

REVISIONS	BY

480V 3Ø 20HP – 60HP SOFT STARTER
ELECTRICAL STANDARD

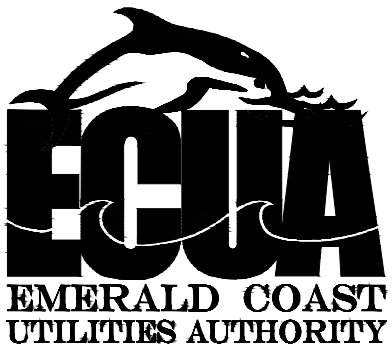
FOR
EMERALD COAST UTILITIES AUTHORITY
ESCAMBIA COUNTY, FL

SHEET NO.	SHEET DESCRIPTION
1	MAIN POWER DISTRIBUTION SCHEMATIC
2	CONTROL SCHEMATIC
3	DIGITAL INPUTS SCHEMATIC
4	DIGITAL OUTPUTS & ANALOG INPUTS SCHEMATIC
5	ANALOG OUTPUTS & STARTER CONTROL SCHEMATIC
6	TERMINAL BLOCK LAYOUT AND FIELD CONNECTIONS
7	LINEAR EXTERIOR PANEL LAYOUT & FIELD CONDUIT REQUIREMENTS
8	POWER & PUMP 1 INTERNAL PANEL LAYOUTS
9	PUMP 2 & CONTROL PANEL INTERNAL LAYOUTS
10	EQUIPMENT LIST
11	HORSEPOWER RELATED EQUIPMENT & POWER CONDUCTORS
12	PANEL TO PANEL CONDUCTORS & EQUIPMENT
13	PANEL TO PANEL WIRING
14	LINEAR STAINLESS STEEL FRAME LAYOUT
15	TABLES, LEGENDS & TAGS
16	ISR INSTRUCTIONS
17	GENERAL NOTES AND DETAILS
18	GENERAL NOTES AND DETAILS

IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM

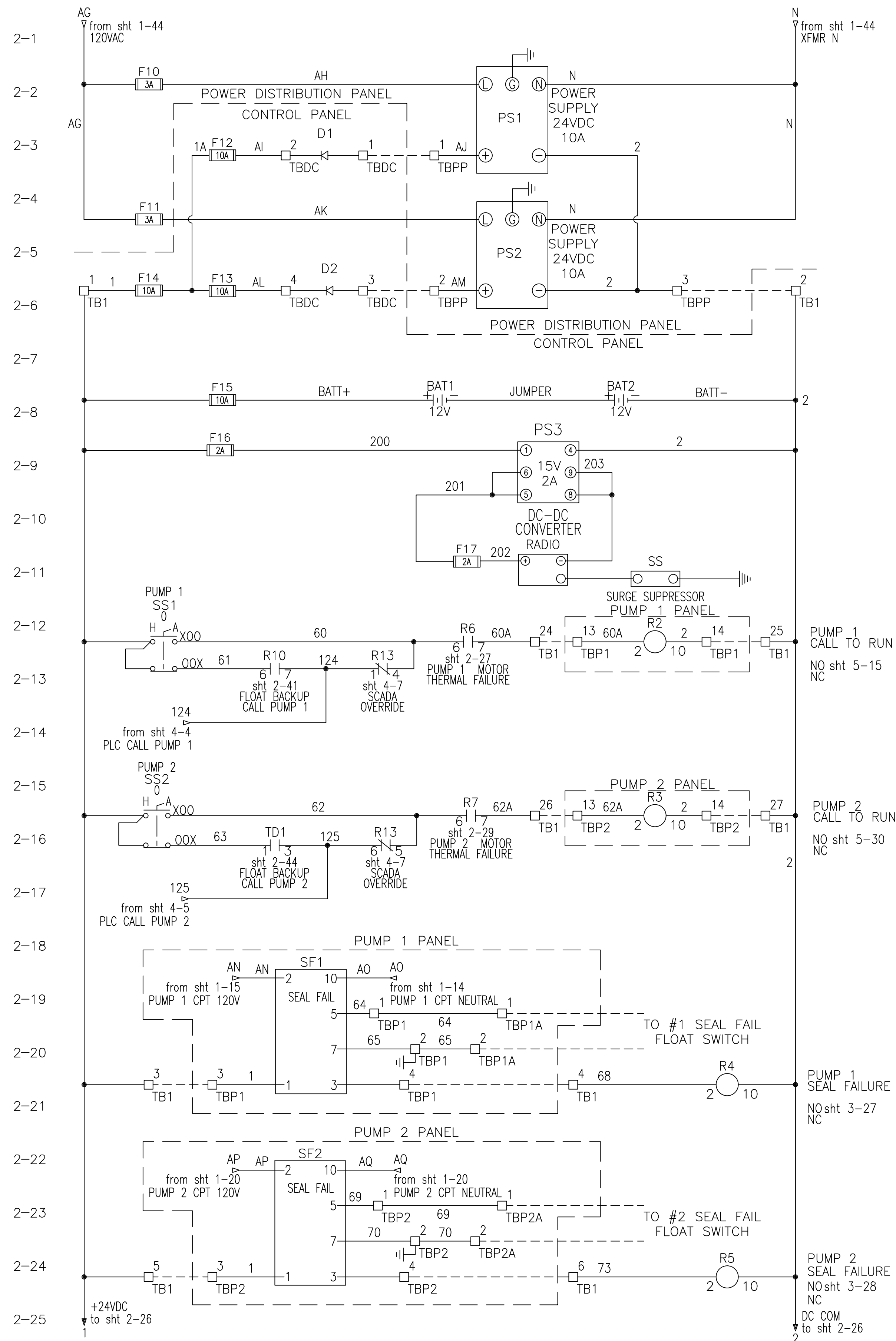
LIFT STATION CONSTRUCTION DETAILS

ELECTRICAL STANDARDS

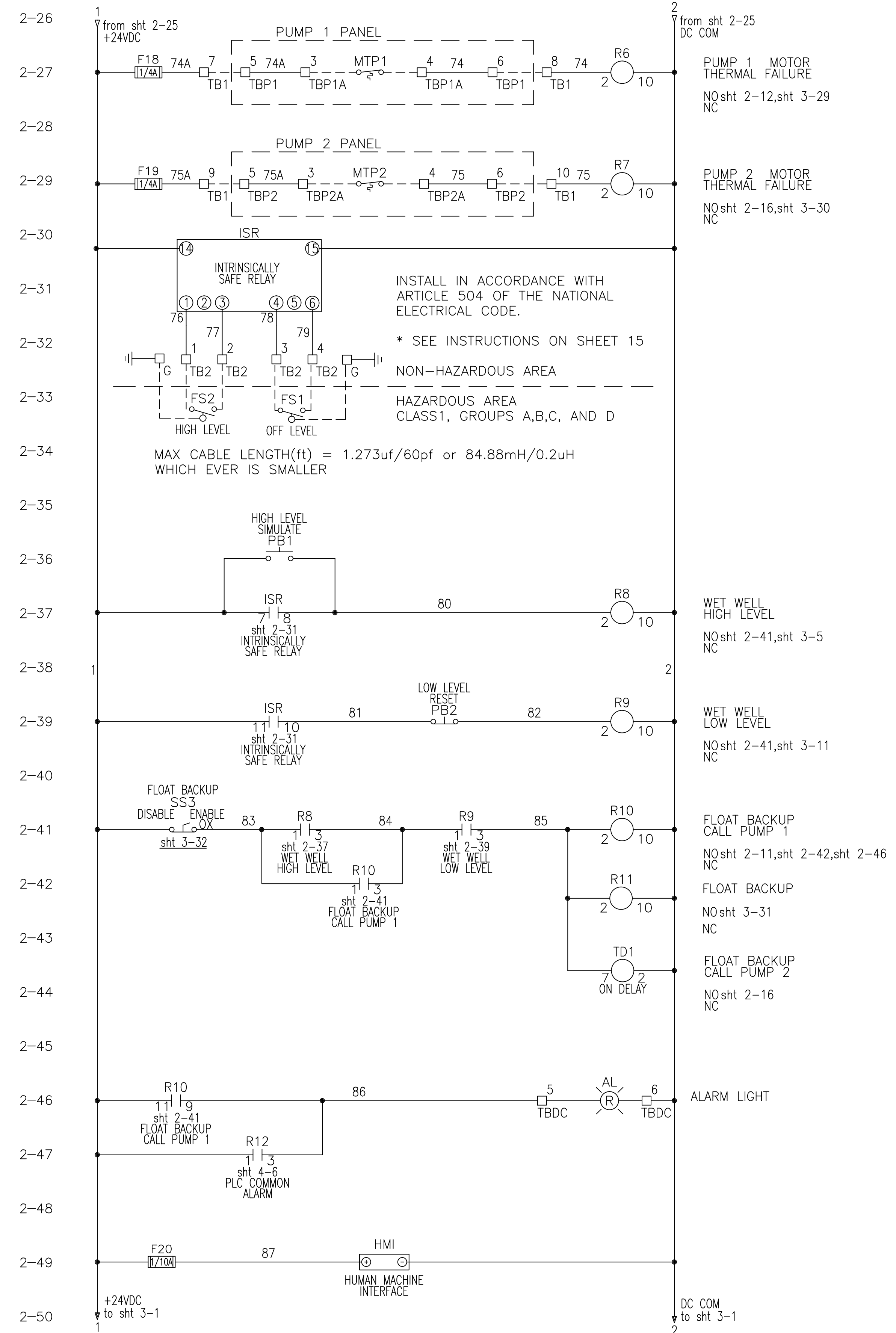


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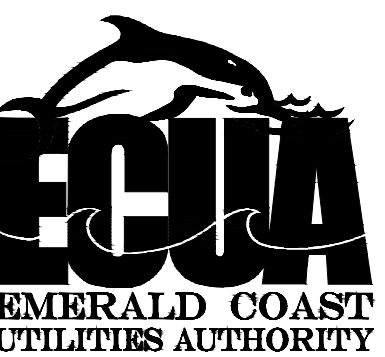


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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM

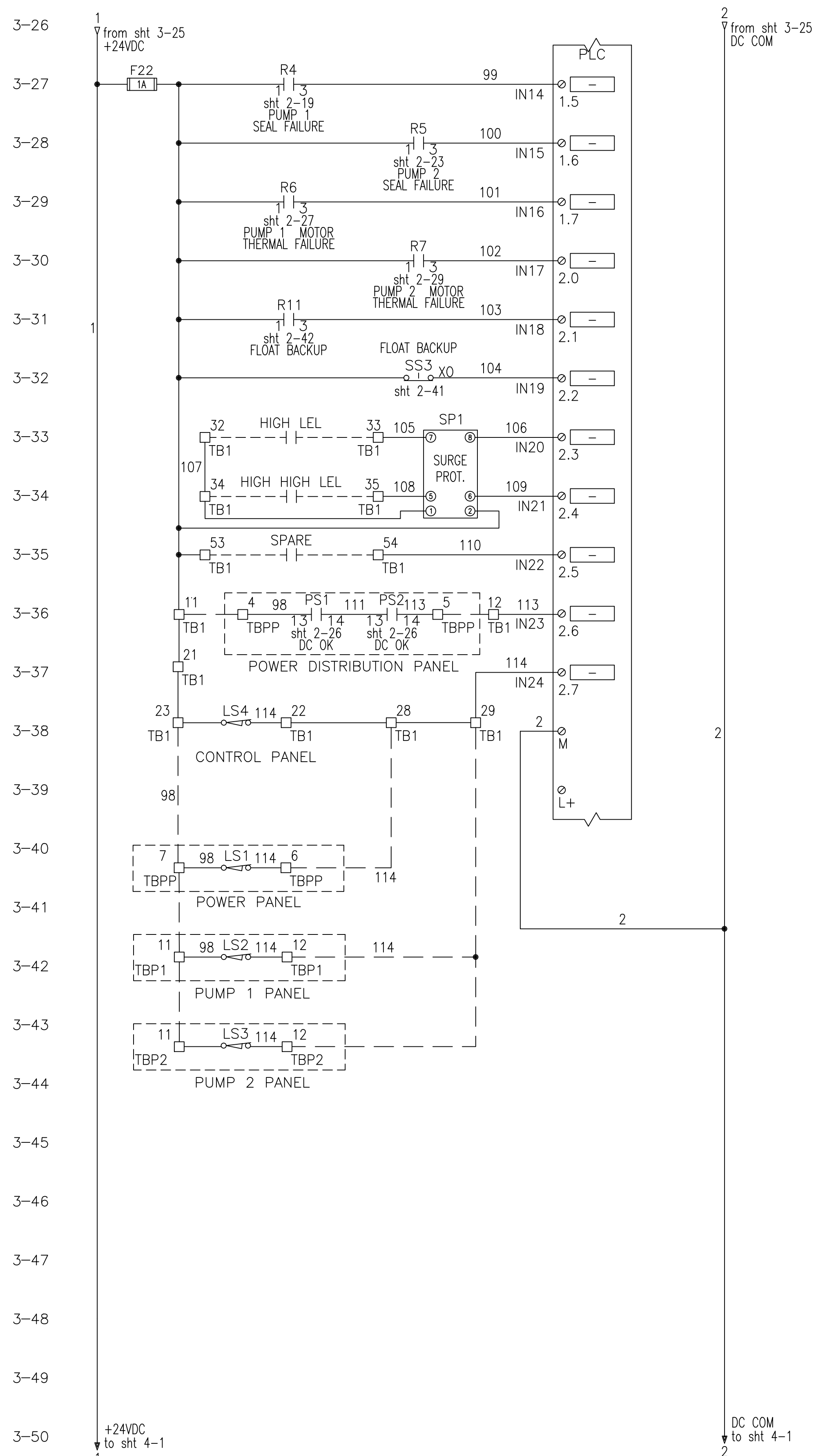
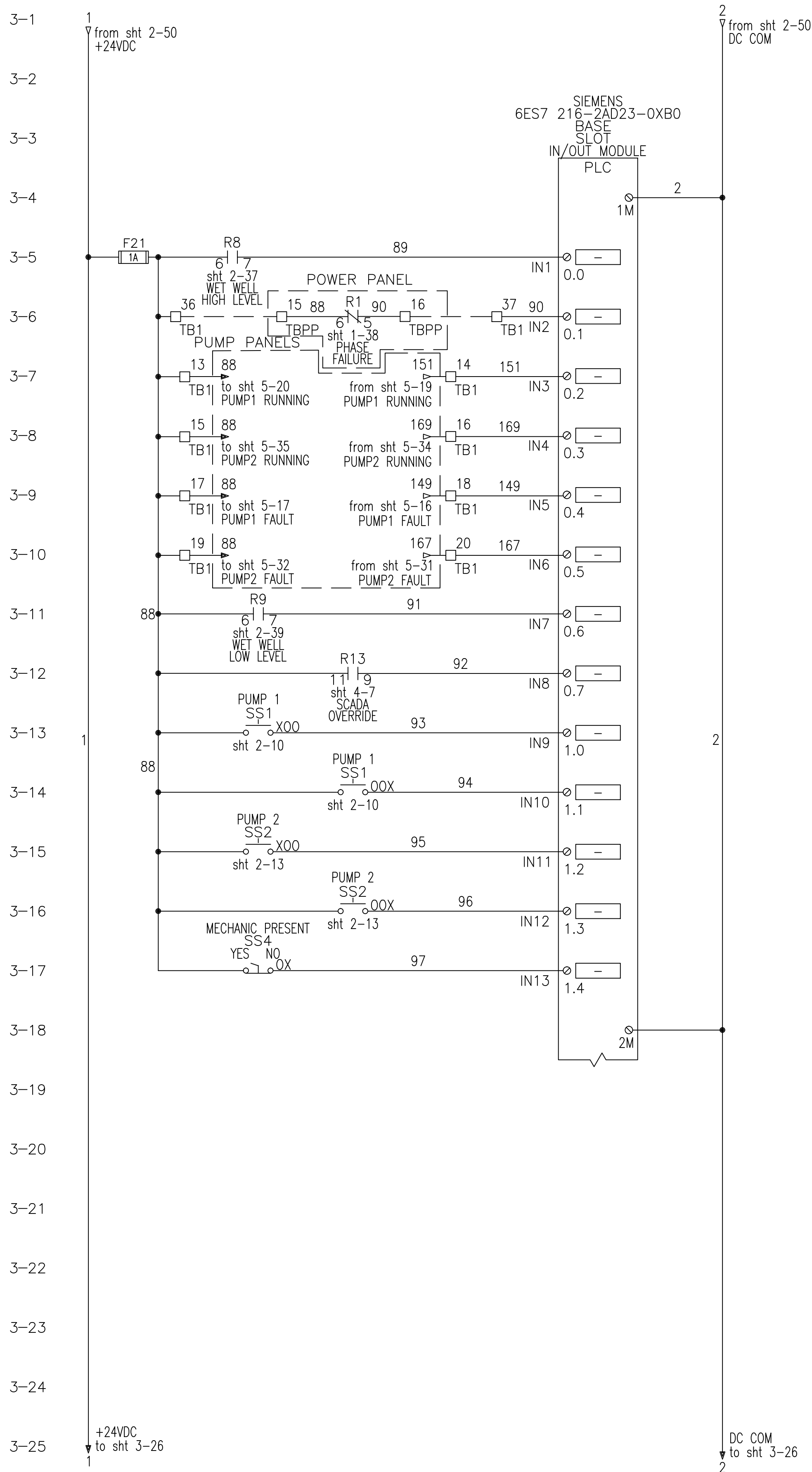
LIFT STATION CONSTRUCTION DETAILS

