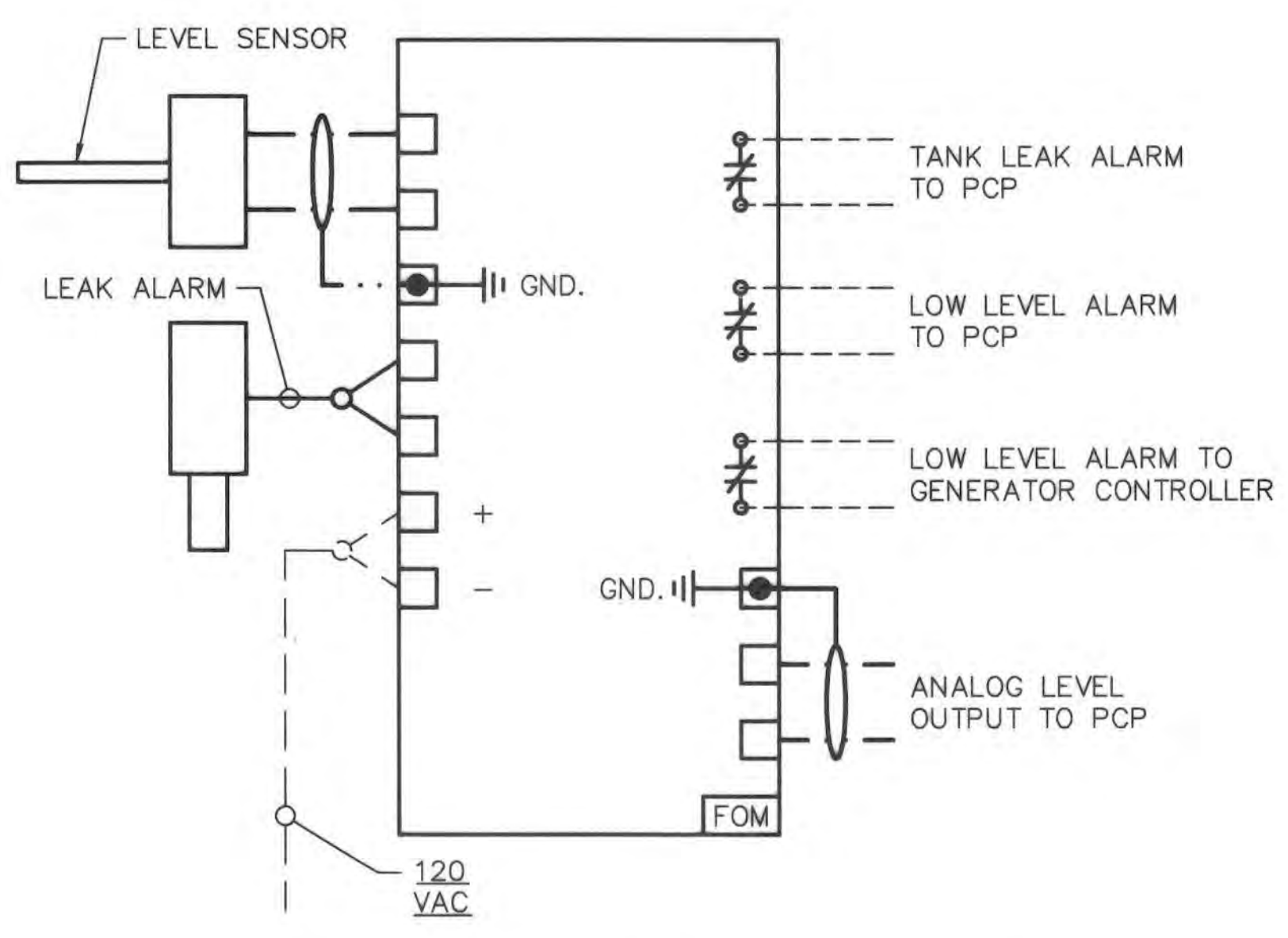
1 P&ID: STANDBY POWER SYSTEM
SCALE: NONE



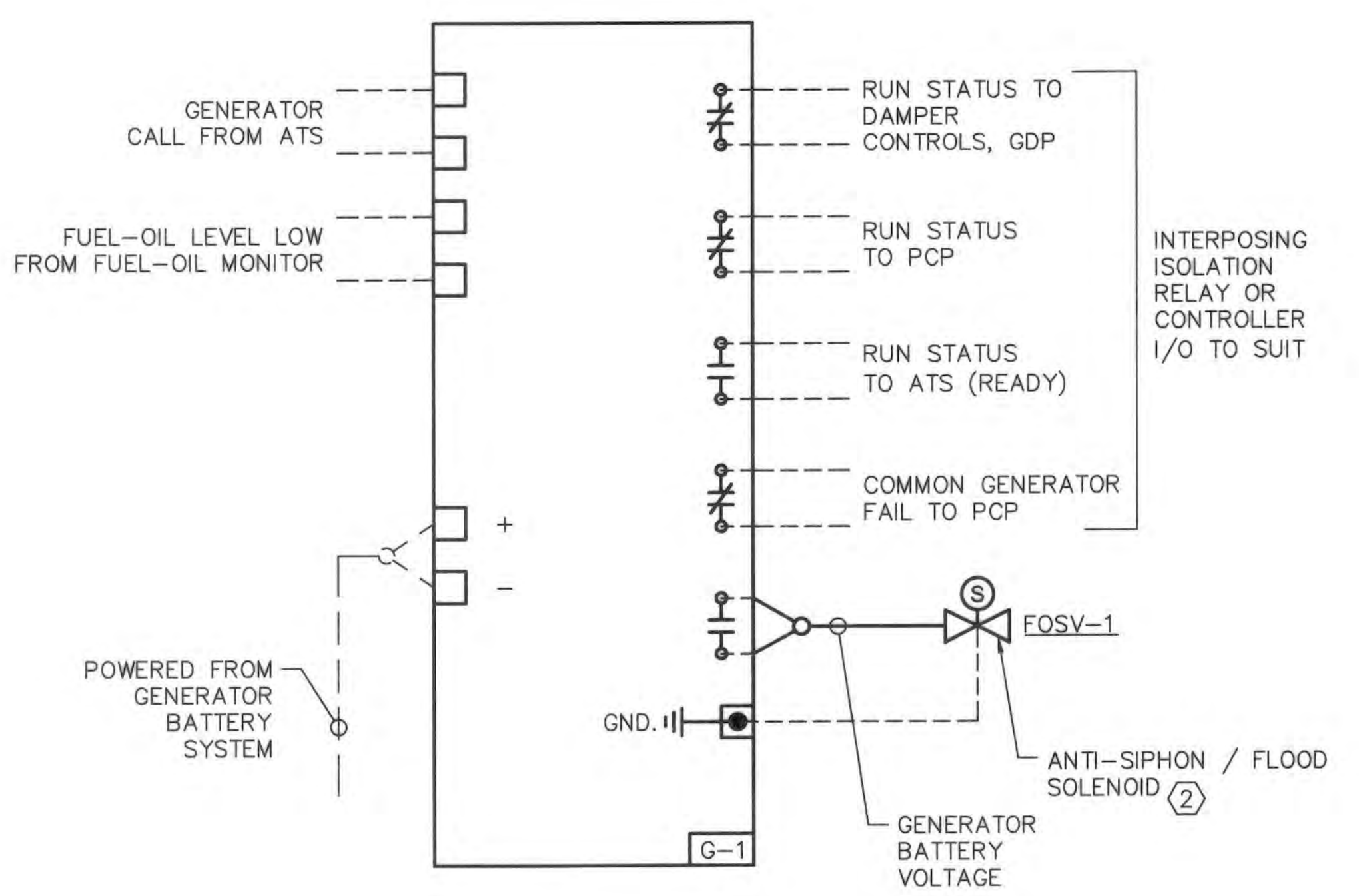
2 RISER: STANDBY POWER SYSTEM
SCALE: NONE



3 RISER DETAIL: ATS CONTROLLER
SCALE: NONE



4 RISER DETAIL: FUEL-OIL MONITOR
SCALE: NONE



5 RISER DETAIL: GENERATOR CONTROL PANEL
SCALE: NONE

- (X) SHEET KEY NOTES**
- SIGNALS SHOWN AT BOU ARE TRANSMITTED FROM THE LC3000 IN THE PUMP STATION. REFER TO DRAWING 11-601.
 - VALVE SHALL BE ENERGIZED TO OPEN. VALVE OPEN SIGNAL TO BE GENERATED WHEN ATS CALLS FOR GENERATOR TO START.
 - CONDUIT TO BE INSTALLED IN FLOOR SLAB OR BELOW GRADE.

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AS-BUILT
DATE: 9/2021

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HOWARD COUNTY, MARYLAND

Jay R. White
DIRECTOR OF PUBLIC WORKS
DATE: 12-20-18
CHIEF, BUREAU OF UTILITIES

Thomas E. Bolla
CHIEF, BUREAU OF ENGINEERING
DATE: 12-20-18
CHIEF, UTILITY DESIGN DIVISION

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DES: SDR					
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CHK: SEA					
DATE: DEC 2018	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 35

GENERATOR SYSTEM P&ID AND RISER DIAGRAM

DATE: 600' SCALE MAP NO. 35
BLOCK NO. 17, 11

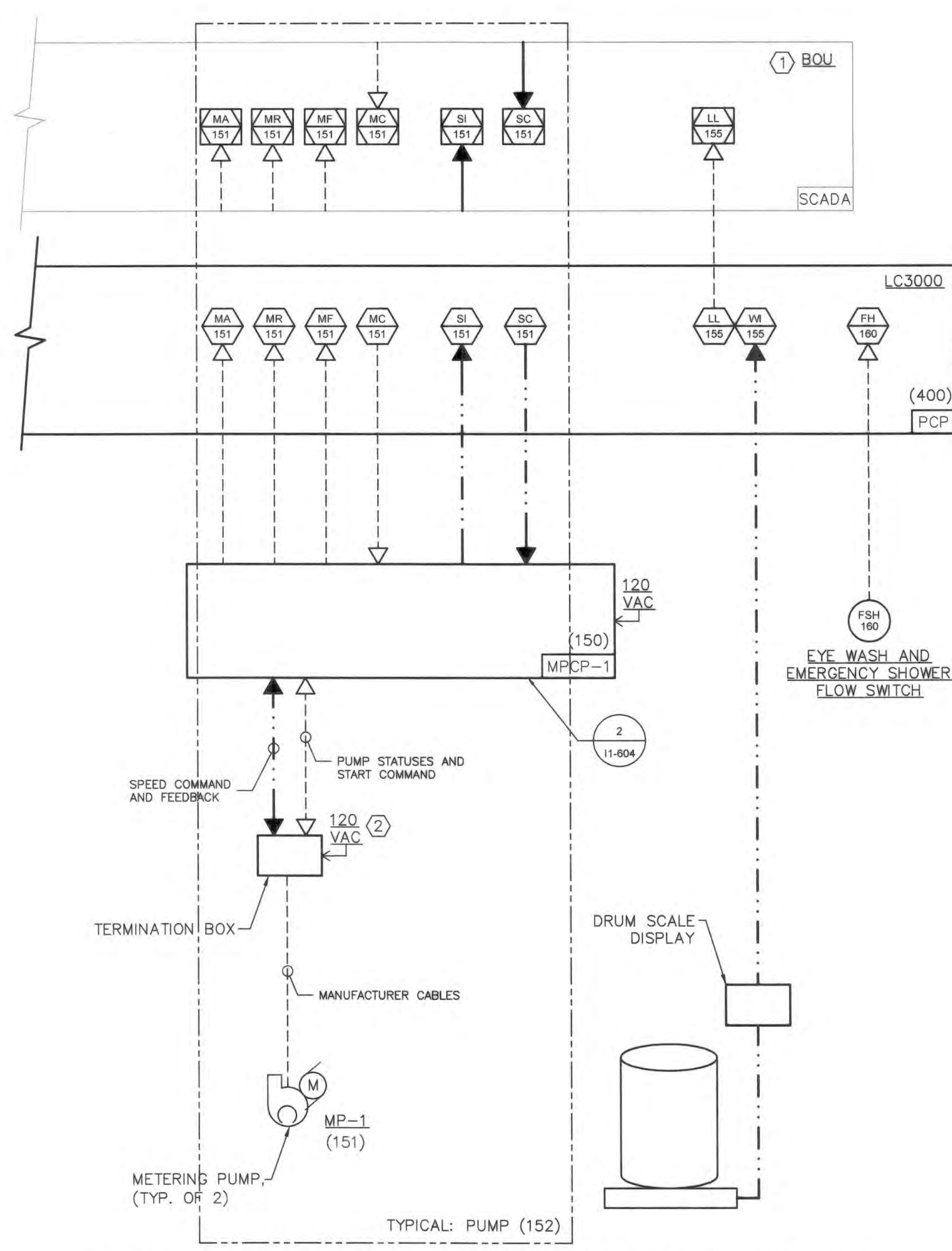
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

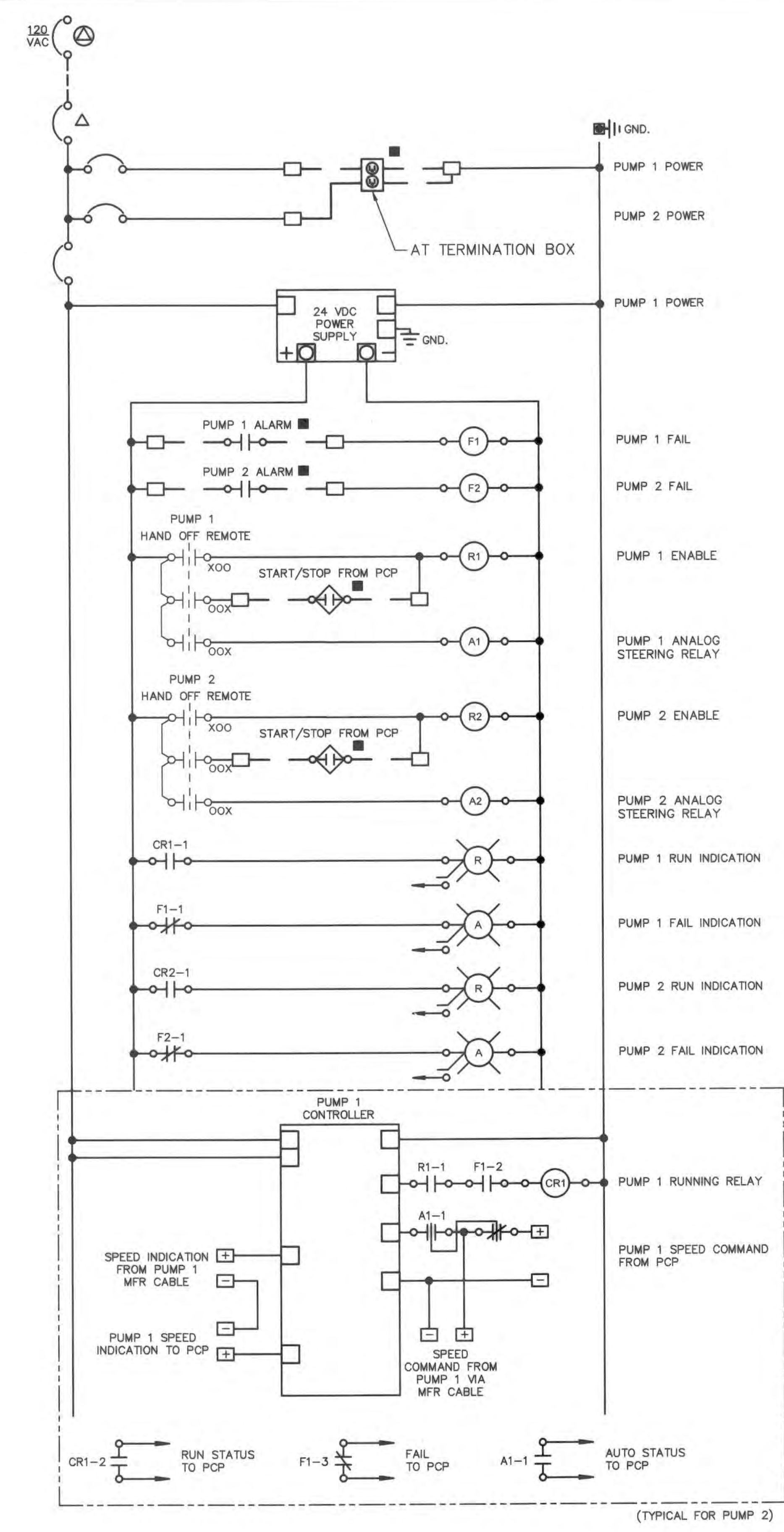
DRAWING NO. 11-603
SCALE AS SHOWN
SHEET 73 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Dec 16, 2018 - 9:04am User: Seth.Rong M:\2018\131601306.01\Drawings\11-604 METERING PUMP CONTROLS.dwg

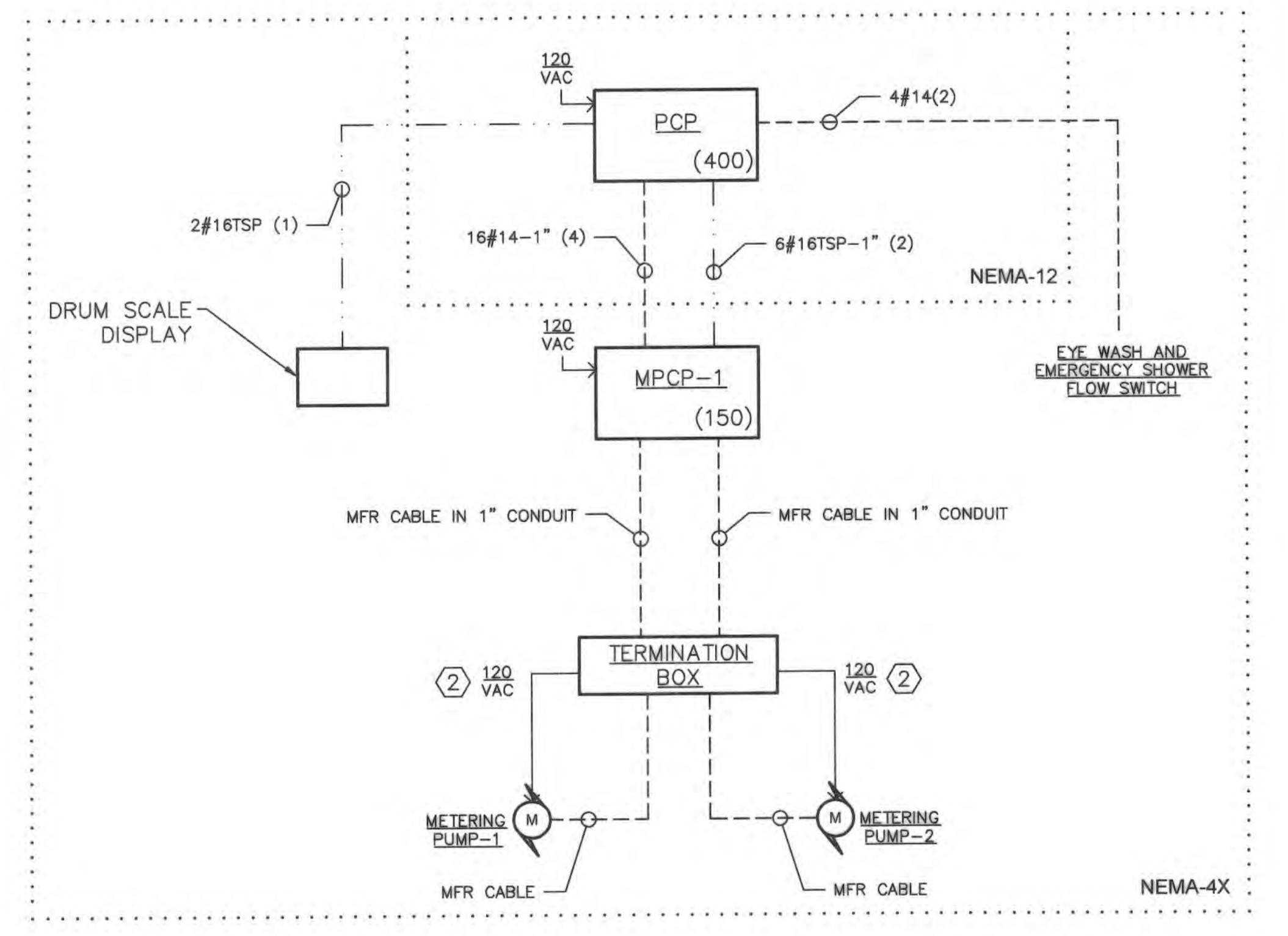


1 P&ID: SODIUM HYPO CHLORITE METERING PUMP SYSTEM
SCALE: NONE



2 ECD: METERING PUMPS (MPCP-1)
SCALE: NONE

- (X) SHEET KEY NOTES**
- SIGNALS SHOWN AT BOU ARE TRANSMITTED FROM THE LC3000 IN THE PUMP STATION. REFER TO DRAWING I1-601.
 - METERING PUMPS TO BE POWERED VIA NEMA 4X RECEPTACLE ON TERMINATION BOX. TERMINATION BOX TO BE POWERED FROM MPCP-1. REFER TO ELECTRICAL DRAWINGS FOR WIRING REQUIREMENTS AND MECHANICAL DRAWINGS FOR LOCATION.



3 RISER DIAGRAM: METERING PUMP SYSTEM
SCALE: NONE

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/20/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12-20-18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12-20-18
CHIEF, UTILITY DESIGN DIVISION DATE

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DATE: DEC 2018	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 35

METERING PUMP CONTROLS

DATE: 600' SCALE MAP NO. 35

BLOCK NO. 17.11

AS-BUILT
DATE 9/2021

CEDAR LANE WATER PUMPING STATION

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING NO. 11-604
SCALE AS SHOWN
SHEET 74 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

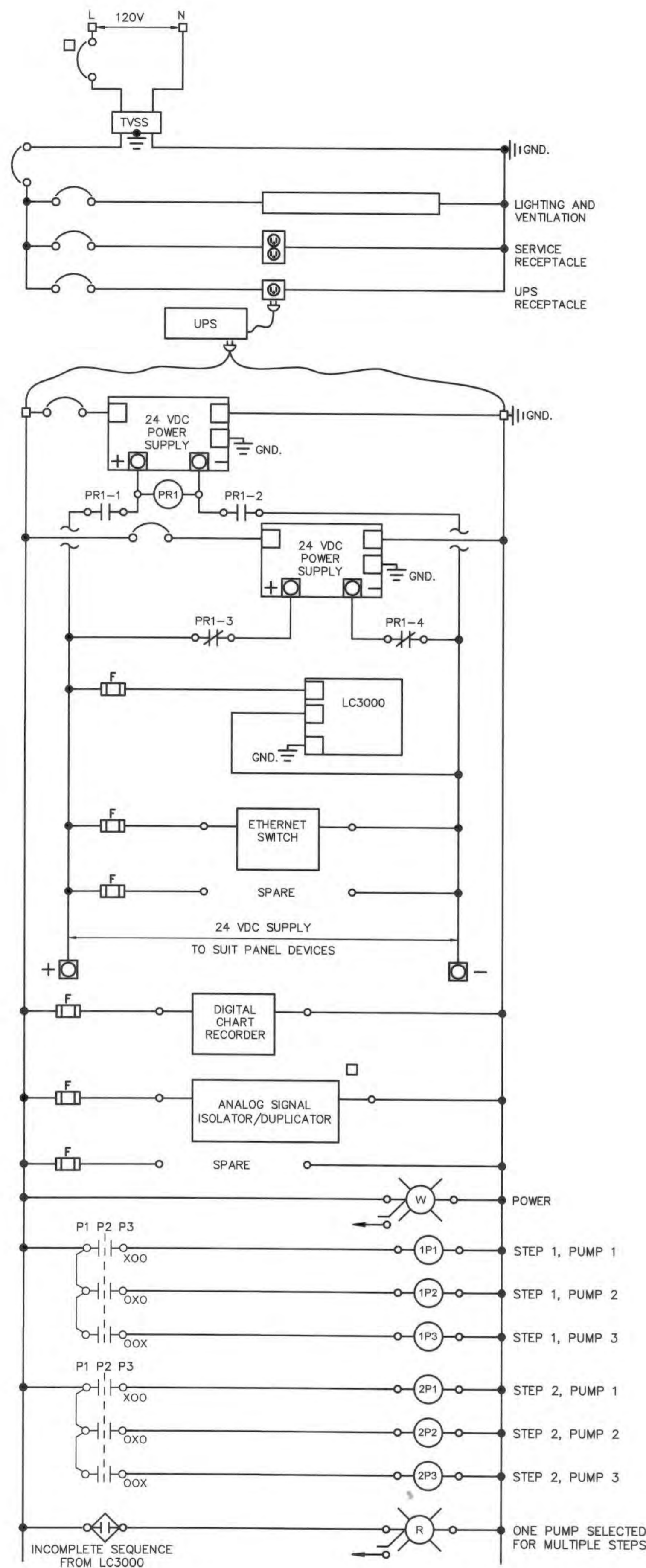
Dec 18, 2018 - 9:04am User: Sathya Reng
 M:\2018\131601306.01\Drawings\11-605 PUMP CONTROL PANEL ECD AND ELEVATION.dwg

GENERAL SHEET NOTES

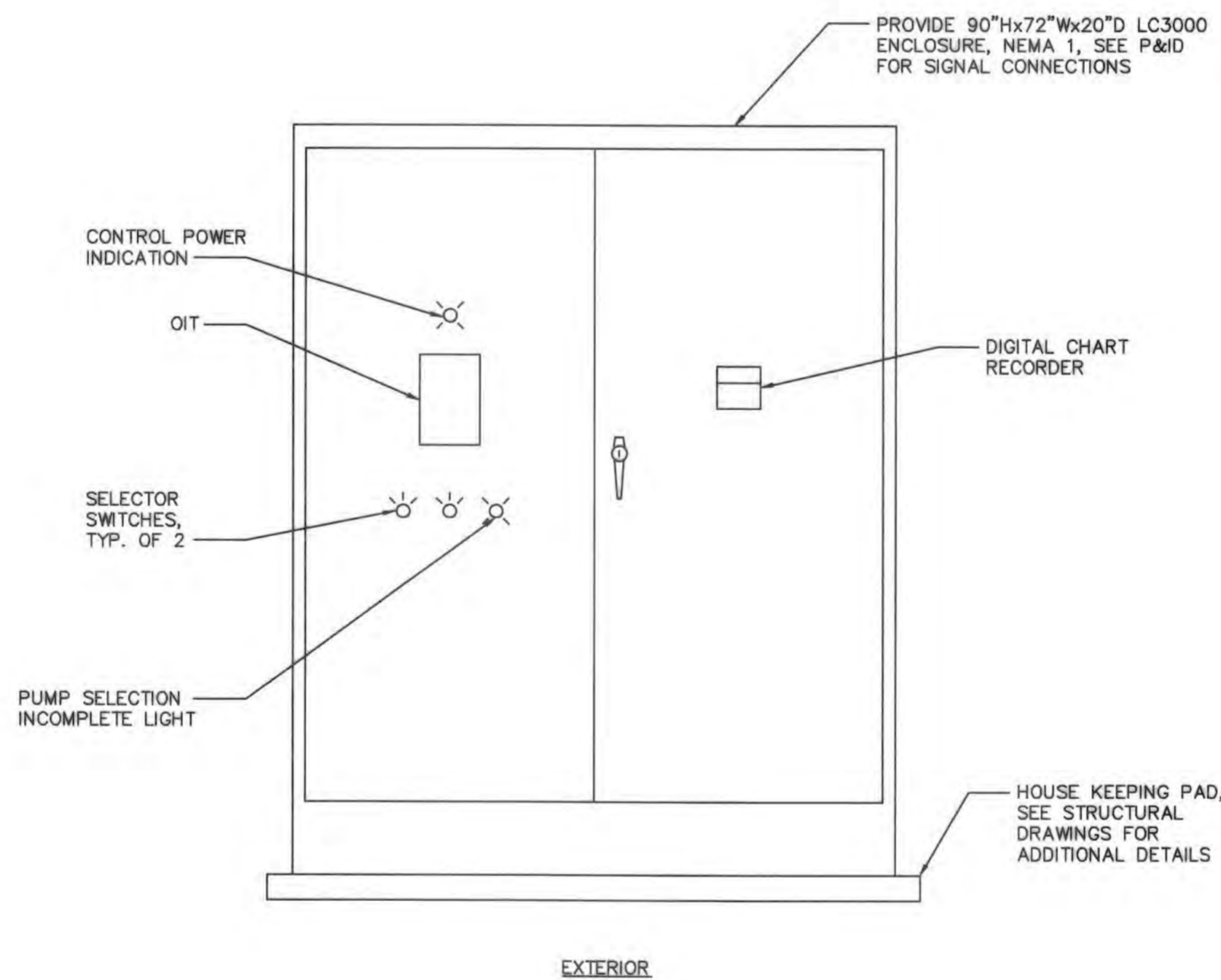
1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.
2. ALL RELAYS SHALL HAVE L.E.D. INDICATION.
3. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.

(X) SHEET KEY NOTES

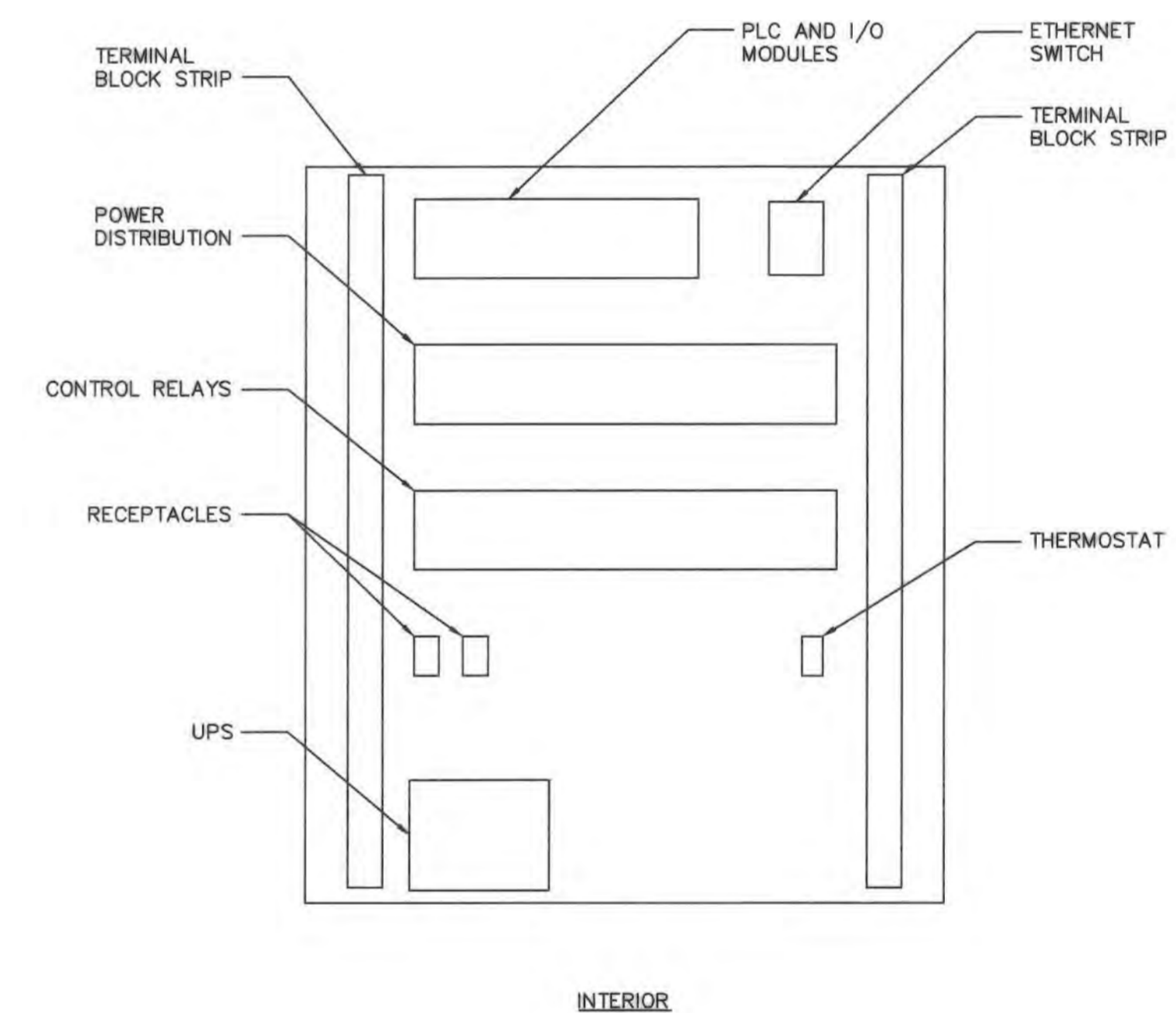
1. SCADA SYSTEM SUPPLIER SHALL COORDINATE PLC I/O MODULE POWER SUPPLY AND I/O TERMINATIONS.



1 ECD: PCP POWER
SCALE: NONE



2 ELEVATION: PUMP CONTROL PANEL
SCALE: NONE



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AS-BUILT
DATE 9/2021

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 CHIEF, UTILITY DESIGN DIVISION DATE 12/26/18

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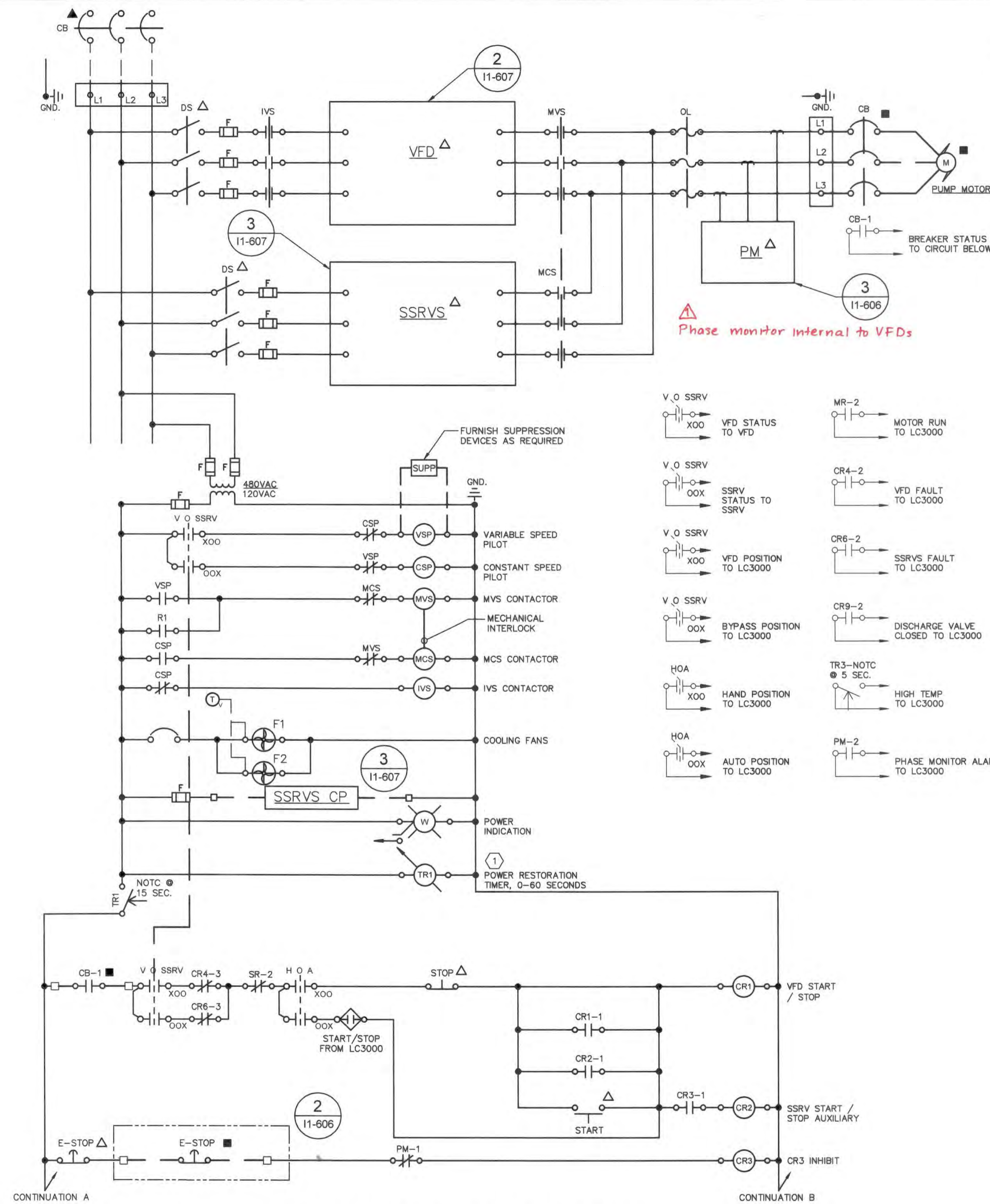
PUMP CONTROL PANEL ECD AND ELEVATION
 600' SCALE MAP NO. 35 BLOCK NO. 17.11

CEDAR LANE WATER PUMPING STATION
 CAPITAL PROJECT No. W-8328
 CONTRACT No. 44-5036
 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

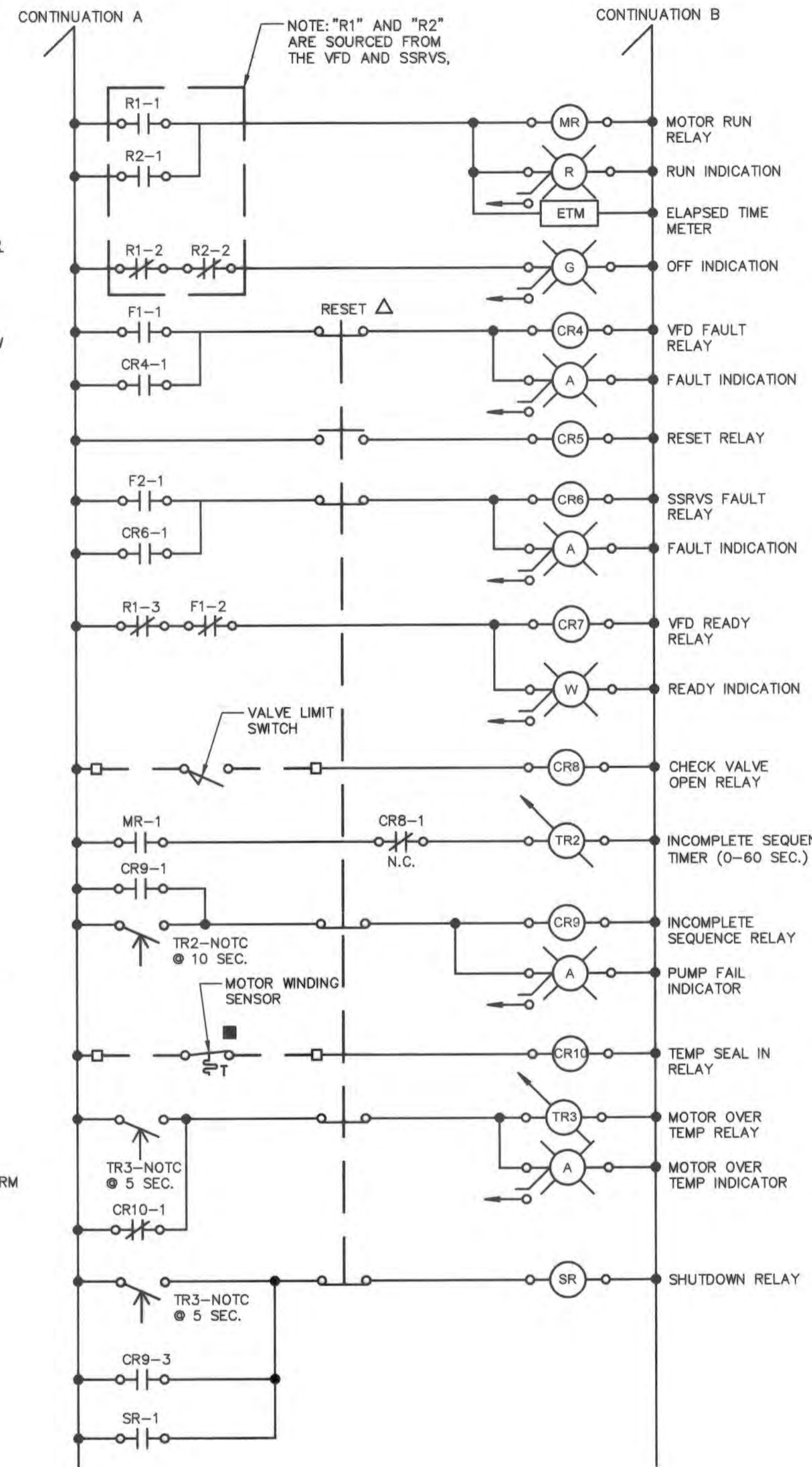
DRAWING NO. 11-605
 SCALE AS SHOWN
 SHEET 75 OF 81

KCI TECHNOLOGIES PROJECT NO.: 131601306.01

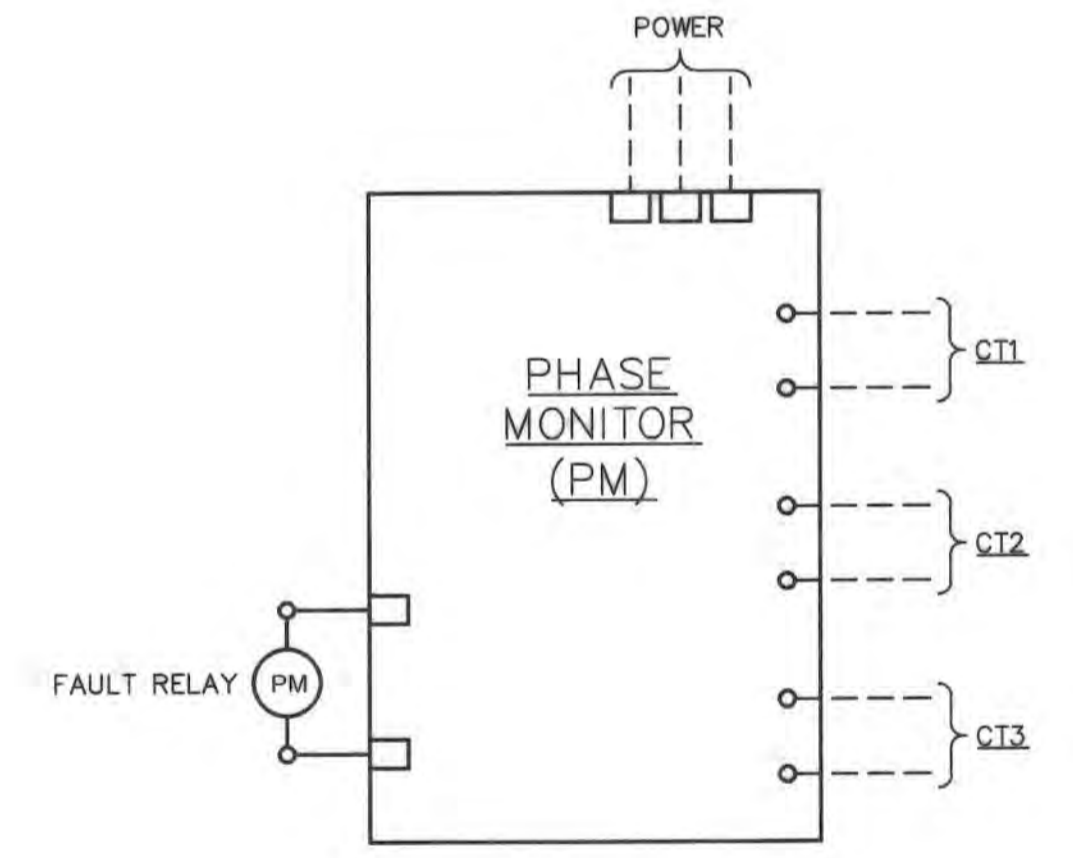
User: Sath-Rong
M:\2016\131601306.01\Drawings\1-000 PUMP CONTROL ECD SHEET 1.dwg
Dec 18, 2018 - 9:04am



1 ECD: PUMP CONTROLS VFD/SSRVs
SCALE: NONE



2 DETAIL: LOCAL E-STOP
SCALE: NONE



3 ECD: PHASE MONITOR
SCALE: NONE

- GENERAL SHEET NOTES**
- SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.
 - ALL RELAYS SHALL HAVE L.E.D. INDICATION.
 - ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.
 - ALL VFD AND RVSS POWER QUALITY I/O IS TO BE OVER ETHERNET TO THE PCP. REFER TO I/O LIST.

- (X) SHEET KEY NOTES**
- POWER START-UP TIMERS SHALL BE:
 - PUMP-1 - 15 SECONDS
 - PUMP-2 - 30 SECONDS
 - PUMP-3 - 45 SECONDS

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. 33925, Expiration Date 01/15/19

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 12/26/18
Chief, Bureau of Engineering: *[Signature]* DATE: 12/26/18
Chief, Bureau of Utilities: *[Signature]* DATE: 12/26/18
Chief, Utility Design Division: *[Signature]* DATE: 12/26/18

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CHK: SEA			
DATE: DEC 2018	BY: AG	NO: 1	REVISION: AS-BUILT

PUMP CONTROL ECD SHEET 1

DATE: 8/2021

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT
DATE: 9/2021

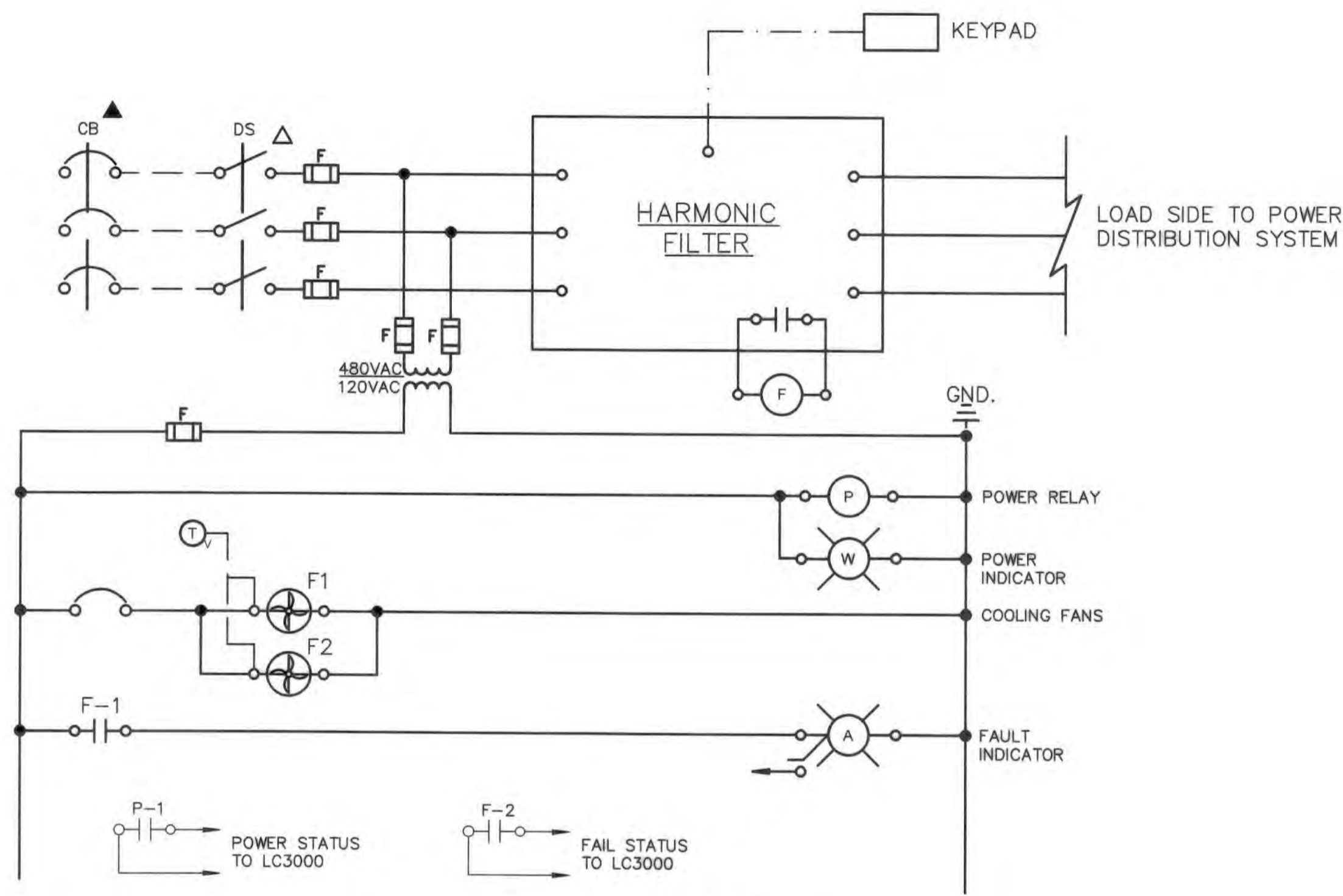
CEDAR LANE
WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

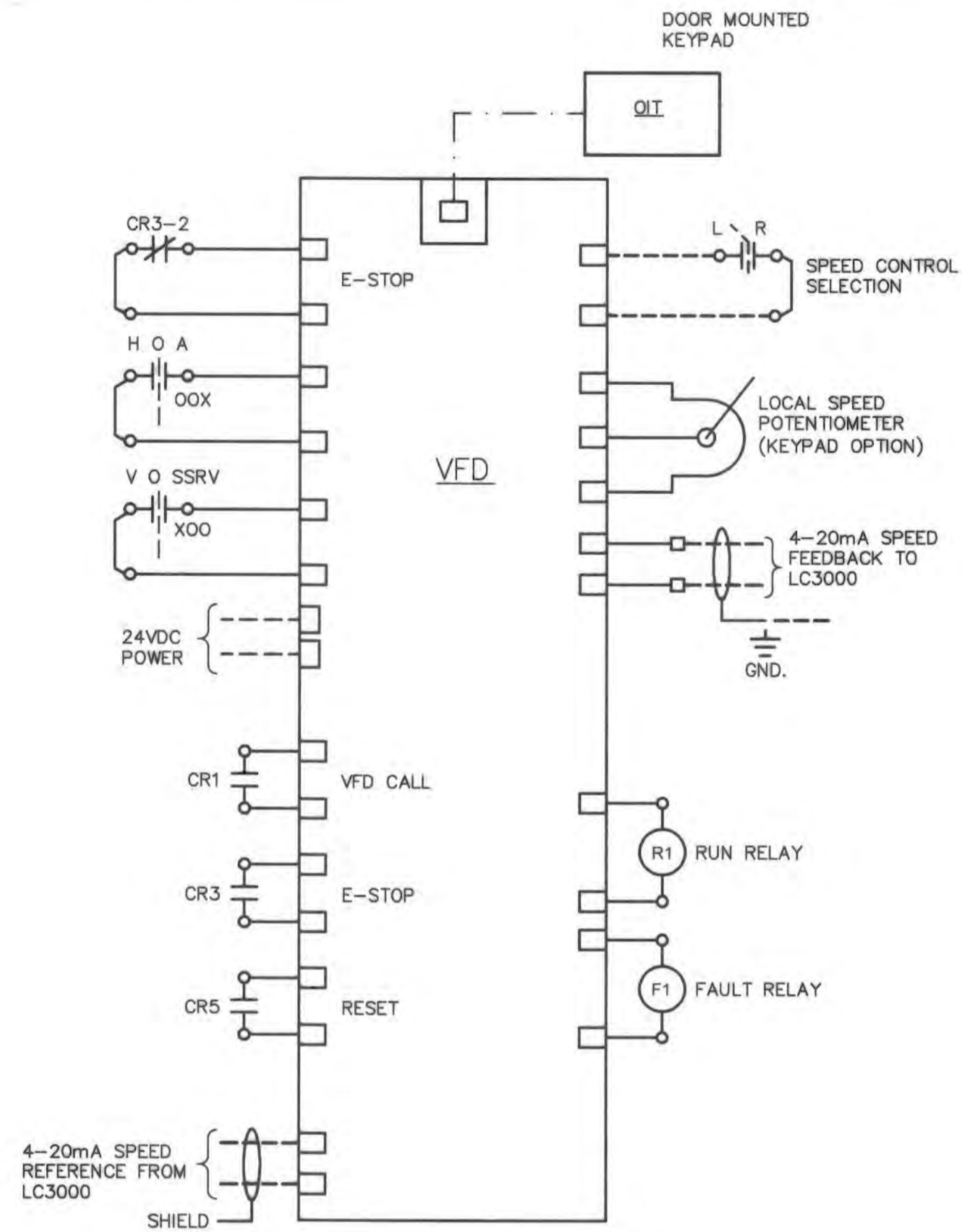
DRAWING NO. 11-606
SCALE AS SHOWN
SHEET 76 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

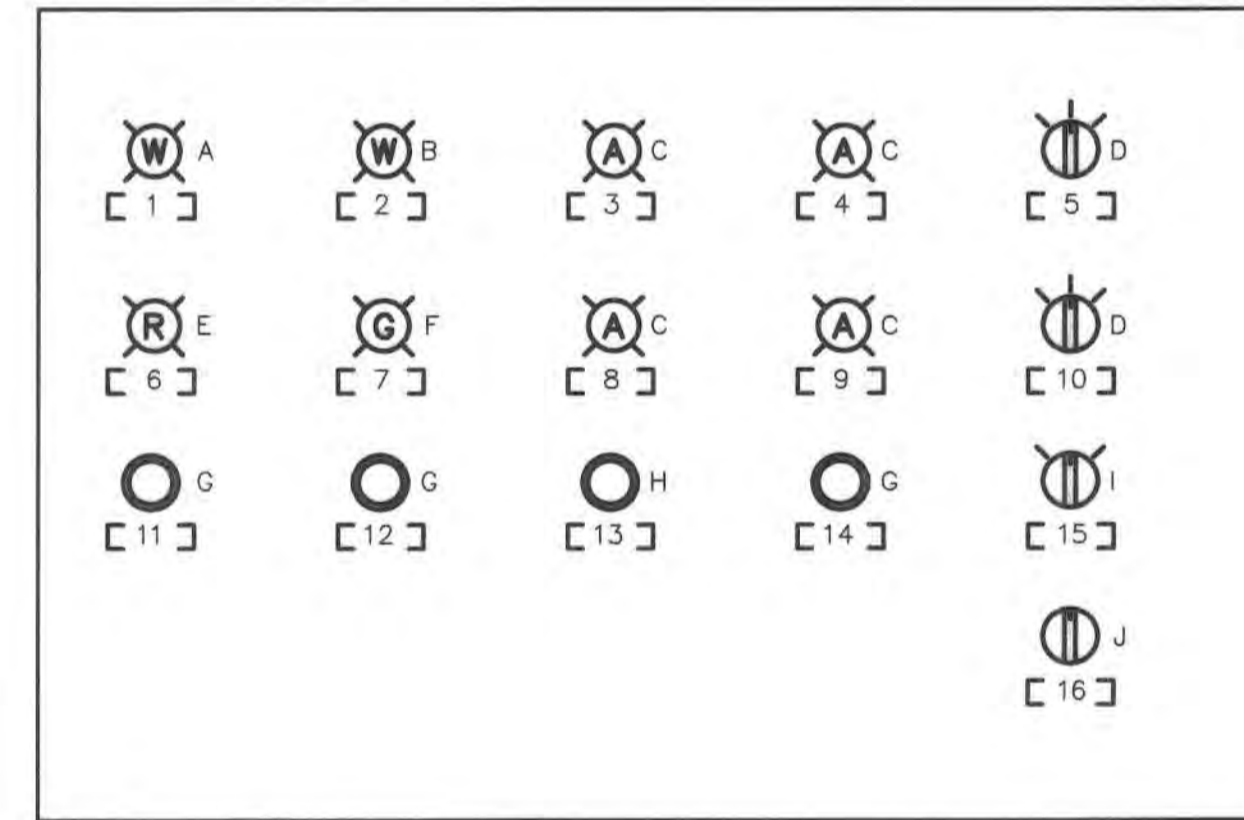
Dec 18, 2018 - 9:04am User: Sals Bane
M:\2018\131601306.01\Drawings\11-607 PUMP CONTROL ECD SHEET 2.dwg



1 ECD: HARMONIC FILTER (HF)
SCALE: NONE



2 ECD: VFD TERMINATIONS
SCALE: NONE

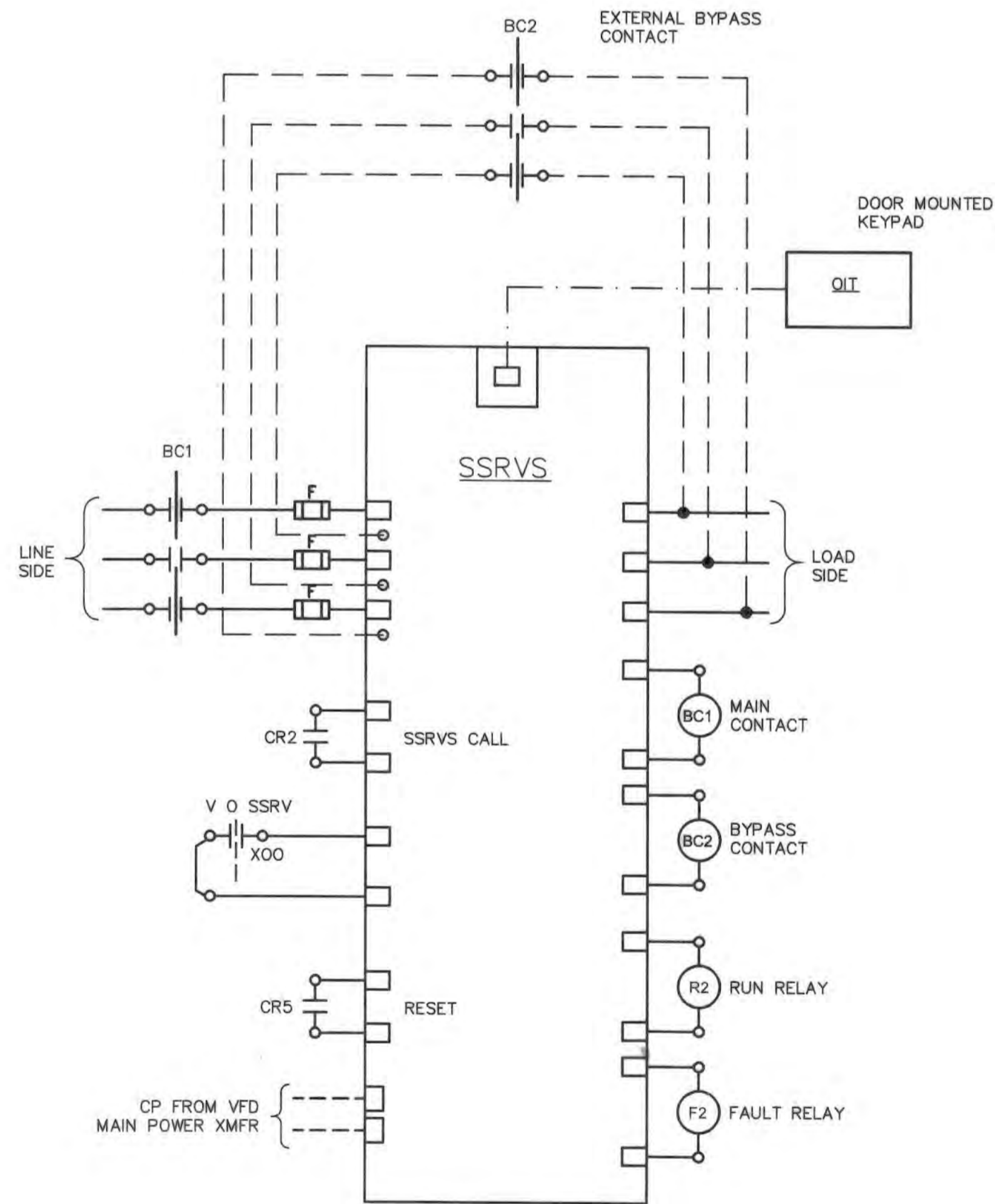


NAMEPLATE LEGEND:

- 1 POWER "ON"
- 2 VFD READY
- 3 PUMP FAIL
- 4 MOTOR OVERTEMP
- 5 VFD-OFF-SSRVS
- 6 RUNNING
- 7 STOPPED
- 8 VFD FAULT
- 9 SSRVS FAULT
- 10 HAND-OFF-AUTO
- 11 START
- 12 STOP
- 13 E-STOP
- 14 RESET
- 15 LOCAL-REMOTE
- 16 LOCAL SPEED CONTROL

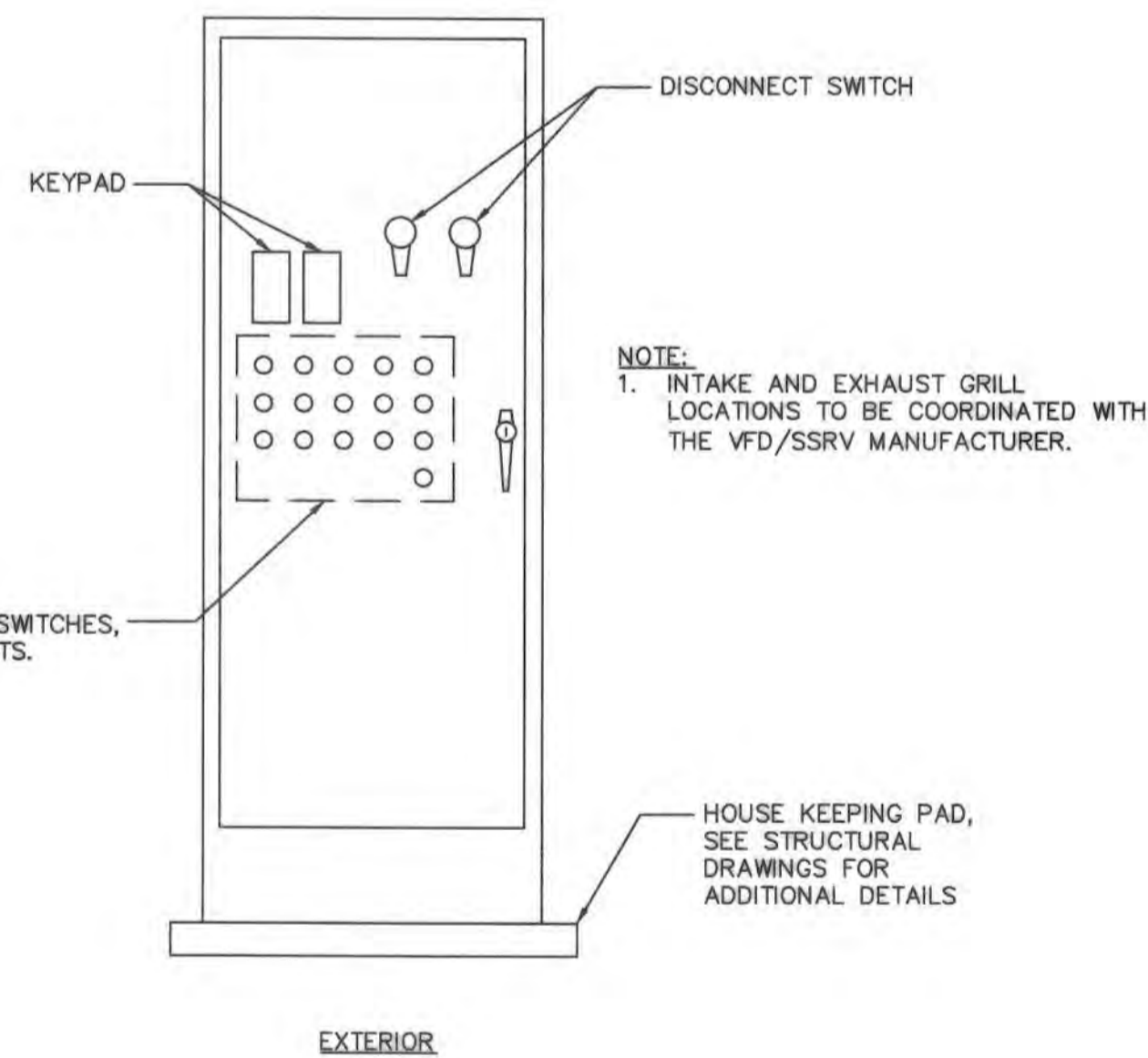
DEVICE LEGEND:

- A INDICATOR (WHITE)
- B PUSH-TO-TEST INDICATOR (WHITE)
- C PUSH-TO-TEST INDICATOR (AMBER)
- D 3-POSITION SELECTOR SWITCH
- E PUSH-TO-TEST INDICATOR (RED)
- F PUSH-TO-TEST INDICATOR (GREEN)
- G PUSHBUTTON (MOMENTARY)
- H PUSHBUTTON (MAINTAINED)
- I 2-POSITION SELECTOR SWITCH
- J POTENTIOMETER



3 ECD: SSRVS TERMINATIONS
SCALE: NONE

5 LOCATION OF SELECTOR SWITCHES, PUSHBUTTONS, AND LIGHTS.
11-607



4 ELEVATION: VFD/SSRV STARTER PANEL
SCALE: NONE

5 DETAIL: VFD / SSRVS CONTROL PANEL
SCALE: NONE

GENERAL SHEET NOTES

1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.
2. ALL RELAYS SHALL HAVE L.E.D. INDICATION.
3. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.
4. ALL VFD AND RVSS POWER QUALITY I/O IS TO BE OVER ETHERNET TO THE PCP. REFER TO I/O LIST.