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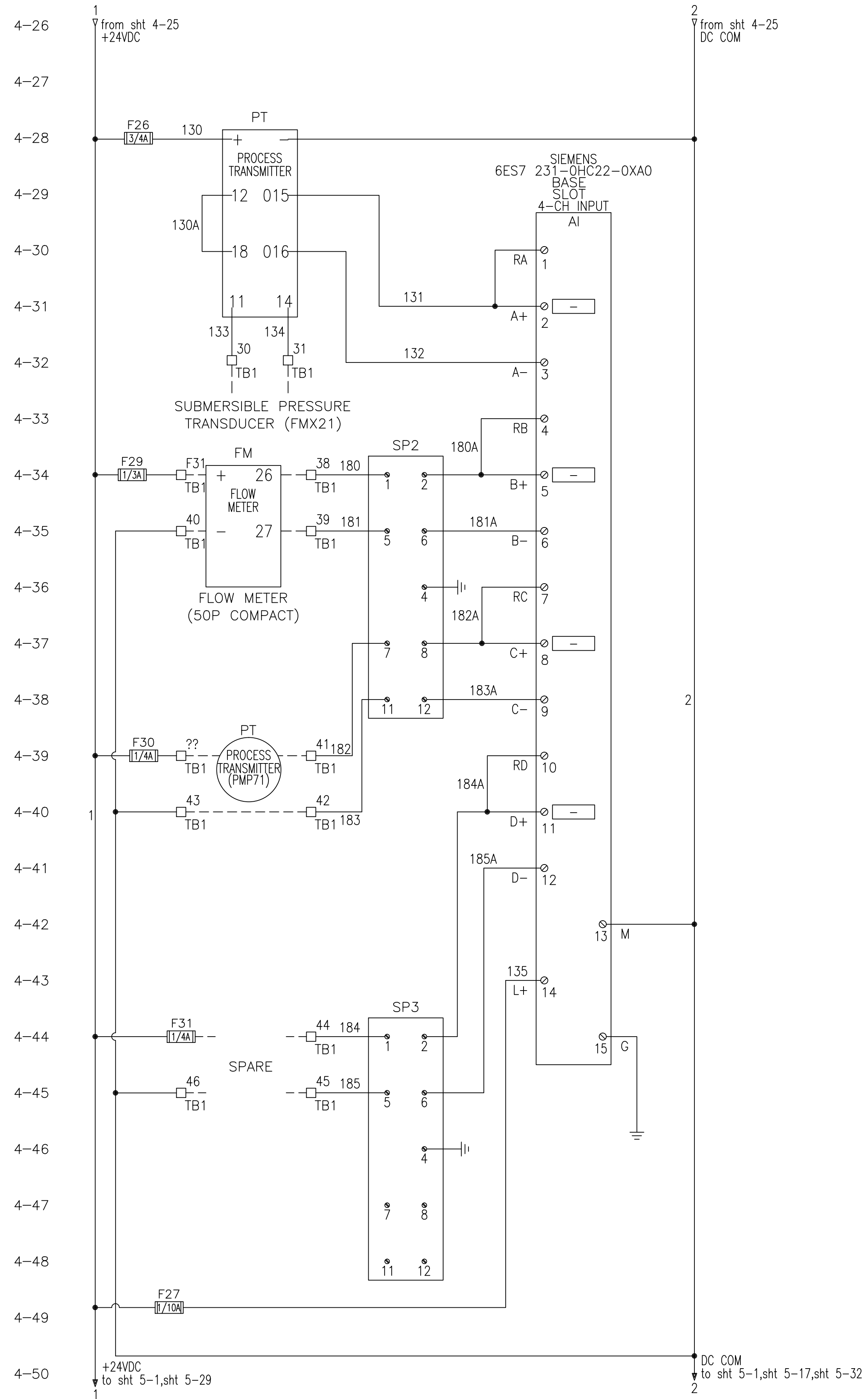
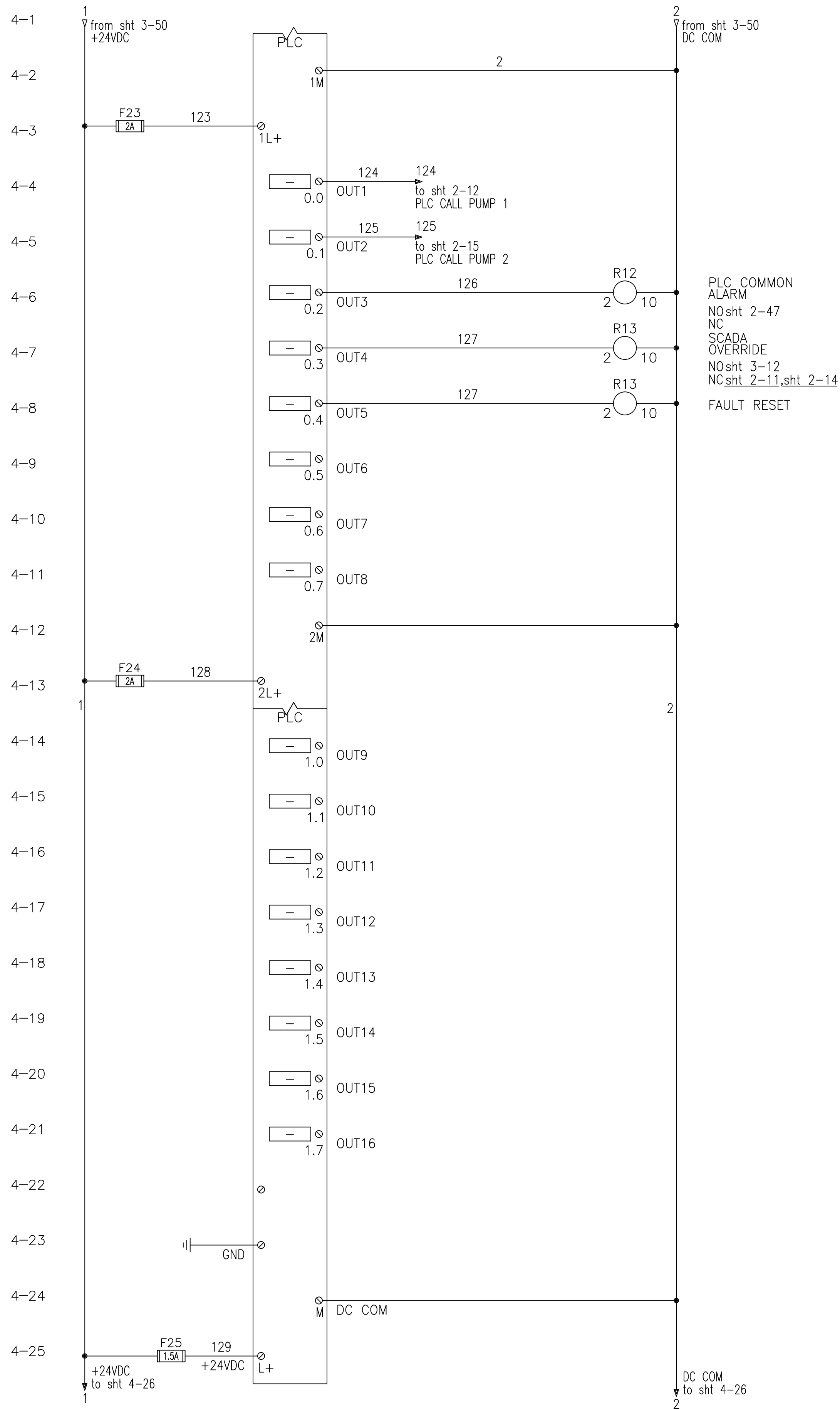
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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
ELECTRICAL STANDARDS



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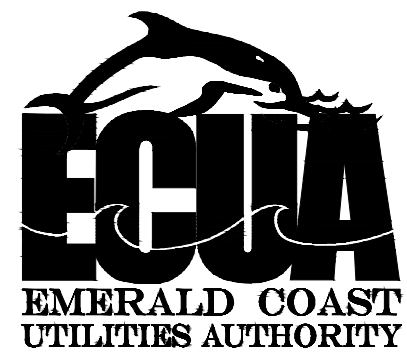
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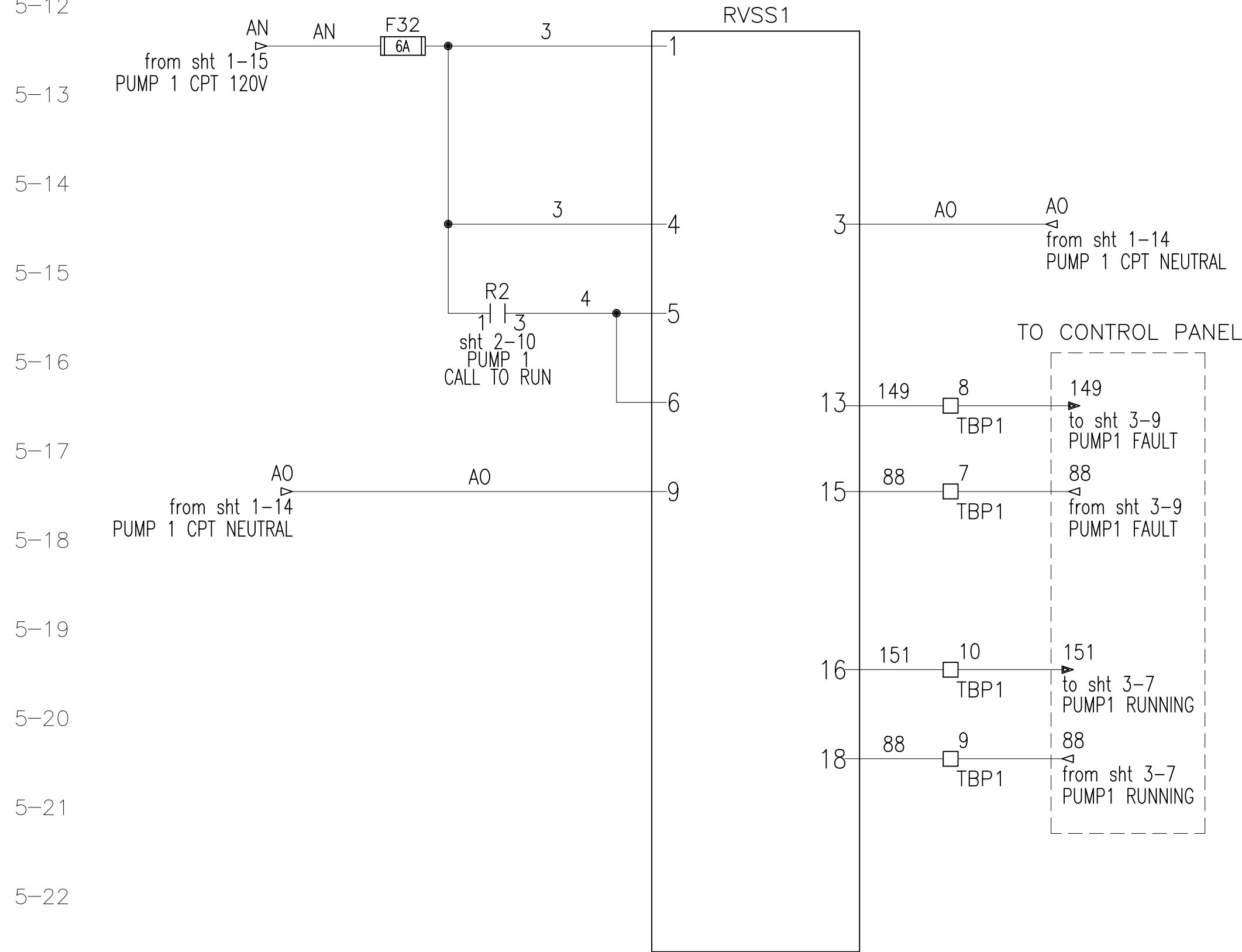
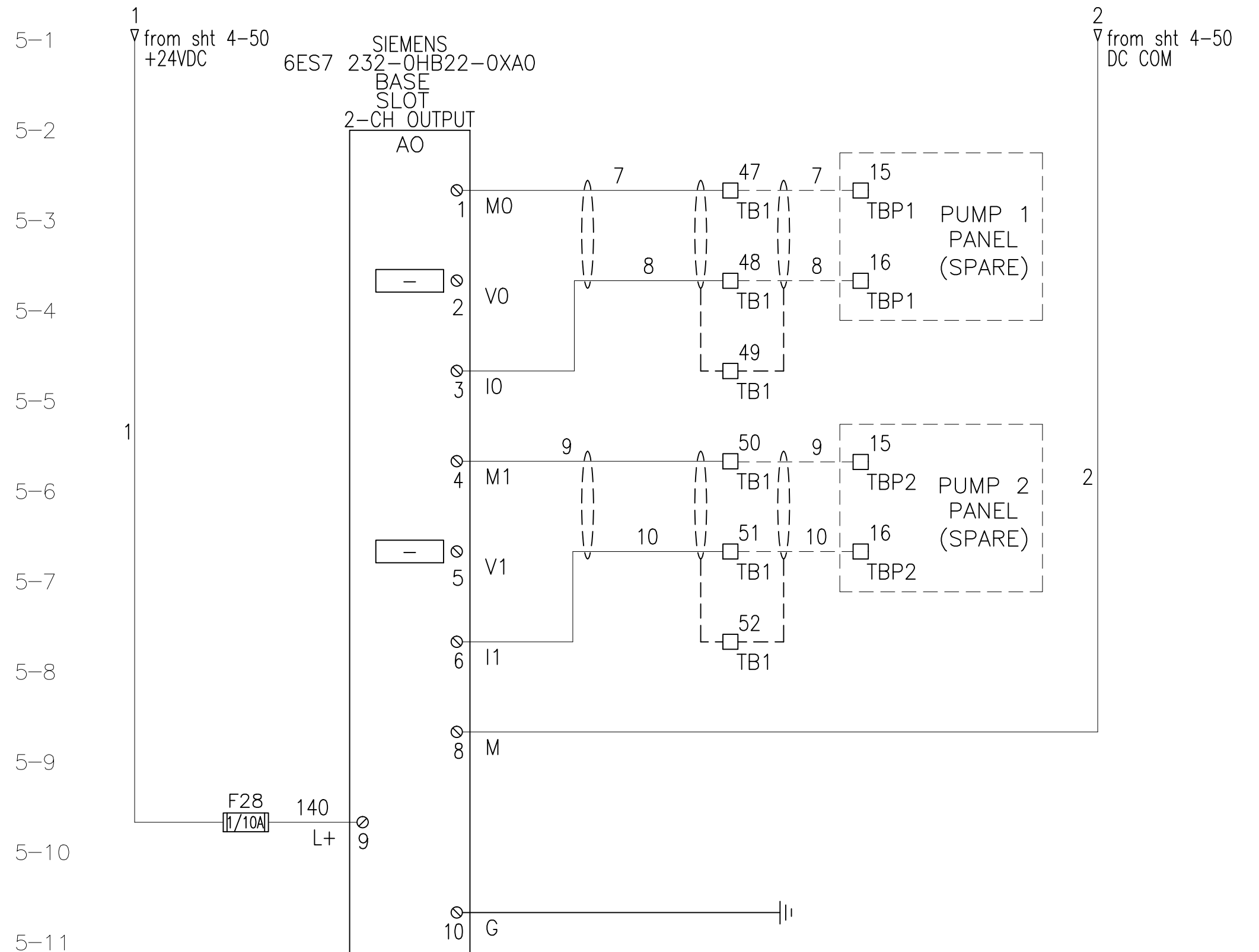
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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
ELECTRICAL STANDARDS