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HOWARD COUNTY, MARYLAND

[Signature] 12/26/18
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/26/18
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/26/18
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

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REVISION	

600' SCALE MAP NO. 35	BLOCK NO. 17_11
-----------------------	-----------------

AS-BUILT
DATE 9/2021

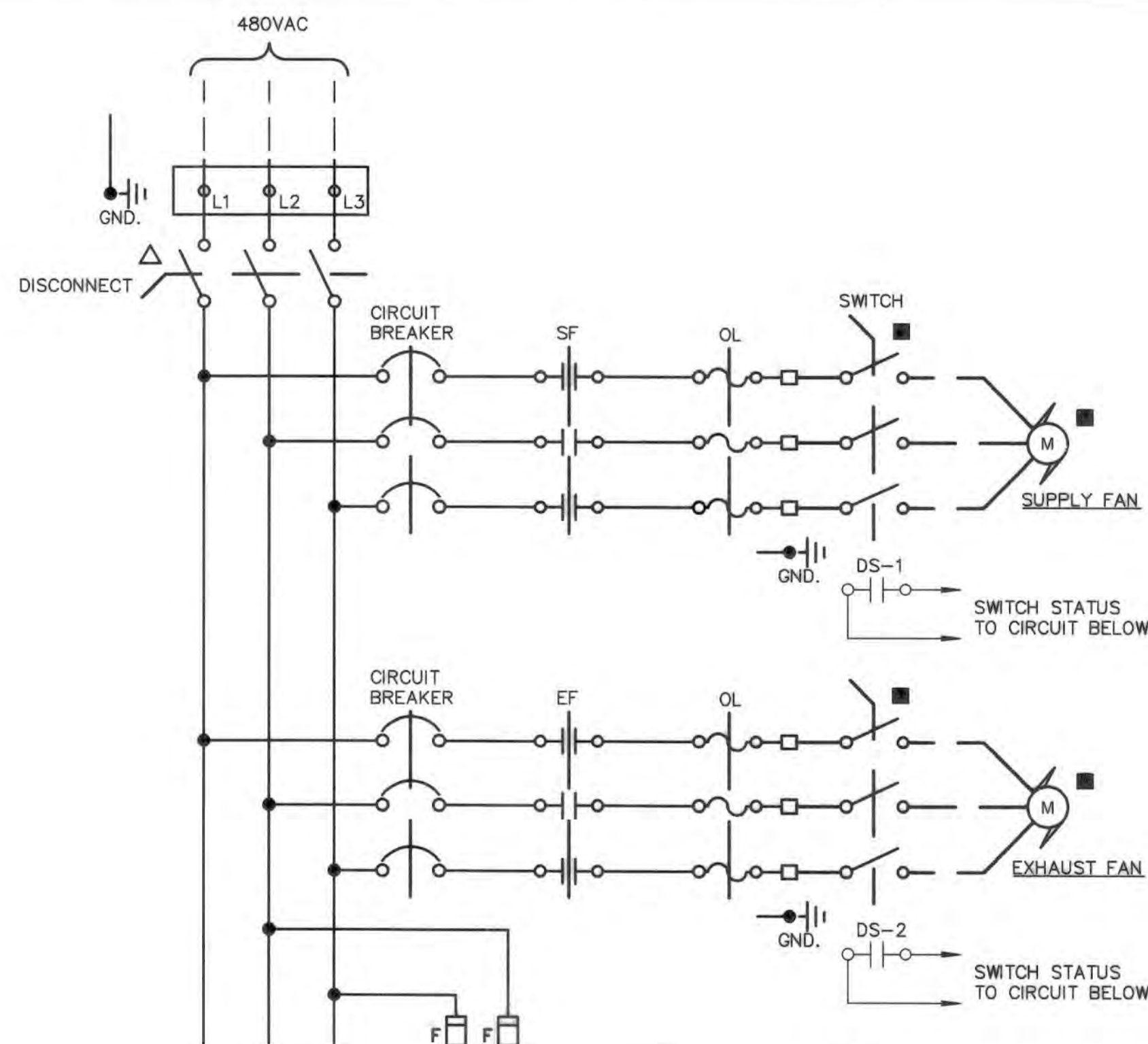
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

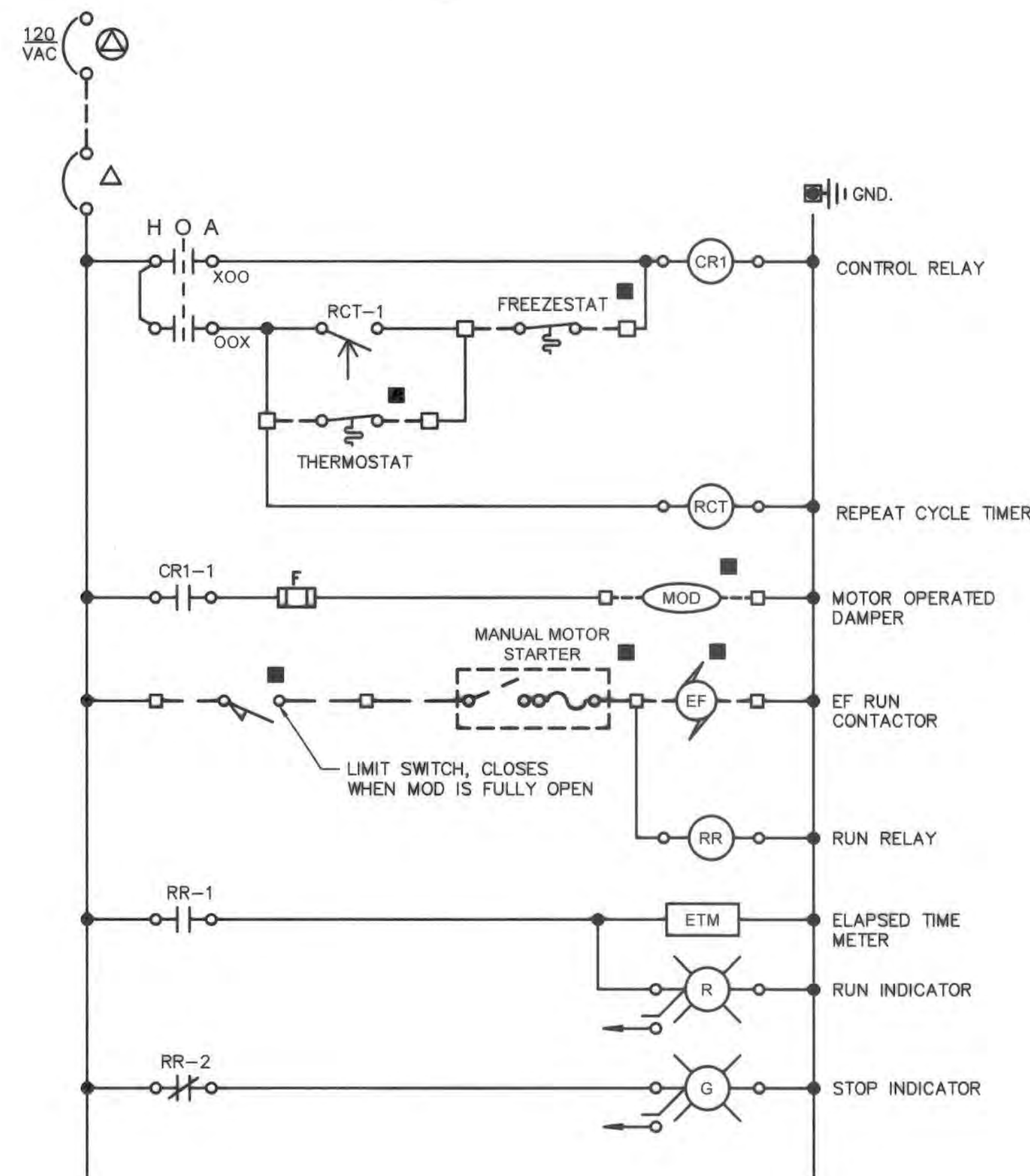
DRAWING NO. 11-607
SCALE AS SHOWN
SHEET 27 of 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

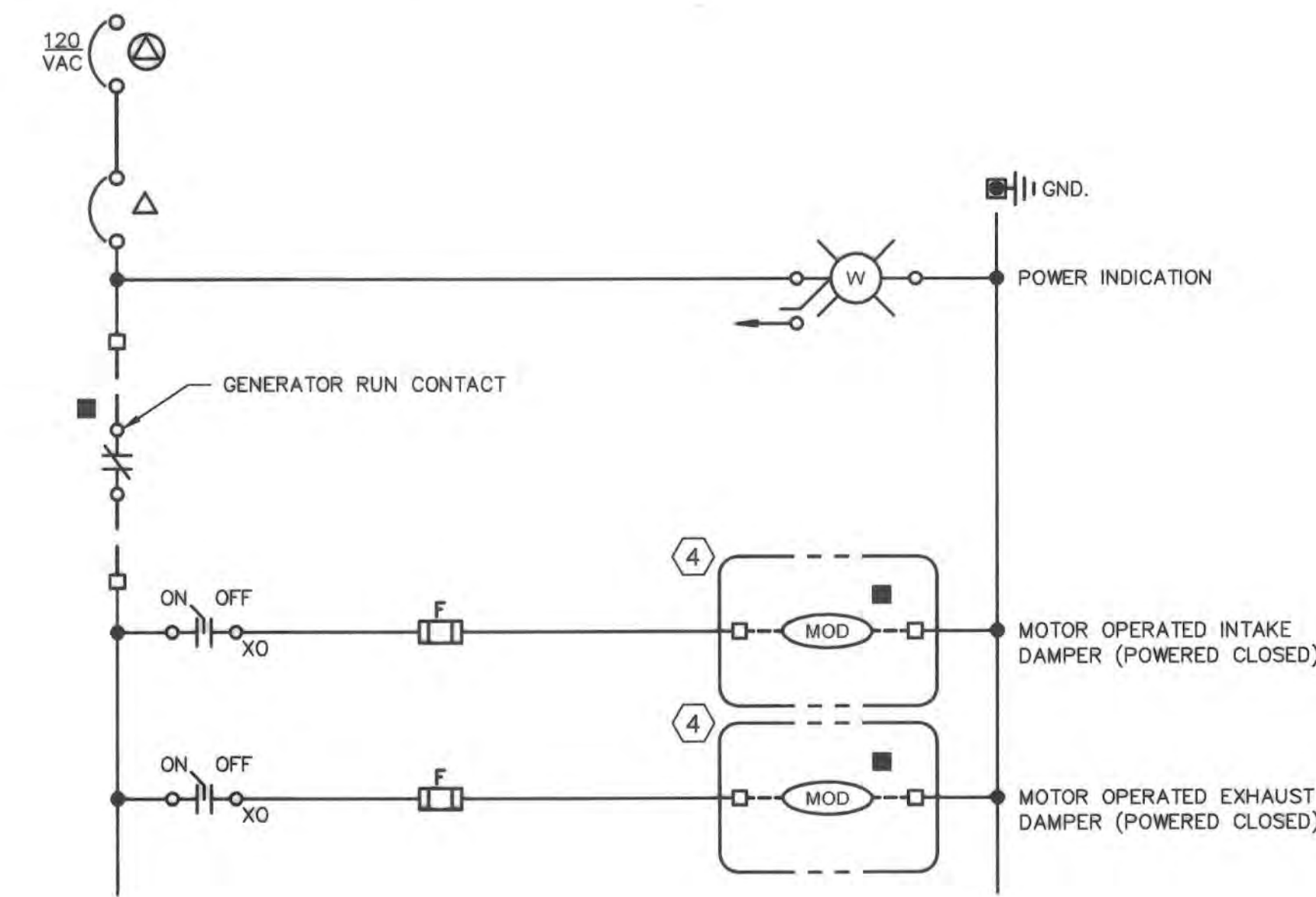
Dec 18, 2018 - 9:04am User: Seth Bess
 M:\V016\131601306.01\Drawings\1-608 VENTILATION CONTROL ECDS.dwg



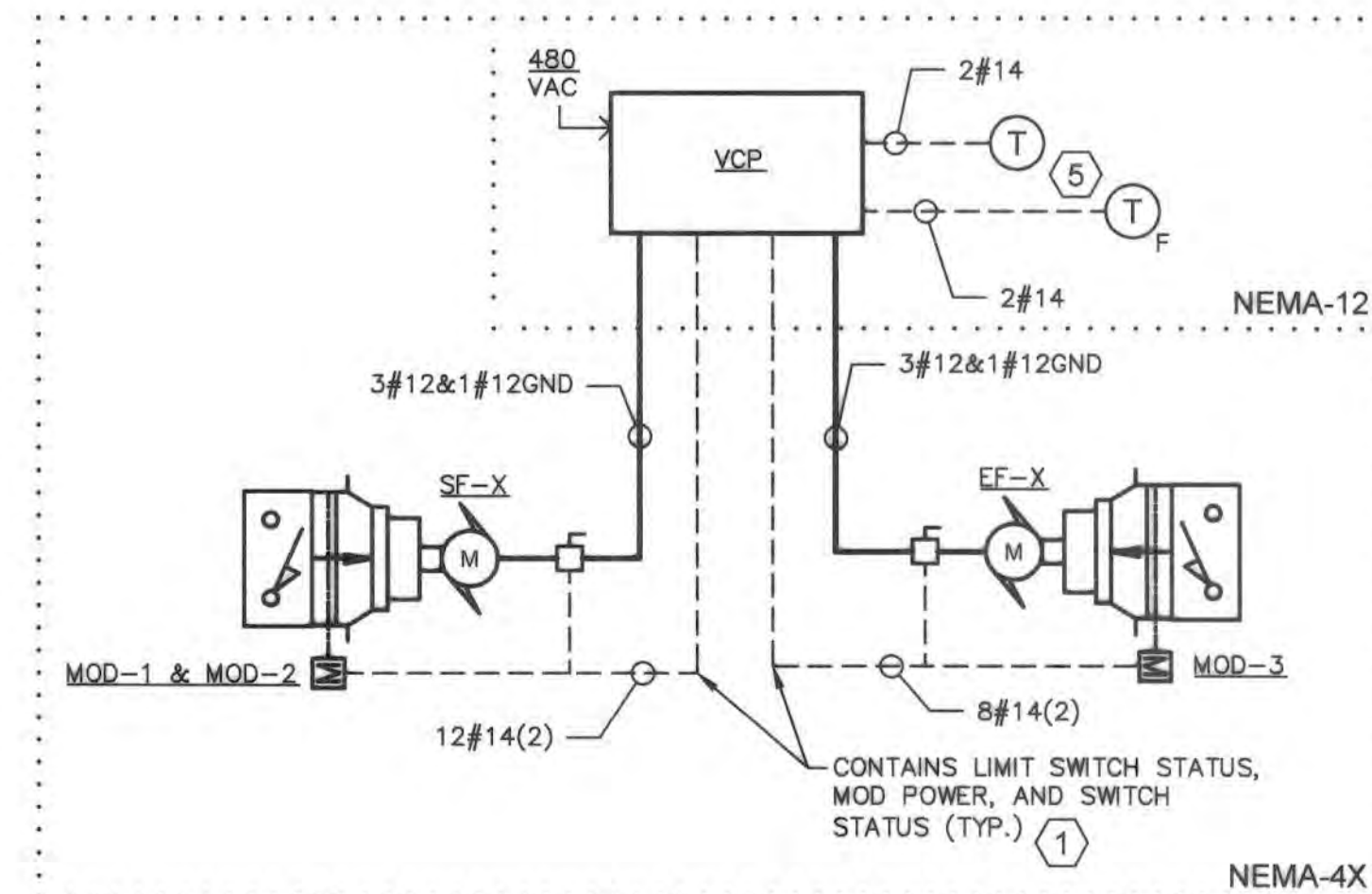
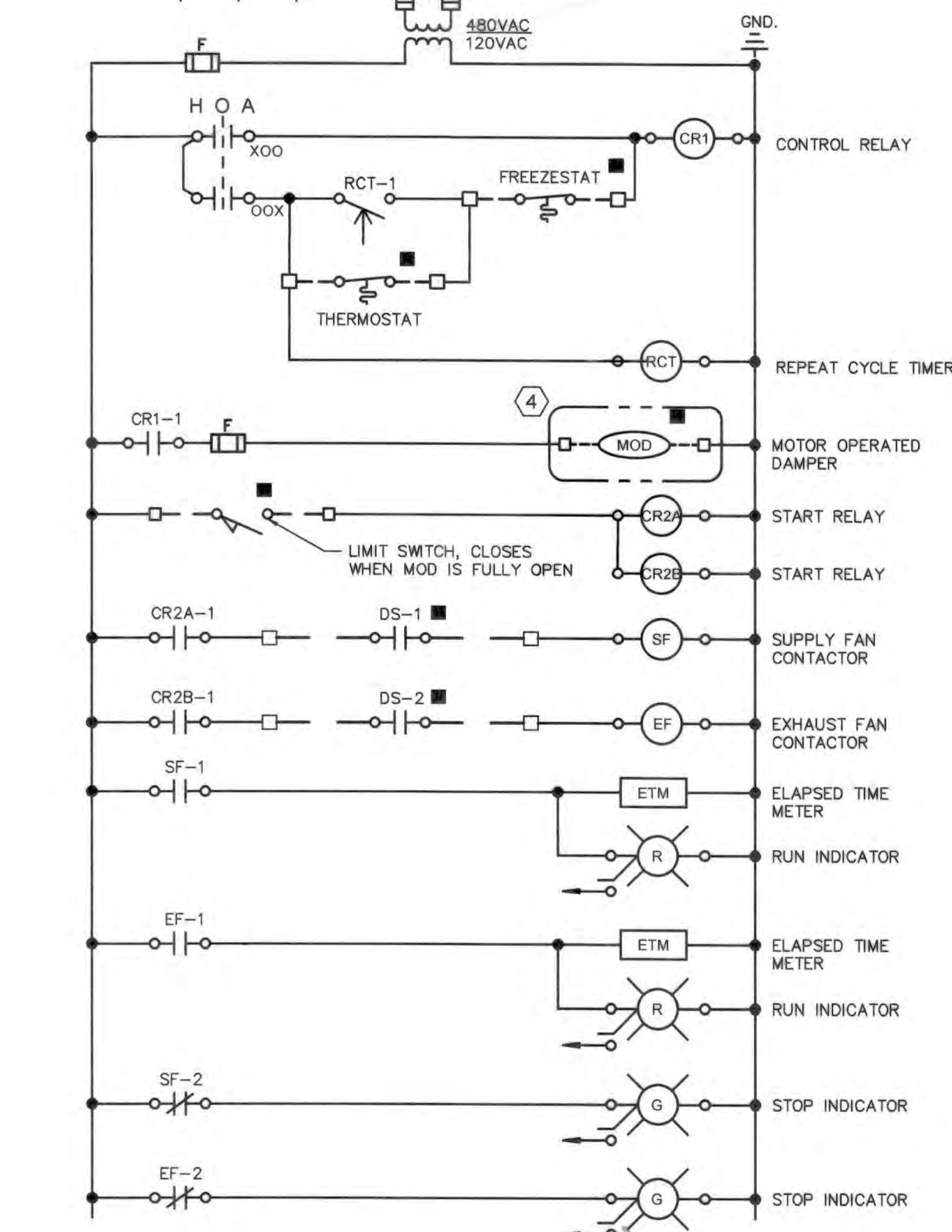
1 ECD: VCP-BLDG
 SCALE: NONE



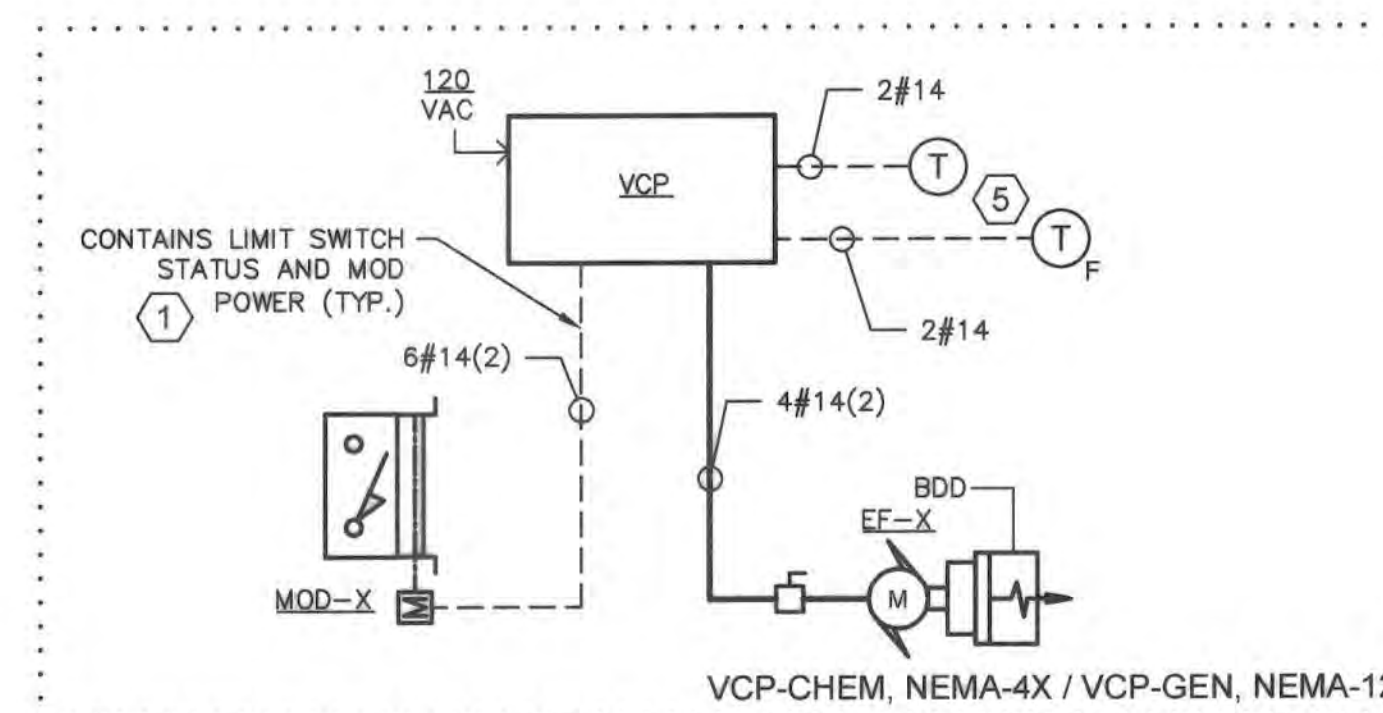
2 ECD: VCP-CHEM, VCP-GEN
 SCALE: NONE



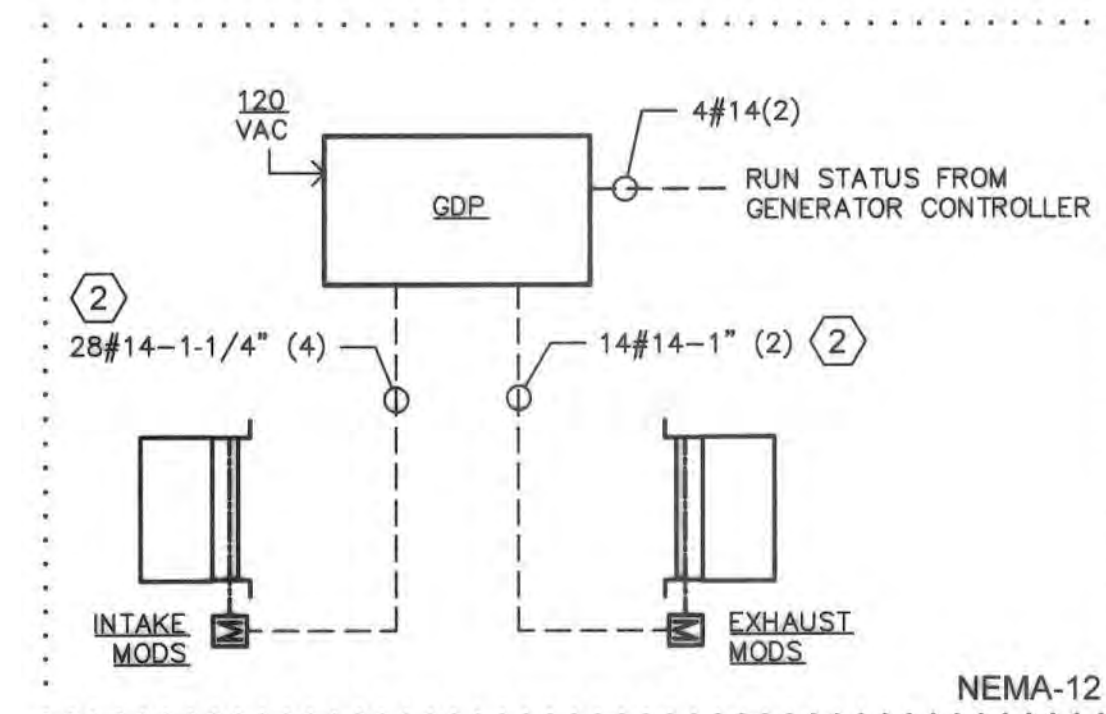
3 ECD: GENERATOR DAMPER PANEL (GDP)
 SCALE: NONE



4 RISER DIAGRAM: VCP-BLDG
 SCALE: NONE



5 RISER DIAGRAM: VCP-CHEM, VCP-GEN
 SCALE: NONE



6 RISER DIAGRAM: GDP
 SCALE: NONE

GENERAL SHEET NOTES

1. ALL RELAYS SHALL HAVE L.E.D. INDICATION OF STATUS.
2. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AT NEC STANDARDS.
3. PROVIDE 60-INCHES SLACK WIRE AT EACH END OF ALL SPARE INSTRUMENTATION WIRES.
4. ALL CONDUIT SHALL BE 3/4-INCH IN SIZE UNLESS OTHERWISE NOTED ON INSTRUMENT RISER DIAGRAMS.
5. CONTRACTOR TO COORDINATE APPROVED LOCATION WITH COUNTY FIRE MARSHAL.

SHEET KEY NOTES

1. LIMIT SWITCH POSITION STATUS SIGNALS CAN BE COMBINED WITH THE MOD CONTROL POWER CONDUCTORS.
2. INSTALL CONDUIT IN FLOOR SLAB
3. LOCATION WITH COUNTY FIRE MARSHAL.
4. MOD QUANTITY TO SUIT. REFER TO MOD SCHEDULE, THIS SHEET.
5. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.

EQUIPMENT LEGEND:

- BDD BACK DRAFT DAMPER
- EF-X EXHAUST FAN
- MOD-X MOTOR OPERATED DAMPER
- SF-X SUPPLY FAN
- VCP-X VENTILATION CONTROL PANEL
- T HIGH TEMP - 90°F
- T FREEZESTAT - 45°F

MOTOR OPERATED DAMPER (MOD) SCHEDULE		
CONTROL PANEL	INTAKE	EXHAUST
VCP-BLDG	MOD-1, MOD-2	MOD-3
VCP-CHEM	MOD-4	-
VCP-GEN	MOD-5	-
GDP	MOD-6, MOD-7, MOD-8, MOD-9, MOD-10, MOD-11, MOD-12, MOD-13, MOD-14, MOD-15, MOD-16, MOD-17	MOD-18, MOD-19, MOD-20, MOD-21, MOD-22, MOD-23

AS-BUILT
 DATE 9/2021

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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE 12/26/18
 Chief, Bureau of Engineering: *[Signature]* DATE 12/26/18
 Chief, Bureau of Utilities: *[Signature]* DATE 12-26-18
 Chief, Utility Design Division: *[Signature]* DATE 12/26/18

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DES: SDR
 DRN: SDR
 CHK: SEA
 DATE: DEC 2018

VENTILATION CONTROL ECDS
 600' SCALE MAP NO. 35
 BLOCK NO. 17.11

CEDAR LANE
 WATER PUMPING STATION
 CAPITAL PROJECT No. W-8328
 CONTRACT No. 44-5036
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

DRAWING NO. 11-608
 SCALE AS SHOWN
 SHEET 78 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

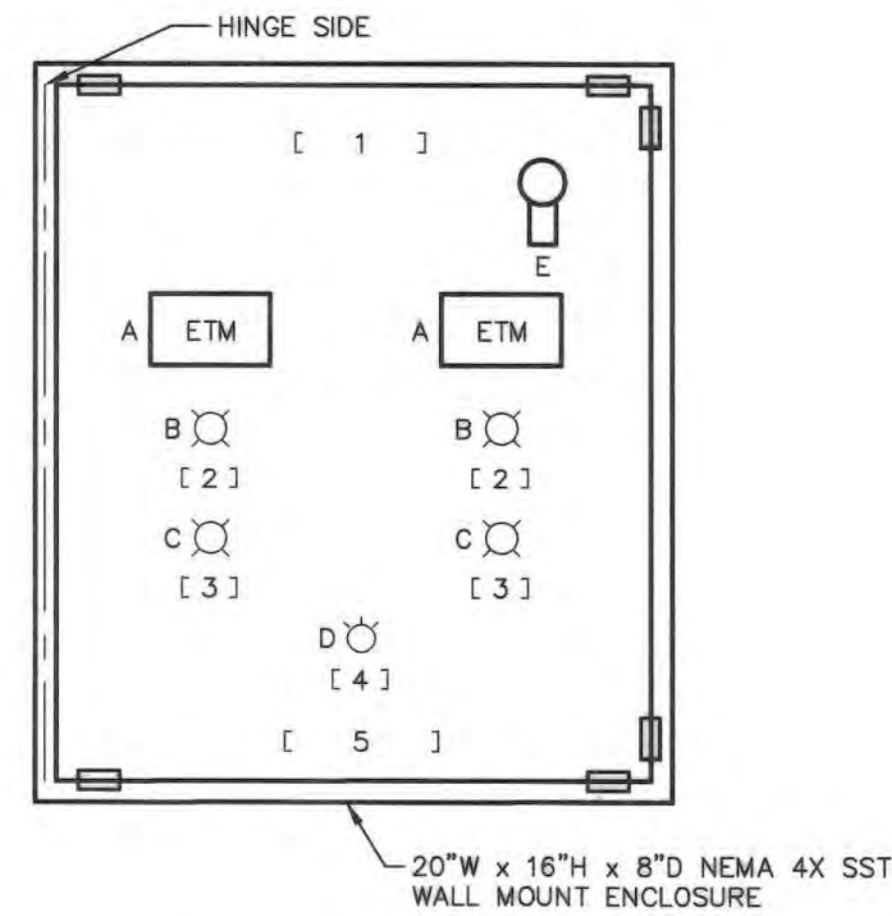
User: Seth.Ring
M:\2018\131601306.01\Drawings\11-609 VENTILATION PANEL DETAILS.dwg
Dec 16, 2018 9:05am

GENERAL SHEET NOTES

- CONTRACTOR TO COORDINATE APPROVED LOCATION WITH COUNTY FIRE MARSHAL.

SHEET KEY NOTES

- VCP-CHEM SHALL BE NEMA 4X SST. VCP-GEN SHALL BE NEMA 12



20"W x 16"H x 8"D NEMA 4X SST WALL MOUNT ENCLOSURE

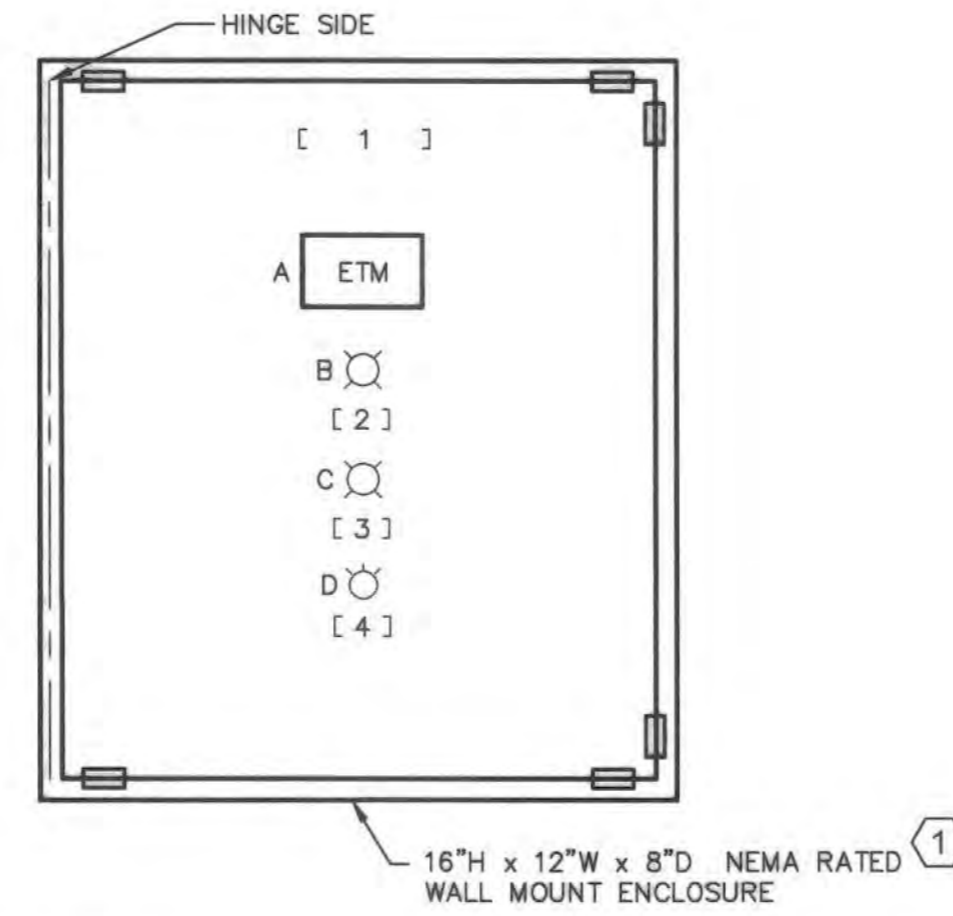
DEVICE LEGEND:

- A ELAPSED TIME METER
- B INDICATION LAMP (RED)
- C INDICATION LAMP (GREEN)
- D 3-POSITION SELECTOR SWITCH
- E DISCONNECT SWITCH

NAMEPLATE LEGEND:

- 1 VCP-BLDG
- 2 RUNNING
- 3 STOPPED
- 4 HAND / OFF / AUTO
- 5 FANS: SF-1 / EF-1

1 ELEVATION: VCP-BLDG
SCALE: NONE



16"H x 12"W x 8"D NEMA RATED WALL MOUNT ENCLOSURE

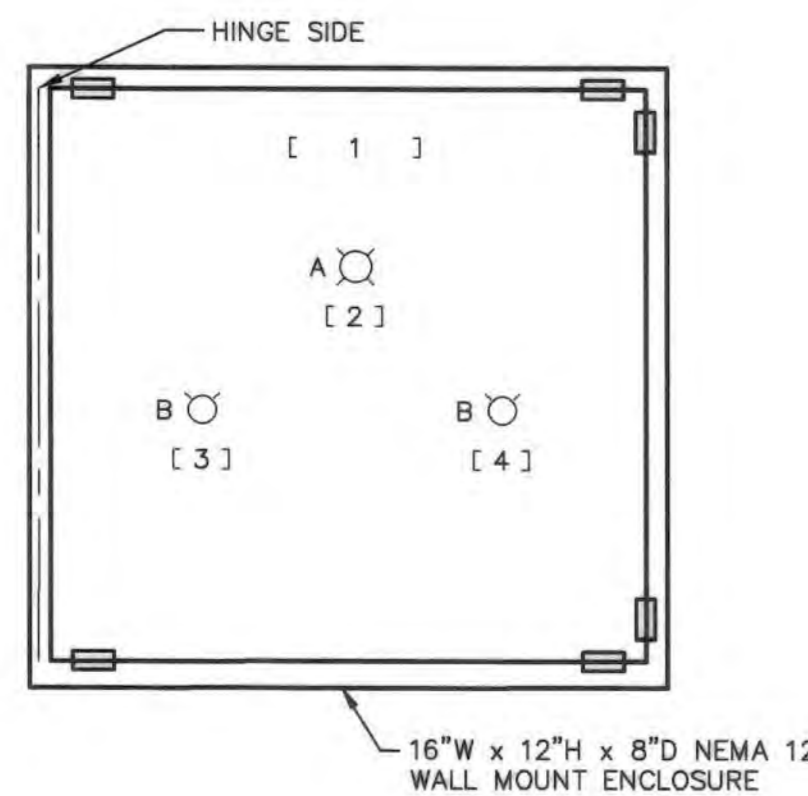
DEVICE LEGEND:

- A ELAPSED TIME METER
- B INDICATION LAMP (RED)
- C INDICATION LAMP (GREEN)
- D 3-POSITION SELECTOR SWITCH

NAMEPLATE LEGEND:

- 1 VCP-CHEM OR VCP-GEN
- 2 RUNNING
- 3 STOPPED
- 4 HAND / OFF / AUTO

2 ELEVATION: VCP-CHEM, VCP-GEN
SCALE: NONE



16"W x 12"H x 8"D NEMA 12 WALL MOUNT ENCLOSURE

DEVICE LEGEND:

- A INDICATION LAMP (WHITE)
- B 2-POSITION SELECTOR SWITCH

NAMEPLATE LEGEND:

- 1 GENERATOR DAMPER PANEL
- 2 POWER
- 3 INTAKE MODS CLOSE / OPEN
- 4 EXHAUST MODS CLOSE / OPEN

3 ELEVATION: GENERATOR DAMPER PANEL (GDP)
SCALE: NONE

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. 33925, Expiration Date 01/15/19

AS-BUILT
DATE 9/2021

DRAWING NO.
11-609

SCALE
AS SHOWN

SHEET

79 OF 81

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/26/18
DIRECTOR OF PUBLIC WORKS DATE
[Signature] 12-26-18
CHIEF, BUREAU OF UTILITIES DATE
[Signature] 12/26/18
CHIEF, UTILITY DESIGN DIVISION DATE

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 Ridgebrook Road
Shirley, MD 21152
Phone: (410) 316-7800
Fax: (410) 316-7817
www.kci.com