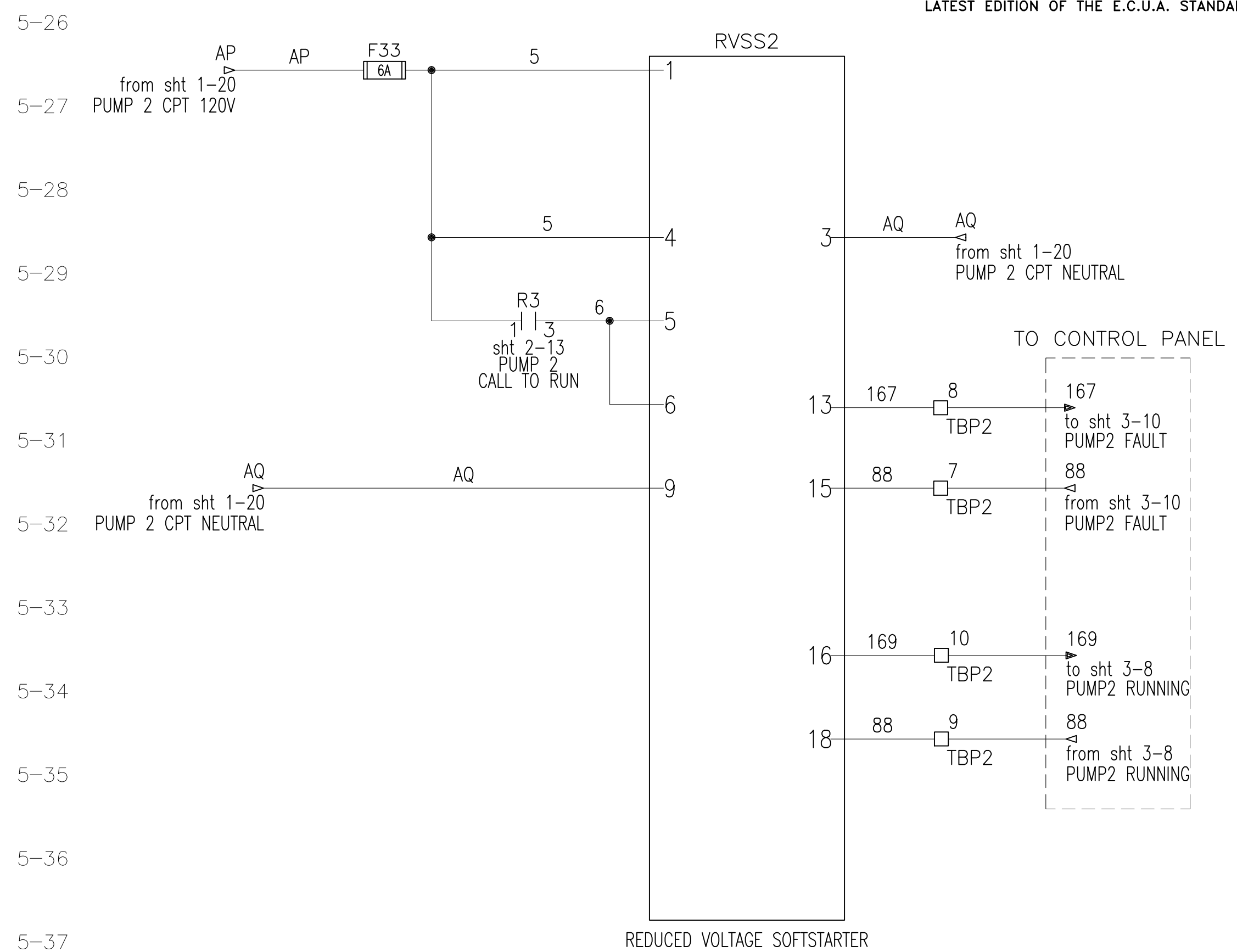


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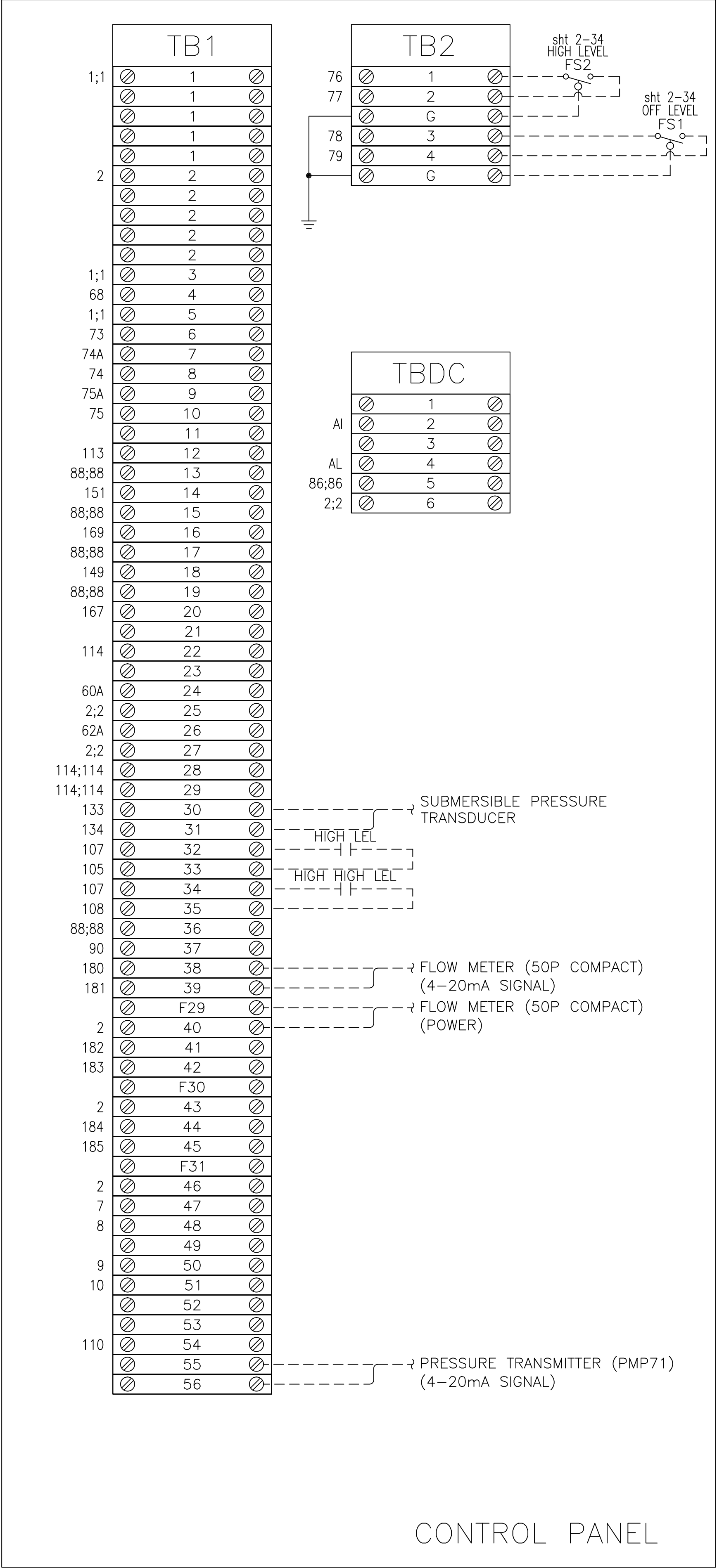
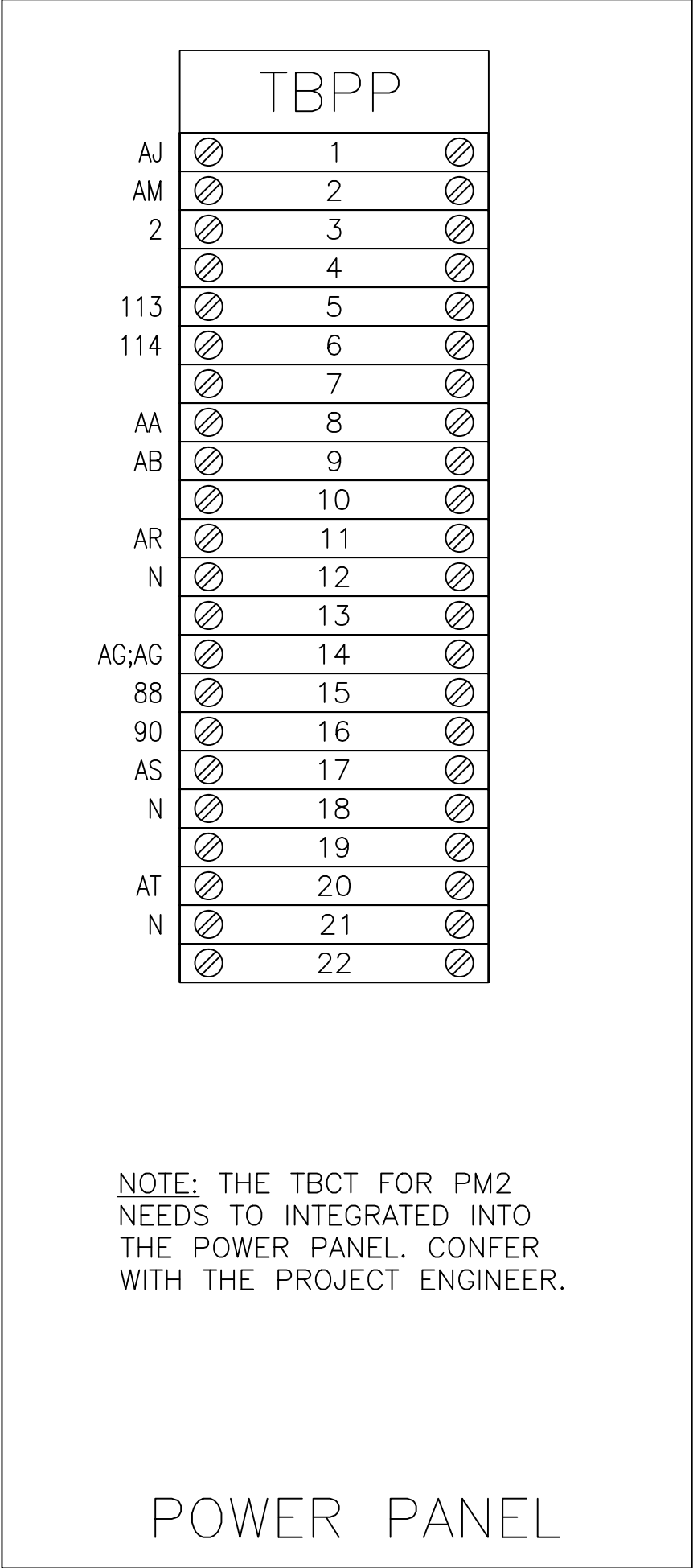
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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
ELECTRICAL STANDARDS



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SUBMERSIBLE PRESSURE
TRANSDUCER

HIGH LEL

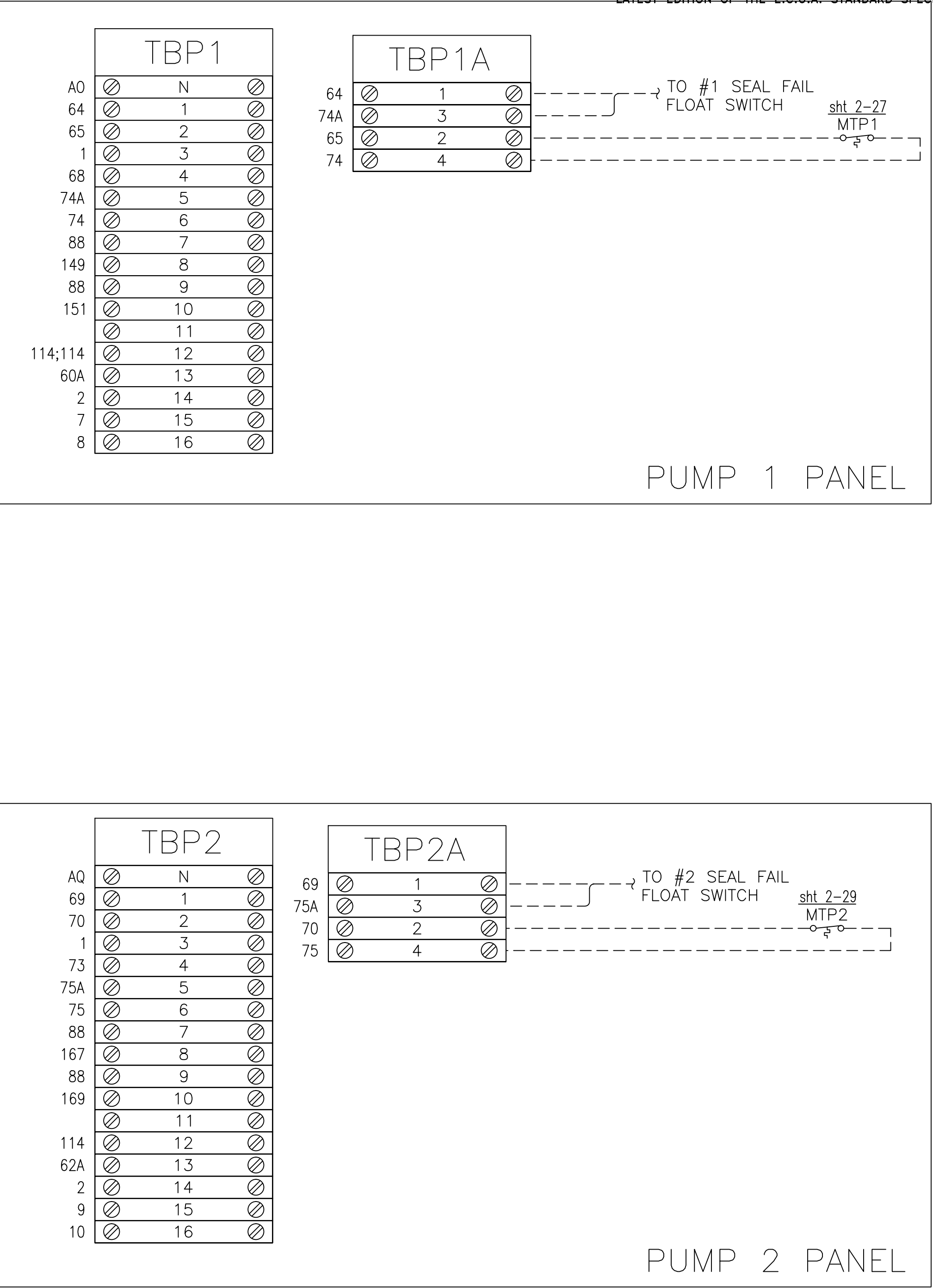
HIGH HIGH LEL

FLOW METER (50P COMPACT)
(4-20mA SIGNAL)

FLOW METER (50P COMPACT)
(POWER)

PRESSURE TRANSMITTER (PMP71)
(4-20mA SIGNAL)

CONTROL PANEL



N

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

TBP2

A0

69

70

1

73

75A

75

88

167

88

169

114

62A

2

9

10

1

3

2

4

TBP2A

69

75A

70

75

TO #2 SEAL FAIL
FLOAT SWITCH

shlt 2-29
MTP2

PUMP 2 PANEL

- NOTES:
- TERMINAL BLOCK DESIGNATIONS:
- TBPP – POWER PANEL TERMINAL BLOCK
 - TB1 – CONTROL PANEL TERMINAL BLOCK
 - TB2 – INTRINSICALLY SAFE TERMINAL BLOCK
 - TBP1 – PUMP 1 TERMINAL BLOCK
 - TBP1A – PUMP 1 TERMINAL BLOCK (MOTOR THERMAL AND SEAL FAILURE)
 - TBP2 – PUMP 2 TERMINAL BLOCK
 - TBP2A – PUMP 2 TERMINAL BLOCK (MOTOR THERMAL AND SEAL FAILURE)

TYPICAL FOR ALL TERMINAL BLOCKS ON THIS DRAWING

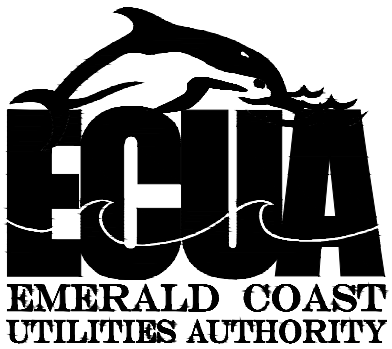
USE COPPER CONDUCTORS ONLY
75 DEG C (167 DEG F)
5.3-7.0 LB/IN TIGHTENING TORQUE

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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM

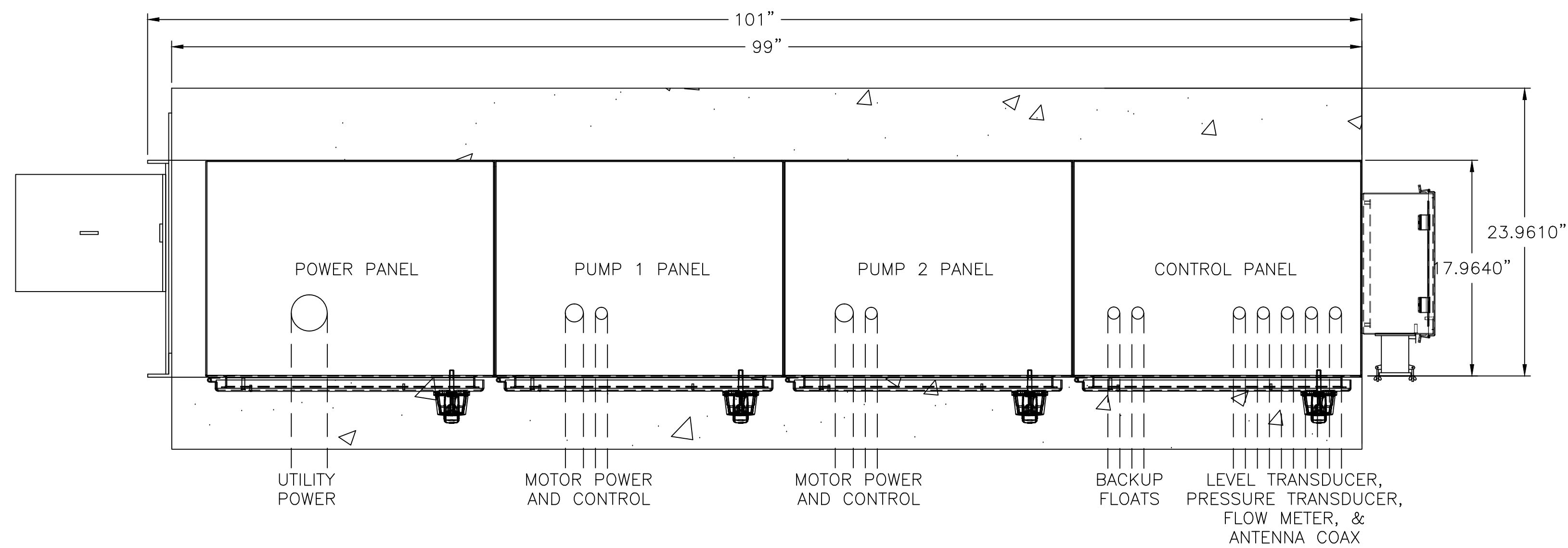
LIFT STATION CONSTRUCTION DETAILS

ELECTRICAL STANDARDS



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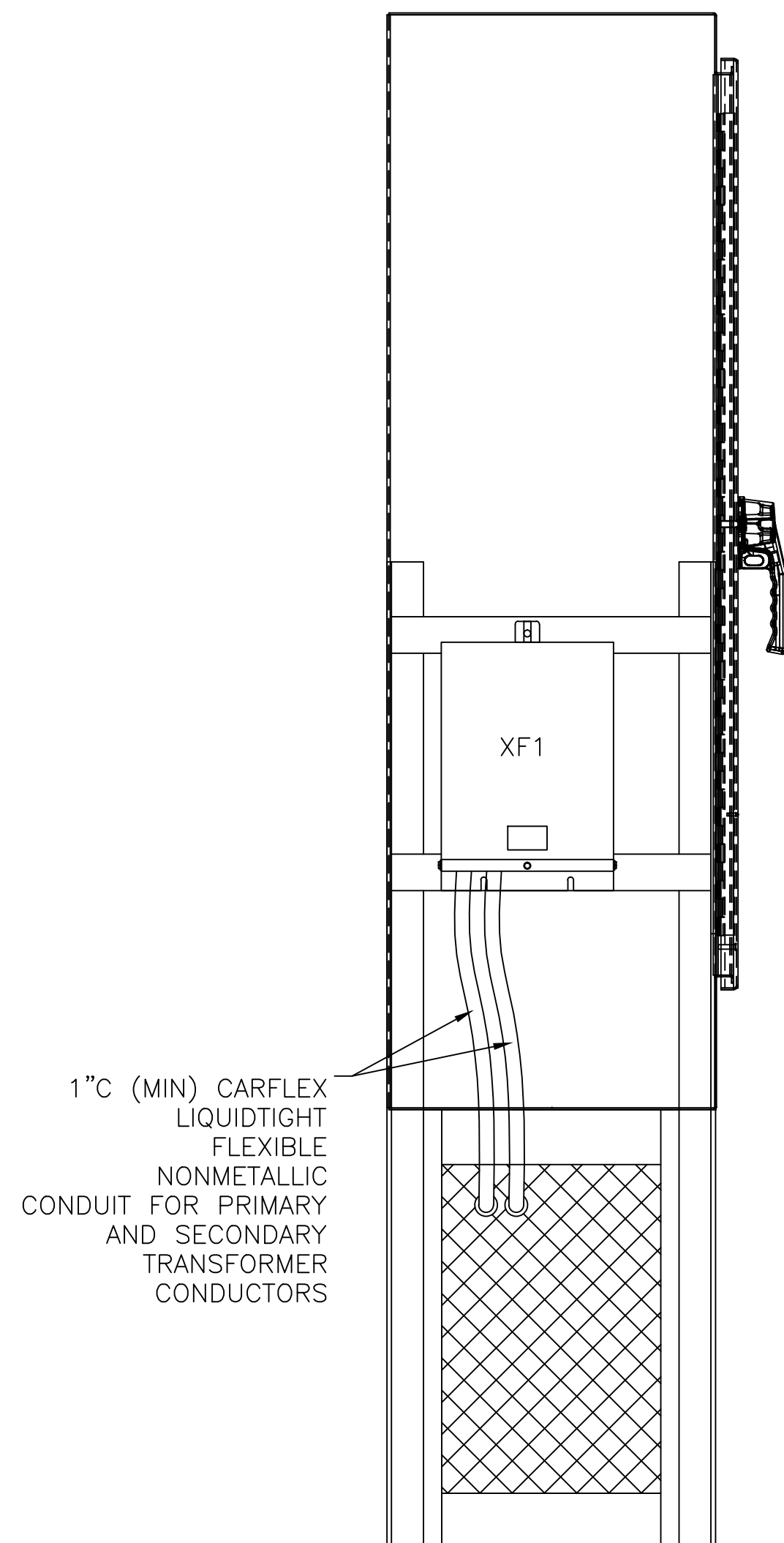
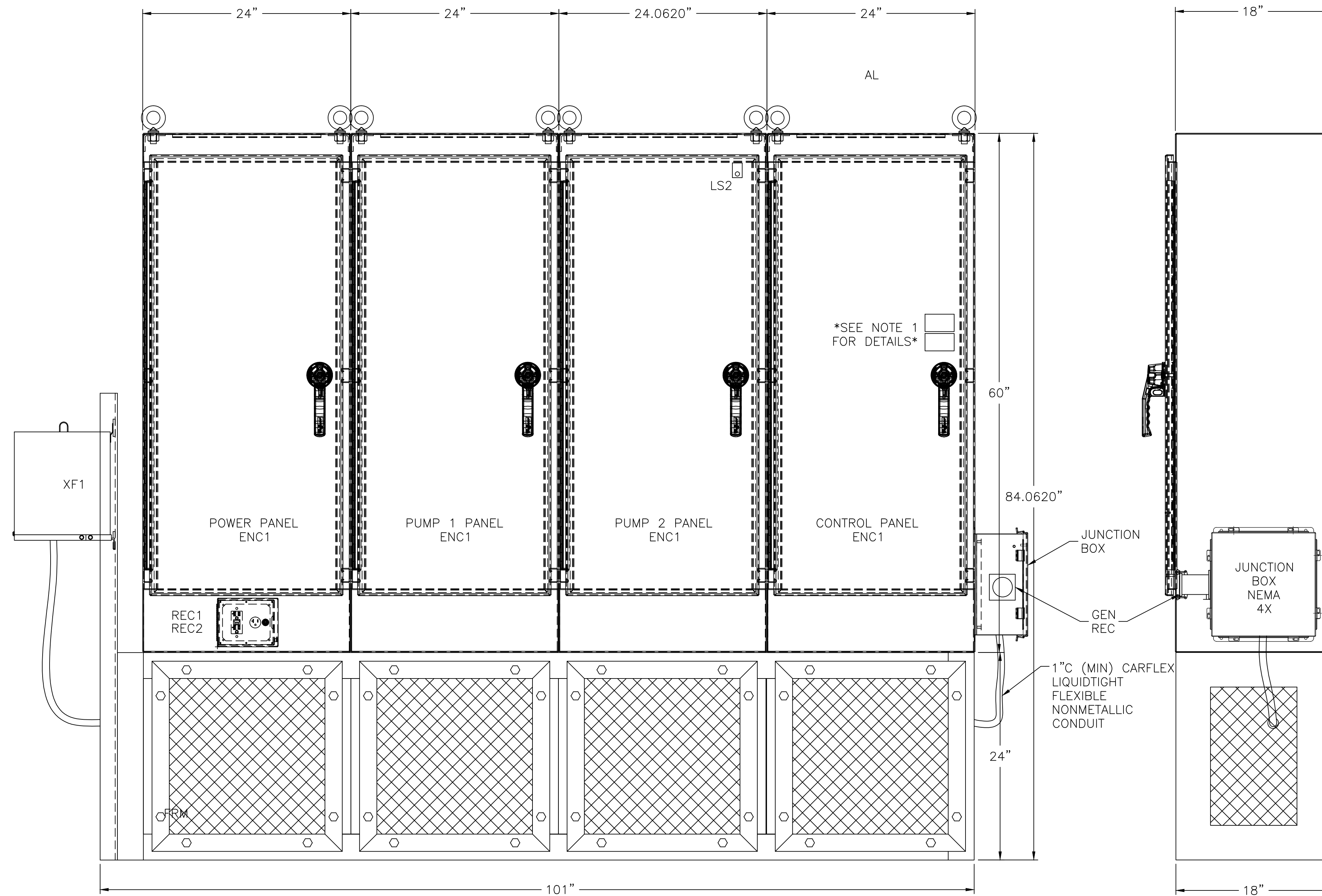
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- ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE E.C.U.A. STANDARD SPECIFICATIONS
- ### NOTES
- SEE SHEET 15 FOR SCHEDULES, LEGENDS AND PANEL TAGS.
 - GENERATOR RECEPTACLE TO BE ON SAME SIDE AS THE DRIVEWAY.