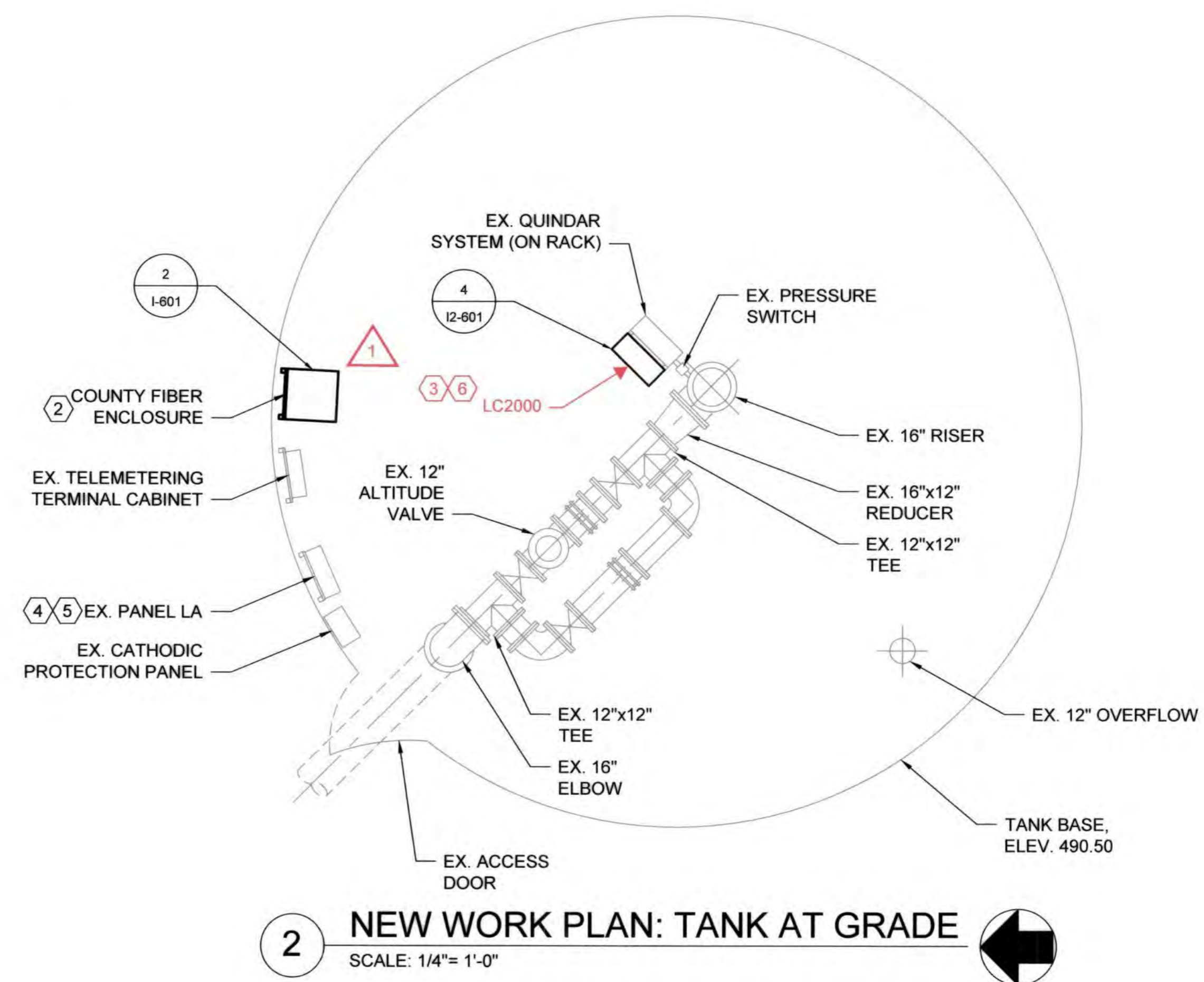
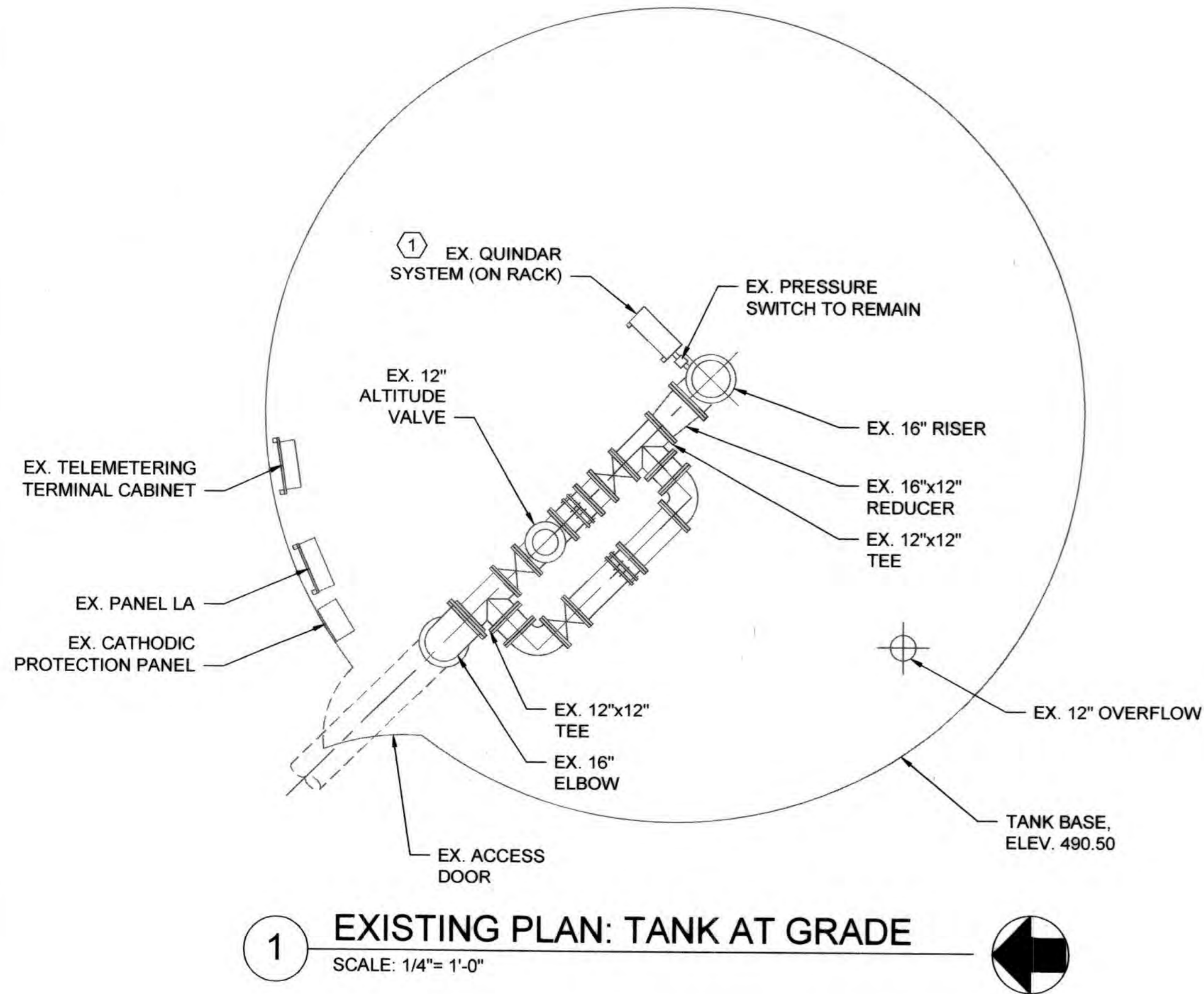
DES: SDR					
DRN: SDR					
CHK: SEA					
DATE: DEC 2018	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 35

VENTILATION PANEL DETAILS

**CEDAR LANE
WATER PUMPING STATION**
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

KCI TECHNOLOGIES PROJECT No.: 131601306.01

Dec 16, 2018 - 9:05am User: Seth.Rong M:\2018\131601306.01\Drawings\12-101 WATER TANK FLOOR PLAN AND SECTION.dwg

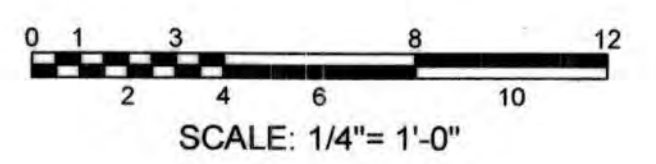


GENERAL SHEET NOTES

- 1. ALL SIGNALS ARE TO BE EXTENDED FROM THE EXISTING QUINDAR ENCLOSURE TO THE PROPOSED LC2000. SEE WATER TANK P&ID DRAWING FOR INFORMATION.

SHEET KEY NOTES

- 1. COUNTY TO REMOVE EXISTING QUINDAR UNIT FROM ENCLOSURE. EXISTING ENCLOSURE WILL BE REUSED, SEE 12-601. ABANDON EXISTING PHONE LINES IN PLACE.
- 2. CONTRACTOR TO COORDINATE WITH COUNTY FOR INSTALLATION. COUNTY TO PROVIDE FIBER CONDUIT ROUTING. SCADA SYSTEM SUPPLIER TO PROVIDE MOUNTING AND ENCLOSURE.
- 3. MOUNT LC2000 ENCLOSURE TO EXISTING RACK.
- 4. PROVIDE A 20A/1P BREAKER FOR PROPOSED COUNTY FIBER ENCLOSURE. FURNISH 2#12 AND #12 GND FROM PANEL LA TO COUNTY FIBER ENCLOSURE.
- 5. PROVIDE A 20A/1P BREAKER FOR PROPOSED LC2000 ENCLOSURE. FURNISH 2#12 AND #12 GND FROM PANEL LA TO LC2000 ENCLOSURE.
- 6. LC2000 I/O WILL BE TERMINATED WITHIN QUINDAR ENCLOSURE. SEE WATER TANK P&ID DRAWING FOR INFORMATION.



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. 33925, Expiration Date 01/15/19.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

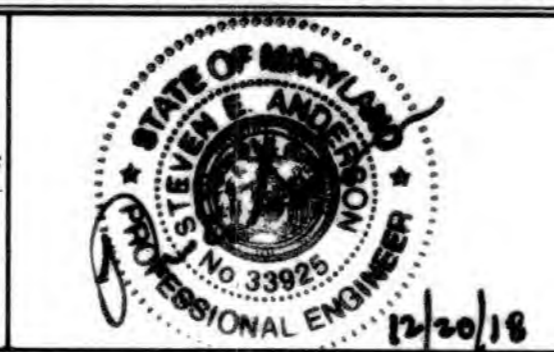
Director of Public Works: *[Signature]* 12/26/18
Date: 12-26-18

Chief, Bureau of Engineering: *[Signature]* 12/26/18
Date: 12/26/18

Chief, Utility Design Division: *[Signature]* 12/26/18
Date: 12/26/18

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

936 Ridgebrook Road
Sparks, MD 21152
Phone: (410) 316-7800
Fax: (410) 316-7817
www.kci.com



DES: SDR			
DRN: JFW			
CHK: SEA			
DATE: DEC 2018	SDR	1	AS-BUILT
BY	NO.	REVISION	DATE

HARPERS CHOICE ELEVATED TANK MODIFICATIONS

600' SCALE MAP NO. 35 BLOCK NO. 17.11

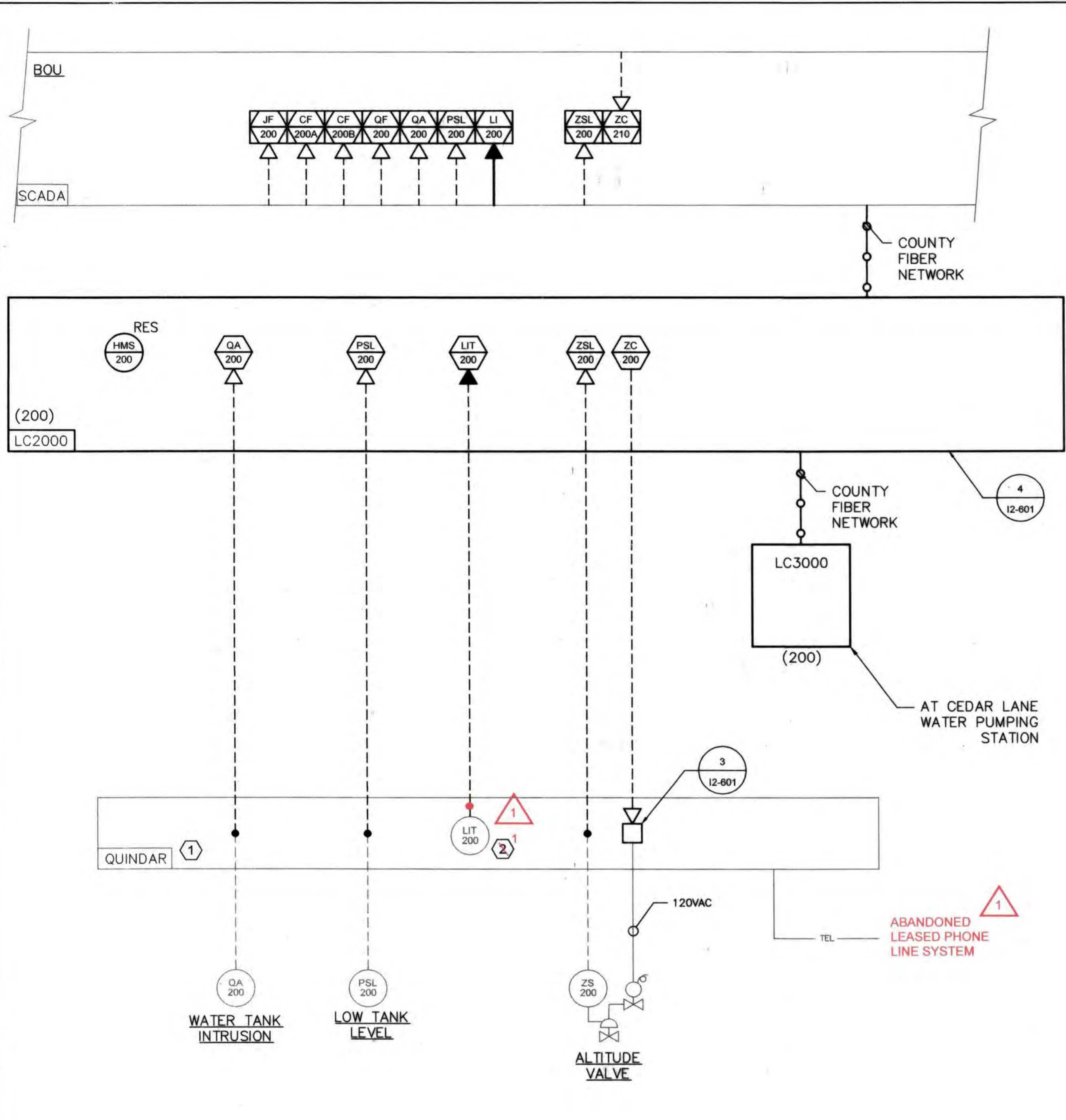
CEDAR LANE WATER PUMPING STATION
CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

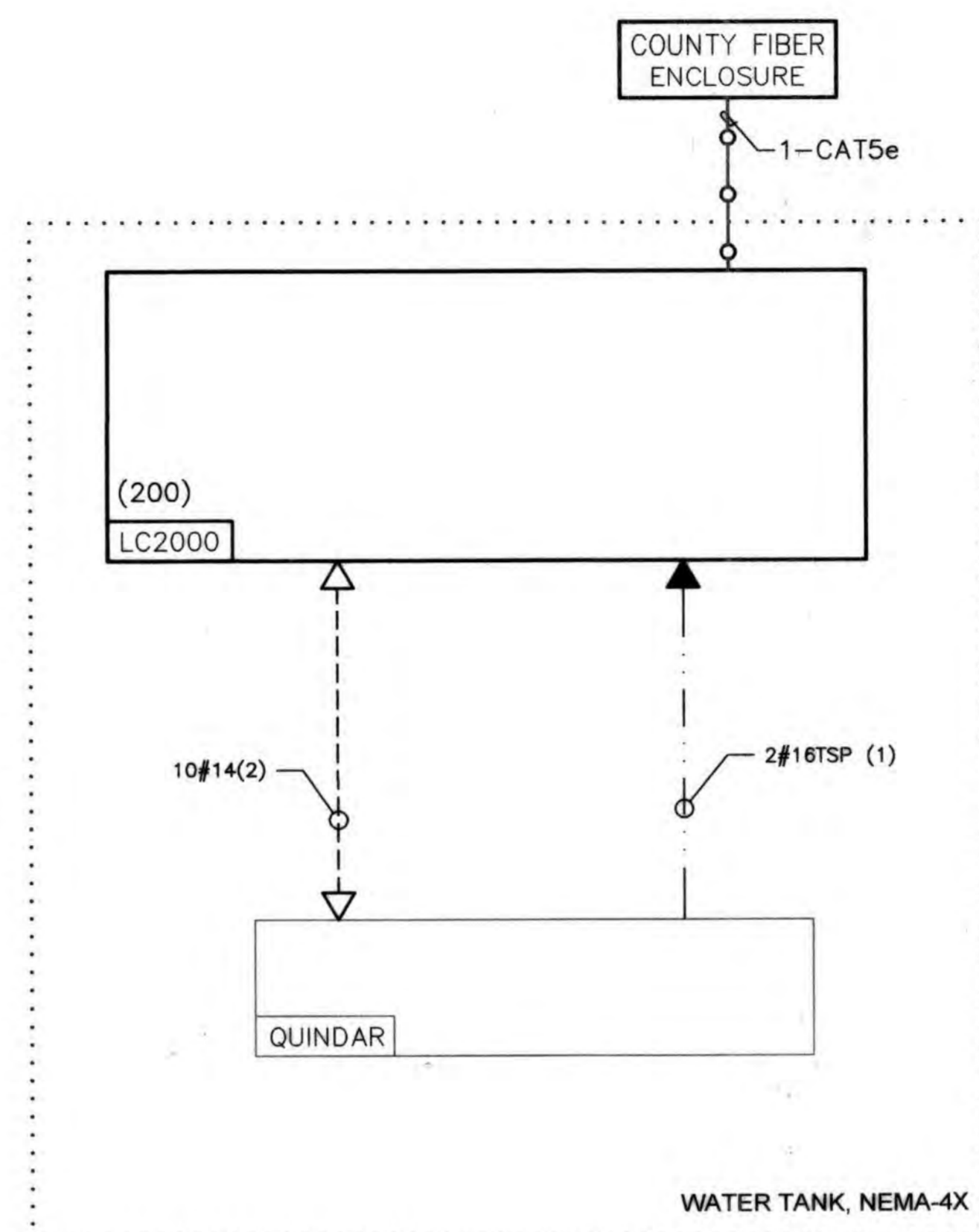
DRAWING NO. 12-101
SCALE AS SHOWN
SHEET 80 OF 81

KCI TECHNOLOGIES PROJECT No.: 131601306.01

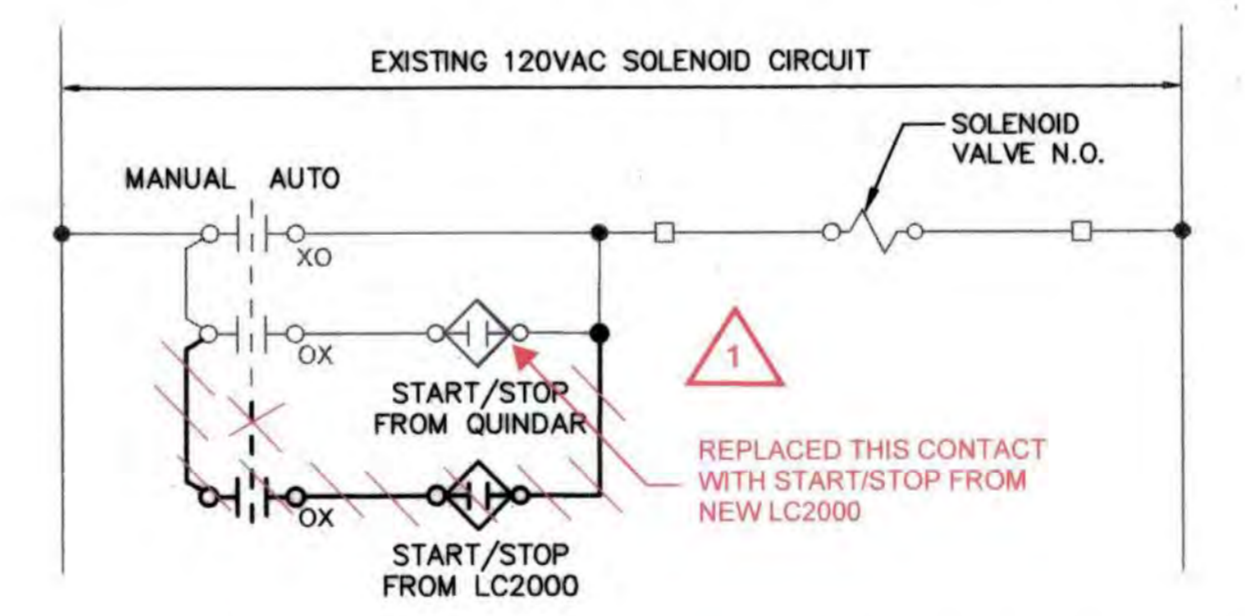
Dec 18, 2018 - 9:05am User: Seth Rong M:\2018\131601306.01\Drawings\12-601 WATER TANK PID AND RISER DIAGRAM.dwg



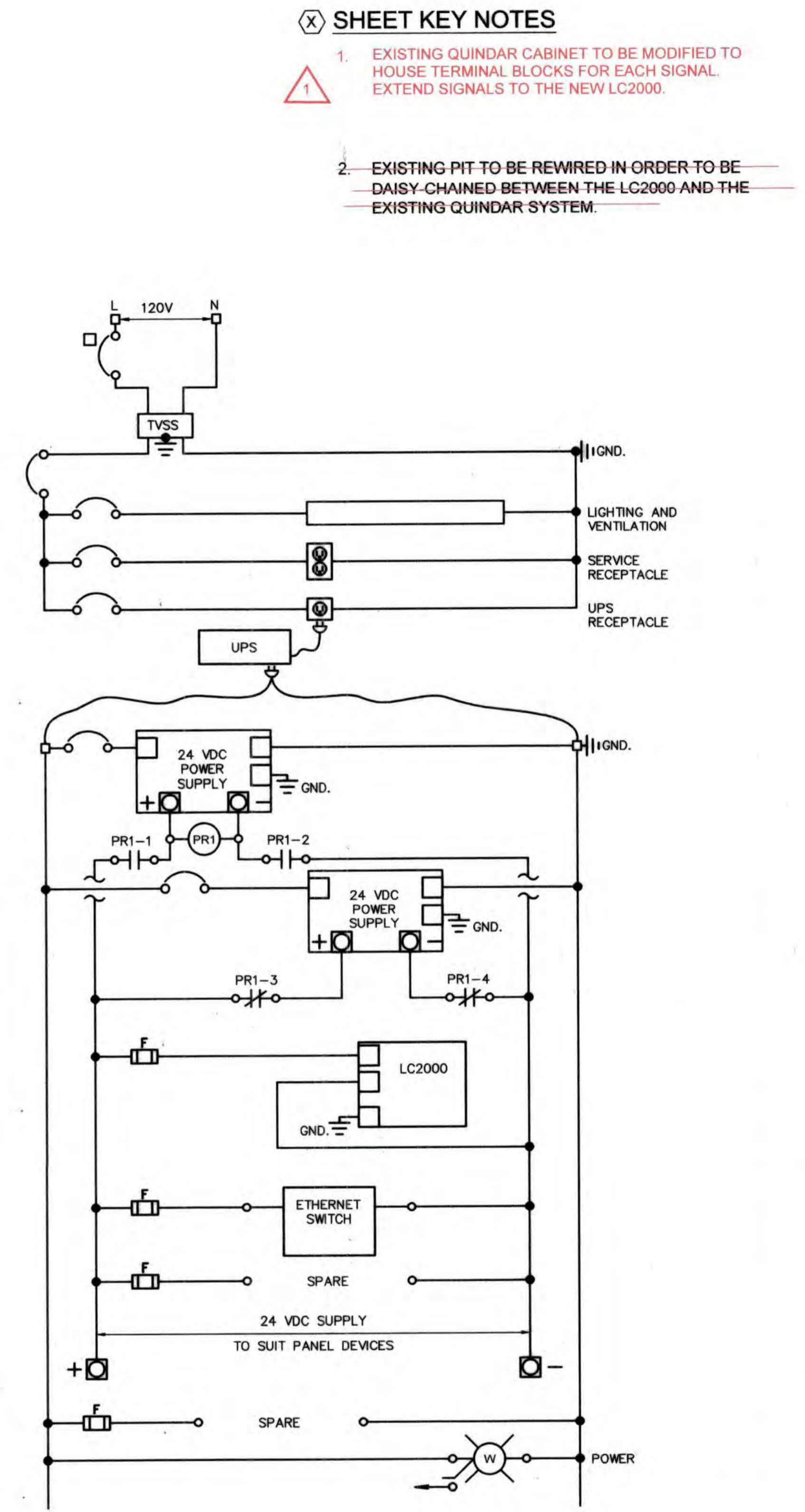
1 P&ID: WATER TANK
SCALE: NONE



2 RISER DIAGRAM: WATER TANK
SCALE: NONE



3 ECD: ALTITUDE VALVE SOLENOID
SCALE: NONE



4 ECD: LC2000 POWER
SCALE: NONE

- (X) SHEET KEY NOTES**
- EXISTING QUINDAR CABINET TO BE MODIFIED TO HOUSE TERMINAL BLOCKS FOR EACH SIGNAL. EXTEND SIGNALS TO THE NEW LC2000.
 - EXISTING PIT TO BE REWIRED IN ORDER TO BE DAISY-CHAINED BETWEEN THE LC2000 AND THE EXISTING QUINDAR SYSTEM.

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. 33925, Expiration Date 01/15/19.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
DIRECTOR OF PUBLIC WORKS
DATE: 12-20-18

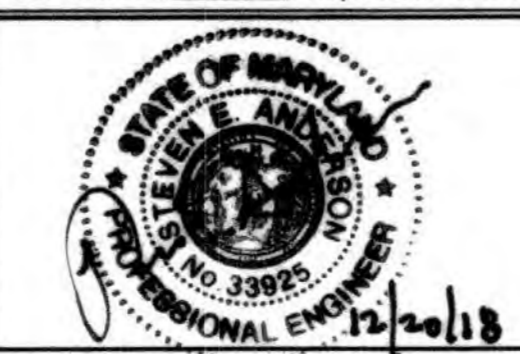
[Signature]
CHIEF, BUREAU OF ENGINEERING
DATE: 12-20-18

[Signature]
CHIEF, UTILITY DESIGN DIVISION
DATE: 12-20-18

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

KCI
TECHNOLOGIES

936 Ridgebrook Road
Sparks, MD 21152
Phone: (410) 316-7800
Fax: (410) 316-7817
www.kci.com



DES: SDR			
DRN: SDR			
CHK: SEA			
DATE: DEC 2018	SDR	1	AS-BUILT
BY NO.			
REVISION			
DATE	8/2021		

HARPERS CHOICE ELEVATED TANK P&ID
AND RISER DIAGRAM

600' SCALE MAP NO. 35 BLOCK NO. 17.11

AS-BUILT REPLACEMENT SHEET 9/2021

**CEDAR LANE
WATER PUMPING STATION**

CAPITAL PROJECT No. W-8328
CONTRACT No. 44-5036

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DRAWING NO. 12-601
SCALE AS SHOWN
SHEET 81 OF 81

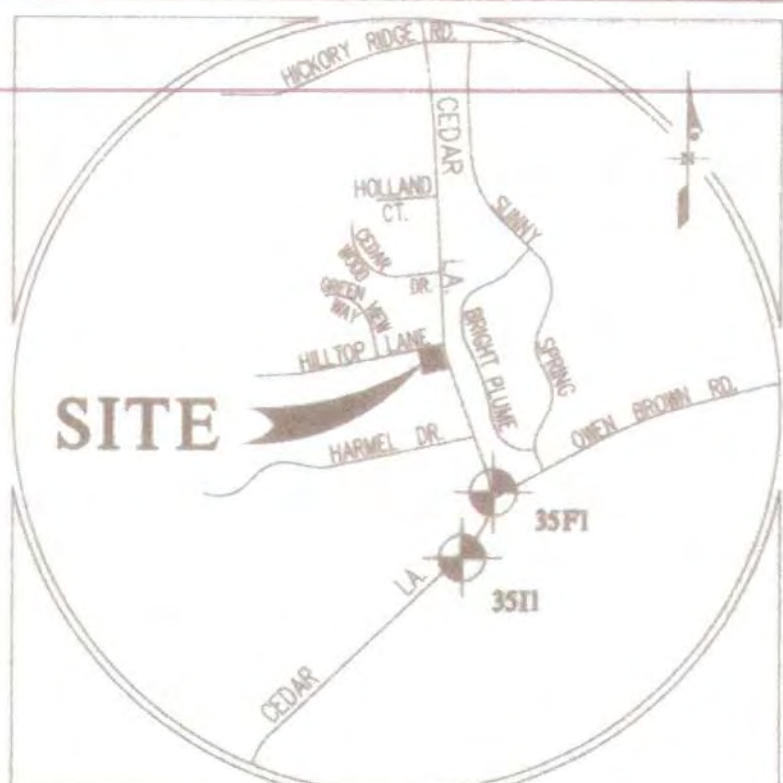
SITE DEVELOPMENT PLAN

CEDAR LANE WATER PUMPING STATION

CEDAR ACRES BLOCK 'B', LOT 1

LIBER 17223 FOLIO 117

ASBUILT



VICINITY MAP
SCALE: 1" = 2,000'

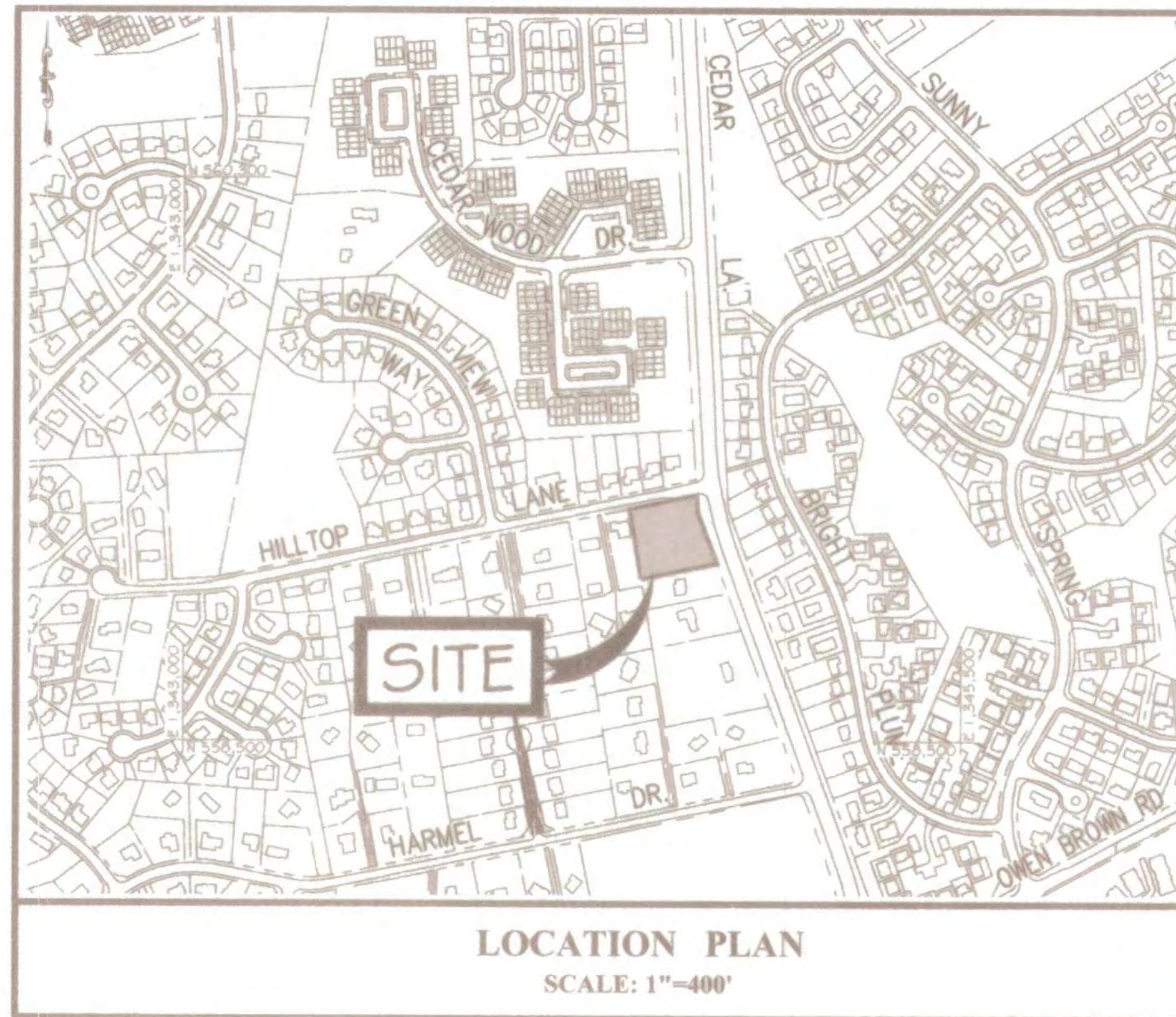
BENCHMARKS
35F1 N=557,787.369 E=1,345,217.326
35I1 N=557,110.385 E=1,344,893.672

ADC MAP: 4934-J8

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION AT (410) 313-8800 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. PROJECT BACKGROUND:

LOCATION:	TAX MAP 905, GRID II
ZONING:	R-20
ELECTION DISTRICT:	5TH
PARCEL AREA:	BLOCK 'B', LOT 1 1.17 AC.
REC. REF.:	PLAT BOOK 4, NO.11
5. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, BUREAU OF UTILITIES AT (410) 313-4900 AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY EXCAVATION WORK.
6. PROPOSED USE: GOVERNMENT STRUCTURE - PUBLIC UTILITY
7. ALL PLAN DIMENSIONS ARE TO FACE OF BUILDING UNLESS OTHERWISE NOTED. DIMENSIONS ARE MEASURED PERPENDICULAR OR RADIALY BETWEEN ITEMS UNLESS OTHERWISE NOTED.
8. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY KCI TECHNOLOGIES DATED DECEMBER 2017.
9. COORDINATES AND BEARINGS ARE BASED UPON THE '83 MD STATE COORDINATE SYSTEM (NAD '83) AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 35H AND 35I1.
10. THE PREVIOUS DEPARTMENT OF PLANNING AND ZONING FILE NUMBERS: ECP-18-014
11. WATER AND SEWER SERVICE IS PUBLIC PER CONTRACT NO. 44-5056.
12. ALL ON-SITE STORM DRAIN SYSTEMS ARE PRIVATE.
13. STORMWATER MANAGEMENT, SATISFYING ENVIRONMENTAL SITE DESIGN (ESD) CRITERIA, PROPOSED BY THESE PLANS INCLUDES 1-HOUR BIO-RETENTION (B-R) FACILITIES. THIS STORMWATER MANAGEMENT PRACTICE WILL BE MAINTAINED BY HOWARD COUNTY.
14. EXISTING UTILITIES ARE BASED ON PLANS AND INFORMATION RECEIVED BY KCI TECHNOLOGIES.
15. THERE ARE NO KNOWN CEMETERIES, GRAVE SITES OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY.
16. THERE ARE NO SCENIC ROADS WITHIN OR ADJACENT TO THE SUBJECT PROPERTY.
17. THERE ARE NO FLOODPLAINS OR WETLANDS WITHIN THE SUBJECT PROPERTY.
18. ALL EXTERIOR LIGHT FIXTURES SHALL BE ORIENTED TO DIRECT LIGHT INWARDS AND DOWNWARDS AWAY FROM ALL ADJOINING RESIDENTIAL USE AREAS AND PUBLIC ROADS IN ACCORDANCE WITH SECTION 194.0 OF THE HOWARD COUNTY ZONING REGULATIONS.
19. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL NOT BE REQUIRED DUE TO GOVERNMENT OWNERSHIP OF THE PROJECT. THE LANDSCAPE PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
20. SETBACK REQUIREMENTS DO NOT APPLY TO WALLS AND FENCES WHICH SERVE AS ENTRANCE FEATURES FOR A SUBDIVISION OR DEVELOPMENT IN ALL ZONING DISTRICTS PROVIDED THE ENTRANCE FEATURE DOES NOT EXCEED 8 FEET IN HEIGHT AND DOES NOT INTERFERE WITH SIGHT DISTANCE ALONG PUBLIC ROADS IN ACCORDANCE WITH SECTION 12B.0 OF THE ZONING REGULATIONS.
21. THERE IS A LOWER LEVEL BASEMENT SPACE IN THE BUILDING.
22. APPROVAL OF THIS SITE DEVELOPMENT PLAN (SDP-18-046) DOES NOT ENSURE APPROVAL OF BUILDING PERMIT APPLICATIONS ASSOCIATED WITH THIS PLAN.
23. IN ACCORDANCE WITH SECTION 12B.0 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY KITCHENS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS, PORCHES, OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
24. NO GRADINGS, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
25. FOREST CONSERVATION FOR THIS SITE IS BEING PROVIDED VIA A PEE-IN-LIEU IN THE AMOUNT OF \$5,735.75 FOR 1645 SQ. FT.
26. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
27. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (4 GUAGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (2 GUAGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
28. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
29. THE COMMUNITY MEETING FOR THIS PROJECT WAS HELD AT SHANFIELD ELEMENTARY SCHOOL AT 7PM ON JANUARY 25, 2018.



SHEET INDEX

- 1 - COVER SHEET
- 2 - EXISTING CONDITIONS PLAN
- 3 - SITE DEVELOPMENT PLAN
- 4 - SITE PLAN DETAILS
- 5 - UTILITY PROFILES
- 6 - STORMWATER MANAGEMENT PLAN
- 7 - LANDSCAPE PLAN
- 8 - LANDSCAPE DETAILS
- 9 - SEDIMENT CONTROL PLAN
- 10 - SEDIMENT CONTROL DETAILS
- 11 - SEDIMENT CONTROL NOTES
- 12 - DRAINAGE AREA MAP

SITE ANALYSIS DATA

1. ZONING: RESIDENTIAL SINGLE FAMILY (R20)
2. LEGAL DESCRIPTION: LOT 1, BLK 'B' CEDAR ACRES, PLAT BK 4, NO. 11
3. GROSS AREA OF LOT: 1.17 AC. DEED REFERENCE: L17223 F. 0017
4. LIMIT OF DISTURBED AREA: 1.21 AC.
5. PROPOSED USE: GOVERNMENT STRUCTURE - PUBLIC UTILITY
6. PARKING:

REQUIRED PARKING	N/A
PARKING PROVIDED	N/A
HANDICAP PARKING REQUIRED	N/A
HANDICAP SPACES PROVIDED	N/A
7. OWNER: HOWARD COUNTY MD
8. APPLICANT: HOWARD COUNTY MD
3450 COURT HOUSE DR
ELLICOTT CITY, MD 21043

ZONING STANDARDS: R-20 ZONE

	ALLOWED / PERMITTED	PROPOSED
1. BUILDING HEIGHT (SEC. 11.4.D):	34 FT.	32 FT.
2. MINIMUM LOT SIZE:	20,000 SQ. FT.	1.17 AC. PROVIDED
3. MINIMUM STRUCTURE SETBACK:		
a. SIDE	10 FT.	20 FT.
b. REAR	30 FT.	30 FT.
c. FROM PUBLIC STREET R/W	50 FT.	75 FT.
3. MINIMUM USE SETBACK:		
a. SIDE	20 FT.	20 FT.
b. REAR	20 FT.	20 FT.
c. FROM PUBLIC STREET R/W	20 FT.	20 FT.

LEGEND

- EX. SEWER
- EX. WATER
- EX. STORM DRAIN
- PROP. SEWER
- PROP. WATER
- PROP. STORM DRAIN
- EX. CONTOURS
- PROP. CONTOURS
- EX. ELECTRIC
- EX. CURB & GUTTER
- PROP. CURB & GUTTER
- PROP. ELECTRIC
- PROP. BUILDING
- PROP. TRANSFORMER
- PROP. CONCRETE
- EX. FIBER OPTIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND TELEPHONE
- EX. OVERHEAD ELECTRIC
- PROP. FIRE HYDRANT
- EX. TELEPHONE
- 10%-25% SLOPE
- 25% SLOPE
- EX. PAVING
- SSF
- PROP. SUPER SILT FENCE
- TEMP. EARTH DIKE
- PROP. STOCKPILE AREA
- PROP. STABILIZED COAST ENTR.



ASBUILT PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285, EXPIRATION DATE: MARCH 17, 2025.

3/15/21
DATE

Todd M. Reddan, P.E.
 MARYLAND REG. NO. 17285
For Group

ASBUILT SHEET 1 OF 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director 8-2-18
 Date

Chief, Division of Land Development 8-2-18
 Date

Chief, Development Engineering Division 7-24-18
 Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3809 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20886
TEL 301-421-4024 BALT. 410-880-1820 DC/VA 301-888-2524 FAX 301-421-4186

L:\COMP\DWG\DWG\PLANS BY DWG\SDP\1808-SDP-01-CoverSheet.dwg DES. EWM DRN. EWM CHK. TMR

PREPARED FOR:
OWNER:
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
9250 BENDIX ROAD
COLUMBIA, MD 21045
(410)-313-2040

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285, EXPIRATION DATE: MARCH 17, 2025.

3-15-21

ASBUILT SITE DEVELOPMENT COVER SHEET

CEDAR LANE WATER PUMPING STATION
LOT 1 BLOCK B

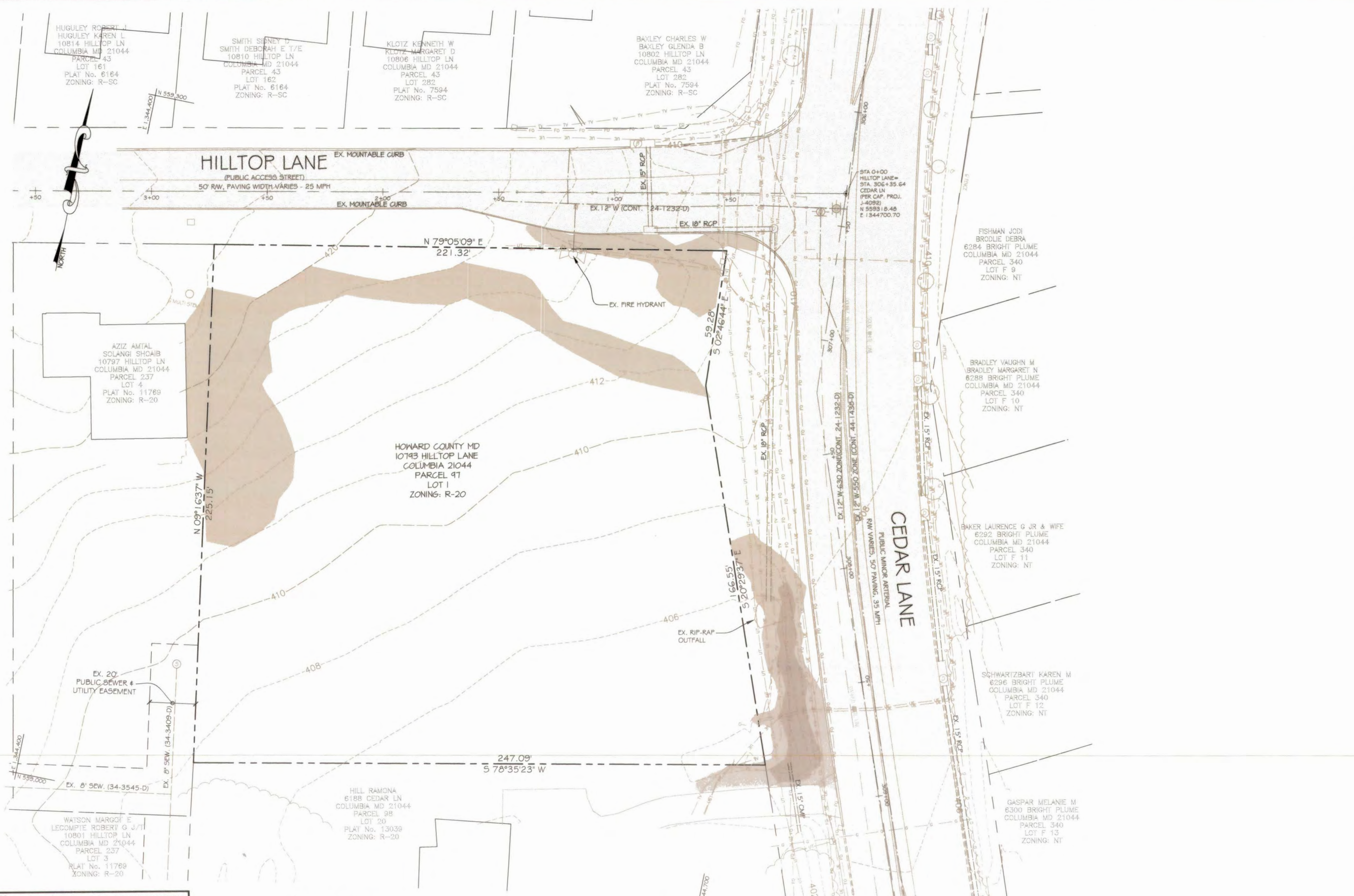
ELECTION DISTRICT No. 05

HOWARD COUNTY, MARYLAND

SCALE	ZONING	C. L. W. FILE NO.
AS SHOWN	R-20	16018
DATE	TAX MAP - GRID	SHEET
MARCH 2021 JUNE 2018	35-11	1 OF 12

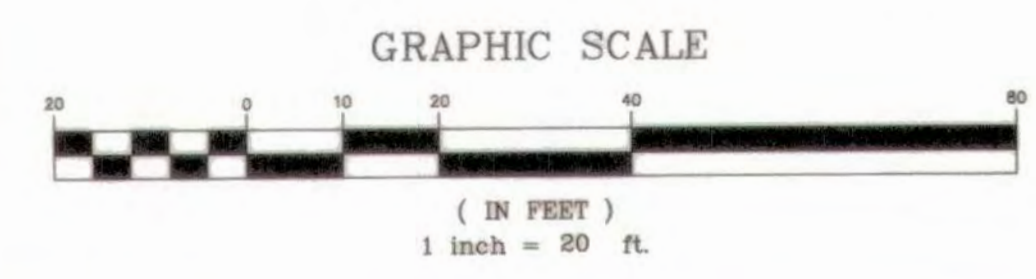
LEGEND

- EX. SEWER
- EX. WATER
- EX. STORM DRAIN
- EX. CONTOURS
- EX. CURB & GUTTER
- EX. FIBER OPTIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND TELEPHONE
- EX. OVERHEAD ELECTRIC
- 10%-25% SLOPE
- +25% SLOPE
- EX. PAVING



NO ASBUILT INFORMATION
3/18/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
N. Williams 8-2-18
 Director Date
Kent St. Louis 8-2-18
 Chief, Division of Land Development Date
Chad 7-24-18
 Chief, Development Engineering Division Date



GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.

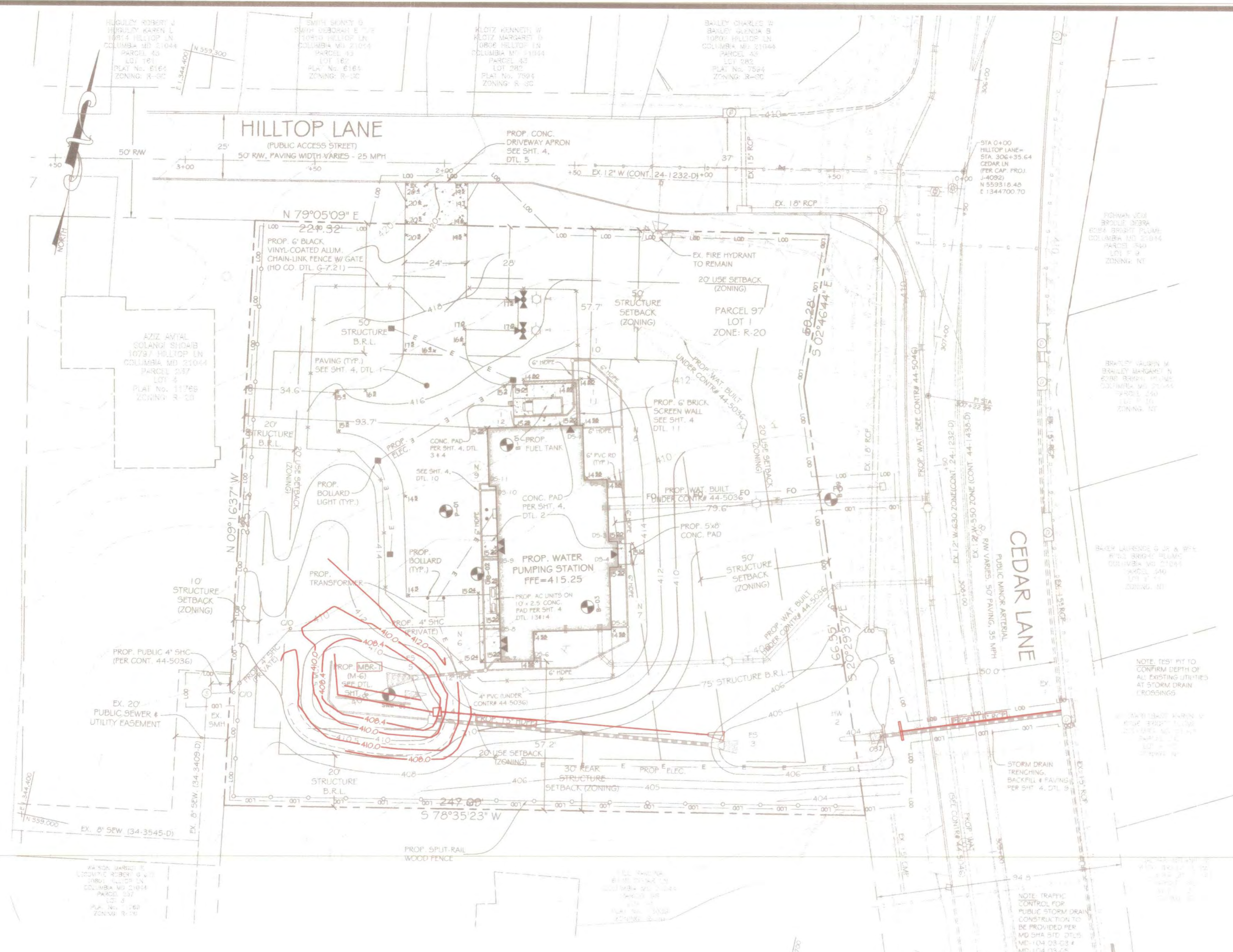
PREPARED FOR:
 OWNER:
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 9250 BENDIX ROAD
 COLUMBIA, MD 21045
 (410)-313-2040

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 17283 EXPIRATION DATE: MARCH 11, 2018

EXISTING CONDITIONS PLAN
CEDAR LANE WATER PUMPING STATION
 LOT 1 BLOCK B
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=20'	R-20	16018
DATE	TAX MAP - GRID	SHEET
JUNE 2018	35-11	2 OF 12

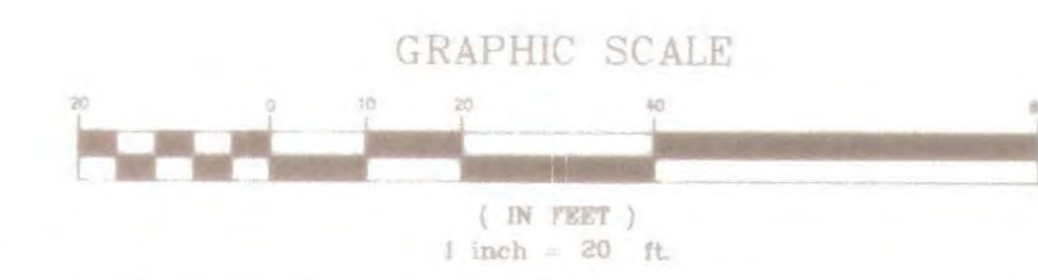
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L:\CADD\DRAWINGS\NEW\PLANS BY CLW\SDP\16018-SDP-03-SitePlan.dwg
 PLOTTED: 6/29/2018 3:30 PM, LAST SAVED: 6/29/2018 3:19 PM, PLOTTED BY: Even Mitchell

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Nathan Zeff 8-2-18
 Director Date
Walter D. ... 8-2-18
 Chief, Division of Land Development Date
Chad ... 7-24-18
 Chief, Development Engineering Division Date

GLW GUTSCHICK LITTLE & WEBER, P.A.
 C.E. ENGINEERS, LAND SURVEYORS, AND PLANNERS, LANDSCAPE ARCHITECTS
 1809 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 FAX: 301-421-4186



DATE	REVISION	BY	APPR.

PREPARED FOR:
 OWNER:
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 9250 BENDIX ROAD
 COLUMBIA, MD 21045
 (410)-313-2040

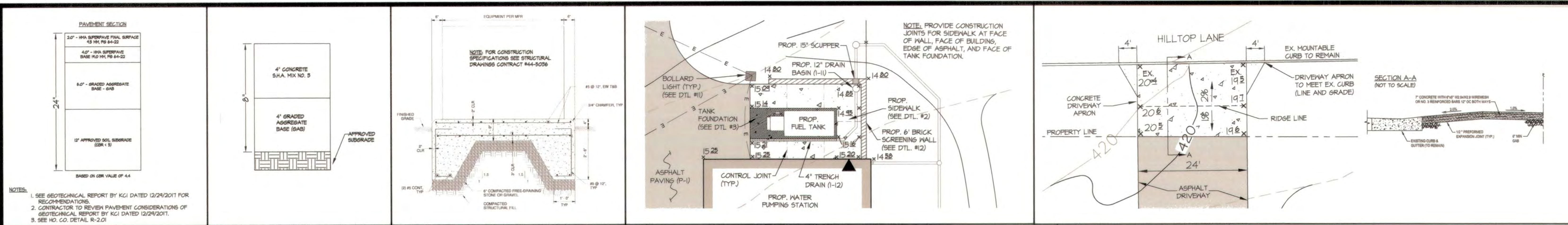
PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285, EXPIRATION DATE: MARCH 17, 2021.

ASBUILT SITE DEVELOPMENT PLAN
CEDAR LANE WATER PUMPING STATION
LOT 1 BLOCK B
 ELECTION DISTRICT No. 05
 HOWARD COUNTY, MARYLAND

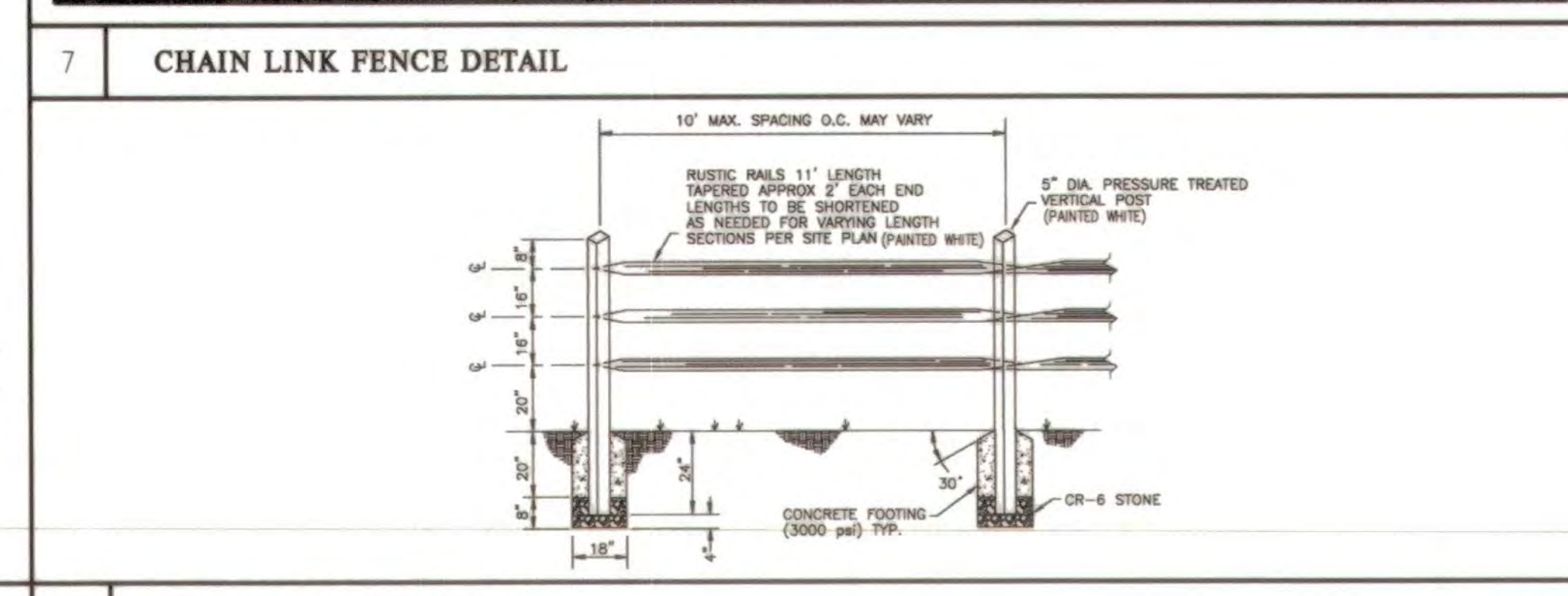
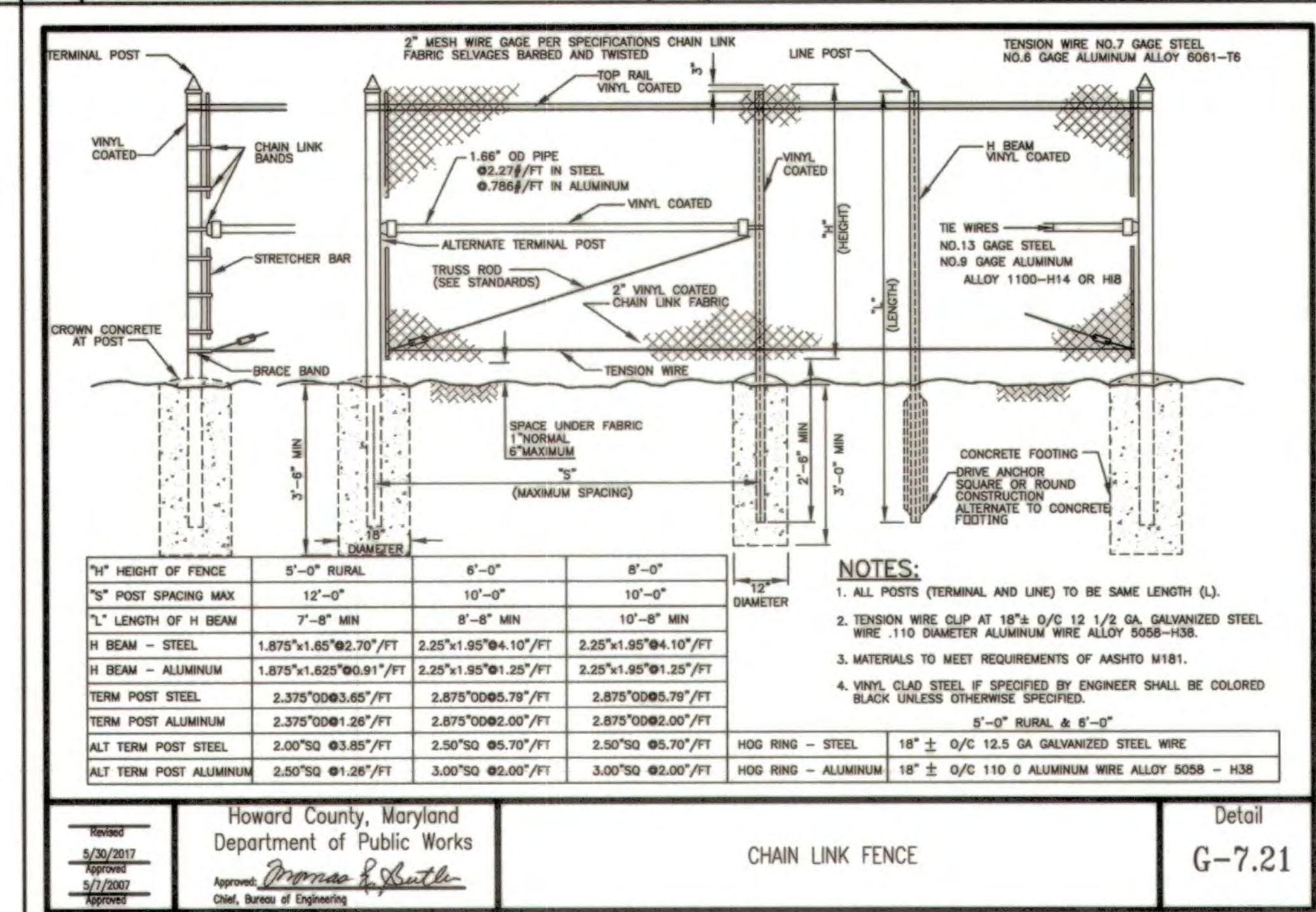
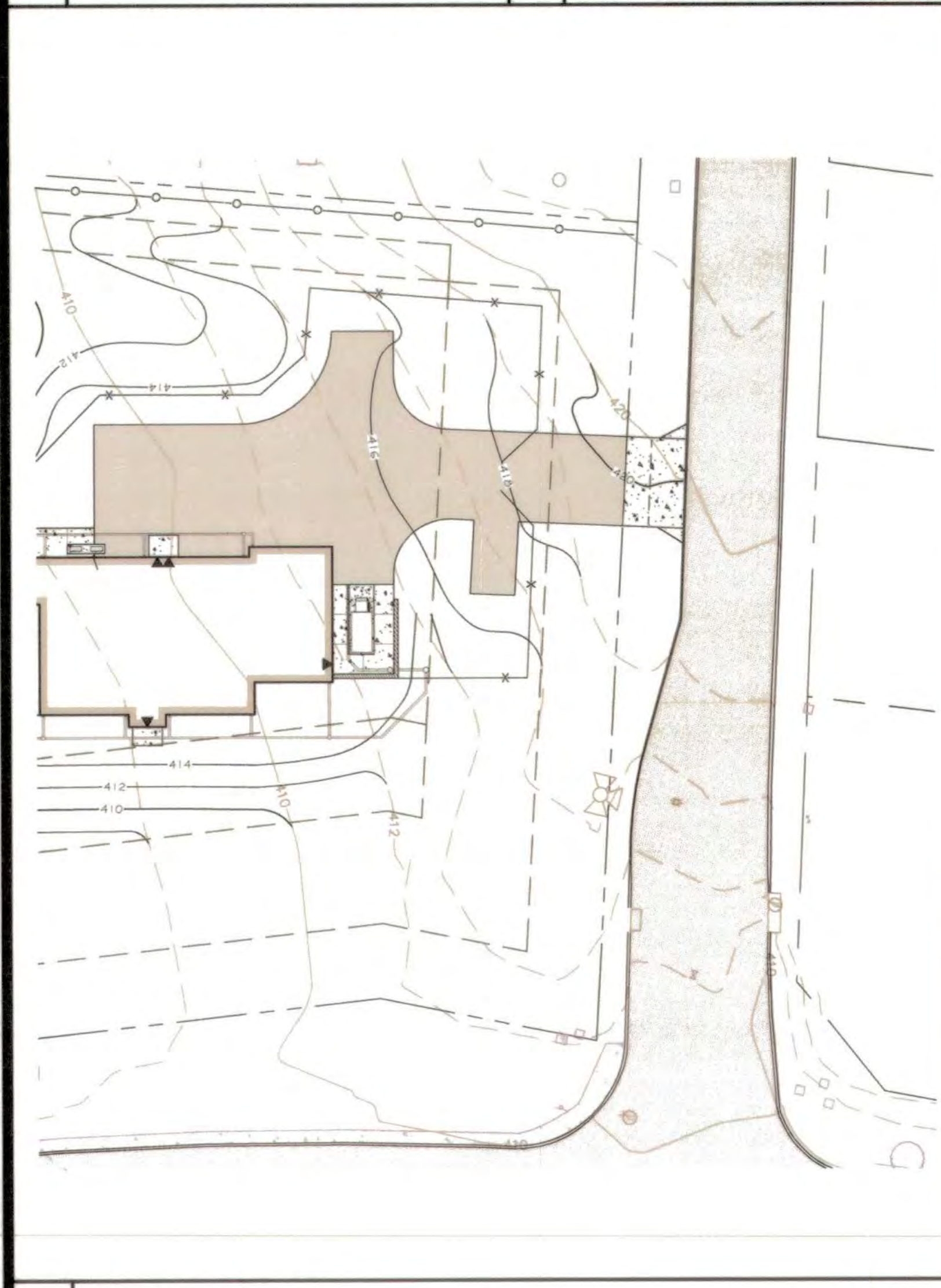
SCALE	ZONING	G. L. W. FILE NO.
1"=20'	R-20	16018
DATE	TAX MAP - GRID	SHEET
MARCH 2021 JUNE 2018	35-11	3 OF 12

ASBUILT PROFESSIONAL CERTIFICATION
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3/18/21
 DATE
 TODD M. REDDAN, P.E.
 MARYLAND REG. NO. 17285
Todd Reddan
FOR GUYRA