ATTENTION

THIS LAYOUT IS ONE OF TWO (2) POSSIBLE CHOICES – SEE SHEET 7A FOR THE OTHER OPTION. IF THIS LAYOUT OPTION IS SELECTED, SEE SHEET 14 FOR ASSOCIATED RACK DETAILS.



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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM

LIFT STATION CONSTRUCTION DETAILS

ELECTRICAL STANDARDS



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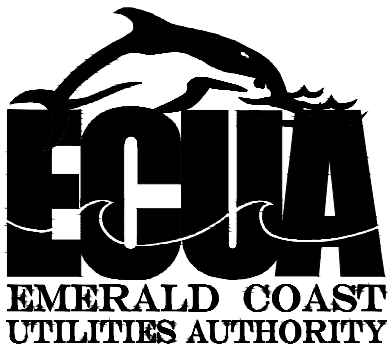
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NOTES

- 1. SEE SHEET 15 FOR SCHEDULES, LEGENDS AND PANEL TAGS.
- 2. LAYOUT OF THE POWER & STARTER SECTIONS DEPICTS THE LARGEST POSSIBLE HORSEPOWER CONFIGURATION.

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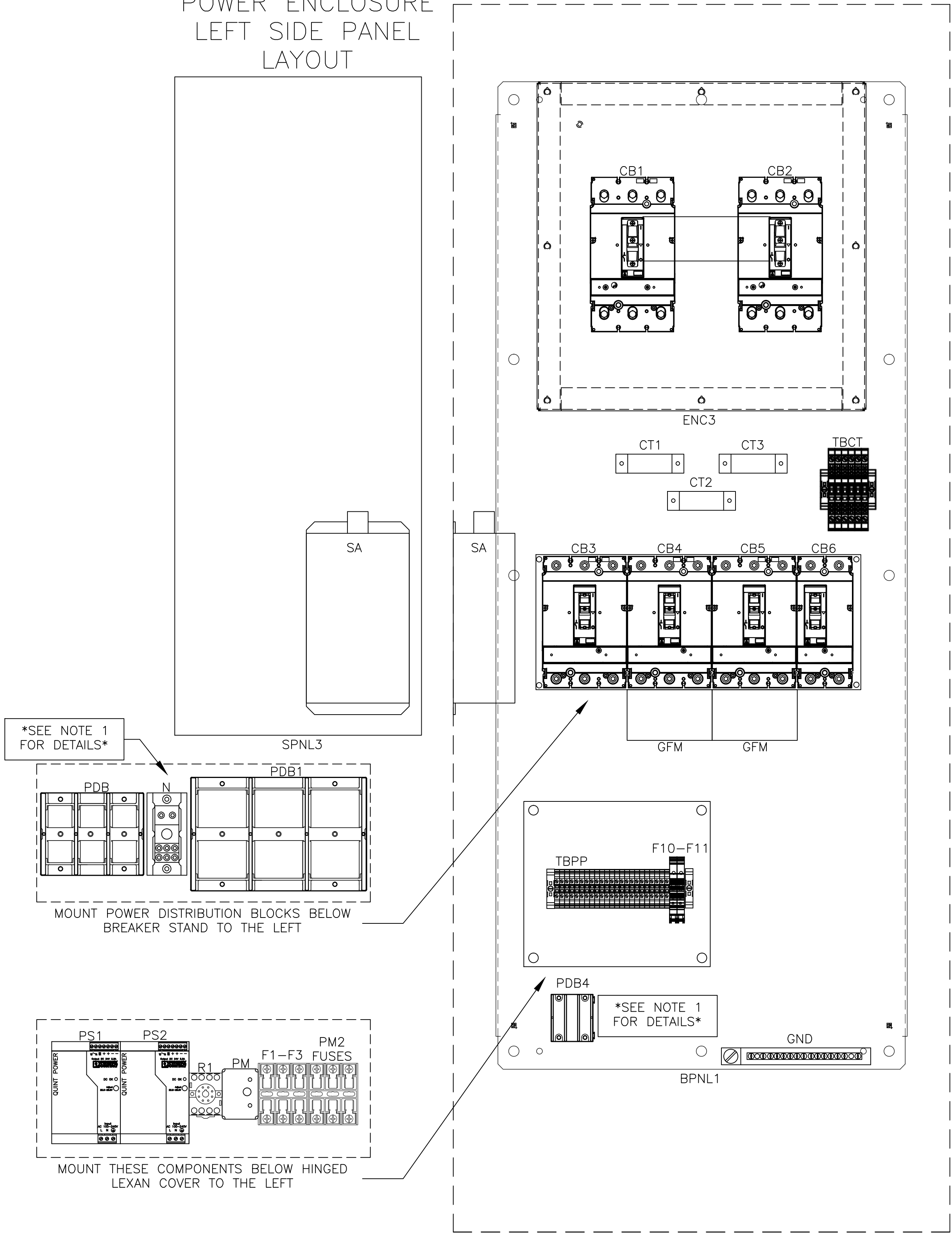
IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
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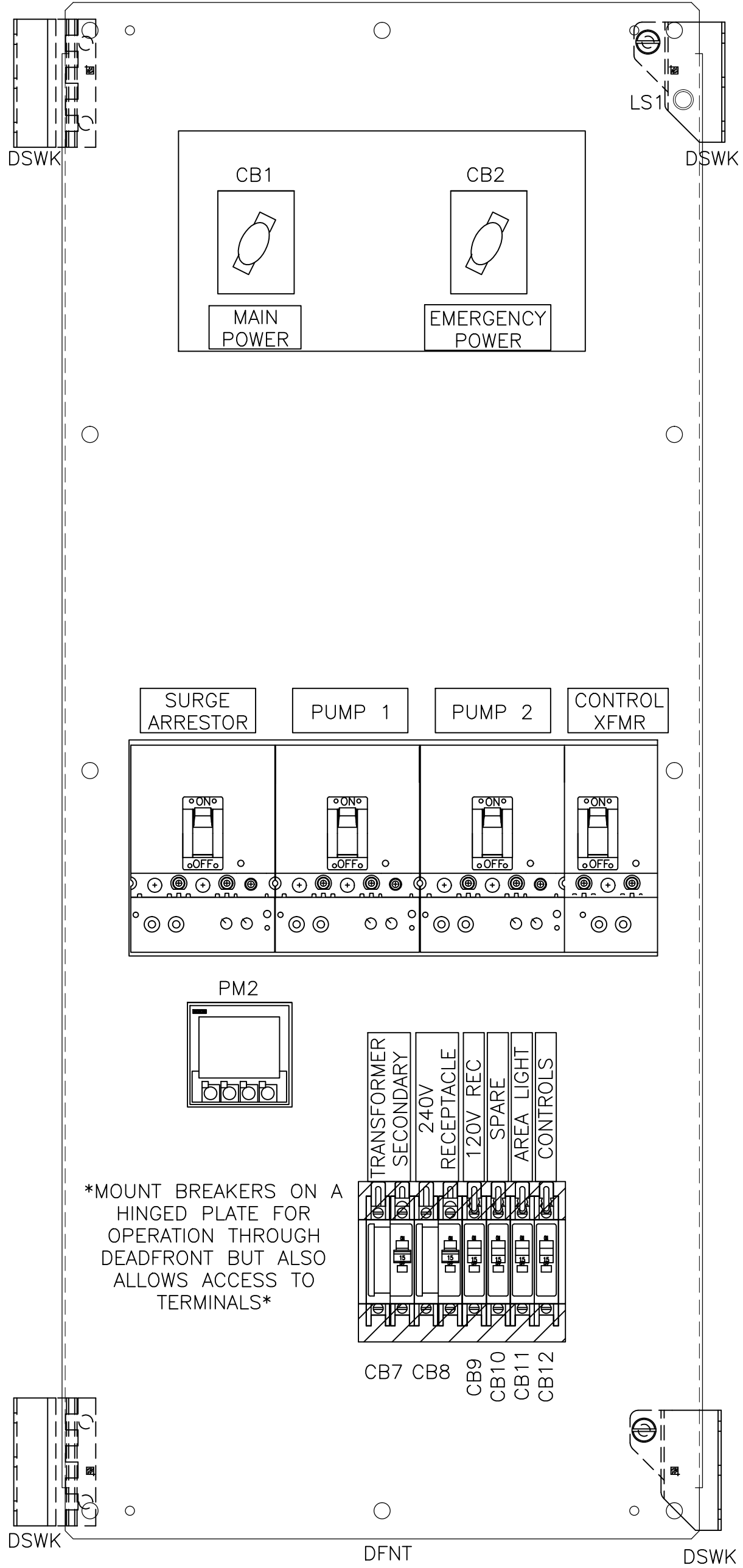
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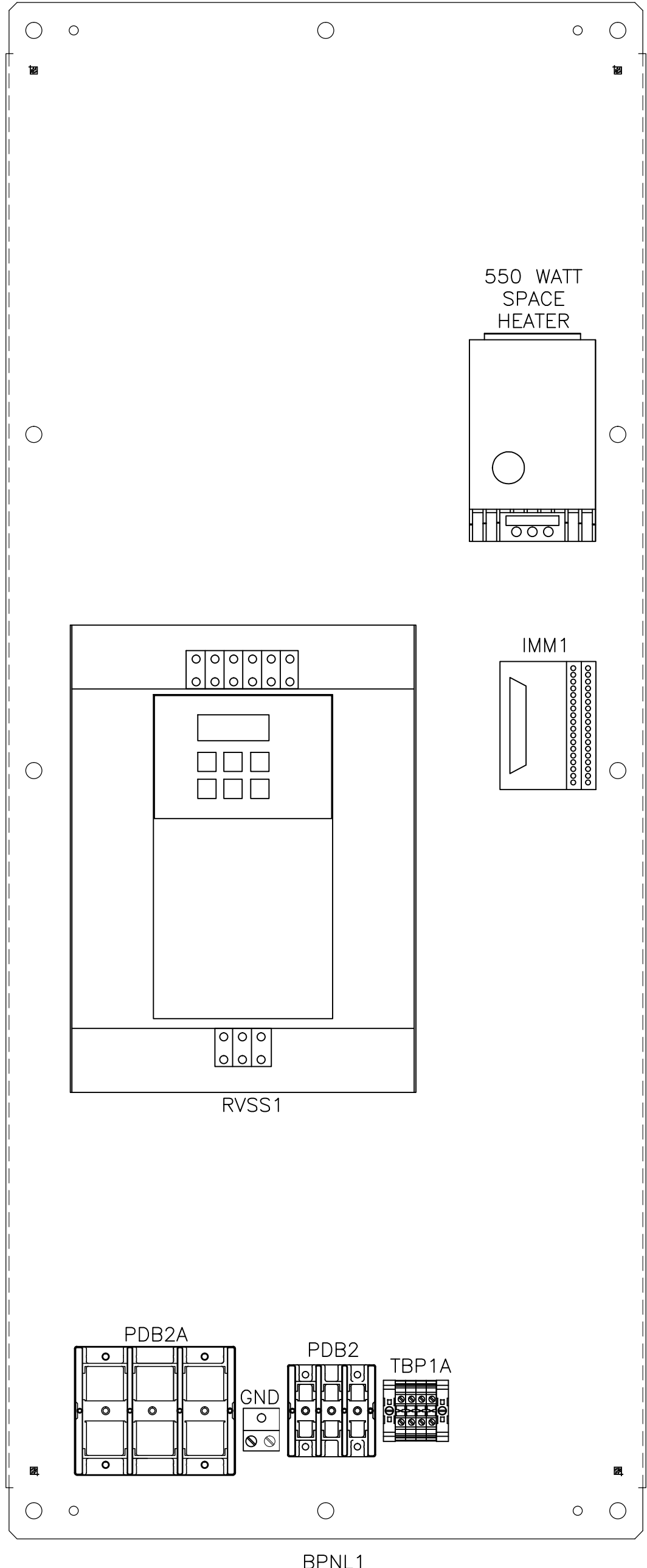
POWER ENCLOSURE
LEFT SIDE PANEL
LAYOUT



POWER ENCLOSURE
BACKPANEL LAYOUT

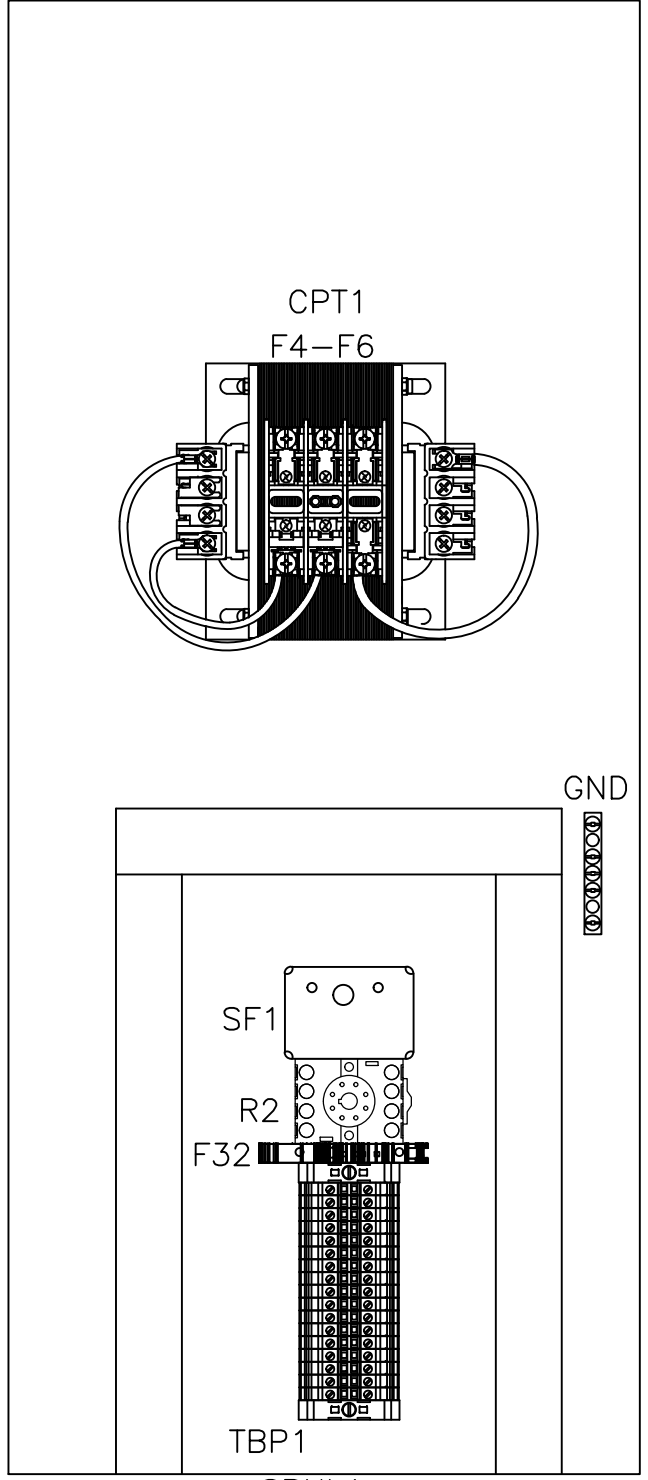


POWER ENCLOSURE
DEADFRONT LAYOUT



PUMP 1 ENCLOSURE
BACKPANEL LAYOUT

*SEE SHEET 9 FOR SIDE
PANEL LAYOUTS



PUMP 1 ENCLOSURE
RIGHT SIDE-PANEL
LAYOUT

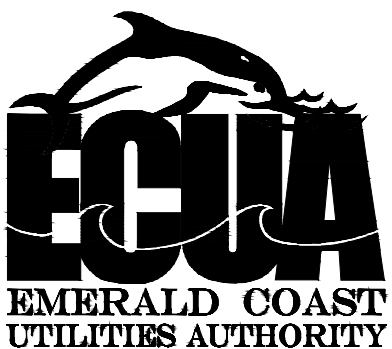
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NOTES

- 1. SEE SHEET 15 FOR SCHEDULES, LEGENDS AND PANEL TAGS.
- 2. LAYOUT OF THE VFD SECTION DEPICTS THE LARGEST POSSIBLE HORSEPOWER CONFIGURATION.