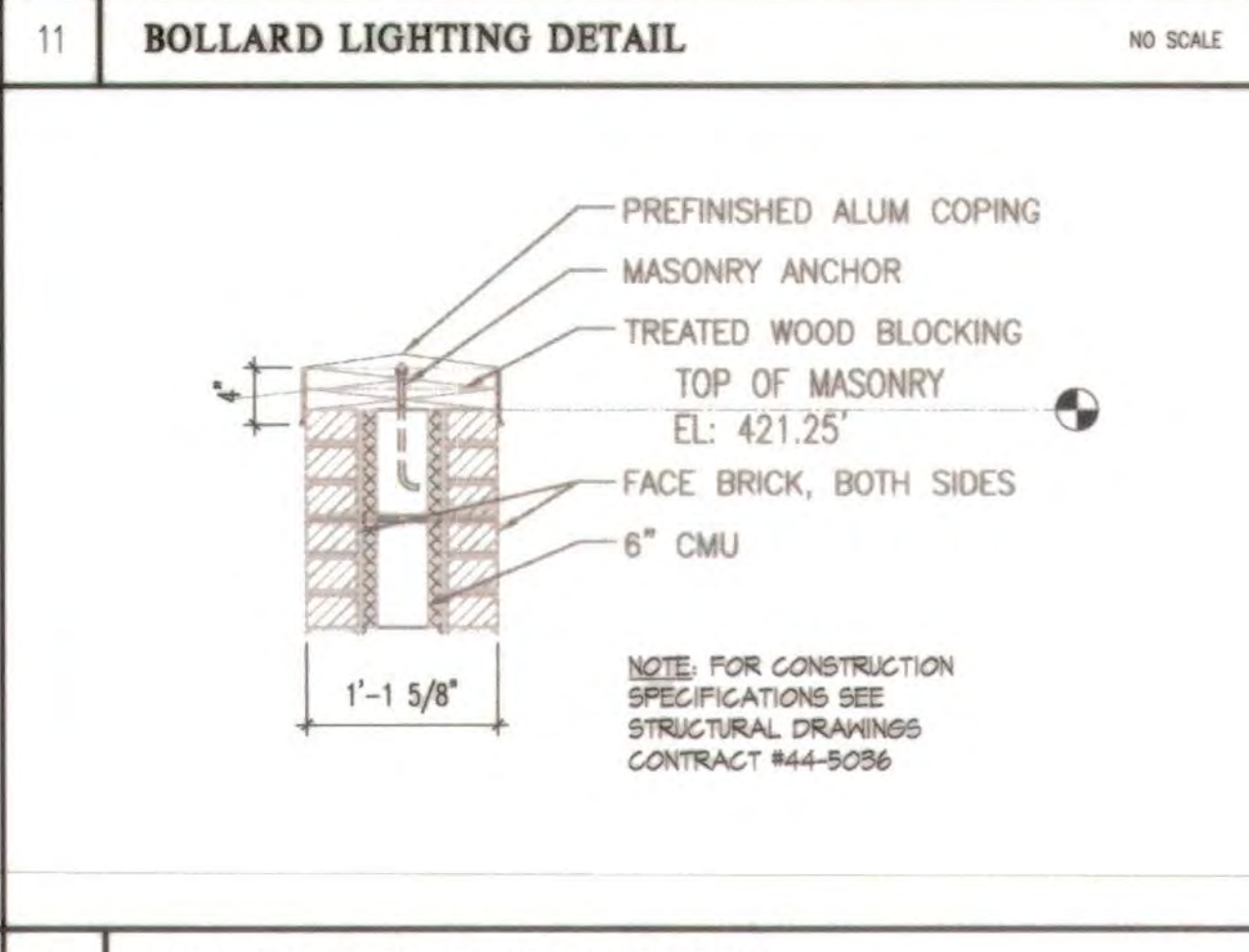
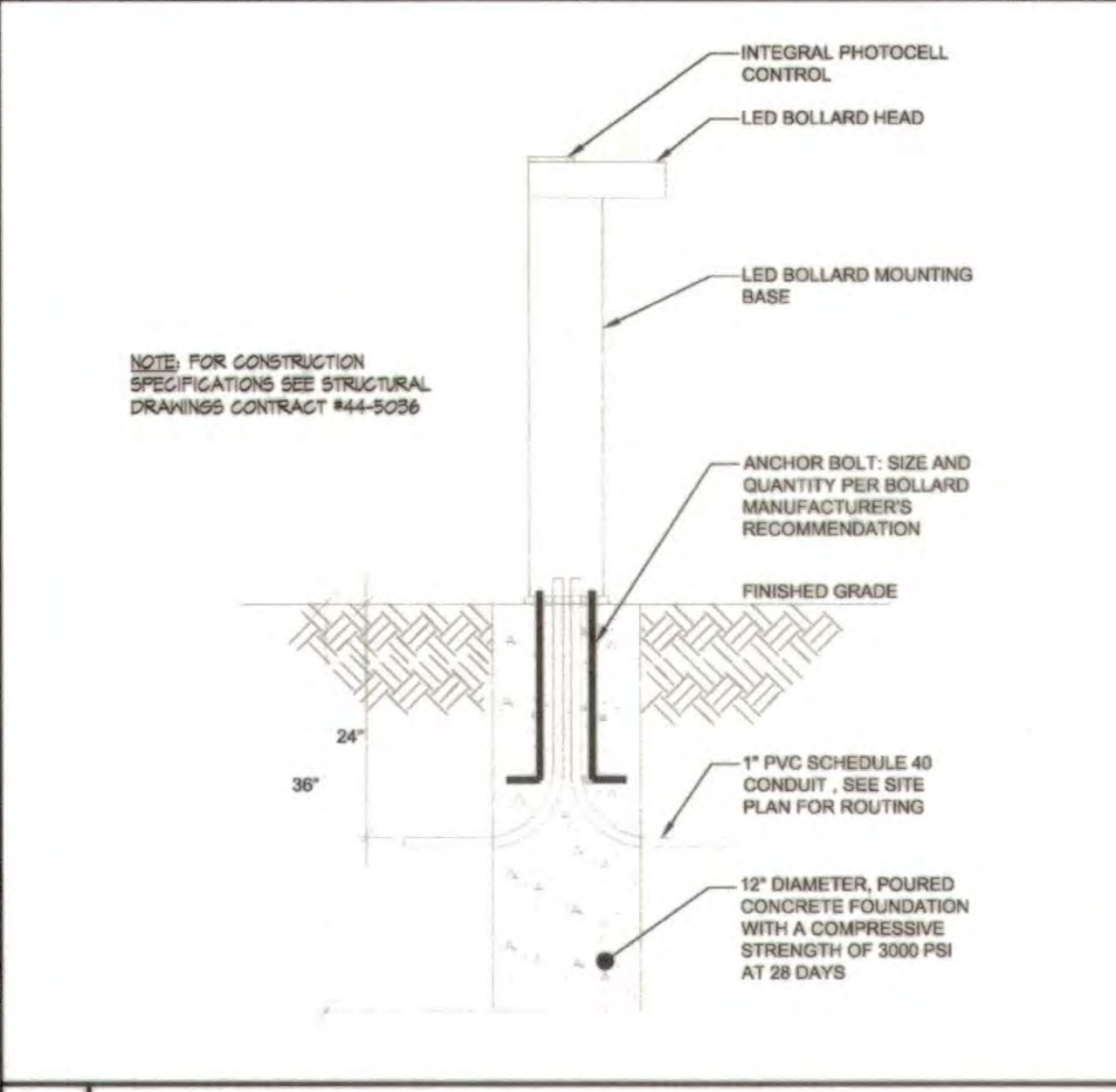
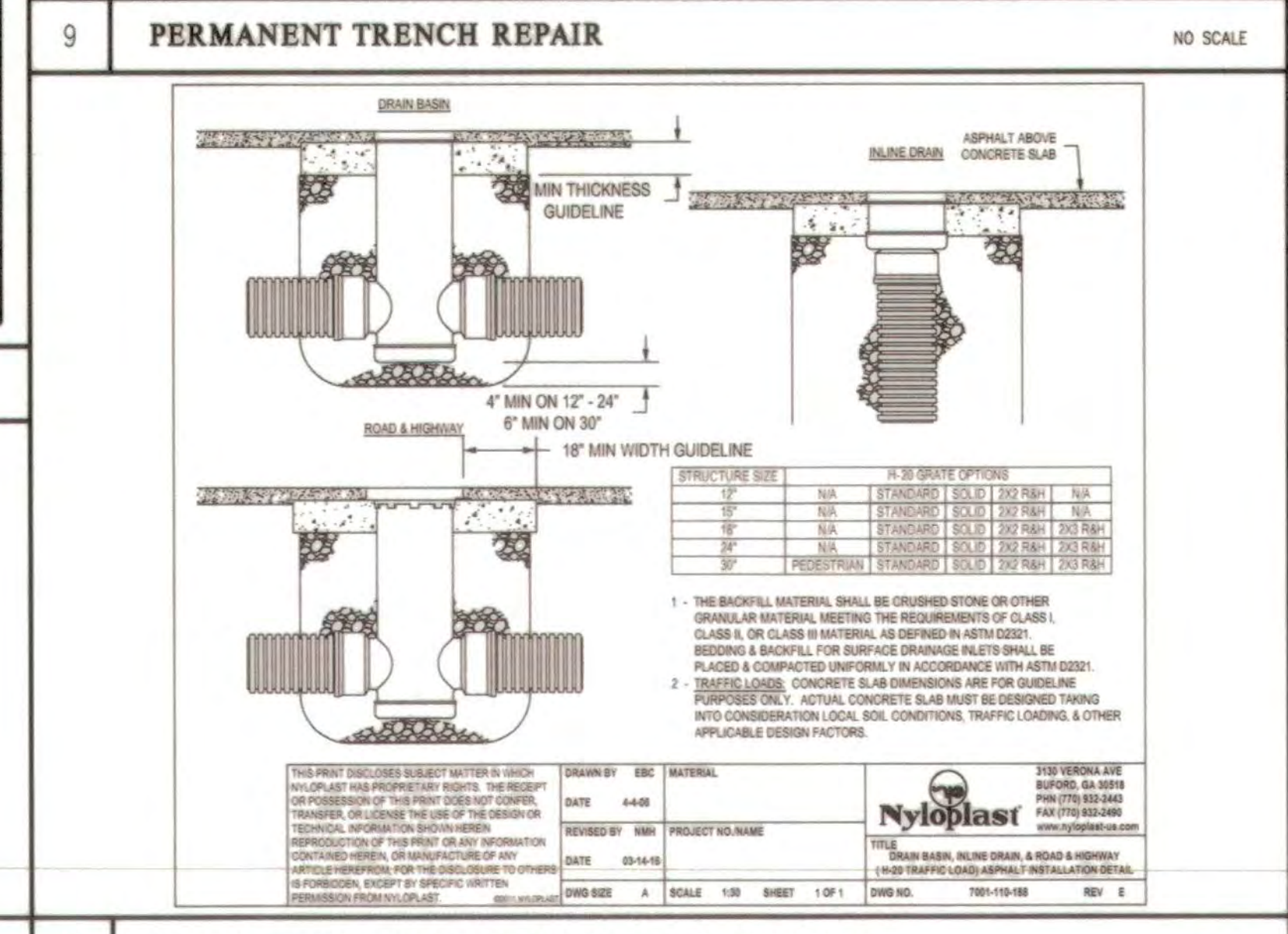
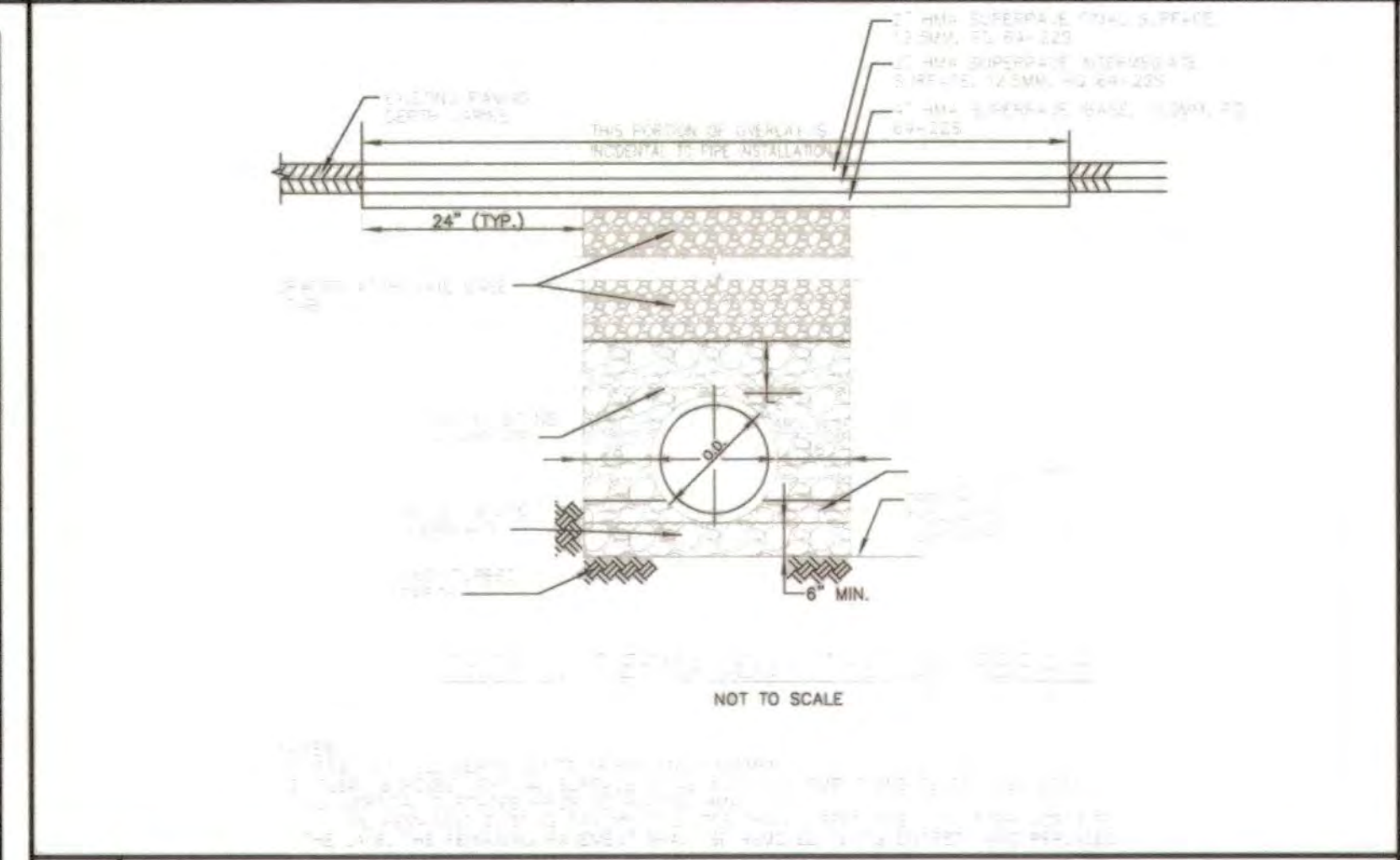


1 BITUMINOUS PAVING SECTION NO SCALE 2 CONCRETE PAVING SECTION NO SCALE 3 FUEL TANK FOUNDATION NO SCALE 4 FUEL TANK AREA DETAIL SCALE: 1" = 10' 5 CONCRETE DRIVEWAY APRON DETAIL SCALE: 1" = 10'



6 FIRE ACCESS PLAN SCALE: 1" = 30'

7 CHAIN LINK FENCE DETAIL NO SCALE



8 SPLIT-RAIL FENCE DETAIL NO SCALE

9 PERMANENT TRENCH REPAIR NO SCALE

10 DRAIN BASIN - ASPHALT INSTALLATION DETAIL NO SCALE

11 BOLLARD LIGHTING DETAIL NO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[Signature] 8-2-18
 Director Date

[Signature] 8-02-18
 Chief, Division of Land Development Date

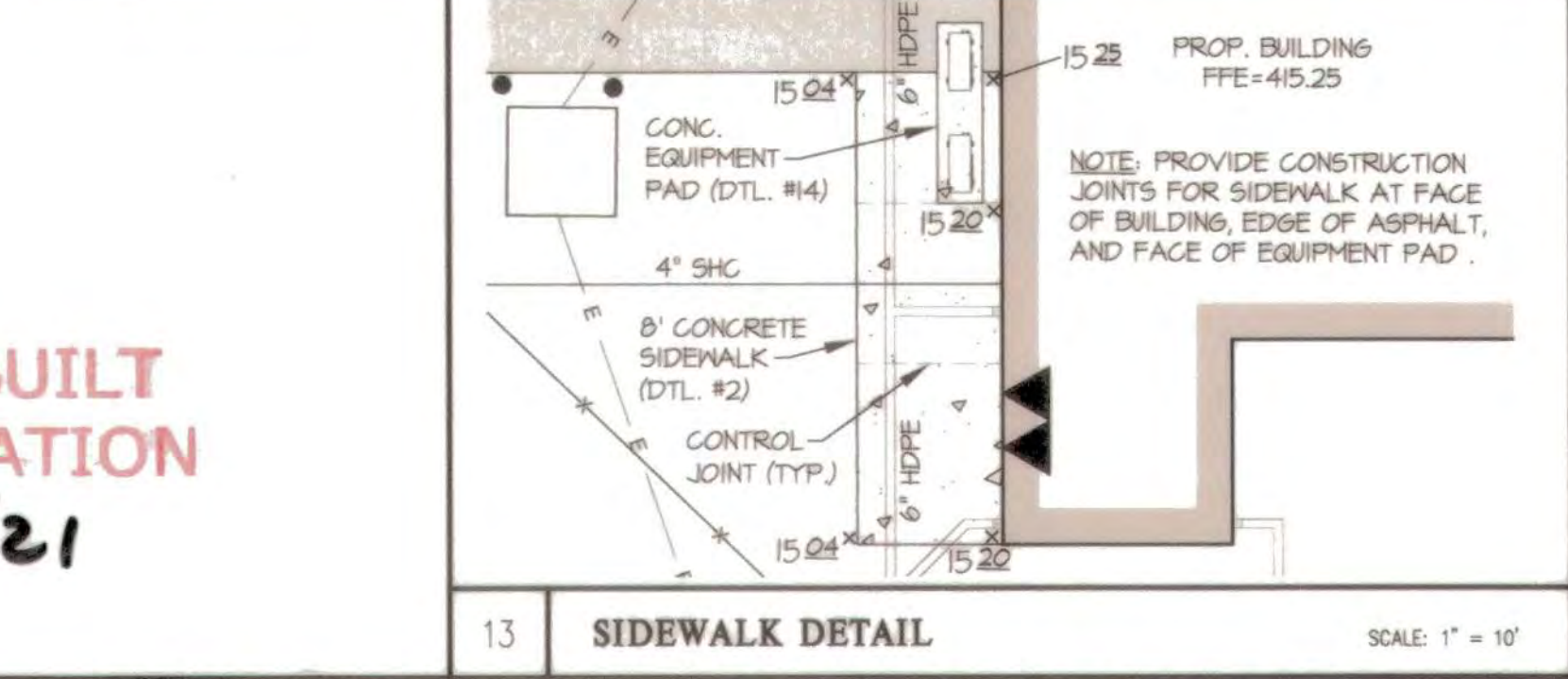
[Signature] 7-24-18
 Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
 BURTNSVILLE, MARYLAND 20866
 TEL: 301-421-4024 FAX: 301-880-1820 DC/VA: 301-880-2524 FAX: 301-421-4188

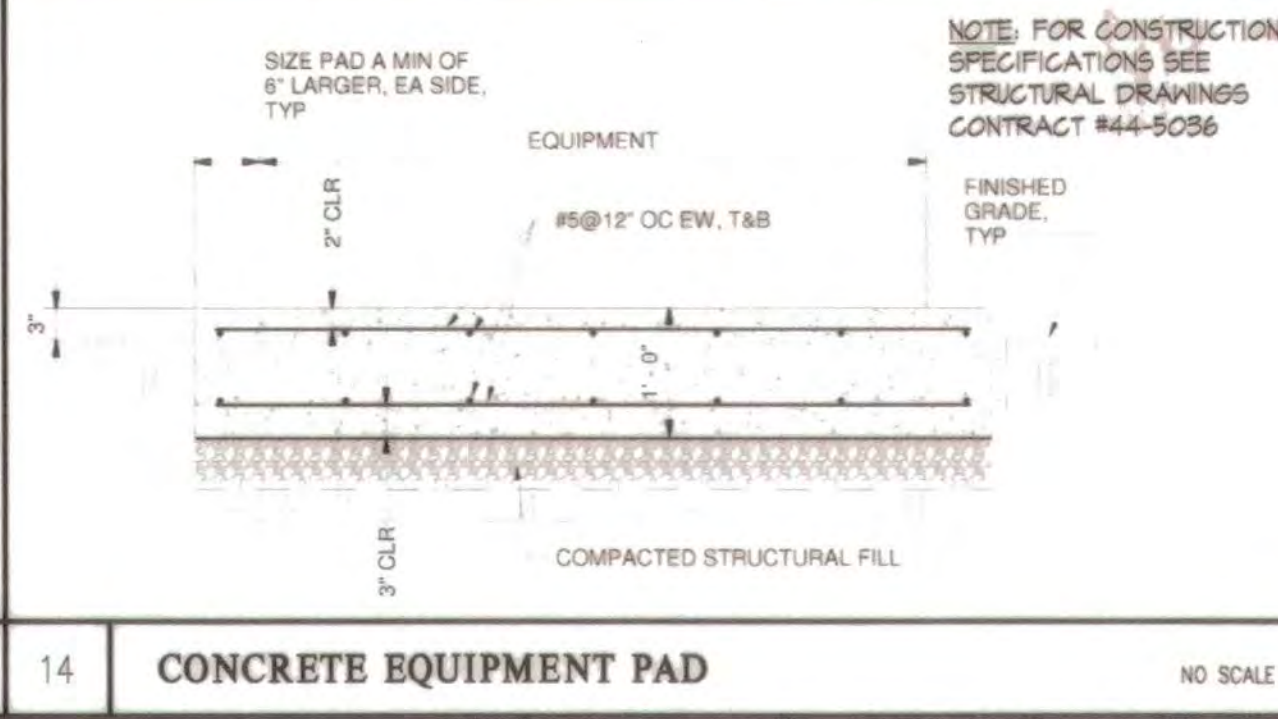
NO ASBUILT INFORMATION
 3/18/21

PREPARED FOR:
 OWNER:
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 9250 BENDIX ROAD
 COLUMBIA, MD 21045
 (410)-313-2040

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 EXPIRATION DATE: MARCH 31, 2028



SITE DEVELOPMENT PLAN DETAILS
CEDAR LANE WATER PUMPING STATION
 LOT 1 BLOCK B



SCALE: 1" = 20'

ZONING: R-20

G. L. W. FILE No.: 16018

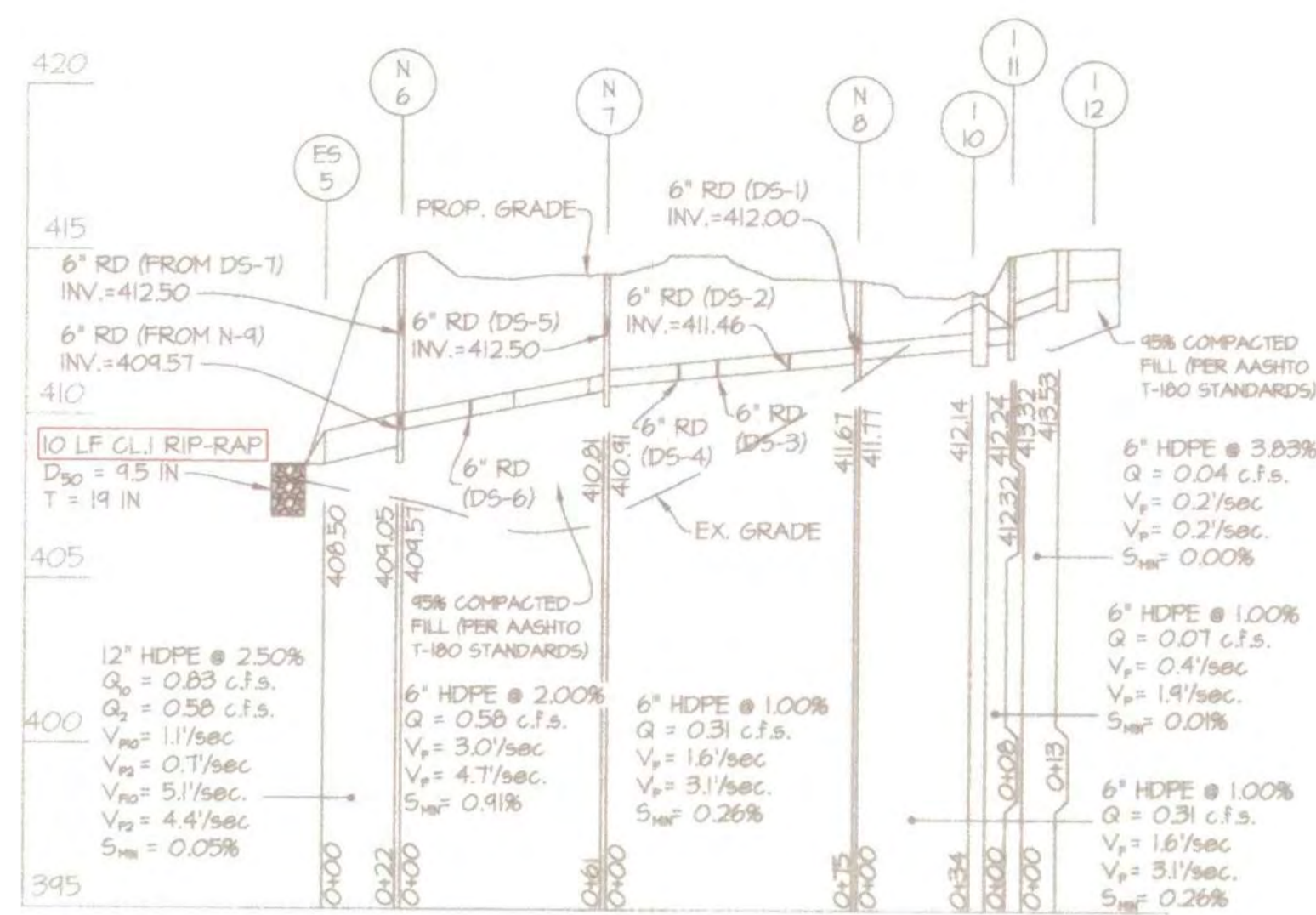
DATE: JUNE 2018

TAX MAP - GRID: 35-11

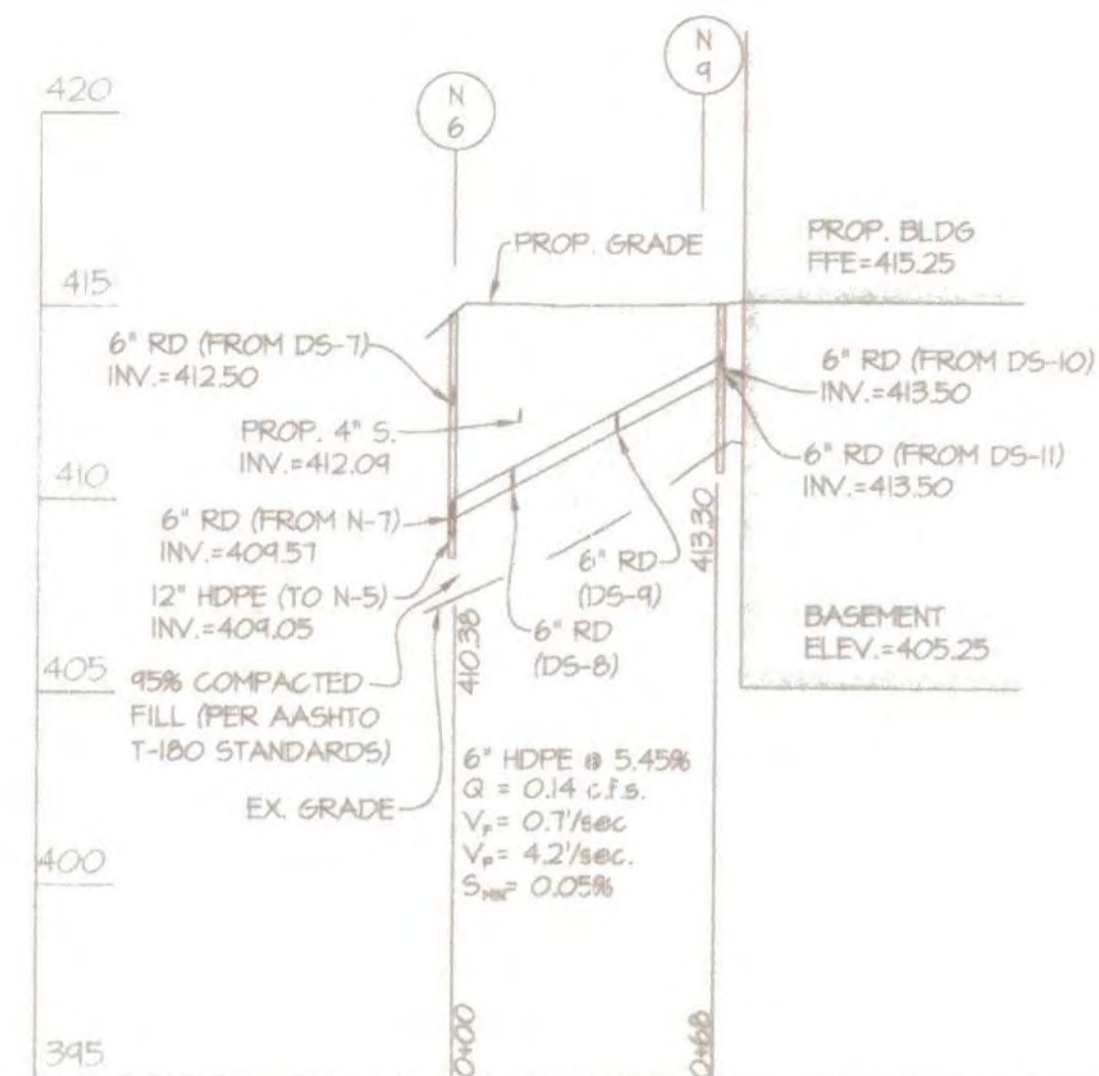
SHEET: 4 OF 12

HOWARD COUNTY, MARYLAND

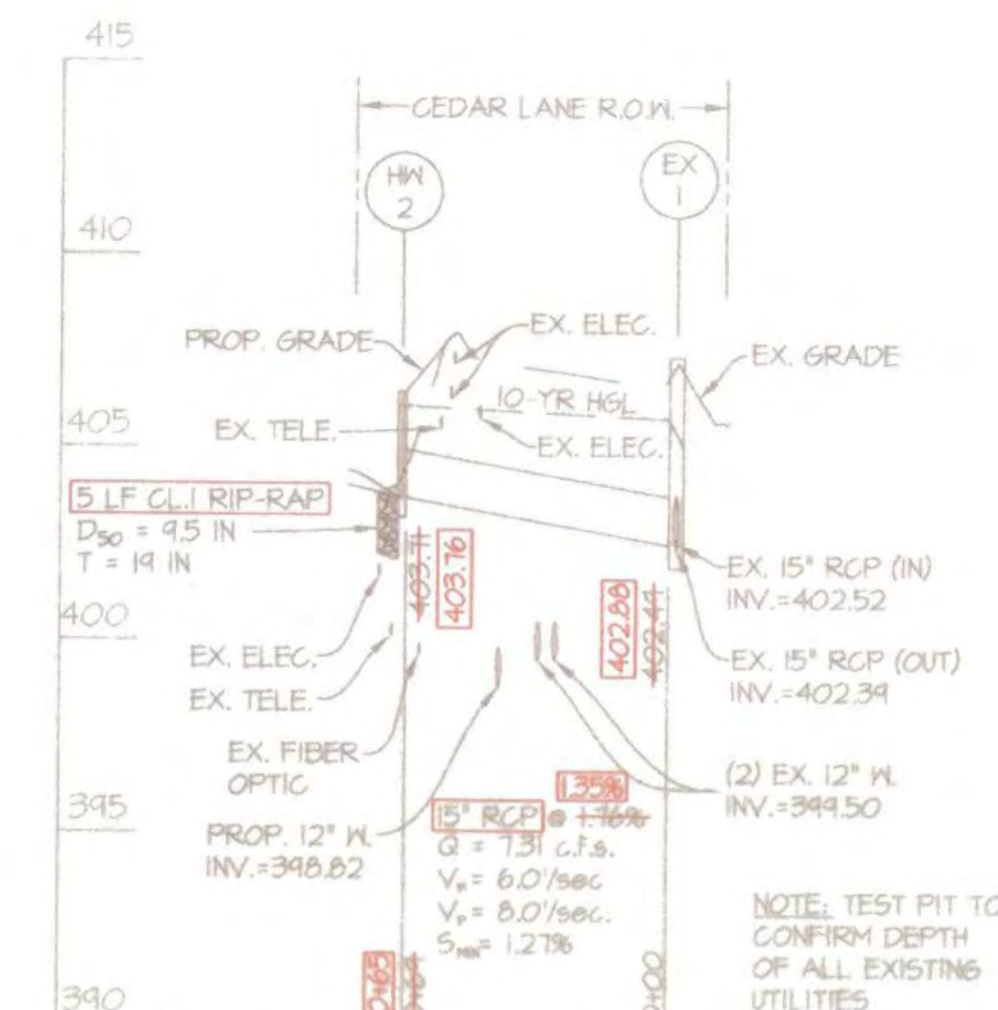
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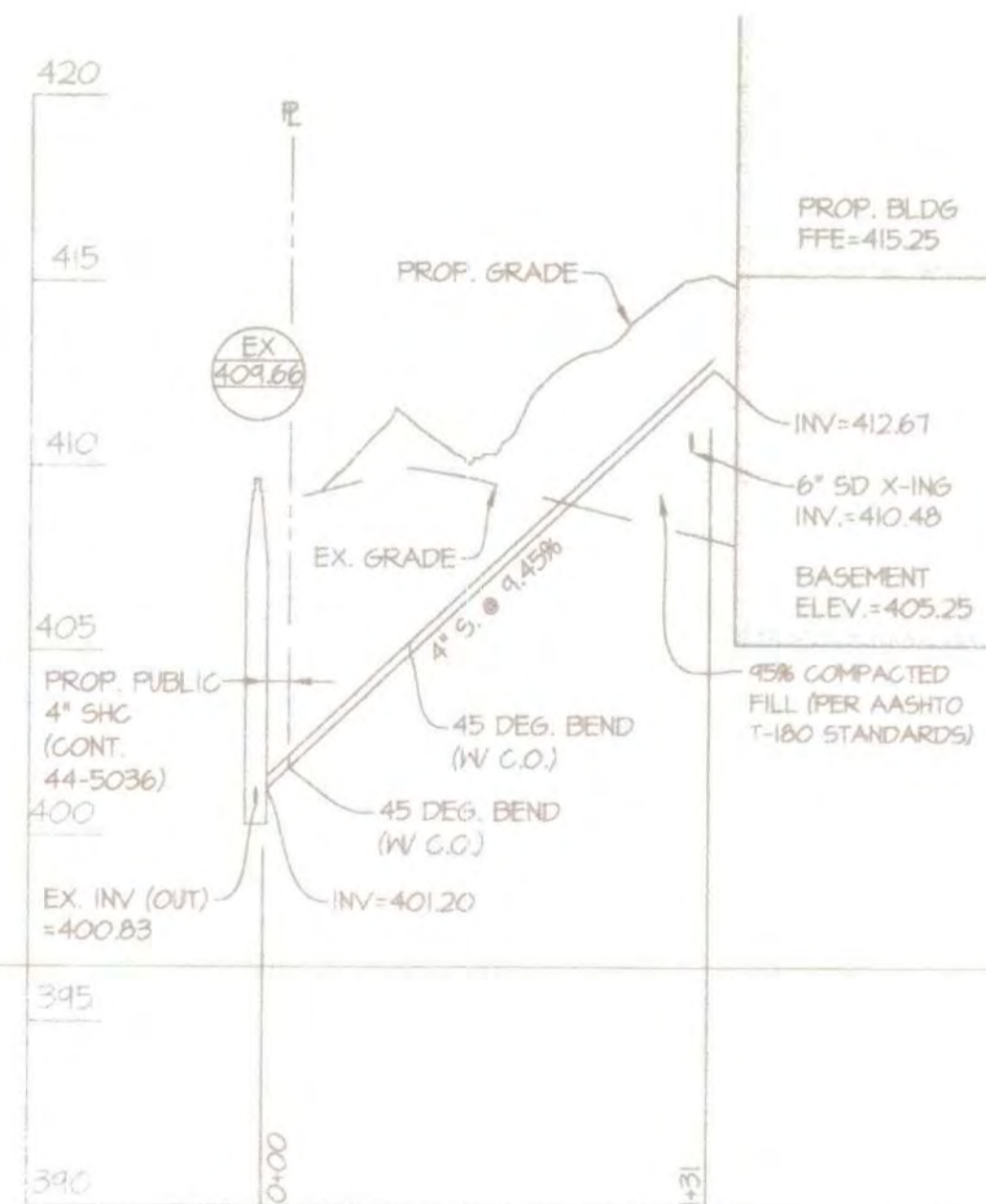
PRIVATE ROOF DRAIN PROFILES
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



PRIVATE STORM DRAIN PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



PUBLIC STORM DRAIN PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



PRIVATE SEWER PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)

PIPE SCHEDULE			
SIZE	TYPE	QUANTITY (LF)	REMARKS
6"	PVC	81	SLOTTED
6"	HDPE	323	
12"	HDPE	22	
15"	HDPE	105	
15"	RCP	64	CLASS IV

HDPE INDICATES HIGH DENSITY POLYETHYLENE PIPE, SUCH AS N-12 BY ADS, OR H-G BY HANGOR OR AN APPROVED EQUAL. ALL RCP PIPE IS TO BE CLASS IV. TRENCH BEDDING TO BE PROVIDED PER HOWARD COUNTY DETAIL 6 211 & 6 212 RESPECTIVELY.

ITEMS	PRIVATE WATER / SEWER QUANTITIES				AS-BUILT
	ESTIMATED QUANTITIES	QUANTITIES	TYPE	MANUFACTURER/SUPPLIER	
4" SEWER PVC SDR 35	131 LF				

NO.	TYPE	WIDTH (INSIDE)	TOP ELEVATION				INVERT				STD. DETAIL	LOCATION	REMARKS
			PROPOSED		AS-BUILT		PROPOSED		AS-BUILT				
			UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER			
HN-2	HEADWALL	15'	405.71	405.71	405.76	405.76	405.71	---	405.76	405.76	HO. CO. D-52	SEE SHEET C-202	

NO.	TYPE	WIDTH (INSIDE)	TOP ELEVATION				INVERT				STD. DETAIL	LOCATION	REMARKS
			PROPOSED		AS-BUILT		PROPOSED		AS-BUILT				
			UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER			
ES-3	HDPE END SECTION	15'	405.45	---	405.74	405.74	404.76	---	404.44	404.44	PER MANUFACTURER	SEE SHEET C-202	
I-4	YARD INLET	5'10"	404.50	---	409.20	409.20	405.42	405.42	405.33	405.33	HO. CO. D-412	SEE SHEET C-202	
ES-5	HDPE END SECTION	12'	404.50	---	409.40	409.40	408.50	---	408.40	408.40	PER MANUFACTURER	SEE SHEET C-202	
N-6	NYLOPLAST DRAIN BASIN	18"	414.80*	---	---	---	412.50	409.05	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	SOLID GRATE
N-7	NYLOPLAST DRAIN BASIN	12"	414.31*	---	---	---	412.50	410.81	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	SOLID GRATE
N-8	NYLOPLAST DRAIN BASIN	12"	414.15*	---	---	---	412.00	411.61	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	SOLID GRATE
N-4	NYLOPLAST DRAIN BASIN	12"	415.10*	---	---	---	413.50	413.30	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	SOLID GRATE
I-10	NYLOPLAST DRAIN BASIN	18"	413.50*	---	---	---	412.24	412.14	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	SOLID GRATE
I-11	NYLOPLAST DRAIN BASIN	12"	414.41*	---	---	---	413.32	412.32	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	DOMED GRATE
I-12	TRENCH DRAIN	4"	415.21*	415.16*	---	---	413.53	---	---	---	NYLOPLAST DRAIN	SEE SHEET C-202	STANDARD GRATE

* ELEV. = GRATE ELEV.

AS-BUILT PROFESSIONAL CERTIFICATION

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3.18.21
DATE
TODD M. REDDAN, P.E.
MARYLAND REG. NO. 17285
for GLWPA

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Director
Chief, Division of Land Development
Chief, Development Engineering Division

GLW GUTSCHICK LITTLE & WEBER, PA.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE, SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20886
TEL 301-421-4024 BALT. 410-880-1820 DC/VA 301-989-2524 FAX 301-421-4186

DES. E.W.M. DRN. E.W.M. CHK. T.M.R.
DATE REVISION BY APPR.