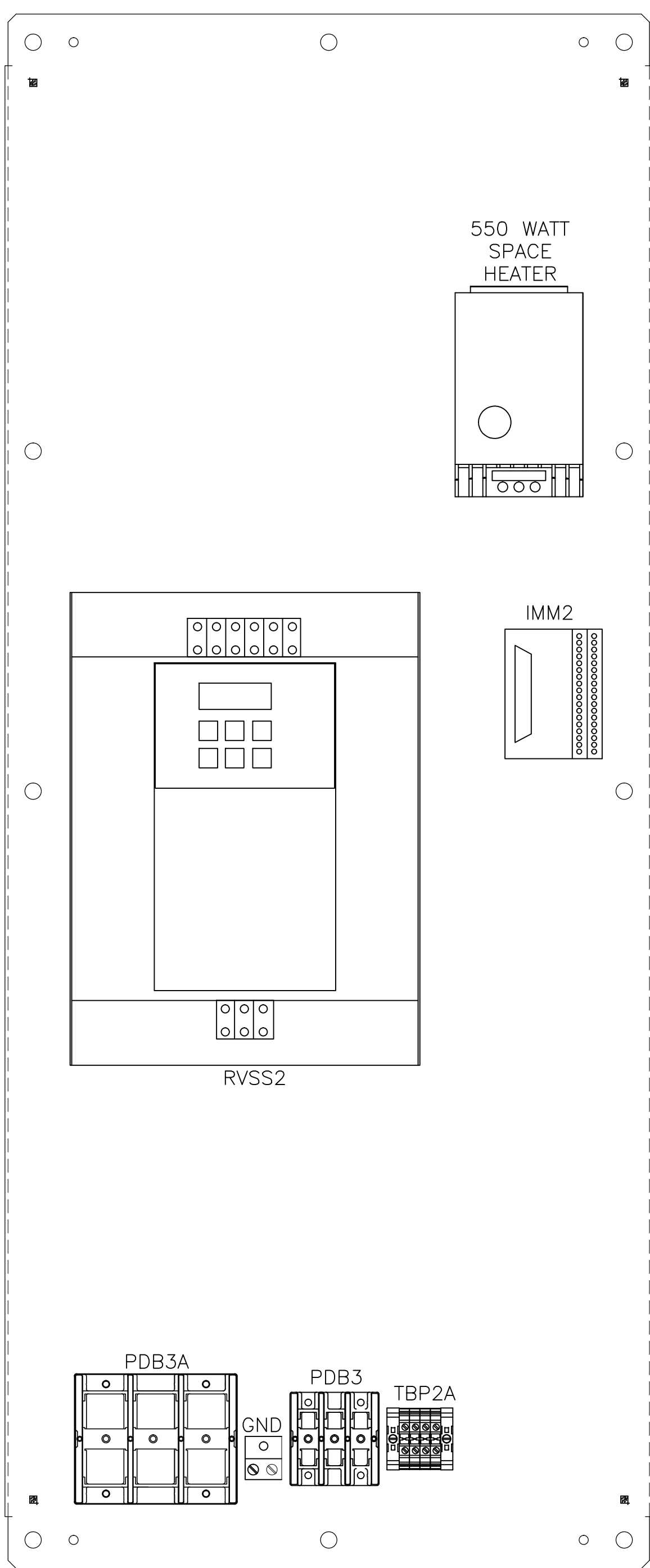
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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
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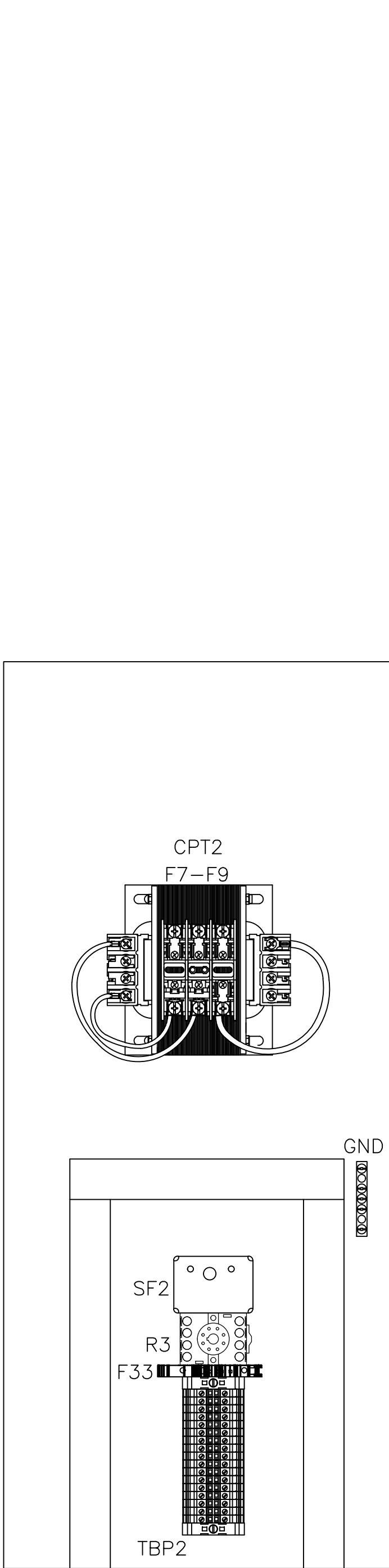


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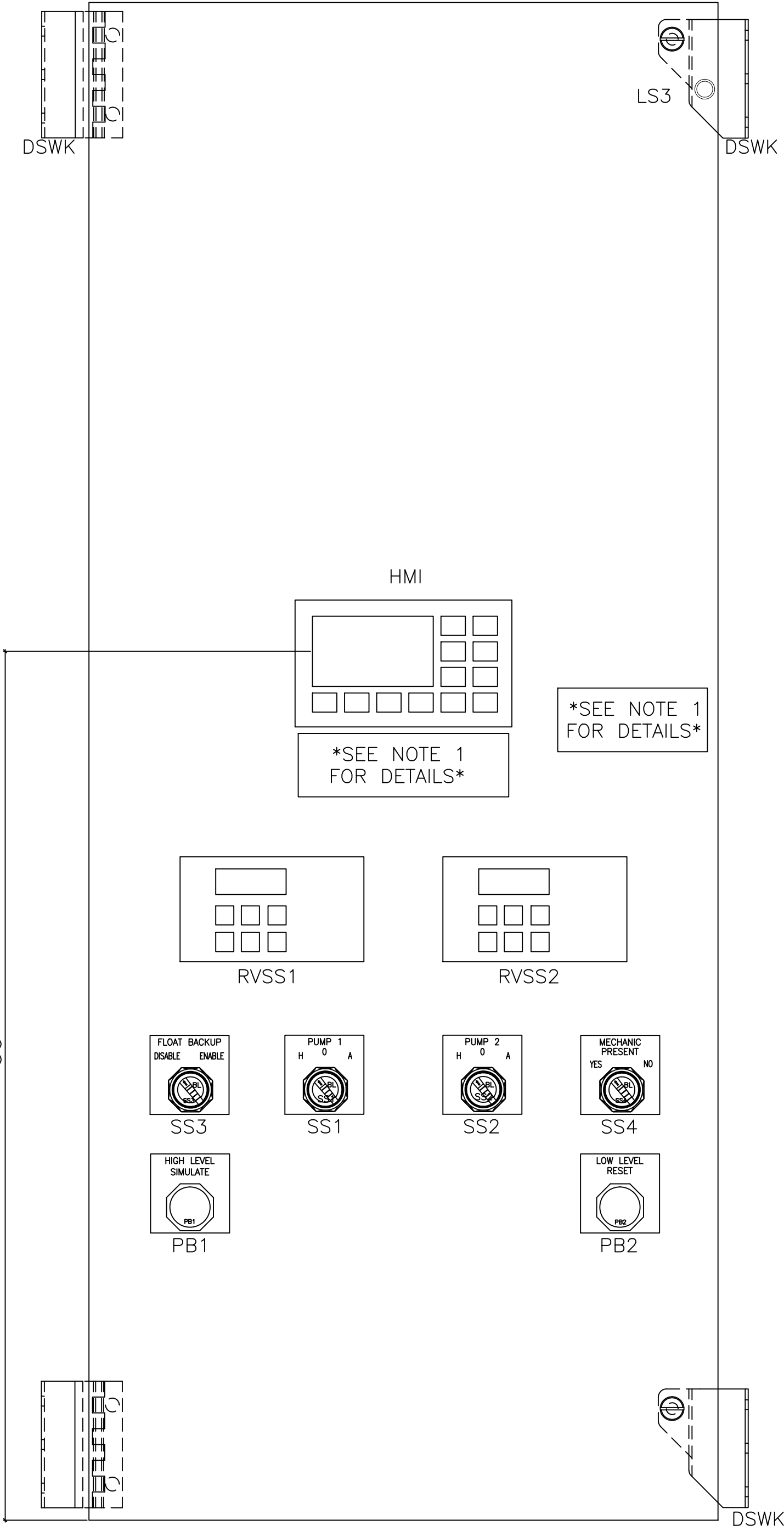
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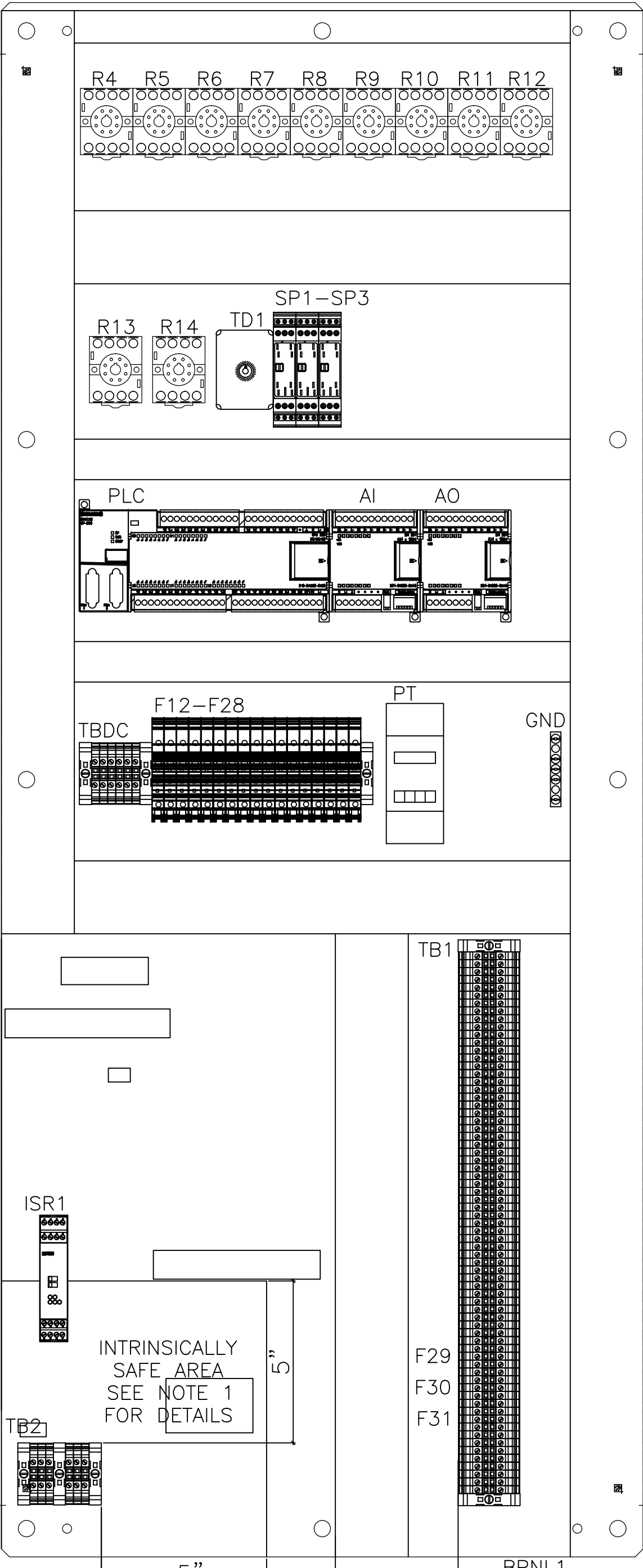
PUMP 2 ENCLOSURE
BACKPANEL LAYOUT