PREPARED FOR:
OWNER:
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
9250 BENDIX ROAD
COLUMBIA, MD 21045
(410)-313-2040

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AS-BUILT UTILITY PROFILES
CEDAR LANE WATER PUMPING STATION
LOT 1 BLOCK B
ELECTION DISTRICT No. 05

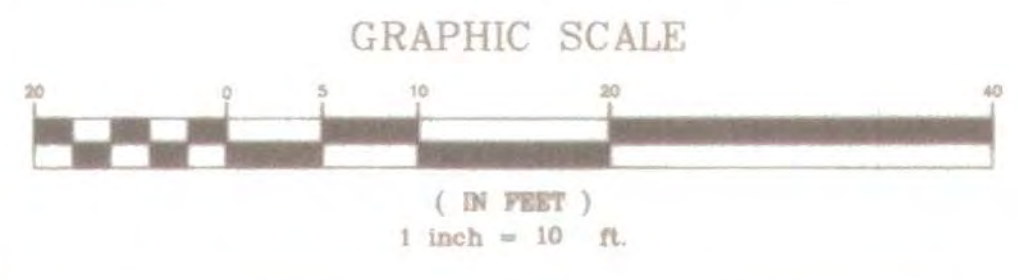
SCALE	ZONING	G. I. W. FILE No.
AS SHOWN	R-20	16018
DATE	TAX MAP - GRID	SHEET
MARCH 2021 JUNE 2018	35-11	5 OF 12

GENERAL NOTES

- MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B4.1.
- PLANTING SOIL**
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.02.02.
- PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:**
 - SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (SUA SOIL TEXTURAL CLASSIFICATION)
 - ORGANIC CONTENT - MINIMUM 1.0% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (80%-85%) AND COMPOST (20% TO 40%) OR SANDY LOAM (50%), COARSE SAND (30%), AND COMPOST (40%).
 - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
 - PH RANGE - SHOULD BE BETWEEN 6.5 - 7.0. AMENDMENTS (E.G. LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.
- COMPACTION**
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF-TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
- ROTTILLING**
ROTTILLING CAN BE ALLEVATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL, FLOR, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
- PLANT MATERIAL**
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. FINE MULCH AND HOOD GRIPS WILL FLOAT AND MOVE TO THE PERIPHERY OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.
- ROOTSTOCK**
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT SHALL BE PLANTED SO THAT IT IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.
- TREES**
TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.
- GRASSES AND LEGUME SEED**
GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.
- THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, LEVELS, OR AT A MINIMUM SPEEDS THIS GOAL. ONLY ADD FERTILIZERS IF HOOD GRIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.**
- UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:**
 - PIPE - SHOULD BE 4" DIAMETER SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 282, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
 - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 5/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 3" (NO. 4 OR 6) GALVANIZED HARDWARE CLOTH.
 - GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
 - THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
 - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 10000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
 - A 4" LAYER OF #57 GRAVEL (SUB TO #58) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
- THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED ONE PER EVERY 1000 SQUARE FEET OF SURFACE AREA.**
- MISCELLANEOUS**
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A-4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.
- THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE UNDERDRAINS WITHIN THE BIO-RETENTION LAYERS.
- THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STORM DRAIN PIPES AND STRUCTURES.



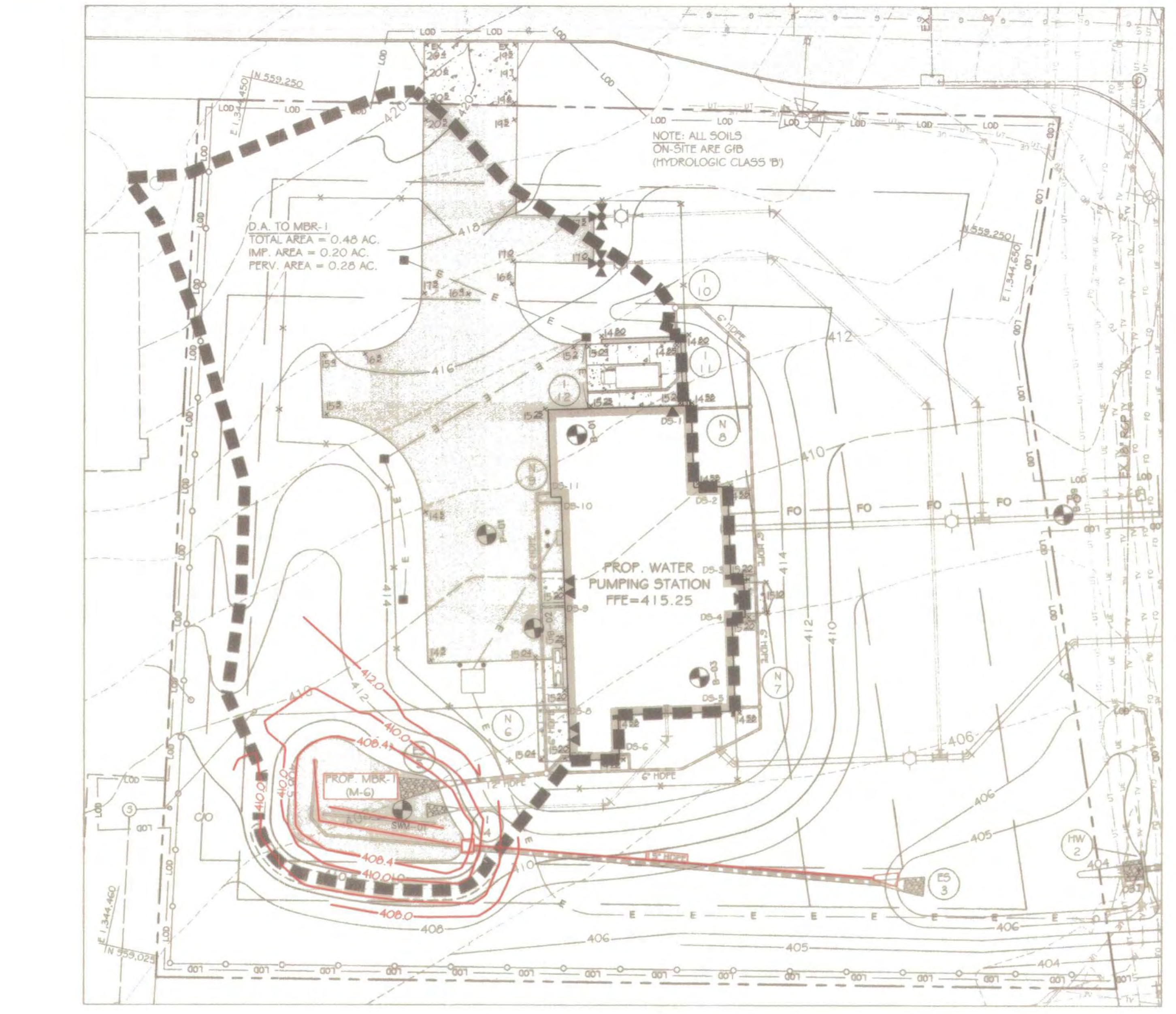
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Valerie J. Jolin 8-2-18
Director Date

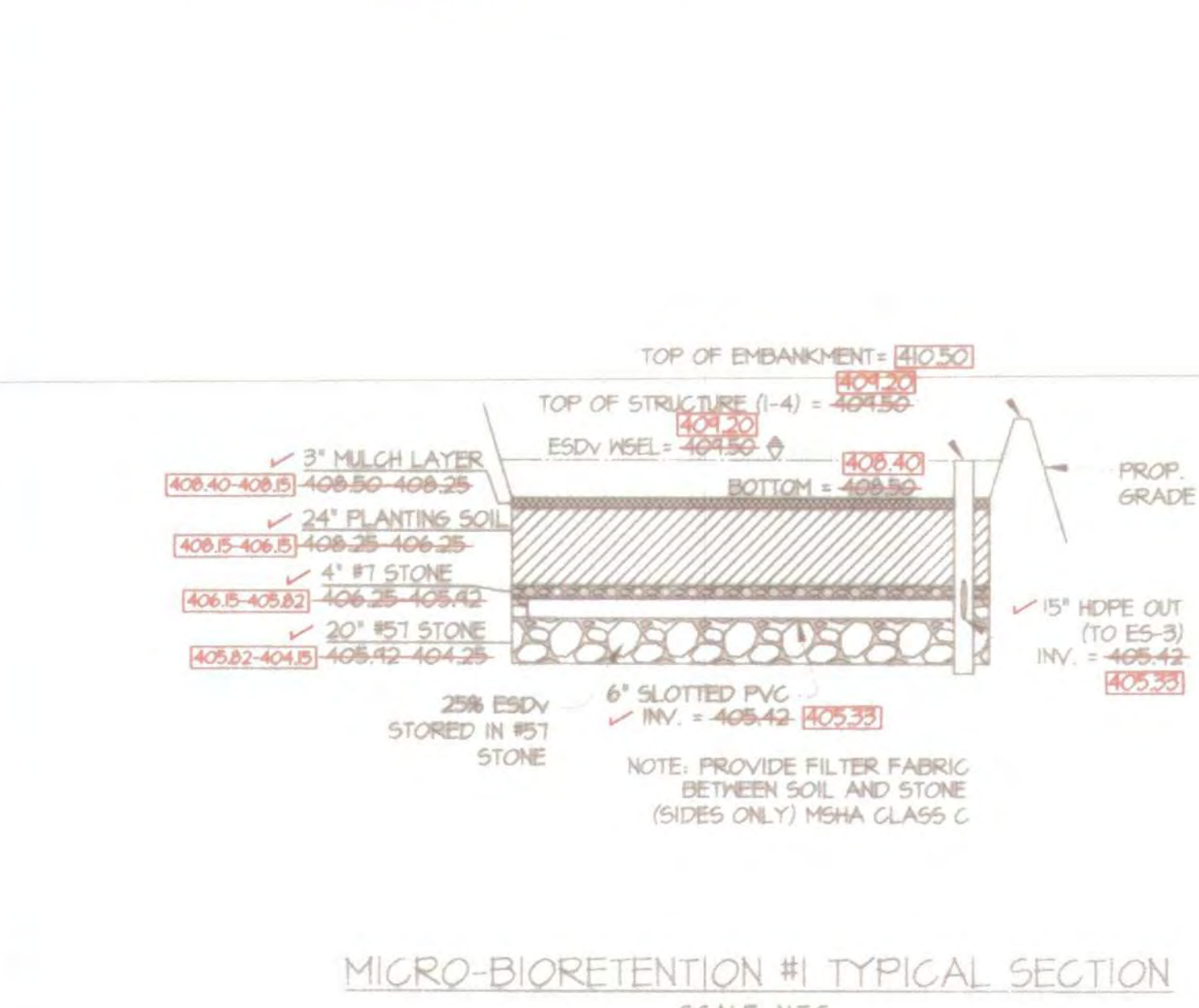
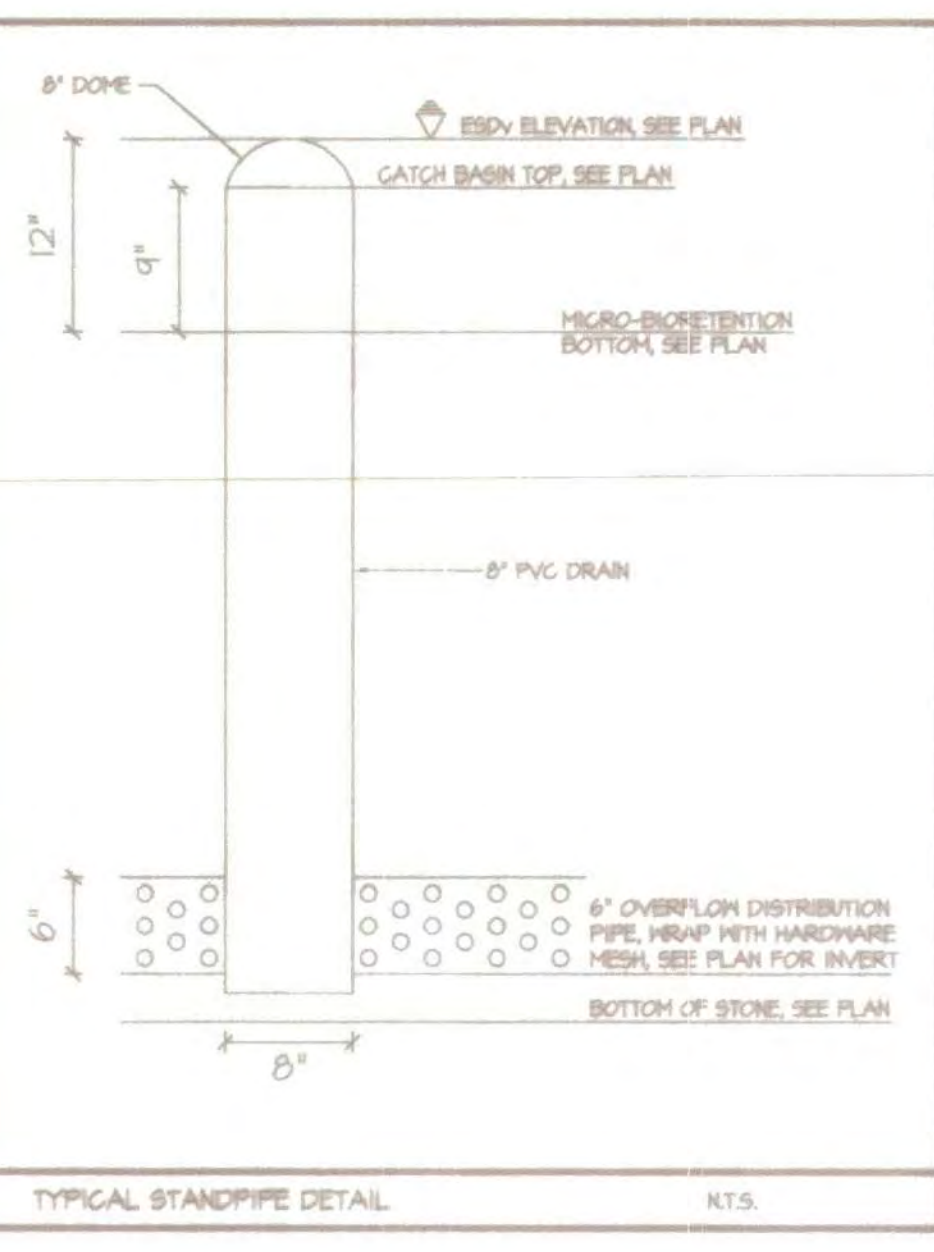
Kevin Sullivan 8-02-18
Chief, Division of Land Development Date

Michael J. ... 7-24-18
Chief, Development Engineering Division Date

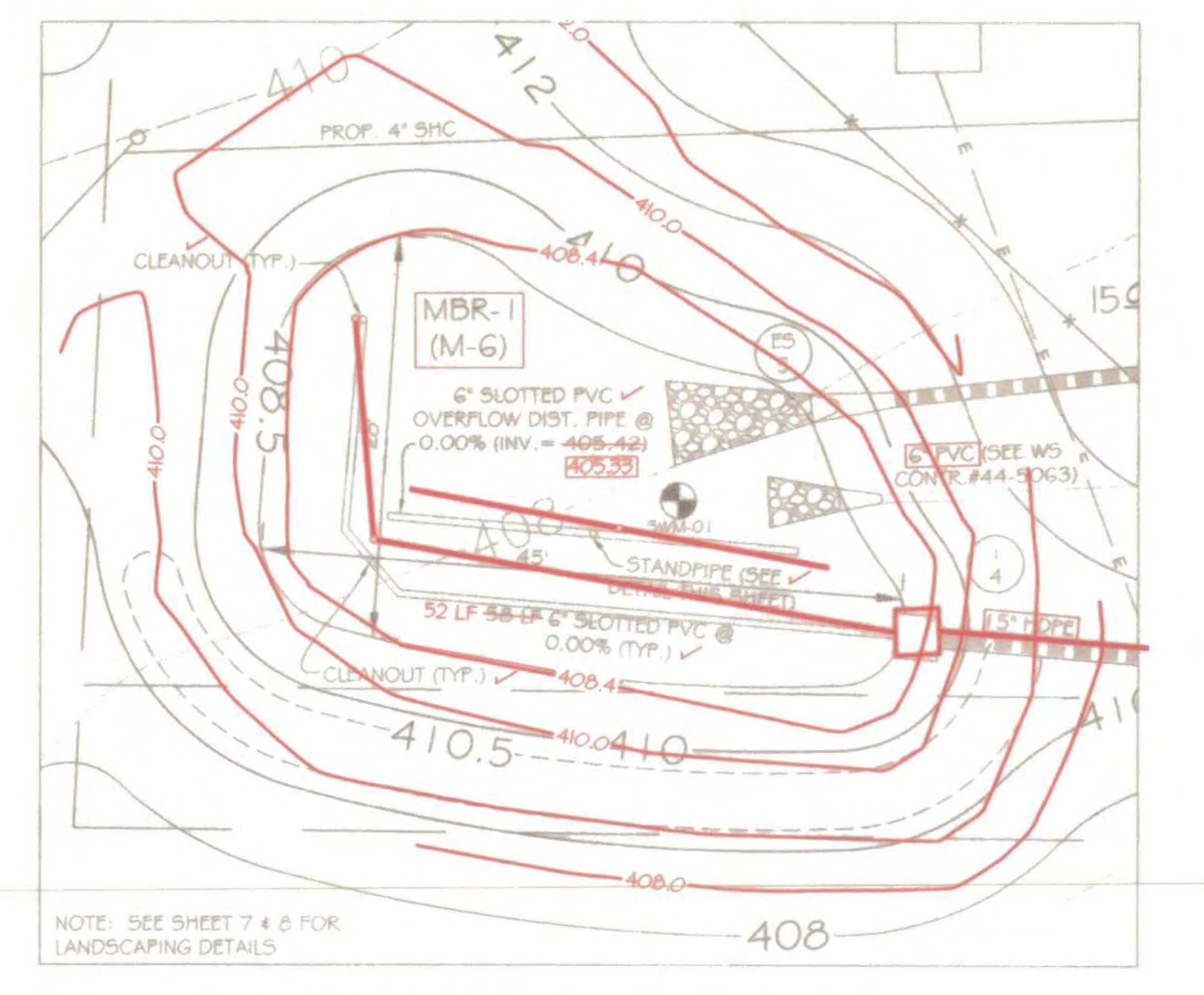
GLWGUTSCHICK LITTLE & WEBER, P.A.
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3909 NATIONAL DRIVE - SUITE 250 - BURTONTVILLE OFFICE PARK
BURTONTVILLE, MARYLAND 20898
TEL: 301-421-4824 FAX: 301-989-2524 FAX 301-421-4186



ESD DRAINAGE AREA MAP
SCALE: 1"=20'



MICRO-BIORETENTION #1 TYPICAL SECTION
SCALE: N.T.S.



MICRO-BIORETENTION #1 DETAIL
SCALE: 1" = 10'

STORMWATER MANAGEMENT SUMMARY TABLE						
FACILITY NO.	DRAINAGE AREA (S.F.)	MIN. ESDV (C.F.)	MAX. ESDV (C.F.)	ESDV PROVIDED (C.F.)	Rev. PROVIDED (C.F.)	P _e PROVIDED (IN)
MBR-1	20,802	752	1,956	468 [1,418]	245 [355]	458 [1,041]
				TOTAL ESDV REQ'D. = 1,167		
				TOTAL ESDV PROV. = 468 [1,418]		
				TOTAL Rev. REQ'D. = 255		
				TOTAL Rev. PROV. = 245 [355]		

ASBUILT SHEET 4 OF 4

ASBUILT STORMWATER MANAGEMENT PLAN

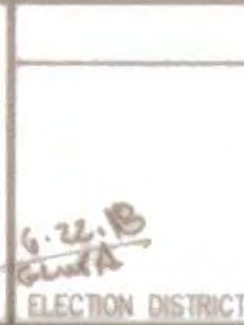
**CEDAR LANE WATER PUMPING STATION
LOT 1 BLOCK B**

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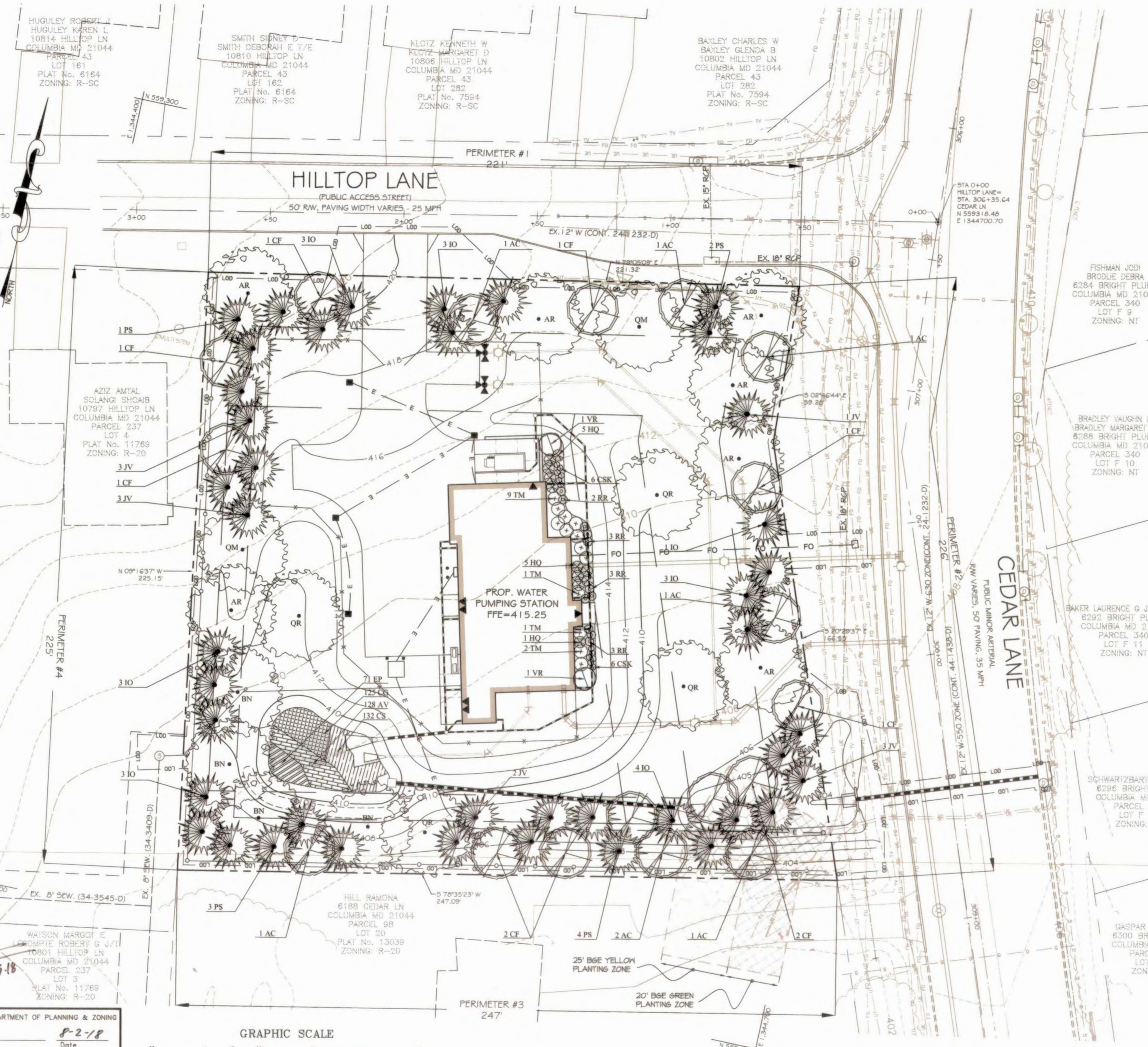
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Todd M. Reddan
TODD M. REDDAN, P.E.
MARYLAND REG. NO. 17285
FOR GLW&W



1. THESE PLANS WERE PREPARED BY GLW&W IN ACCORDANCE WITH THE MARYLAND PROFESSIONAL ENGINEERING AND SURVEYING ACT OF 1968, AS AMENDED, AND THE MARYLAND PROFESSIONAL ENGINEERING AND SURVEYING BOARD REGULATIONS. 2. THESE PLANS WERE PREPARED BY GLW&W IN ACCORDANCE WITH THE MARYLAND PROFESSIONAL ENGINEERING AND SURVEYING ACT OF 1968, AS AMENDED, AND THE MARYLAND PROFESSIONAL ENGINEERING AND SURVEYING BOARD REGULATIONS.



LEGEND

- EX. SEWER
- EX. WATER
- EX. STORM DRAIN
- PROP. SEWER
- PROP. WATER
- PROP. STORM DRAIN
- EX. CONTOURS
- 410
- 408
- 406
- PROP. CONTOURS
- EX. CURB & GUTTER
- PROP. CURB & GUTTER
- PROP. ELECTRIC
- PROP. BUILDING
- PROP. TRANSFORMER
- PROP. CONCRETE
- EX. FIBER OPTIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND TELEPHONE
- EX. OVERHEAD ELECTRIC

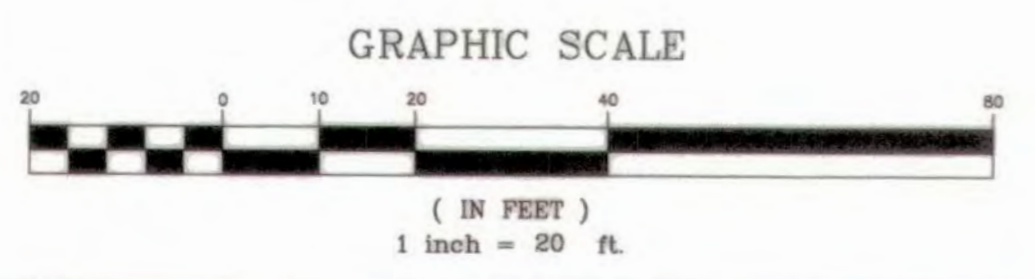
NO ASBUILT INFORMATION
3/18/21

DEVELOPER'S/OWNER'S CERTIFICATE
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.04 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Heidi Dinsmore 6/25/2018
NAME DATE

STATE OF MARYLAND
Michael B. Tran
6-25-18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
N. Adams 8-2-18
Director Date
Kent Shuler 8-02-18
Chief, Division of Land Development Date
Chad... 7-24-18
Chief, Development Engineering Division Date



GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3509 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BAL: 410-880-1820 DC/WA: 301-889-2524 FAX: 301-421-4186

PREPARED FOR:
OWNER:
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
9250 BENDIX ROAD
COLUMBIA, MD 21045
(410)-313-2040

LANDSCAPE PLAN
CEDAR LANE WATER PUMPING STATION
LOT 1 BLOCK B

SCALE	ZONING	G. L. W. FILE No.
1"=20'	R-20	16018
DATE	TAX MAP - GRID	SHEET
JUNE 2018	35-11	7 OF 12

LANDSCAPE NOTES

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.024 OF THE HOWARD COUNTY CODE & THE HOWARD COUNTY LANDSCAPE MANUAL.
- CONTRACTOR SHALL NOTIFY ALL UTILITIES AT LEAST (5) FIVE DAYS BEFORE STARTING WORK. ALL GENERAL NOTES, ESPECIALLY THOSE REGARDING UTILITIES, ON SHEET NO. 1 SHALL APPLY.
- FIELD VERIFY UNDERGROUND UTILITY LOCATIONS AND EXISTING CONDITIONS BEFORE STARTING PLANTING WORK. CONTACT CONSTRUCTION MANAGER OR OWNER IF ANY RELOCATIONS ARE REQUIRED.
- PLANT QUANTITIES SHOWN ON THE PLANT LIST ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON THE PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL TAKE PRECEDENCE.
- ALL PLANT MATERIAL SHALL BE FULL, HEAVY, WELL FORMED, SYMMETRICAL, AND CONFORM TO THE A.A.N. SPECIFICATIONS.
- NO SUBSTITUTION SHALL BE MADE WITHOUT PRIOR APPROVAL FROM HOWARD COUNTY DPZ AND THE OWNER OR HIS REPRESENTATIVE.
- ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES BUT NOT OTHERWISE PLANTED, PAVED, OR MULCHED SHALL BE SOODED OR SEEDED IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATION. A MINIMUM OF 4" OF TOPSOIL SHALL BE PROVIDED TO ALL PLANTING AREAS.
- THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING IF HEAVY ENCOUNTERS SOIL DRAINAGE CONDITIONS THAT MAY BE DETRIMENTAL TO THE GROWTH OF THE PLANTS.
- ALL EXPOSED EARTH WITHIN THE LIMITS OF PLANTING BEDS SHALL BE MULCHED WITH SHREDDED HARDWOOD MULCH PER THE PLANTING DETAILS.

SPECIFICATIONS: PLANT MATERIALS AND PLANTING METHODS

- PLANT MATERIALS**
THE LANDSCAPE CONTRACTOR SHALL FURNISH AND INSTALL AND/OR DIG, BALL, BURLAP AND TRANSPORT ALL OF THE PLANT MATERIALS CALLED FOR ON DRAWINGS AND/OR LISTED IN THE PLANT SCHEDULE.
1. **PLANT NAMES**
PLANT NAMES USED IN THE PLANT SCHEDULE SHALL CONFORM WITH 'AAN' STANDARDS.
2. **PLANT STANDARDS**
ALL PLANT MATERIAL SHALL BE EQUAL TO OR BETTER THAN THE REQUIREMENTS OF THE 'USA STANDARD FOR NURSERY STOCK' LATEST EDITION AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERMEN HERE-AFTER REFERRED TO AS AAN STANDARDS. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, SHALL HAVE A NORMAL HABIT OF GROWTH AND SHALL BE FIRST QUALITY, SOUND, VIGOROUS, WELL-BRANCHED AND WITH HEALTHY, WELL-FURNISHED ROOT SYSTEMS. THEY SHALL BE FREE OF DISEASE, INSECT PESTS AND MECHANICAL INJURIES.
ALL PLANTS SHALL BE NURSERY GROWN AND SHALL HAVE BEEN GROWN UNDER THE SAME CLIMATE CONDITIONS AS THE LOCATION OF THIS PROJECT FOR AT LEAST TWO YEARS BEFORE PLANTING. NEITHER HELED-IN PLANTS NOR PLANTS FROM COLD STORAGE WILL BE ACCEPTED.
3. **PLANT MEASUREMENTS**
ALL PLANTS SHALL CONFORM TO THE MEASUREMENTS SPECIFIED IN THE PLANT SCHEDULE.
A. CALIPER MEASUREMENTS SHALL BE TAKEN SIX INCHES (6") ABOVE GRADE FOR TREES UP TO FOUR-INCH (4") CALIPER AND TWELVE (12") ABOVE GRADE FOR TREES GREATER THAN FOUR INCHES (4") IN CALIPER.
B. MINIMUM BRANCHING HEIGHT FOR ALL SHADE TREES SHALL BE SIX FEET (6'), MAXIMUM EIGHT FEET (8').
C. CALIPER HEIGHT, SPREAD AND SIZE OF BALL SHALL BE GENERALLY AS FOLLOWS:

CALIPER	HEIGHT	SPREAD	SIZE OF BALL
2" - 2.5"	12'-14'	9'-6"	28" DIA. DIAMETER
3" - 3.5"	14'-16'	8'-0"	32" DIA. DIAMETER
3.5" - 4"	14'-16'	8'-0"	36" DIA. DIAMETER
4" - 4.5"	16'-18'	8'-0"	40" DIA. DIAMETER
4.5" - 5"	16'-17'	10'-12"	44" DIA. DIAMETER
5" - 5.5"	18'-20'	10'-12"	48" DIA. DIAMETER
5.5" - 6"	18'-20'	12'-14"	52" DIA. DIAMETER

ALL PLANT MATERIAL SHALL GENERALLY AVERAGE THE MEDIAN FOR THE SIZE RANGES INDICATED ABOVE AS INDICATED IN THE 'AAN' STANDARDS.
4. **PLANT IDENTIFICATION**
LEGIBLE LABELS SHALL BE ATTACHED TO ALL SHADE TREES, MINOR TREES, SPECIMEN SHRUBS AND BUNDLES OR BOXES OF OTHER PLANT MATERIAL GIVING THE BOTANICAL AND COMMON NAMES, SIZE AND QUANTITY OF EACH. EACH SHIPMENT OF PLANTS SHALL BEAR CERTIFICATES OF INSPECTION AS REQUIRED BY FEDERAL, STATE AND COUNTY AUTHORITIES.
5. **PLANT INSPECTION**
THE OWNER MAY REQUEST, AT LEAST TEN (10) DAYS PRIOR TO THE INSTALLATION OF ANY PROPOSED PLANT MATERIAL, TO INSPECT ALL PROPOSED PLANT MATERIAL AT THE SOURCE OF ORIGIN.
- PLANTING METHODS**
ALL PROPOSED PLANT MATERIALS THAT MEET THE SPECIFICATIONS IN SECTION A ARE TO BE PLANTED IN ACCORDANCE WITH THE FOLLOWING METHODS DURING THE PROPER PLANTING SEASONS AS DESCRIBED IN THE FOLLOWING:
1. **PLANTING SEASONS**
THE PLANTING OF DECIDUOUS TREES, SHRUBS AND VINES SHALL BE FROM MARCH 1ST TO JUNE 15TH AND FROM SEPTEMBER 15TH TO DECEMBER 15TH. PLANTING OF DECIDUOUS MATERIAL MAY BE CONTINUED DURING THE WINTER MONTHS PROVIDING THERE IS NO FROST IN THE GROUND AND FROST-FREE TOPSOIL PLANTING MIXTURES ARE USED.
THE PLANTING OF EVERGREEN MATERIAL SHALL BE FROM MARCH 15TH TO JUNE 15TH AND FROM AUGUST 15TH TO DECEMBER 15TH. NO PLANTING SHALL BE DONE WHEN THE GROUND IS FROZEN OR EXCESSIVELY MOIST. NO FROZEN OR WET TOPSOIL SHALL BE USED AT ANY TIME.
2. **DIGGING**
ALL PLANT MATERIAL SHALL BE DIG, BALLED AND BURLAPPED (B4B) IN ACCORDANCE WITH THE 'AAN' STANDARDS.
3. **EXCAVATION OF PLANT PITS**
THE LANDSCAPE CONTRACTOR SHALL EXCAVATE ALL PLANT PITS, VINE PITS, HEDGE TRENCHES AND SHRUB BEDS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
A. LOCATIONS OF ALL PROPOSED PLANT MATERIAL SHALL BE STAKED AND APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT BEFORE ANY OF THE PROPOSED PLANT MATERIAL IS INSTALLED BY THE LANDSCAPE CONTRACTOR.
B. ALL PITS SHALL BE GENERALLY CIRCULAR IN OUTLINE, VERTICAL SIDES, DEPTH SHALL NOT BE LESS THAN 6" DEEPER THAN THE ROOT BALL DIAMETER SHALL NOT BE LESS THAN TWO TIMES THE DIAMETER OF THE ROOT BALL AS SET FORTH IN THE FOLLOWING SCHEDULE:

PLANT SIZE	ROOT BALL	PIT DIA.	PIT DEPTH
2" - 2.5" CAL.	28"	36"	24"
3" - 3.5" CAL.	32"	64"	28"
3.5" - 4" CAL.	36"	72"	32"
4" - 4.5" CAL.	40"	80"	36"
4.5" - 5" CAL.	44"	88"	40"
5" - 5.5" CAL.	48"	96"	44"
5.5" - 6" CAL.	52"	104"	48"