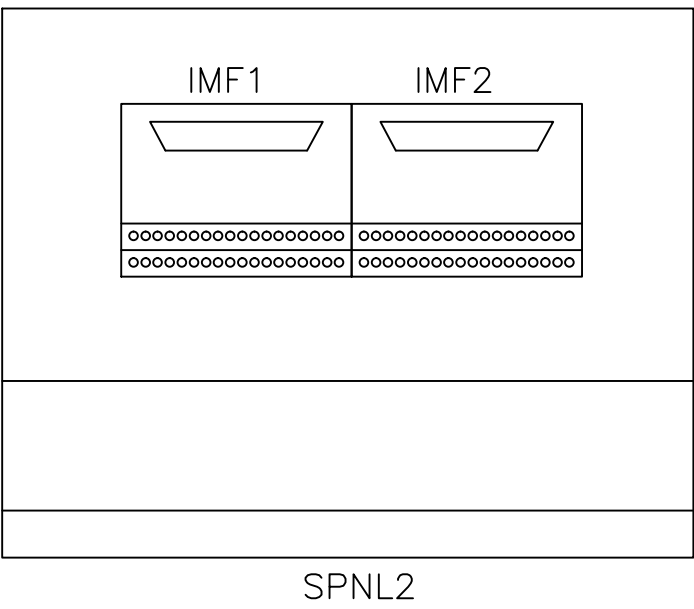
PUMP 2 ENCLOSURE
RIGHT SIDEPANEL LAYOUT



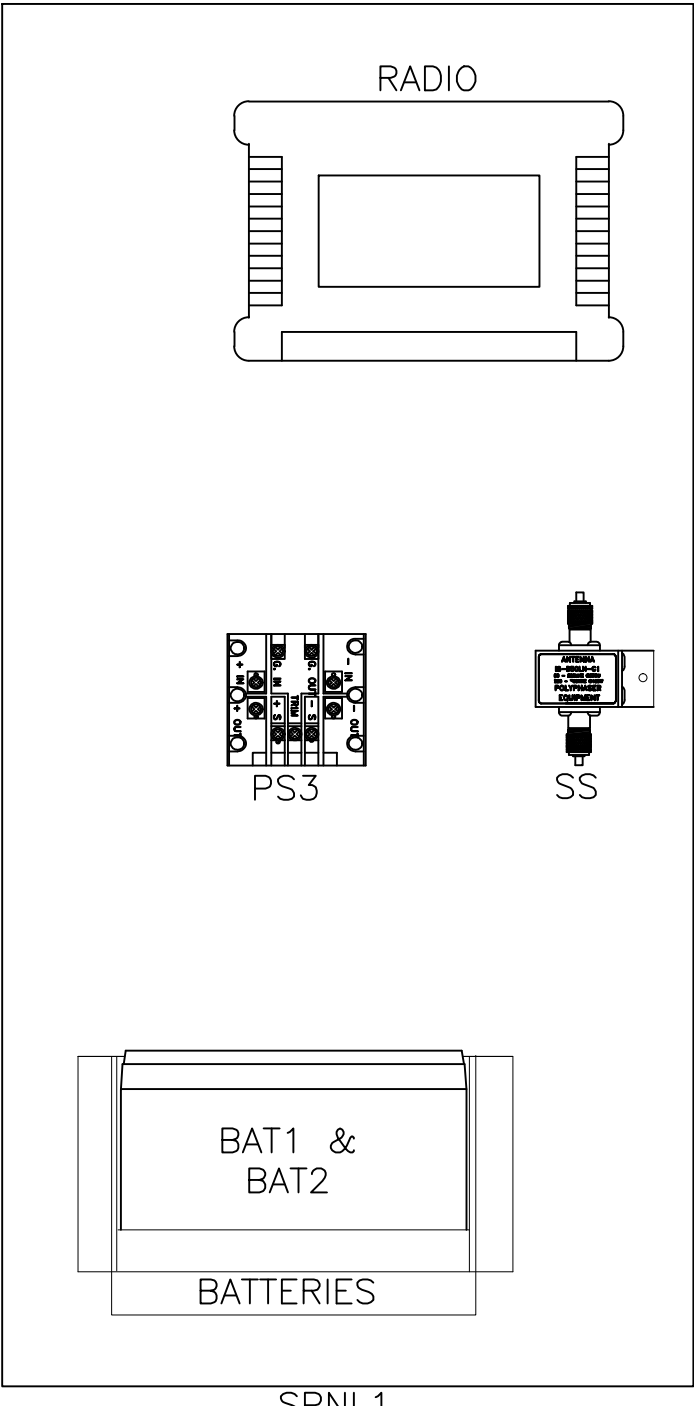
CONTROL PANEL
DEADFRONT LAYOUT



CONTROL ENCLOSURE
BACKPANEL LAYOUT



CONTROL ENCLOSURE
LEFT SIDEPANEL LAYOUT



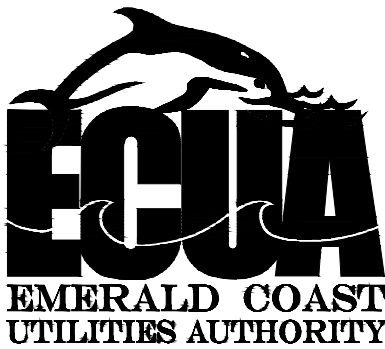
CONTROL ENCLOSURE
RIGHT SIDEPANEL LAYOUT

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480V RVSS Equipment List							480V RVSS Equipment List						
Item	Tag	Panel	Description	Manufacturer	Model	Qty	Item	Tag	Panel	Description	Manufacturer	Model	Qty
1	ENC1	All	60X24X18 NEMA 4X SS Enclosure	Hoffman	A602418SSFSN4	4	75	-	-	Antenna Tower 5' Base Section, ROHN R-SB25G5 (Ship Loose)	Tessco	64559	1
2	BPNL1	All	60x24 Painted Steel Backpanel	Hoffman	A60P24F1	4	76	-	-	Antenna Tower 10' Mid Section, ROHN R-25G (Ship Loose)	Tessco	56866	1
3	SPNL1	Pump 1, 2 & Control	28"H x 12"W Aluminum Sidepanel	EWS	Custom	3	77	-	-	Antenna Tower 9' Top Section, ROHN R-25AG2 (Ship Loose)	Tessco	70080	1
4	DFNT	Power & Control	60x24 Aluminum Deadfront Panel	EWS	Custom	2	78	-	-	21' 1-1/4" S.S. Antenna Mast (Ship Loose)	Bell Steel	23008	1
5	DSWK	Power & Control	Door Swing Kit	Hoffman	ANADFK	2	79	F18, F19	Control	1/4A Fuse	Bussmann	AGC-1/4	2
6	FRM	All	Expanded Metal Stainless Steel Frame	EWS	SEE DRAWINGS	1	80	F16, F17, F23, F24	Control	2A Fuse	Bussmann	AGC-2	4
7	PDB	Power	Incoming Power Distribution Block PDB	Square D	SEE HP TABLE SHEET 11	1	81	SS1, SS2	Control	3 Position Selector Switch, 30MM	Square D	9001SKS43BH2	2
8	PDB	Power	Incoming Power Distribution Block PDB Cover	Square D	SEE HP TABLE SHEET 11	1	82	R2-R13	Control	24VDC 3PDT General Purpose Relay w/ Indicator Lamp	Potter Brumfield	KRPA-14DN-24	12
9	GND	Power	Power Panel Ground Bar	Square D	PK15GTA-L	1	83	SF1, SF2	Control	120V Seal Failure Relay	ATC	SPM-120-AAA-10K	2
10	ENC3	Power	16"H x 16"W x 8"D Screw Cover Type 3R Enclosure	Hoffman	A16168GSC	1	84	ISR1	Control	Intrinsically Safe Barrier Relay, 24VDC	Phoenix Contact	2685476	1
11	CB1	Power	600V Main Circuit Breaker	Square D	SEE HP TABLE SHEET 11	1	85	TB2	Control	Terminal Block, Blue TB2	Phoenix Contact	3044115	4
12	CB2	Power	600V Emergency Circuit Breaker	Square D	SEE HP TABLE SHEET 11	1	86	TB2	Control	Terminal Block, Blue End Barrier, TB2	Phoenix Contact	3047235	1
13	CB1,CB2	Power	Mechanical Interlock for H/J Frame Circuit Breakers	Square D	S29369	1	87	TB2	Control	Ground Terminal Blocks, TB2	Phoenix Contact	3044128	2
14	CB1,CB2	Power	Door Mounted Rotary Handle for H/J Frame Circuit Breakers	Square D	S29338	2	88	PB1, PB2	Control	Push Button, Black 1NO 1NC	Square D	9001SKR1BH13	2
15	GEN REC	Power	NEMA 4X Generator Receptacle	Appleton	AR20044R5	1	89	SS3, SS4	Control	2 Position Selector Switch, 30MM	Square D	9001SKS11BH2	2
16	PDB1	Power	Main Power Distribution Block	Square D	SEE HP TABLE SHEET 11	1	90	TD1	Control	24VDC 0-180Second Time Delay Relay	Square D	RE48ATM12MW	1
17	PDB1	Power	Main Power Distribution Block Cover	Square D	SEE HP TABLE SHEET 11	1	91	TD1	Control	8 Pin Relay Base	ABB	NDS-8	1
18	F1-F3, F38-F40	Power	3 Pole Rejection type Fuse Block	Bussmann	BC6033PQ	2	92	F20, F27, F28	Control	1/10A Fuse	Bussmann	AGC-1/10	3
19	F1-F3, F38-F40	Power	1A Rejection Type Fuse, Class CC	Bussmann	KTk-R-1	6	93	HMI	Control	TD400C Text Display	Siemens	6AV6 640-0AA00-0AX1	1
20	F1-F3, F38-F40	Power	Fuse Cover	Bussmann	SAMI-7N	6	94	F21, F22	Control	1A Fuse	Bussmann	AGC-1	2
21	PM	Power	480V Phase Monitor	Timemark	A257B	1	95	PLC	Control	S7-200 Dual Com Port Processor w/ 24 DI & 16 DO Points	Siemens	6ES7 216-2AD23-0XB0	1
22	PM	Power	480V, 8-Pin Relay Base	ABB	OT08PC	1	96	AI	Control	S7-200 4 Point AI Module	Siemens	6ES7 231-0HC22-0XA0	1
23	CB3-CB6	Power	Breaker Stand	EWS	AO	1	97	AO	Control	S7-200 2 Point AO Module	Siemens	6ES7 232-0HB22-0XA0	1
24	CB3	Power	30A 480V 3 Pole Circuit Breaker, Main Surge Arrestor	Square D	HDL36030	1	98	PLC	Control	S7-200 Communication cable PC/PP1 RS-232/485	Siemens	6ES7 901-3CB30-0XA0	1
25	SA	Power	Main Surge Arrestor	SSI	SDLA3N4	1	99	SP1-SP3	Control	Plug In DI Surge Suppression, PT 4x1...DC	Phoenix Contact	2838322	3
26	CB4, CB5	Power	600V 3 Pole Circuit Breaker, Starter	Square D	SEE HP TABLE SHEET 11	2	100	SP1-SP3	Control	Terminal Block Base for Plugable Surge Suppression, PT 4x1-BE	Phoenix Contact	2839363	3
27	CB4,CB5	Power	H & J Frame Circuit Breaker Locking System	Square D	S29371	2	101	LS1-LS4	Control	Panel Intrusion Switches, N.C. Contacts	NSI	76030PS	4
28	PDB2A, PDB3A	Pump 1 & 2	Power Distribution Block	Square D	SEE HP TABLE SHEET 11	2	102	F25	Control	1-1/2A Fuse	Bussmann	AGC-1-1/2	1
29	PDB2A, PDB3A	Pump 1 & 2	Power Distribution Block Cover	Square D	SEE HP TABLE SHEET 11	2	103	F26	Control	3/4A Fuse	Bussmann	AGC-3/4	1
30	RVSS1, RVSS2	Pump 1 & 2	480V Reduced Voltage Soft Starter	Solcon	SEE HP TABLE SHEET 11	2	104	PT	Control	Transmitter Proless	Endress & Hauser	RMA42AAAH2	1
31	RVSS1, RVSS2	Control	Remote keypad for Solcon RVS-DN SoftStarter	Solcon	DISP6640043	2	105	PT	-	Submersible Level Transducer, 33ft Range w/ 60ft Cable & Mounting Clamp (Ship Loose)	Endress & Hauser	FMX21-FE221HGE21APO	1
32	IMM1, IMM2	Pump 1 & 2	FLKM-037 SUB/S Interface Cable Male	Phoenix Contact	2281115	2	106	F29-F31	Control	24VDC Fused Terminal Block With Indication	Phoenix Contact	3046090	3
33	IMF1, IMF2	Control	FLKM-037 SUB/B Interface Cable Female	Phoenix Contact	2281212	2	107	F29-F31	Control	1/4A Fuse, Analog Inputs	Bussmann	GMA-250	3
34	IMM1, IMM2, IMF1, IMF2	Pump 1, 2 & Control	37 Pin D-Sub Cable, DB-37 Male to DB-37 Female	GC Electronics	45-463	2	108	VR1, VR2	Control	6A Fuse, RVSS Control Power	Bussmann	AGC-6	2
35	SPNL2	Control	10"H x 12"W Aluminum Sidepanel	EWS	Custom	1	109	TBPP,1,DC,P1, 1A, P2 & 2A	All	Terminal Block, Gray 26-10 AWG Wire	Phoenix Contact	3044102	126
36	GND	Pump 1 & 2	Power Panel to Starter Panel Ground	NSI	2-OT	2	110	TBPP,1,DC,P1, 1A, P2 & 2A	All	Terminal Block End Barrier	Phoenix Contact	3047028	8
37	PDB2, PDB3	Pump 1 & 2	Motor Power Distribution Block PDB2&3, (1)#14-2/0.....(1)#14-2/0	Square D	9080LBA362101	2	111	TBPP,1,DC,P1, 1A, P2 & 2A	All	Terminal Block End Anchor	Phoenix Contact	800886	17
38	PDB2, PDB3	Pump 1 & 2	Motor Power Distribution Block PDB2&3 Cover	Square D	9080LB23	2	112	TBP1A, TBP2A	Pump 1 & 2	Terminal Block, Gray 26-8 AWG Wire, TBVFD1A & TBVFD2A	Phoenix Contact	3044131	8
39	F4, F5, F7, F8	Pump 1 & 2	3-1/2A Rejection Type Fuse, RVSS CPT Primary	Bussmann	FNQ-R-3-1/2	4	113	GND	Control	Control Panel Ground Bar	Square D	PK5GTA	3
40	CPT1, CPT2	Pump 1 & 2	480/120V 750VA Transformer	Square D	9070TF750D1	2	114	-	-	Meter Socket (SHIP LOOSE)	Milbank	SEE HP TABLE SHEET 11	1
41	CPT1, CPT2	Pump 1 & 2	Transformer Finger Safe Cover, VFD CPT Primary	Square D	9070FSC-2	2	115	-	-	Stainless Steel 60' Float (SHIP LOOSE)	Anchor Scientific	P60NO-SST	2
42	CPT1, CPT2	Pump 1 & 2	Fuse Puller, RVSS CPT	Square D	9070FP-1	2	116	-	-	Insulated Ground Neutral (SHIP LOOSE)	Square D	SN400LA	1
43	F6, F9	Pump 1 & 2	10A Fuse, RVSS CPT Secondary	Bussmann	FNQ-10	2	117	-	-	Ground Bar Kit (SHIP LOOSE)	Square D	PKDGTJ250	1
44	CB6	Power	25A 480V 2 Pole Circuit Breaker, XF1 Transformer Primary	Square D	HDL26025	1	118	-	-	NEMA 4A S.S. Disconnect (SHIP LOOSE)	Square D	J250D5	1
45	XF1	Power	5kVA 480V/240-120V Transformer, NEMA 3R Stainless Steel	Square D	5S1FSS	1	119	-	-	Antenna Mast Stabilization Plate (Ship Loose)	EWS	Custom	1
46	CB7-CB13	Power	Hinged Aluminum Bracked for Mounting 240/120V Circuit Breakers through Deadfront	EWS	Custom	1	120	-	-	Stainless Steel 'U' Bolt, 2" Pole, 5/16" Diameter Bolt w/ 2-1/2" Threads (SHIP LOOSE)			1
47	CB7	Power	30A 240/120V 2 Pole Circuit Breaker, XF1 Transformer Secondary	Square D	QOU230	1	121	-	-	5/16" Stainless Steel Flat Washer for 'U' Bolt (SHIP LOOSE)			2
48	PDB4	Power	240V/120V Power Distribution Block PDB4, (1) #14-2 ... (4) #18-10	Square D	9080LBA361104	1	122	-	-	5/16" Stainless Steel Lock Washer for 'U' Bolt (SHIP LOOSE)			2
49	CB8	Power	20A, 240V, 2 Pole Circuit Breaker	Square D	QOU220	1	123	-	-	5/16" Stainless Steel Nut for 'U' Bolt (SHIP LOOSE)			2
50	REC1	Power	20A, 250V, 6-20R Receptacle	P&S	5872I	1	124	-	-	Stainless Steel 'U' Bolt, 1/4" Diameter (SHIP LOOSE)			2
51	CB9, CB10	Power	20A, 120V 1 Pole Circuit Breaker	Square D	QOU120	2	125	-	-	1/4" Stainless Steel 1/4" Nut for 'U' Bolt (SHIP LOOSE)			4
52	REC2	Power	120V 20A GFCI Duplex Receptacle NEMA5-20R	P&S	2094-I	1	126	-	-	1-1/4" Reduction Bushing for Antenna Tower, ROHN R-TB50 (SHIP LOOSE)	Tessco	36882	1
53	REC1, REC2	Power	Custom Receptacle Cover NEMA 4X S.S.	HOFFMAN	HIDRPSS-MOD	1	127	PLC	Control	S7-200 Memory Module	Siemens	6ES7 2918GF230AX0	1
54	REC1, REC2	Power	3/4 1G AL FD BOX	Appelton	4CS-1/2	2	128	N	Power	Generator Neutral Block, (1)#6-400kcmil ... (6)#14-2	Square D	9080LBA163106	1
55	CB11	Power	15A, 120V, 1 Pole Circuit Breaker	Square D	QOU115	1	129	N	Power	Generator Neutral Block Cover	Square D	9080LB31	1
56	CB12	Power	10A, 120V, 1 Pole Circuit Breaker	Square D	QOU110	1	130	SPNL3	Power	32"x12" Aluminum Sidepanel	EWS	Custom	1
57	R1	Power	120V 3PDT General Purpose Relay w/ Indicator Lamp	Potter Brumfield	KRPA-14AN-120	1	131	FM	Control	Flow Meter	Endress & Hauser	50P Compact	1
58	R1-R13, SF1, SF2	All	11 Pin Relay Base	ABB	NDS-11	15	132	PR	Control	Pressure Transmitter (0-150 PSI TRANSMITTER)	Endress & Hauser	PMP71-AAC1P61RAAMA	1
59	F10, F11	Power	Fused Terminal Block w/ 120V Blown Fuse Indication	Allen Bradley	1492-H4	4	133	PM2	Power	Voltage Monitor, Sentron PAC 3100	Siemens	7KM3133-0BA00-3440	1
60	-	Power & Control	1492-H4 &H5 Fused Terminal Block End Cover	Allen Bradley	1492-N37	2	134	SPACE HEATER	Pump 1 & 2	Space Heater	Stego	02700.9-00	2
61	F10, F11	Power	3A Fuse, Power Supply Primary	Bussmann	AGC-3	2	135	TBCT	Power	Terminal Board, Current Transformer	Phoenix Contact	3047400	6
62	PS1, PS2	Power	10A 24VDC Power Supply	Phoenix Contact	2938604	2	136	TBCT	Power	Terminal Board, Current Transformer	Phoenix Contact	3034442	3
63	D1, D2	Power	10A Diode, P1000A	Newark	51R7094	2	137	TBCT	Power	Terminal Board, Current Transformer	Phoenix Contact	3034468	3
64	-	Power	Custom Stand/Lexan Hinged Cover w/Alum Stand for TBPP & Power Supply Fuses	EWS	Custom	1	138	TBCT	Power	Terminal Board, Current Transformer	Phoenix Contact	3047426	1
65	F12-F28	Control	Fused Terminal Block w/ 24VDC Blown Fuse Indication	Allen Bradley	1492-H5	17	139	CT1-CT3	Power	Current Transformer	Square D	SEE HP TABLE SHEET 11	
66	F12-F15	Control	10A Fuse, Power Supply Secondary & Batteries	Bussmann	AGC-10	4	140	GFM	Power	Ground Fault Module	Square D	SEE HP TABLE SHEET 11	
67	BAT1, BAT2	Control	12VDC Battery	Power Sonic	PS1290	2	141	F4I	Power	1 Pole Rejection Type Fuse Block	Bussmann	BC6031PQ	1
68	PS3	Control	24VDC-15VDC Converter, 2A	Vicor	V1-J12-EY-B1	1	142	F4I	Power	0.6A Rejection Typrr Fuse, Type Class CC	Bussmann	KTk-R-6/10	1
69	RADIO	Control	400MHz Radio	GE MDS	SD04MD	1	143	ENC4	Power	14 X 12 NEMA 4X SS Enclosure	Hoffman	LC353020SS	1
70	RADIO	Control	DB9 Male/Male Gender Changer	Office Depot	946660	1	144	ENC4	Power	2" Galv. Rigid Coupling	-	-	1
71	RADIO/SS	Control	3 Foot LMR400UF Coaxial Jumper NMale to TNCMale	Tessco	324503	1	145	ENC4	Power	2" x 1-1/2" Reducing Bushing	Crousehinds	-	1
72	SS	Control	Coaxial Surge Suppressor, 100-512MHz	Polyphaser	VHF50HN	1	146	ENC4	Power	2" Ring Seal Rubber Gasket	T&B	5267	1
73	-	-	50FT Coaxial Cable, NMale-Nmale, Wireless Solutions 400-07-07-P50 (Ship Loose)	Tessco	370875	1	147	ENC4	Power	Cord Grip, 1.28 - 1.53	Appleton	CG-128150	1
74	-	-	400MHz Yagi Antenna w/ N Female Connector, MAXRAD MYA4506N (Ship Loose)	Tessci	37634	1	148	ENC4	Power	1-1/2" Alum. Hub	Crousehinds	STA-S	1

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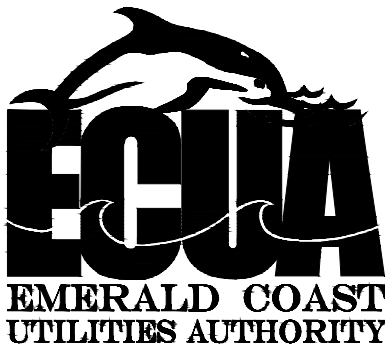
Horsepower Related Componentents Equipment List						
Item	Tag	Horsepower				
		20	30	40	50	60
Incoming Power Distribution Block	PDB	9080LBA362101	9080LBA363101	9080LBA363101	9080LBA363101	9080LBA363101
Incoming Power Distribution Block Cover	PDB	9080LB23	9080LB33	9080LB33	9080LB33	9080LB33
Main Circuit Breaker	CB1	HDL36110	HDL36150	JDL36175	JDL36200	JDL36225
Emergency Circuit Breaker	CB2	HDL36110	HDL36150	JDL36175	JDL36200	JDL36200
Main Power Distribution Block	PDB1	9080LBA363206	9080LBA365208	9080LBA365208	9080LBA365208	9080LBA365208
Main Power Distribution Block Cover	PDB1	9080LB33	9080LB53	9080LB53	9080LB53	9080LB53
Starter Circuit Breaker	CB4, CB5	HDL36060SA	HDL36080SA	HDL36090SA	HDL36100SA	HDL36110SA
Motor Power Distribution Block	PDB2A, PDB3A	9080LBA362104	9080LBA362104	9080LBA363104	9080LBA363104	9080LBA363104
Motor Power Distribution Block Cover	PDB2A, PDB3A	9080LB23	9080LB23	9080LB33	9080LB33	9080LB33
480V RVSS	RVSS1, RVSS2	RVS-DN-44-480-115-3+M+8+9+D+U-S	RVS-DN-44-480-115-3+M+8+9+D+U-S	RVS-DN-58-480-115-3+M+8+9+D+U-S	RVS-DN-72-480-115-3+M+8+9+D+U-S	RVS-DN-85-480-115-3+M+8+9+D+U-S
Meter Socket	-	UAP9701-RRL	UAP9701-RRL	UAP9701-RRL	UAP3566-X-HSP	UAP3566-X-HSP
Current Transformer	CT1-CT3	2NR-201	2NR-201	2NR-201	2NR-201	2NR-201
Ground Fault Module	GFM	CHECK WITH SQUARE D	CHECK WITH SQUARE D	CHECK WITH SQUARE D	CHECK WITH SQUARE D	CHECK WITH SQUARE D

ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE E.C.U.A. STANDARD SPECIFICATIONS

Horsepower Related Power Conductors, CGB's and Hubs						
Conductor Tag		Horsepower				
		20	30	40	50	60
P-01, P-03 & P-04	Description	(3)#2	(3)#1	(3)#2/0	(3)#3/0	(3)#4/0
	Manufacturer	N/A	N/A	N/A	N/A	N/A
	Catalog #	N/A	N/A	N/A	N/A	N/A
	Length (Max Ft)	N/A	N/A	N/A	N/A	N/A
	Cable Dia (in)	0.384"	0.446"	0.532"	0.584"	0.642"
	Appleton Connector	(3) -CG-3150	(3) -CG-3775	(3) -CG-5075	(3) -CG-5075	(3) -CG-6275
	Connector Range	0.312"-0.437"	0.375"-0.500"	0.500"-0.625"	0.500"-0.625"	0.625"-0.750"
P-02A	Meyers Hub	(3) 1/2" - STA-1	(3) 3/4" - STA-2	(3) 3/4" - STA-2	(3) 3/4" - STA-2	(3) 3/4" - STA-2
	Description	(1)#6	(1)#6	(1)#6	(1)#6	(1)#4
	Manufacturer	N/A	N/A	N/A	N/A	N/A
	Catalog #	N/A	N/A	N/A	N/A	N/A
	Length (Max Ft)	N/A	N/A	N/A	N/A	N/A
	Cable Dia (in)	0.254"	0.254"	0.254"	0.254"	0.324"
	Appleton Connector	(1)-GC-1850	(1)-GC-1850	(1)-GC-1850	(1)-GC-1850	(1)-GC-3150
P-02B	Connector Range	0.187"-0.312"	0.187"-0.312"	0.187"-0.312"	0.187"-0.312"	0.312"-0.437"
	Hub	(1) 1/2" - STA-1	(1) 1/2" - STA-1	(1) 1/2" - STA-1	(1) 1/2" - STA-1	(1) 1/2" - STA-1
	Description	(1)#6	(1)#6	(1)#6	(1)#6	(1)#4
	Manufacturer	Southwire	Southwire	Southwire	Southwire	Southwire
	Description	(3)#2	(3)#1	(3)#2/0	(3)#3/0	(3)#3/0
	Manufacturer	N/A	N/A	N/A	N/A	N/A
	Catalog #	N/A	N/A	N/A	N/A	N/A
P-05 & P-06	Length (Max Ft)	N/A	N/A	N/A	N/A	N/A
	Cable Dia (in)	0.384"	0.446"	0.532"	0.584"	0.584"
	Appleton Connector	(3) -CG-3150	(3) -CG-3775	(3) -CG-5075	(3) -CG-5075	(3) -CG-5075
	Connector Range	0.312"-0.437"	0.375"-0.500"	0.500"-0.625"	0.500"-0.625"	0.500"-0.625"
	Hub	(3) 1/2" - STA-1	(3) 3/4" - STA-2	(3) 3/4" - STA-2	(3) 3/4" - STA-2	(3) 3/4" - STA-2
	Description	(3)#8 W/G, TC	(3)#6 W/G, TC	(3)#2 W/G, TC	(3)#2 W/G, TC	(3)#2 W/G, TC
	Manufacturer	Houston Wire	Houston Wire	Houston Wire	Houston Wire	Houston Wire
P-07 & P-09	Catalog #	HW 154 00803	HW 154 00603	HW 154 00203	HW 154 00203	HW 154 00203
	Length (Max Ft)	19 FT	19 FT	19 FT	19 FT	19 FT
	Cable Dia (in)	0.58"	0.69"	1.03"	1.03"	1.03"
	Appleton Connector	(2) - CG-5075	(2) - CG-6275	(2) - CG-100125	(2) - CG-100125	(2) - CG-100125
	Connector Range	0.500"-0.625"	0.625"-0.750"	1.000"-1.125"	1.000"-1.125"	1.000"-1.125"
	Hub	(2) 3/4" - STA-2	(2) 3/4" - STA-2	(2) 1-1/4" - STA-4	(2) 1-1/4" - STA-4	(2) 1-1/4" - STA-4
	Description	(3)#8	(3)#6	(3)#2	(3)#2	(3)#2
P-08 & P-10	Manufacturer	Southwire	Southwire	Southwire	Southwire	Southwire

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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
ELECTRICAL STANDARDS



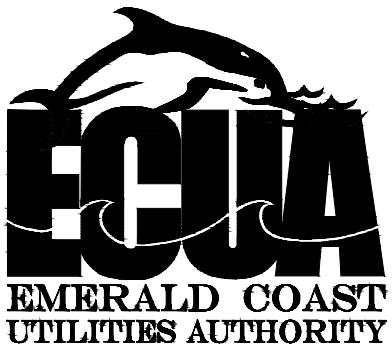
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Power & Control Conductors, CGB's and Hubs										
Cable Number	Description	Manufacturer	Catalog Numer	Length (Max Ft)	Cable Diameter	Appleton Liquidtight Cable Connector	Connector Cable Range	Crouse-Hinds Myers Hub	From Panel/Enclosure	To Panel/Enclosure
P-13	(3)#8 AWG W/GND, Tray Cable	Houston Wire & Cable	HW 154 00803	6 FT	0.58"	(1) - CG-5075	0.500"-0.625"	(1) 3/4" - STA-2	Power Panel	480/240-120V Transformer
P-14	(3)#6 AWG W/GND, Tray Cable	Houston Wire & Cable	HW 154 00603	6 FT	0.69"	(1) - CG-6275	0.625"-0.750"	(1) 3/4" - STA-2	480/240-120V Transformer	Power Panel
P-15	3-1/C #12 AWG	N/A	N/A	AS REQ'D	N/A	N/A	N/A	N/A	Power Panel	Power Panel
P-16	3-1/C #12 AWG	N/A	N/A	AS REQ'D	N/A	N/A	N/A	N/A	Power Panel	Power Panel
C-01	(16) #14 AWG, Tray Cable	Houston Wire & Cable	HW 151 01416	24 FT	0.68"	(2) - CG-6275	0.625"-0.750"	(2) 3/4" - STA-2	Power Panel	Control Panel
C-02	(16) #14 AWG, Tray Cable	Houston Wire & Cable	HW 151 01416	22 FT	0.68"	(2) - CG-6275	0.625"-0.750"	(2) 3/4" - STA-2	Pump 1 Panel	Control Panel
C-03	(16) #14 AWG, Tray Cable	Houston Wire & Cable	HW 151 01416	19 FT	0.68"	(2) - CG-6275	0.625"-0.750"	(2) 3/4" - STA-2	Pump 2 Panel	Control Panel
C-04	1 Pair #16 SH, Tray Cable	Houston Wire & Cable	HW 120 01601	22 FT	0.33"	(2) - CG-2575	0.250"-0.375"	(2) 3/4" - STA-2	Pump 1 Panel	Control Panel
C-05	1 Pair #16 SH, Tray Cable	Houston Wire & Cable	HW 120 01601	19 FT	0.33"	(2) - CG-2575	0.250"-0.375"	(2) 3/4" - STA-2	Pump 2 Panel	Control Panel
PUMP 1-PWR	Per Mfg Specs	N/A	N/A	N/A	N/A	CG Series based on Mfg Specs	N/A	STA Series based on Mfg Specs	Field (Pump 1)	Pump 1 Panel
PUMP 1-MTP	Per Mfg Specs	N/A	N/A	N/A	N/A	CG Series based on Mfg Specs	N/A	STA Series based on Mfg Specs	Field (Pump 1)	Pump 1 Panel
PUMP 1-SF	Per Mfg Specs	N/A	N/A	N/A	N/A	CG Series based on Mfg Specs	N/A	STA Series based on Mfg Specs	Field (Pump 1)	Pump 1 Panel
PUMP 2-PWR	Per Mfg Specs	N/A	N/A	N/A	N/A	CG Series based on Mfg Specs	N/A	STA Series based on Mfg Specs	Field (Pump 2)	Pump 2 Panel
PUMP 2-MTP	Per Mfg Specs	N/A	N/A	N/A	N/A	CG Series based on Mfg Specs	N/A	STA Series based on Mfg Specs	Field (Pump 2)	Pump 2 Panel
PUMP 2-SF	Per Mfg Specs	N/A	N/A	N/A	N/A	CG Series based on Mfg Specs	N/A	STA Series based on Mfg Specs	Field (Pump 2)	Pump 2 Panel
Float Switch 1	Float Switch Cable	BY OTHERS	N/A	N/A	0.56"	(1) - CG-5050	0.500"-0.625"	(1) 1/2" - STA-1	Field (Float Switch)	Control Panel
Float Switch 2	Float Switch Cable	BY OTHERS	N/A	N/A	0.56"	(1) - CG-5050	0.500"-0.625"	(1) 1/2" - STA-1	Field (Float Switch)	Control Panel
Pressure Xducer	Pressure Transducer Cable	BY OTHERS	N/A	N/A	0.35"	(1) - G-3150	0.312"-0.437"	(1) 1/2" - STA-1	Field (Float Switch)	Control Panel
Antenna COAX	Coaxial Cable	BY OTHERS	N/A	N/A	0.408"	(1) - CG-3750	0.375"-0.500"	(1) 1/2" - STA-1	Field (Antenna)	Control Panel
Comm-1	(37) #18 AWG, Tray Cable	Houston Wire & Cable	HW15001837	20 FT	0.74"	(1) - CG-6275	0.625"-0.750"	(1) 3/4" - STA-2	Control Panel	Pump 1 Panel
Comm-2	(37) #18 AWG, Tray Cable	Houston Wire & Cable	HW15001837	20 FT	0.74"	(1) - CG-6275	0.625"-0.750"	(1) 3/4" - STA-2	Control Panel	Pump 2 Panel

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WARNING

NEVER LEAVE THE CT CIRCUIT OPEN ALWAYS SHORT THE CIRCUIT. WHEN MAINTENANCE IS REQUIRED ENSURE TO FOLLOW THE INSTRUCTIONS BELOW. FAILURE TO DO SO MAY RESULT IN HIGH VOLTAGE SURGE THAT COULD INJURE PERSONAL AND DAMAGE EQUIPMENT.

THE CALIBRATION & DISCONNECT PROCESS

- Loosen the screws on the SB–ME 2–8 and move the shorting bar from position A to B to short the outputs of the CT.
- Secure the shorting bar by tightening the screws. The CT is now neutralized and the circuit is "safe" to open.
 - For circuits that include an ME knife–disconnect terminal block, the knife disconnects can now be safely opened.
- The test signal can now be injected into the transducer/meter side of the circuit by inserting the signal probes into the test adapters or connecting the signal to the disconnected wiring of the measurement circuit.

To return the unit to normal operation, perform the above steps in reverse order:

- Disconnect the test signal/probes from the transducer wires or remove probes from the test plugs.
 - For circuits that include the ME, the knife disconnect must now be CLOSED.
- Open the switching bridge and return to normal operation.
- Loosen the screws and move the shorting bar from position B to A and snap into place.
- Tighten the screws to prevent movement and inadvertent shorting of the CT.

The CT measurement circuit is now functional

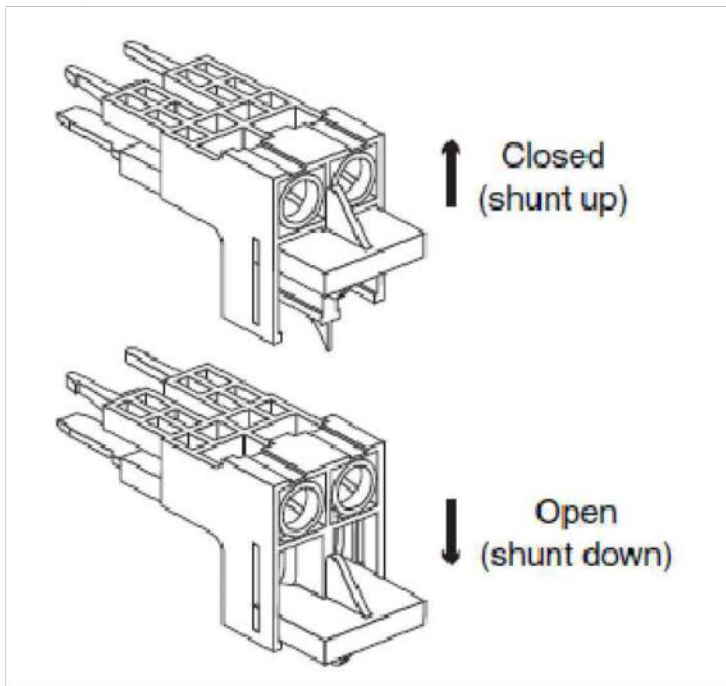


FIGURE 1: SB–ME 2–8 switching bridge

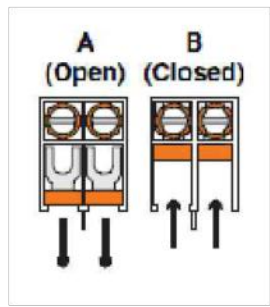


FIGURE 2: SB–ME 2–8 switching bridge

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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM

LIFT STATION CONSTRUCTION DETAILS

ELECTRICAL STANDARDS



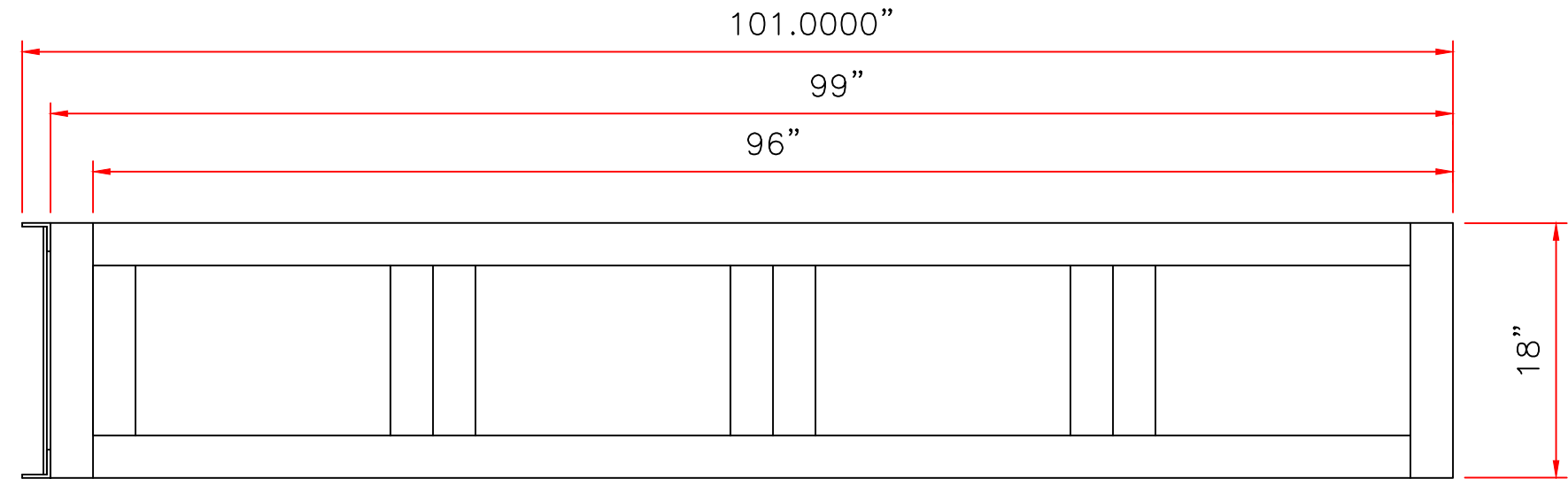
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- NOTES:
- 1.TOP AND BOTTOM OF BASE TO BE LEFT OPEN.
 - 2.DRILL TOP OF BASE TO ATTACH ENCLOSURES AS REQUIRED.
 - 3.DRILL BOTTOM OF BASE TO ATTACH TO SLAB AS REQUIRED.

ATTENTION

THIS LAYOUT IS ONE OF TWO (2) POSSIBLE CHOICES – SEE SHEET 14A FOR THE OTHER OPTION. IF THIS LAYOUT OPTION IS SELECTED, SEE SHEET 7 FOR ASSOCIATED PANEL LAYOUT DETAILS.



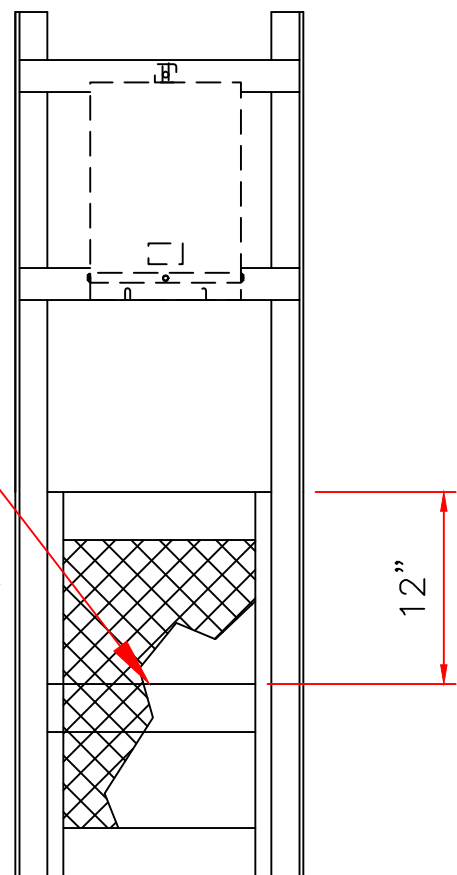
TOP VIEW

*SEE RACK DETAILS BELOW FOR ADDITIONAL INFORMATION AND DIMENSIONS

SINGLE HORIZONTAL 2" ANGLE, 3 PLC'S TO SUPPORT INTERNAL CABLES AND CONDUIT. WELD BETWEEN OTHER (3) SUPPORTS

1/4" STAINLESS STEEL MESH BEHIND EXPANDED METAL (TYP.)

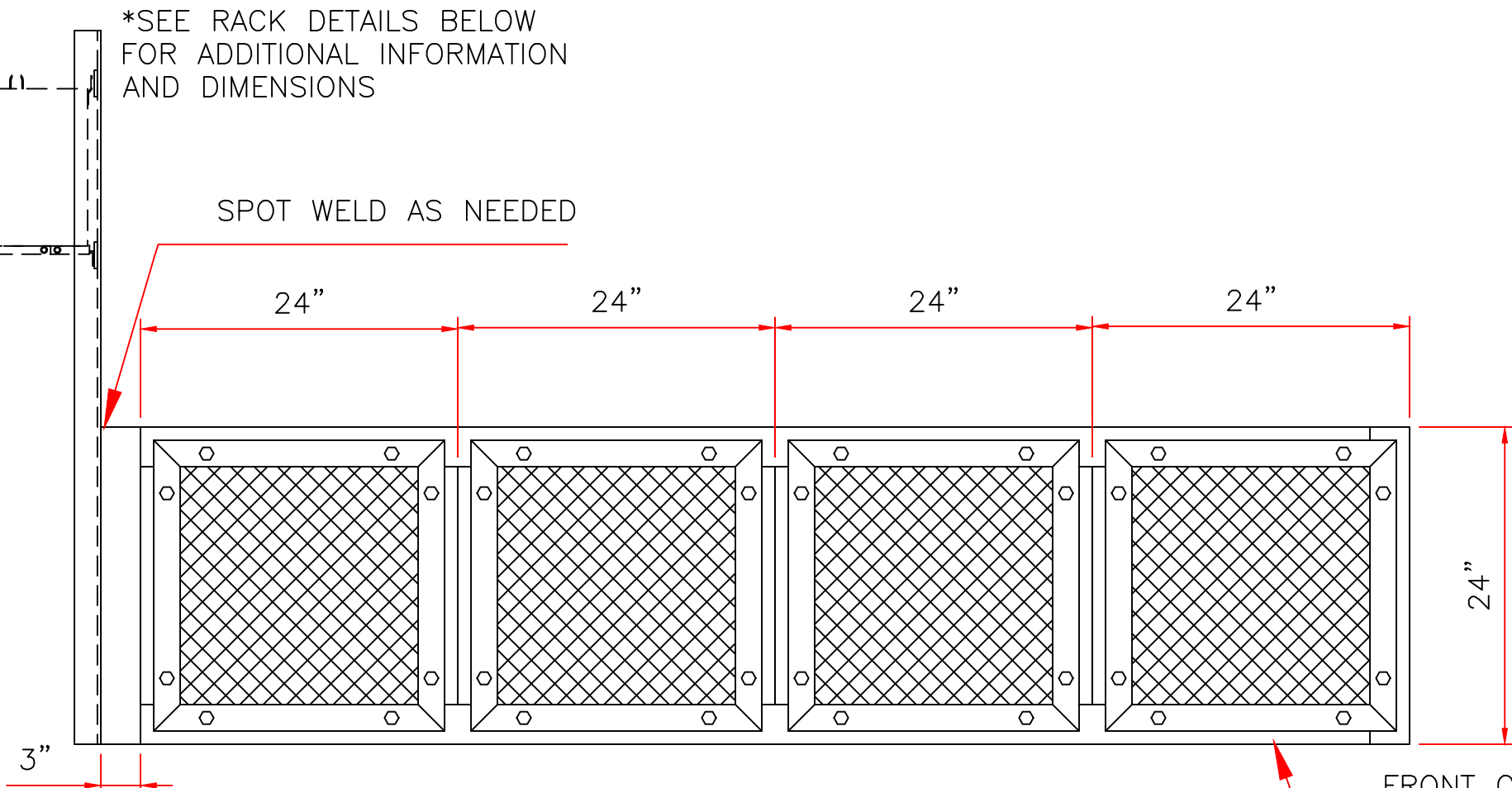
3/4" EXPANDED METAL, ON FRONT, BACK, AND SIDES OF BASE. TACH WELDED TO THE INSIDE OF BASE