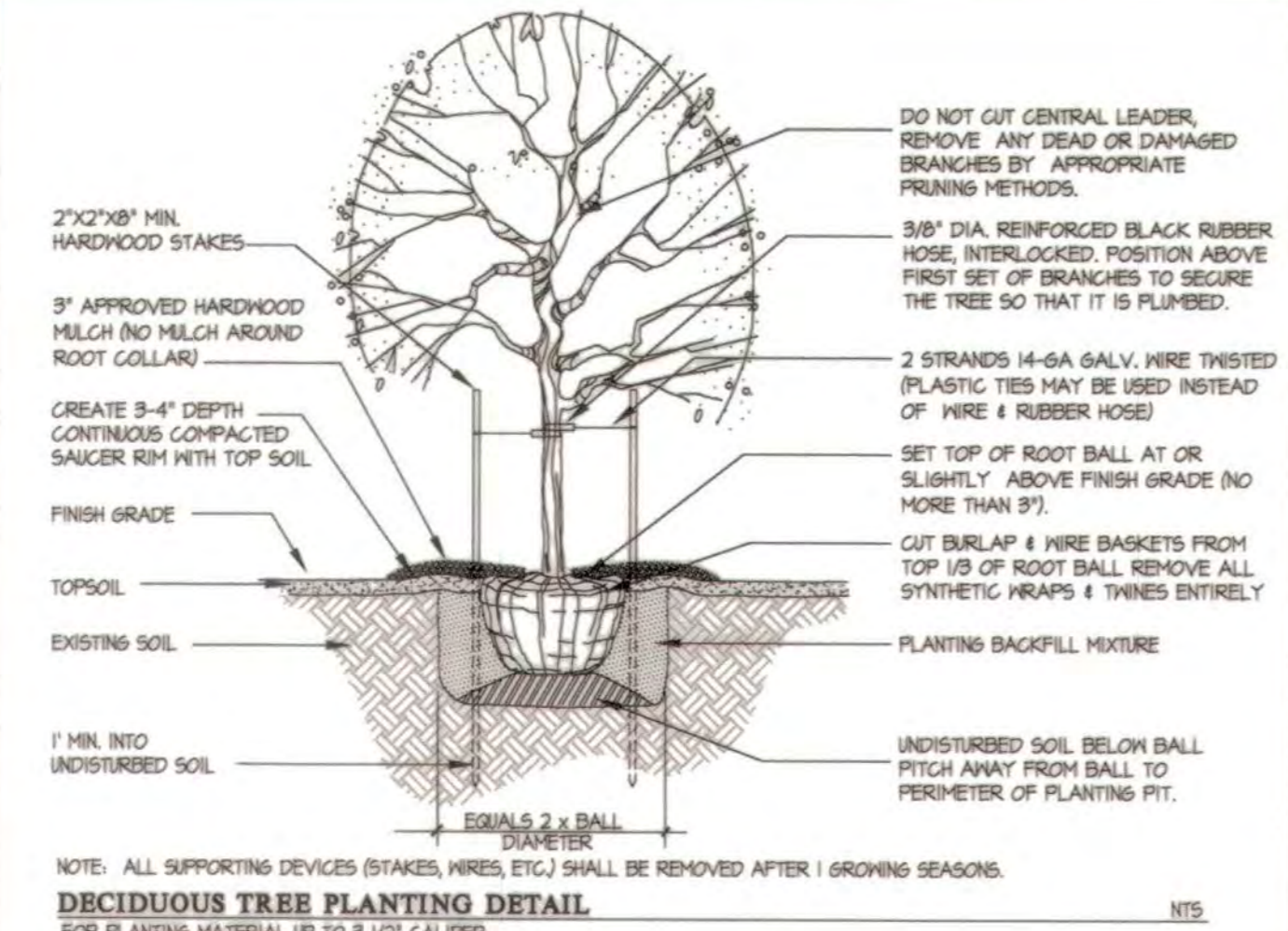
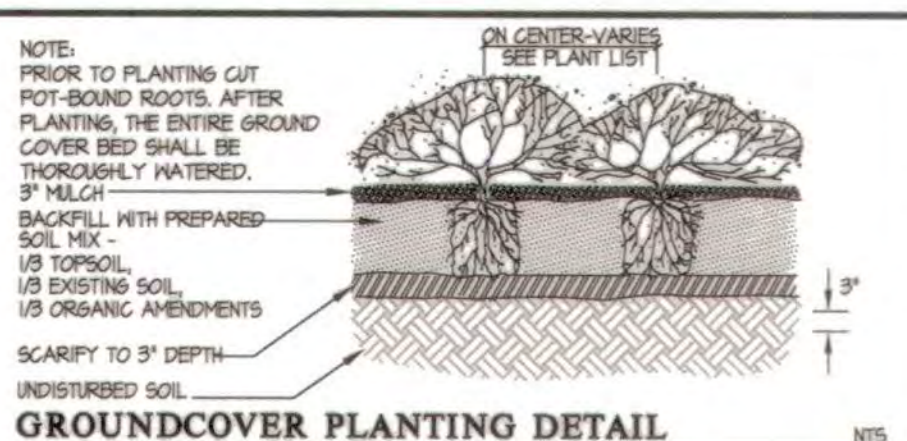
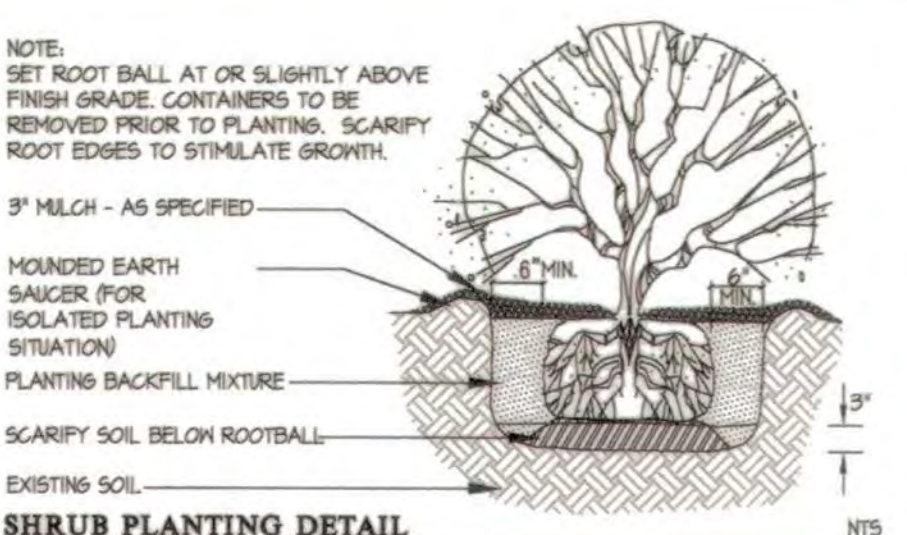
A 20% COMPACTION FIGURE OF THIS SOIL TO BE REMOVED IS ASSUMED AND WILL BE ALLOWED IN CALCULATION OF EXTRA TOPSOIL. THE TABULATED PIT SIZES ARE FOR PURPOSES OF UNIFORM CALCULATION AND SHALL NOT OVERRIDE THE SPECIFIED DEPTHS BELOW THE BOTTOMS OF THE ROOT BALLS.
C. IF AREAS ARE DESIGNATED AS SHRUB BEDS OR HEDGE TRENCHES, THEY SHALL BE EXCAVATED TO AT LEAST 18" DEPTH MINIMUM. AREAS DESIGNATED FOR GROUND COVERS AND VINES SHALL BE EXCAVATED TO AT LEAST 12" IN DEPTH MINIMUM.
D. DIAMETER AND DEPTH OF TREE PITS SHALL GENERALLY BE AS FOLLOWS:

PLANT SIZE	ROOT BALL	PIT DIA.	PIT DEPTH
2" - 2.5" CAL.	28"	36"	24"
3" - 3.5" CAL.	32"	64"	28"
3.5" - 4" CAL.	36"	72"	32"
4" - 4.5" CAL.	40"	80"	36"
4.5" - 5" CAL.	44"	88"	40"
5" - 5.5" CAL.	48"	96"	44"
5.5" - 6" CAL.	52"	104"	48"
- STAKING, GUYING AND WRAPPING**
ALL PLANT MATERIAL SHALL BE STAKED OR GUYED, AND WRAPPED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
A. STAKES SHALL BE SOUND WOOD 2" X 2" ROUGH SHAWN OAK OR SIMILAR DURABLE WOODS, OR LENGTHS, MINIMUM 7'-0" FOR MAJOR TREES AND 5'-0" MINIMUM FOR MINOR TREES.
B. WIRE AND CABLE: WIRE SHALL BE #10 GA. GALVANIZED OR BETHANIZED ANNEALED STEEL WIRE. FOR TREES OVER 3" CALIPER PROVIDE 3/8" TURN BUCKLES, EYE AND EYE WITH 4" TAKE-UP. FOR TREES OVER 5" CALIPER, PROVIDE 3/8" 1 STRAND CABLE CADMIUM PLATED TURN BUCKLES, EYE AND EYE WITH 4" TAKE-UP. FOR TREES OVER 3" CALIPER, PROVIDE 3/8" 1 STRAND CABLE WITH GALVANIZED 'EYE' THIMBLES OF WIRE AND HOSE ON TREES UP TO 3" IN CALIPER.
C. HOSE SHALL BE NEW 2 FLY REINFORCED RUBBER HOSE, MINIMUM 1/2" I.D. 'PLASTIC LOCK TIES' OR 'PAUL'S TREES BRACES' MAY BE USED IN PLACE OF WIRE AND HOSE ON TREES UP TO 3" IN CALIPER.
D. ALL TREES UNDER 3" IN CALIPER ARE TO BE PLANTED AND STAKED IN ACCORDANCE WITH THE ATTACHED PLANTING DETAILS.
5. **PLANT PRUNING, EDGING AND MULCHING**
A. EACH TREE, SHRUB OR VINE SHALL BE PRUNED IN AN APPROPRIATE MANNER TO ITS PARTICULAR REQUIREMENTS, IN ACCORDANCE WITH ACCEPTED STANDARD PRACTICE. BROKEN OR BRUISED BRANCHES SHALL BE REMOVED WITH CLEAN CUTS FLUSH WITH THE ADJACENT TRUNK OR BRANCHES. ALL CUTS OVER 1" IN DIAMETER SHALL BE PAINTED WITH AN APPROVED ANTISEPTIC TREE WOUND DRESSING.
B. ALL TRENCHES AND SHRUB BEDS SHALL BE EDGED AND CULTIVATED TO THE LINES SHOWN ON THE DRAWING. THE AREAS AROUND ISOLATED PLANTS SHALL BE EDGED AND CULTIVATED TO THE FULL DIAMETER OF THE PIT. SOIL WHICH HAS BEEN REMOVED AND STACKED SHALL BE USED TO TRIM THE EDGES OF ALL EXCAVATED AREAS TO THE NEAR LINES OF THE PLANT PIT SAUCERS, THE EDGES OF SHRUB AREAS, HEDGE TRENCHES AND VINE POCKETS.
C. AFTER CULTIVATION ALL PLANT MATERIALS SHALL BE MULCHED WITH A 3" LAYER OF FINE SHREDDED PINE BARK, PEAT MOSS, OR ANOTHER APPROVED MATERIAL OVER THE ENTIRE AREA OF THE BED OR SAUCER.
6. **PLANT INSPECTION AND ACCEPTANCE**
THE DESIGN REVIEW COMMITTEE SHALL BE RESPONSIBLE FOR INSPECTING ALL PLANTING PROJECTS ON A PERIODIC BASIS TO ASSURE THAT ALL WORK IS PROCEEDING IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
7. **PLANT GUARANTEE**
ALL PLANT MATERIAL SHALL BE GUARANTEED FOR THE DURATION OF ONE FULL GROWING SEASON, AFTER FINAL INSPECTION AND ACCEPTANCE OF THE WORK IN THE PLANTING PROJECT. PLANTS SHALL BE ALIVE AND IN SATISFACTORY GROWING CONDITION AT THE END OF THE GUARANTEE PERIOD.
A. FOR THIS PURPOSE, THE 'GROWING SEASON' SHALL BE THAT PERIOD BETWEEN THE END OF THE 'SPRING' PLANTING SEASON AND THE COMMENCEMENT OF THE 'FALL' PLANTING SEASON.
B. GUARANTEE FOR PLANTING PERFORMED AFTER THE SPECIFIED END OF THE 'SPRING' PLANTING SEASON, SHALL BE EXTENDED THROUGH THE END OF THE NEXT FOLLOWING 'SPRING' PLANTING SEASON.
SOODED
ALL SOODED SHALL BE IN ACCORDANCE TO THE 'LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS' LATEST EDITION APPROVED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF METROPOLITAN WASHINGTON AND THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS.
ALL SOOD SHALL BE STRONGLY ROOTED SOOD, NOT LESS THAN TWO YEARS OLD AND FREE OF NEEDS AND UNDESIRABLE NATIVE GRASSES. PROVIDE ONLY SOOD CAPABLE OF GROWTH DEVELOPMENT WHEN PLANTED AND IN STRIPS NOT MORE THAN 18" WIDE X 4' LONG. PROVIDE SOOD COMPOSED PRINCIPALLY OF IMPROVED STRAIN KENTUCKY BLUEGRASS, SUCH AS COLUMBIA, VICTA, OR ESCORT.

FOREST CONSERVATION WORKSHEET

Project Name:	Cedar Lane Water Pumping Station	DPZ File No.:	SDP-18-046
1 Site Data			
A. Gross Site Area		Acreage	1.700
B. Area within 100-yr floodplain, if any			0.0000
C. Area of existing easement for major utility transmission lines, if any			0.0000
D. Area of external public road (frontage) dedication, if any			0.0000
E. Net Tract Area			1.700
F. Land Use Category	(for R-20 zone)	Residential-Suburban	
2 Input Data			
A. Net Tract Area			1.700
B. Reforestation Threshold (percent of net tract = 20%)			0.2340
C. Afforestation Threshold (percent of net tract = 15%)			0.1755
D. Existing Forest on Net Tract Area			0.0000
E. Forest Clearing on Net Tract Area			0.0000
F. Forest Retention on Net Tract Area			0.0000
3 Reforestation Calculations			
A. Net tract forest clearing above reforestation threshold			0.0000
B. Net tract forest clearing below reforestation threshold			0.0000
C. Planting up to afforestation threshold			0.1755
D. Reforestation planting required for clearing above threshold			0.0000
E. Reforestation planting required for clearing below threshold			0.0000
F. Total reforestation planting required (3C+3D+3E)			0.1755
4 Forest Conservation Required			
A. Forest Retention Area (2F)			0.0000
B. Forest Planting Area (3F)			0.1755
C. Total minimum FCE required for retention and reforestation			0.1755

* FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE FULFILLED IN ACCORDANCE WITH SECTION 16.020 OF THE FOREST CONSERVATION MANUAL UNDER SDP-18-046 BY THE PAYMENT OF A FEE IN LIEU OF \$0.75/SQ. FT. IN THE AMOUNT OF \$5,193.75 FOR THE 1645 SQ. FT. OF FOREST CONSERVATION OBLIGATION.



PLANT SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	COMMENTS
SHADE TREES (17)						
AR	7	Acer rubrum	NATIVE Red maple	2-1/2"-3" cal., 12-14' height	B4B	Min. Branch Height 6'
BN	4	Betula nigra	NATIVE Clump Birch	2-1/2"-3" cal., 12-14' height	B4B	Multistem, 3 stem min. match
GM	2	Quercus montana (Quercus prinus)	NATIVE Chestnut Oak	2-1/2"-3" cal., 12-14' height	B4B	Min. Branch Height 6'
OR	4	Quercus rubra	NATIVE Northern Red Oak	2-1/2"-3" cal., 12-14' height	B4B	Min. Branch Height 6'
ORNAMENTAL TREES (16)						
AG	6	Amelanchier canadensis	NATIVE Serviceberry	2-1/2"-3" cal., 8-10' height	B4B	Multistem, 3 stem min. match
CF	10	Cornus florida	NATIVE Flowering Dogwood	2-1/2"-3" cal., 8-10' height	B4B	
EVERGREEN TREES (12)						
IO	20	Ilex opaca	NATIVE American Holly	6-8" ht.	B4B	
JV	12	Juniperus virginiana	NATIVE Eastern Red Cedar	6-8" ht.	B4B	
PS	10	Pinus strobus	NATIVE Eastern White Pine	6-8" ht.	B4B	
SHRUBS (41)						
CSK	12	Cornus sericea 'Kelsay'	NATIVE Kelsay's Dwarf Red-Osier Dogwood	18-24"	Container	
HQ	11	Hydrangea quercifolia	NATIVE Oakleaf Hydrangea	18-24"	Container	
RR	11	Rosa 'Radar'	NATIVE Knock Out Rose	18-24"	Container	
TM	19	Taxus x media 'Everline'	NATIVE Everline Yew	18-24"	Container	Alternate: Densiformis Yew
VR	2	Viburnum rhytidophyllum 'Allegheny'	NATIVE Leatherleaf Viburnum	4-5'	Container	
MICRO-BIORETENTION (456)						
AV	128	Andropogon virginicus	NATIVE Broom Sedge		1 gal.	18" on center
CS	132	Carex stricta	NATIVE Tussock Sedge		1 gal.	18" on center
C6	125	Chelone glabra	NATIVE White Turtlehead		1 gal.	18" on center
BP	71	Eutrochium purpureum	NATIVE Joe Pye Weed		1 gal.	18" on center

PERIMETER LANDSCAPE EDGE PLANTING

CATEGORY	#1 - NORTH ADJACENT TO HILLTOP LANE (NORTH)	#2 - ADJACENT TO CEDAR LANE (EAST)	#3 - ADJACENT TO LOT 20 (SOUTH)	#4 - ADJACENT TO LOT 4 (WEST)
LANDSCAPE EDGE TYPE	B	B	G	G
LINEAR FEET (L.F.) OF ROADWAY FRONTAGE/PERIMETER	222 L.F.	226 L.F.	247 L.F.	226 L.F.
NUMBER OF PLANTS REQUIRED PER LANDSCAPE EDGE TYPE:				
SHADE TREES (B = 1/50 L.F.; C = 1/40 L.F.)	5	5	7	6
EVERGREEN TREES (B = 1/40 L.F.; C = 1/20 L.F.)	6	6	13	12
SHRUBS (B = 4 C = 0 PER L.F.)	0	0	0	0
NUMBER OF PLANTS PROVIDED:				
SHADE TREES	3	3	3	5
EVERGREEN TREES	8	8	14	12
SUBSTITUTION TREES (2 SH DECID. TREES FOR 1 SHADE TREE)	4	4	8	2
SHRUBS (10:1 SUBSTITUTION)	0	0	0	0

STATE OF MARYLAND
Michael B. Tran
 REGISTERED LANDSCAPE ARCHITECT
 No. 938
 6.25.18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Valdis Jyllis 8-2-18
 Director Date
Kurt Sheppard 8-2-18
 Chief, Division of Land Development Date
W. J. ... 7-24-18
 Chief, Development Engineering Division Date

NO ASBUILT INFORMATION
 3/18/21

DEVELOPER'S/OWNER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.024 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.
Kristi Dinsmore 6/25/2018
 NAME DATE

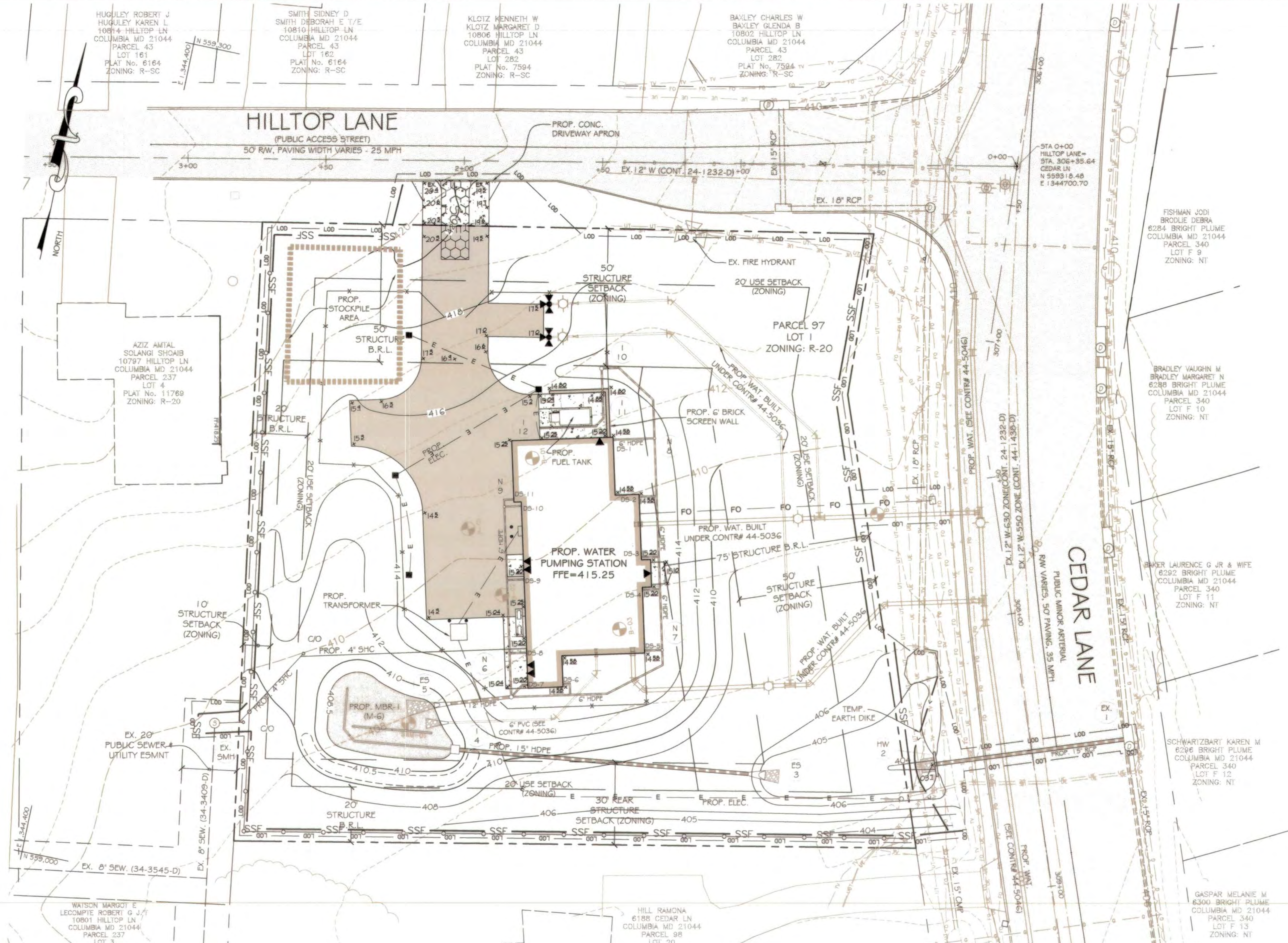
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 BURTONSVILLE, MARYLAND 20866
 TEL: 410-421-4024 FAX: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186
 GLW 2017

PREPARED FOR:
 OWNER:
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 9250 BENDIX ROAD
 COLUMBIA, MD 21045
 (410)-313-2040

LANDSCAPE DETAILS
CEDAR LANE WATER PUMPING STATION
 LOT 1 BLOCK B

SCALE	ZONING	G. L. W. FILE NO.
1"=20'	R-20	16018
DATE	TAX MAP - GRID	SHEET
JUNE 2018	35-11	8 OF 12

DATE REVISION BY APPR.



LEGEND

- EX. SEWER
- EX. WATER
- EX. STORM DRAIN
- PROP. SEWER
- PROP. WATER
- PROP. STORM DRAIN
- EX. CONTOURS
- PROP. CONTOURS
- EX. ELECTRIC
- EX. CURB & GUTTER
- PROP. CURB & GUTTER
- PROP. ELECTRIC
- PROP. BUILDING
- PROP. TRANSFORMER
- PROP. CONCRETE
- EX. FIBER OPTIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND TELEPHONE
- EX. OVERHEAD ELECTRIC
- PROP. SUPER SILT FENCE
- TEMP. EARTH DIKE
- PROP. STOCKPILE AREA
- PROP. STABILIZED CONST. ENTR.

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

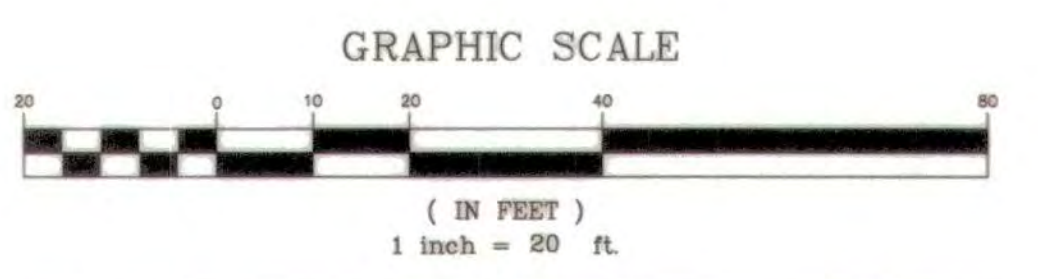
Kiri Dianne 6/25/2018
 SIGNATURE OF DEVELOPER/BUILDER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
N. Alvin Bell 8-2-18
 Director Date
Kent S. DeLoach 8-2-18
 Chief, Division of Land Development Date
Chad E. Smith 7-24-18
 Chief, Development Engineering Division Date

ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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."

John G. Gupta 6-22-18
 ENGINEER'S SIGNATURE DATE

This Development Plan is approved for Soil Erosion and Sediment Control by the Howard Soil Conservation District.
John K. Rhoton 7/19/18
 Howard S.C.D. Date



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DES. EVM	DRN. EVM	CHK. TMR	DATE	REVISION	BY	APPR.

PREPARED FOR:
 OWNER:
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 9250 BENDIX ROAD
 COLUMBIA, MD 21045
 (410)-313-2040

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 17282
 EXPIRATION DATE: MARCH 11, 2018

John G. Gupta
 STATE OF MARYLAND PROFESSIONAL ENGINEER

SEDIMENT CONTROL PLAN

CEDAR LANE WATER PUMPING STATION
 LOT 1 BLOCK B

ELECTION DISTRICT No. 05

SCALE	ZONING	G. L. W. FILE No.
1"=20'	R-20	16018
DATE	TAX MAP - GRID	SHEET
JUNE 2018	35-11	9 OF 12

HOWARD COUNTY, MARYLAND

NO ASBUILT INFORMATION
 3/18/21

SEDIMENT CONTROL NOTES

A. PRIOR TO THE START OF EARTH DISTURBANCE... B. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT... C. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES... D. PRIOR TO THE START OF EARTH DISTURBANCE...

STANDARD AND SPECIFICATIONS FOR TOPSOIL DEFINITION

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation. PURPOSE: To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH materials toxic to plants, and/or unacceptable soil gradation.

CONDITIONS WHERE PRACTICE APPLIES: 1. This practice is limited to areas having 2:1 or flatter slopes where: a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth...

CONSTRUCTION AND MATERIAL SPECIFICATIONS: 1. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications... 2. Topsoil specifications - a soil to be used as topsoil must meet the following:

III. For sites having disturbed areas under 5 acres: a. Place topsoil (if required) and apply soil amendments as specified in 2.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres: a. On soil meeting Topsoil specifications, obtain test results distating fertilizer and lime amendments required to bring the soil into compliance with the following:

VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

Reference: Guideline Specifications Soil Preparation and Seeding MD-VI Pub #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute, Revised 1975.

DEFINITION: Controlling dust blowing and movement on construction sites and roads. PURPOSE: To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

TEMPORARY METHODS: 1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION: The process of preparing the soils to sustain adequate vegetative stabilization. PURPOSE: To provide a suitable soil medium for vegetative growth.

CRITERIA: A. Soil Preparation 1. Temporary Stabilization a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment...

B. Topsoiling 1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS in cooperation with Maryland Agricultural Experiment Station.

3. Topsoil application: a. When topsoiling, maintain needed erosion and sediment control practices such as diversion, Grade Stabilization Structures, Earth Ditches, Slope Six Fences and Sediment Traps and Basins.

4. Areas having slopes steeper than 2:1 require special consideration and design. 5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

6. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.

7. Soil Amendments (Fertilizer and Lime Specifications): a. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more.

8. Soil amendments must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Heavy materials should be substituted for fertilizer with prior approval from the appropriate approval authority.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION: The application of seed and mulch to establish vegetative cover. PURPOSE: To protect disturbed soils from erosion during and at the end of construction.

CRITERIA: A. Seeding 1. Specifications a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory.

2. Application a. Dry Seeding: This includes use of conventional drag or broadcast spreaders. i. Incorporate seed into the subsoil at the rates prescribed in Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.

b. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer). If fertilizer is being applied at the time of seeding, the application rates should not exceed the following nitrogen, 100 pounds per acre total of soluble nitrogen...

B. Mulching 1. Mulch Materials (in order of preference): a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright color straw...

2. Application a. Apply mulch to all seeded areas immediately after seeding. b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches.

3. Anchoring a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference):

4. Tackling a. Apply tackling to all seeded areas immediately after seeding. b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches.

5. Anchoring: a. A mulch anchoring tool is a tractor-drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas but is limited to flatter slopes where equipment can operate safely.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION: To stabilize disturbed soils with vegetation for up to 6 months. PURPOSE: To use fast growing vegetation that provides cover on disturbed soils.

CRITERIA: 1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3) and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths.

TEMPORARY SEEDING SUMMARY: Hardness Zone (from Figure B.3): 6b Seed Mixture (from Table B.1): #1 Fescue/Kentucky Bluegrass

TEMPORARY SEEDING NOTES: Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed. Seeded Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding (unless previously loosened).

SOIL AMENDMENTS: Apply 600 lbs per acre 10-10-10 fertilizer (4 lbs/1000 sq ft). Seeding: For periods March 1 thru April 30 and August 1 thru November 15, seed with 2-1/2 bushels per acre of annual ryegrass (2 lbs/1000 sq ft).

MULCHING: Apply 1/2 to 2 tons per acre (70 to 40 lbs/1000 sq ft) of unwashed small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 2x8 galena per acre (8 gal/1000 sq ft) of emulsified asphalt on flat areas.

MAINTENANCE: Inspect all seeded areas and make needed repairs, replacements and reseedings. 2. Turfgrass Mixtures: a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

3. Kentucky Bluegrass/Parrotail Ryegrass Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet.

4. Kentucky Bluegrass/Fine Fescue Shade Mixture: For use in areas with shade to bluegrass lawns. For establishment in high quality, intensively managed turf areas, Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION: To stabilize disturbed soils with permanent vegetation. PURPOSE: To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

CRITERIA: 1. General Use a. Select one or more of the species or mixtures listed in Table B.5 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose listed on Table B.2, Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary.

2. Turfgrass Mixtures: a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

3. Kentucky Bluegrass/Parrotail Ryegrass Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet.

4. Kentucky Bluegrass/Fine Fescue Shade Mixture: For use in areas with shade to bluegrass lawns. For establishment in high quality, intensively managed turf areas, Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet.

5. Anchoring: a. A mulch anchoring tool is a tractor-drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas but is limited to flatter slopes where equipment can operate safely.

6. Tackling: a. Apply tackling to all seeded areas immediately after seeding. b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches.

7. Soil Amendments (Fertilizer and Lime Specifications): a. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more.

8. Soil amendments must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Heavy materials should be substituted for fertilizer with prior approval from the appropriate approval authority.

DEVELOPERS/BUILDERS CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

Signature: Heidi Dunsen, Date: 6/25/2018. APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING. Signature: [Signature], Date: 8-2-18.

ENGINEER'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND INCREASING 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.

Signature: [Signature], Date: 6-22-18. PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

TEMPORARY METHODS

1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing. 2. Vegetative Cover - See standards for temporary vegetative cover.

3. Tackling - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. 4. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the soil is moist.

5. Barriers - Solid board fences, silt fences, burlap fences, straw bales, and similar material to be used to control air currents and soil blowing. 6. Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.

PERMANENT METHODS

1. Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with soil. 2. Topsoiling - Covering with less erodible soil materials. See standards for topsoiling.

3. Stone - Cover surface with crushed stone or coarse gravel. 4. Turfgrass Mixtures: a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

5. Kentucky Bluegrass/Parrotail Ryegrass Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet.

SEDIMENT CONTROL NOTES

SCALE: NO SCALE. ZONING: R-20. G. L. W. FILE NO.: 16018. DATE: JUNE 2018. TAX MAP - GRID: 35-11. SHEET: 11 OF 12.

NO ASBUILT INFORMATION 3/18/21. CEDAR LANE WATER PUMPING STATION LOT 1 BLOCK B. HOWARD COUNTY, MARYLAND.

SEDIMENT CONTROL NOTES

SCALE: NO SCALE. ZONING: R-20. G. L. W. FILE NO.: 16018. DATE: JUNE 2018. TAX MAP - GRID: 35-11. SHEET: 11 OF 12.

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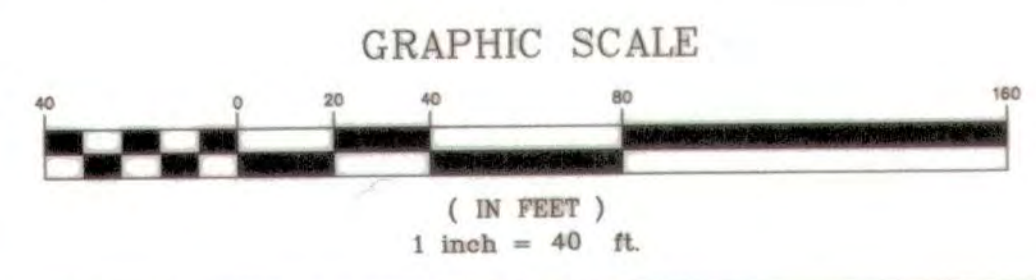


DRAINAGE AREA SUMMARY TABLE

STR. NO.	AREA (AC)	IMP. AREA (AC)	"C"-FACTOR
EX-1	0.10	0.09	0.80
EX-1B	0.13	0.13	0.86
EX-1C	0.08	0.08	0.86
EX-1D	8.14	2.06	0.36
EX-2	0.15	0.09	0.58
EX-3	0.03	0.02	0.51
EX-4	0.15	0.10	0.64
HW-2	1.47	0.80	0.48
I-4	0.34	0.09	0.38
N-6	0.02	0.02	0.86
N-7	0.04	0.04	0.86
N-8	0.005	0.005	0.86
N-4	0.02	0.02	0.86
I-10	0.04	0.03	0.10
I-11	0.01	0.01	0.86
I-12	0.01	0.01	0.86

NO ASBUILT
INFORMATION
3/18/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
N. A. [Signature] 8-2-18
 Director Date
K. [Signature] 8-02-18
 Chief, Division of Land Development Date
[Signature] 7-24-18
 Chief, Development Engineering Division Date



GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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 BURTONSVILLE, MARYLAND 20886
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PREPARED FOR:
 OWNER:
 DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 9250 BENDIX ROAD
 COLUMBIA, MD 21045
 (410)-313-2040

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 11285
 EXPIRATION DATE: MARCH 11, 2018
[Signature] 6-22-18



DRAINAGE AREA MAP
CEDAR LANE WATER PUMPING STATION
LOT 1 BLOCK B

SCALE	ZONING	G. L. W. FILE No.
1"=40'	R-20	16018
DATE	TAX MAP - GRID	SHEET
JUNE 2018	35-11	12 OF 12

L:\CAD\DRAWINGS\2018\PLANS BY GLW\SDP\18018-SDP-11-DAM.dwg PLOTTED BY: Evan Mitchell

L:\CAD\DRAWINGS\2018\PLANS BY GLW\SDP\18018-SDP-11-DAM.dwg DES. EWM DRN. EWM CHK. TMR

DATE	REVISION	BY	APPR.

ELECTION DISTRICT No. 05

HOWARD COUNTY, MARYLAND

SDP-18-046