END VIEW

*SEE RACK DETAILS BELOW FOR ADDITIONAL INFORMATION AND DIMENSIONS

SPOT WELD AS NEEDED

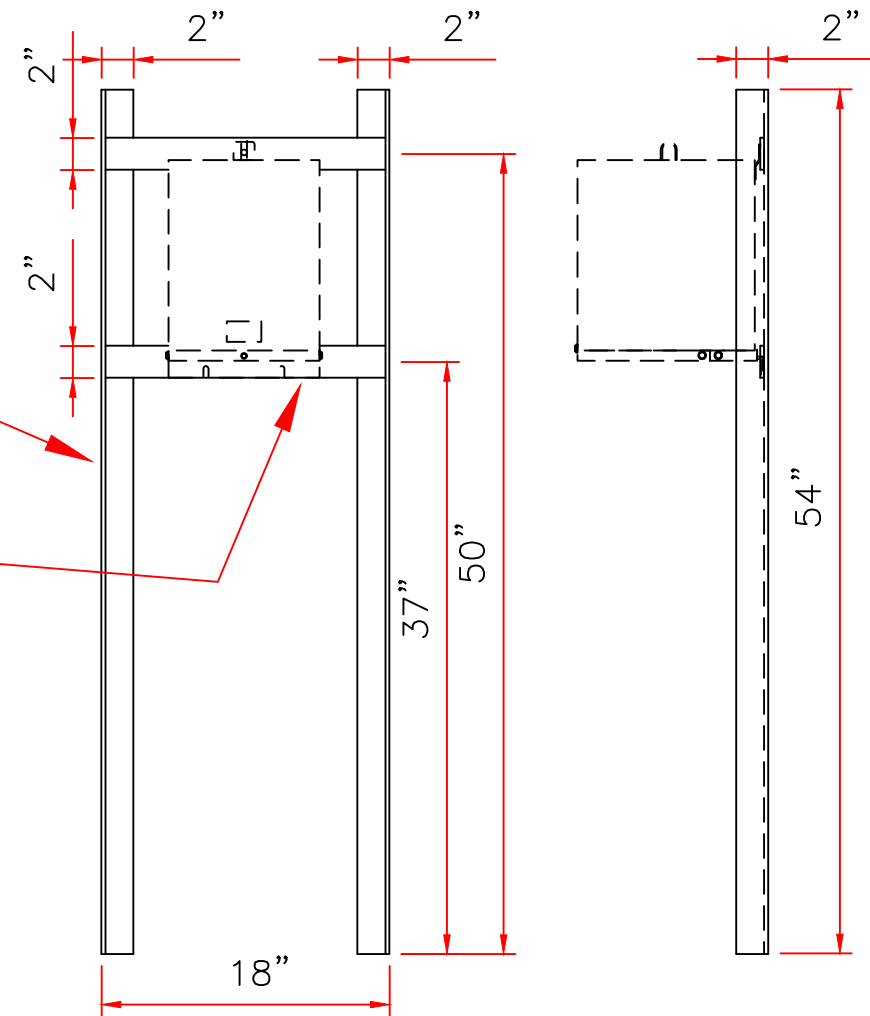


FRONT VIEW

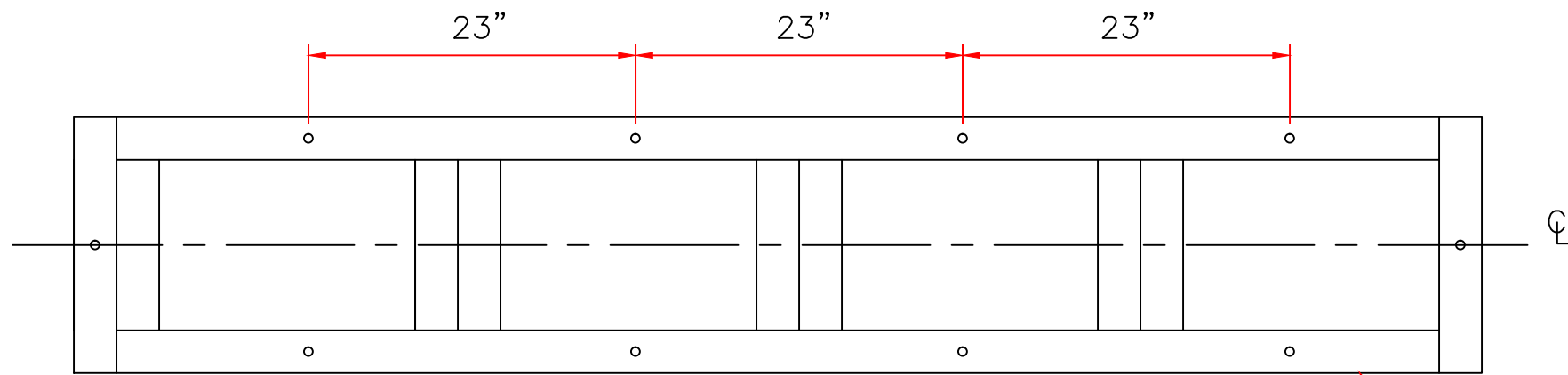
FRONT OF BASE WILL HAVE REMOVABLE PANELS AT EACH OPENING AS SHOWN. ATTACH SCREENS TO BACK SIDE OF REMOVABLE PANELS

2" X 2" S.S. ANGLE FOR VERTICAL MEMBERS

2" WIDE FLAT S.S FOR HORIZONTAL MEMBERS

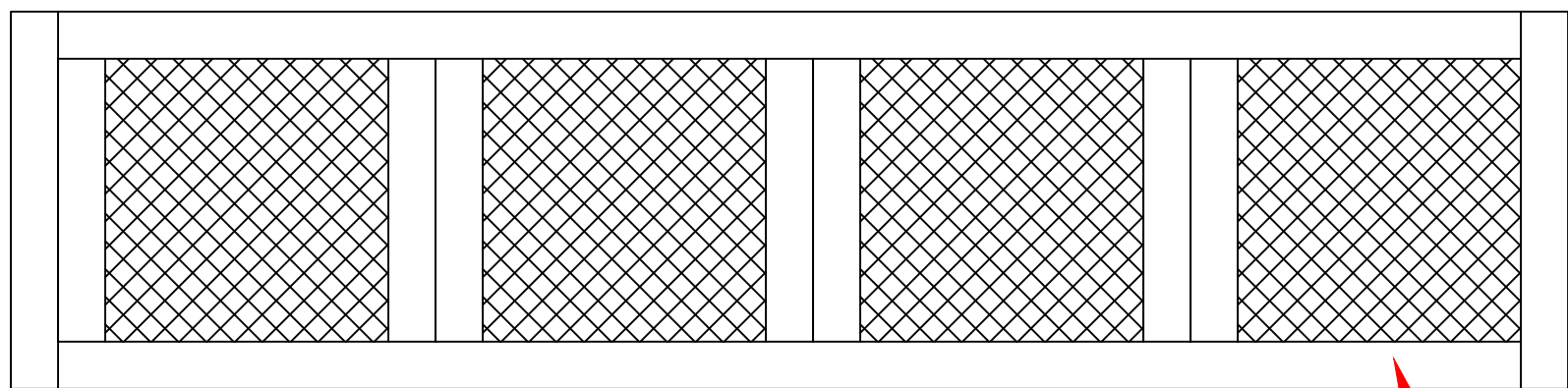


RACK DETAILS



BOTTOM VIEW

DRILL (10) 5/8"Ø HOLES AS SHOWN, CENTERED ON ANGLE



BACK VIEW

ENTIRE BASE MADE FROM 2" STAINLESS STEEL ANGLE, WELDED

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Power Panel Fuse Schedule				
Fuse	Type	Voltage	Amps	Description
F1	KTK-R-1	600	1A	PM1 Phase Monitor A Phase
F2	KTK-R-1	600	1A	PM1 Phase Monitor B Phase
F3	KTK-R-1	600	1A	PM1 Phase Monitor C Phase
F10	AGC-3	250	3A	Power Supply 1 Primary
F11	AGC-3	250	3A	Power Supply 2 Primary
F38	KTK-R-1	600	1A	PM2 Power Monitor A Phase
F39	KTK-R-1	600	1A	PM2 Power Monitor B Phase
F40	KTK-R-1	600	1A	PM2 Power Monitor C Phase
F41	KTK-R-6/10	600	.6A	Power Monitor

Pump 1 Panel Fuse Schedule				
Fuse	Type	Voltage	Amps	Description
F4	FNQ-R-3-1/2	600	3-1/2A	Pump 1 CPT Phase A
F5	FNQ-R-3-1/2	600	3-1/2A	Pump 1 CPT Phase C
F6	FNQ-10	500	10A	Pump 1 CPT Secondary
F32	AGC-6	250	6A	RVSS Control Power

Pump 2 Panel Fuse Schedule				
Fuse	Type	Voltage	Amps	Description
F7	FNQ-R-3-1/2	600	3-1/2A	Pump 2 CPT Phase A
F8	FNQ-R-3-1/2	600	3-1/2A	Pump 2 CPT Phase C
F9	FNQ-10	500	10A	Pump 2 CPT Secondary
F33	AGC-6	250	6A	RVSS Control Power

Nameplate Data					
Total Load (FLA)	73	99	127	155	181
Motor Hp	20	30	40	50	60
Motor FLA	27	40	52	65	77

Torque Rating Table					
Component	Horsepower				
	20	30	40	50	60
Incoming Distribution Block (PDB1)	120lb-in/13.5N-m	275lb-in/31.0N-m	275lb-in/31.0N-m	275lb-in/31.0N-m	275lb-in/31.0N-m
Main Ground Block	35lb-in/3.9N-m	35lb-in/3.9N-m	35lb-in/3.9N-m	35lb-in/3.9N-m	35lb-in/3.9N-m
Motor Distribution Block (PDB2 & 3)	40lb-in/4.5N-m	120lb-in/13.5N-m	120lb-in/13.5N-m	120lb-in/13.5N-m	120lb-in/13.5N-m
Motor Ground Block	35lb-in/4.0N-m	45lb-in/5.1N-m	45lb-in/5.1N-m	45lb-in/5.1N-m	45lb-in/5.1N-m

Control Panel Fuse Schedule				
Fuse	Type	Voltage	Amps	Description
F12	AGC-10	250	10A	Power Supply 1 Secondary
F13	AGC-10	250	10A	Power Supply 2 Secondary
F14	AGC-10	250	10A	Control Power
F15	AGC-10	250	10A	Batteries
F16	AGC-2	250	2A	Radio Power Supply Primary
F17	AGC-2	250	2A	Radio Power Supply Secondary
F18	AGC-1/4	250	1/4A	Pump 1 Moter Thermal
F19	AGC-1/4	250	1/4A	Pump 2 Moter Thermal
F20	AGC-1/10	250	1/10A	Operator Interface
F21	AGC-1	250	1A	Digital Inputs 0.0-1.4
F22	AGC-1	250	1A	Digital Inputs 1.5-2.7
F23	AGC-2	250	2A	Digital Outputs 0.0-0.7
F24	AGC-2	250	2A	Digital Outputs 1.0-1.7
F25	AGC-1-1/2	250	1-1/2A	PLC Power
F26	AGC-3/4	250	3/4A	Process Transmitter Supply
F27	AGC-1/10	250	1/10A	Analog Inputs
F28	AGC-1/10	250	1/10A	Analog Outputs
F29	GMA-1/4	250	1/4A	Analog Input 2
F30	GMA-1/4	250	1/4A	Analog Input 3
F31	GMA-1/4	250	1/4A	Analog Input 4

HMI BUTTON LEGEND	
F1	FAULT RESET/ENABLE INTRUSION
SHIFT+F1	DISABLE INTRUSION
F2	ALTERNATE PUMP ASSIGNMENTS
F3	RESET PUMP 1 RUNTIME
SHIFT+F3	RESET PUMP 2 RUNTIME
F4	ALARMS SCREEN
F5	OVERVIEW SCREEN
F6	PUMP 1 SCREEN
F7	PUMP 2 SCREEN
F8	SETPOINTS SCREEN

CONTROL PANEL ISR INFORMATION TAGS

THIS AREA IN BLUE IS FOR INTRINSICALLY SAFE CIRCUITS AND DEVICES ONLY. THIS AREA INCLUDES THE AIR SPACE DIRECTLY IN FRONT OF THE BLUE AREA BETWEEN THE BACKPANEL AND THE ENCLOSURE WALLS AND DOOR INCLUDING THE BOTTOM OF THE ENCLOSURE. ONLY INTRINSICALLY SAFE DEVICES AND WIRING ARE ALLOWED IN THIS AREA. DO NOT ROUTE NON-INTRINSICALLY SAFE WIRING THROUGH THIS AREA OF ENCLOSURE.

WARNING

SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY

CONTROL PANEL EXTERIOR TAG INFORMATION

WARNING

TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES DISCONNECT POWER BEFORE SERVICING

PROVIDES INTRINSICALLY SAFE CIRCUIT EXTENSIONS FOR USE IN CLASS 1, GROUPS A, B, C, AND D WHEN CONNECTED PER REFERENCE DRAWINGS ON MAIN NAMEPLATE LABEL

CONTROL PANEL DEADFRONT TAG INFORMATION

SECURELY FASTEN ALL INNER DOOR LATCHES BEFORE CLOSING OUTER DOOR. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE THE OUTER DOOR TO JAM WHEN RE-OPENED

CONTROL / INSTALLATION DRAWING MACX MCR-EX Series

Doc.-No.: 83104549-04

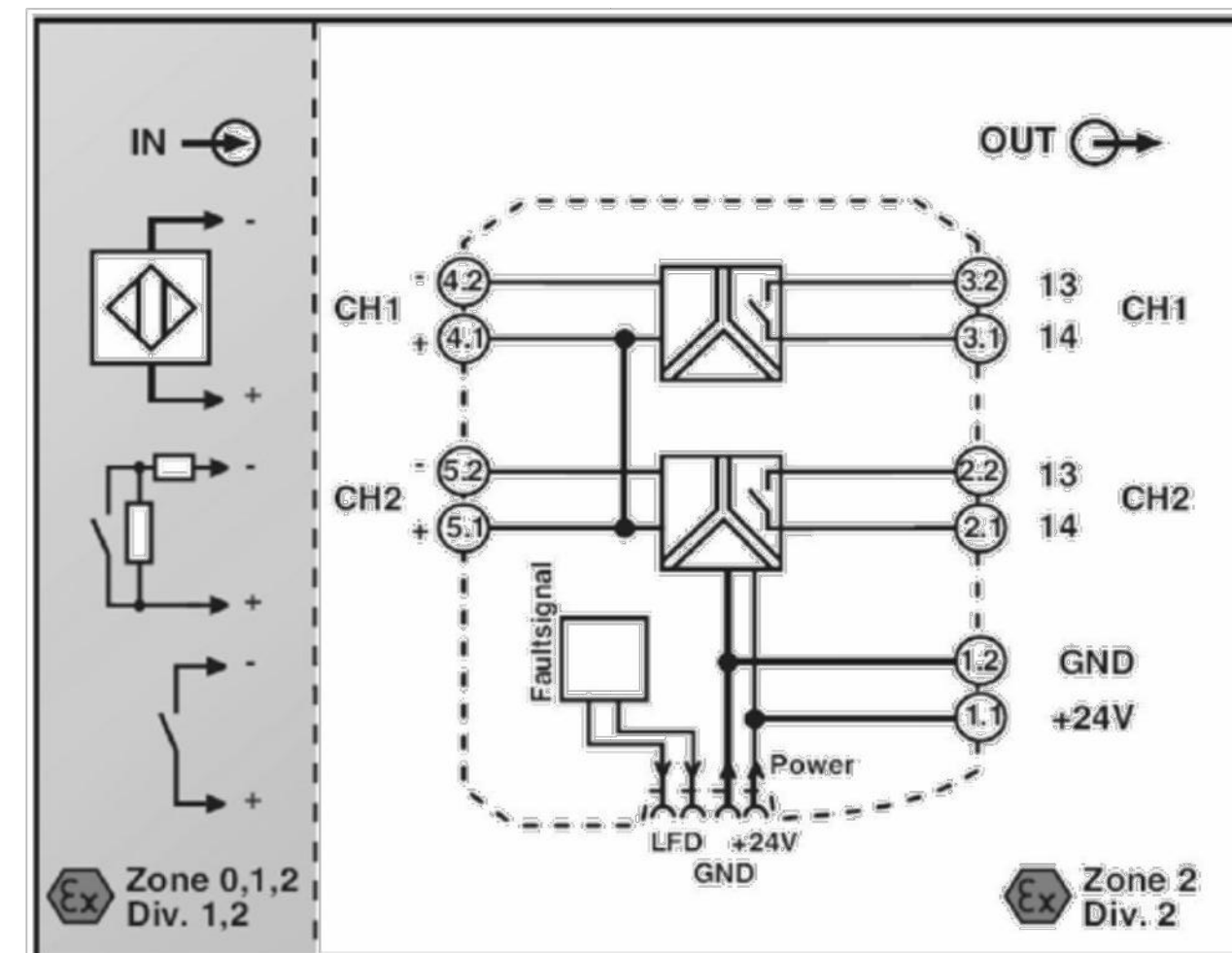
Art.Nr. Model Number

2865476 MACX MCR-EX-SL-2NAM-RO
~~2924087 MACX MCR-EX-SL-2NAM-RO-SP~~

WARNING – EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2.

WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

WARNING – Exposure to some chemicals may degrade the sealing properties of materials used in the sealed relays.



HAZARDOUS AREA

Class I, Division 1, Groups A,B,C,D
Class II, Division 1, Groups E,F,G
Class III, Division 1
Class I, Zone 0,1,2, Groups IIC,IIB,IIA

NON HAZARDOUS AREA

or Class I, Division 2, Groups A,B,C,D
or Class I, Zone 2, Groups IIC,IIB,IIA

- The Entity Concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system. Selected Intrinsically Safe Equipment must be third party listed as intrinsically safe for the application and have intrinsically safe entity parameters conforming with table 1 below:
Tabelle 1:

I.S. Equipment		Associated Apparatus
V max (or U _i)	≥	V _{oc} or V _t (or U _o)
I max (or I _i)	≥	I _{sc} or I _t (or I _o)
P max (or P _i)	≥	P _o
C _i + C _{cab}	≤	C _a (or C _o)
L _i + L _{cab}	≤	L _a (or L _o)
- Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown under I. Where the cable capacitance and inductance per foot are not known, the following values shall be used: C_{cab} = 60 pF / ft., L_{cab} = 0.2 μH / ft.
- The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.
- This associated apparatus has not been evaluated for use in combination with another associated apparatus.
- This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA70), or other local codes applicable.
- Associated apparatus must be installed in an enclosure (which meets the requirements of ANSI/ISA S82) suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code for installation in Canada, or other local codes, as applicable.
- When using as non-incendive device for Class I, Division 2 or Class I, Zone 2 do not snap equipment onto or off the T-connector, or connect and disconnect non-intrinsically safe-lines unless power has been removed or the area is known to be non hazardous.
- Intrinsically safe circuits must be wired separately in according with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code Part 1, Appendix F for installation in Canada, or other local codes, as applicable.
- When multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30(B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA RP12.6 for installing intrinsically safe equipment.
- When using as non-incendive device for Class I, Division 2 or Class I, Zone 2 with exposure to some chemicals a periodically inspect of the relays for any degradation of properties and a replacement if degradation is found is recommended.

Art.Nr.	Model Number	output circuit - hazardous zone							Group A, B or IIC		Group C or IIB		Group D or IIA		input circuit - hazardous zone				
		Terminal	Voc or U _o / Vdc	Isc or I _o / mA	P _o / mW	C _i / nF	L _i / mH		Ca or Co / nF	La or Lo / mH	Ca or Co / nF	La or Lo / mH	Ca or Co / nF	La or Lo / mH	Terminal	Vmax or U _i / V	Imax or I _i / mA	C _i / nF	L _i / mH
2865476	MACX MCR-EX-SL-2NAM-RO	4.1-4.2 5.1.5.2	9,6	10	25	1,1	negligible		510 840 1200 3600	100 5 1 0,01	2700 4400 6300 26000	100 5 1 0,01	-	-	-	-	-	-	-
2924087	MACX MCR-EX-SL-2NAM-RO-SP	4.1-4.2 5.1.5.2	9,6	10	25	1,1	negligible		510 840 1200 3600	100 5 1 0,01	2700 4400 6300 26000	100 5 1 0,01	-	-	-	-	-	-	-

Art.Nr.	Model Number	power supply circuit				Um	Max. Surrounding Air Temperature Rating: 60°C	signal circuit - safe zone			interface circuit	
		Terminal	T-Connector	Un = 24 V - 20% +25% U range			Ambient Temperature Range: Tamb	Terminal	output	input	socket	
2865476	MACX MCR-EX-SL-2NAM-RO	1.1-1.2	yes	19,2 ... 30 V DC		253 V AC / 125 V DC	-20...+60°C	3.1-3.2 + 2.1-2.2	X	-	-	
2924087	MACX MCR-EX-SL-2NAM-RO-SP	1.1-1.2	yes	19,2 ... 30 V DC		253 V AC / 125 V DC	-20...+60°C	3.1-3.2 + 2.1-2.2	X	-	-	

REVISIONS	BY

IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
ELECTRICAL STANDARDS



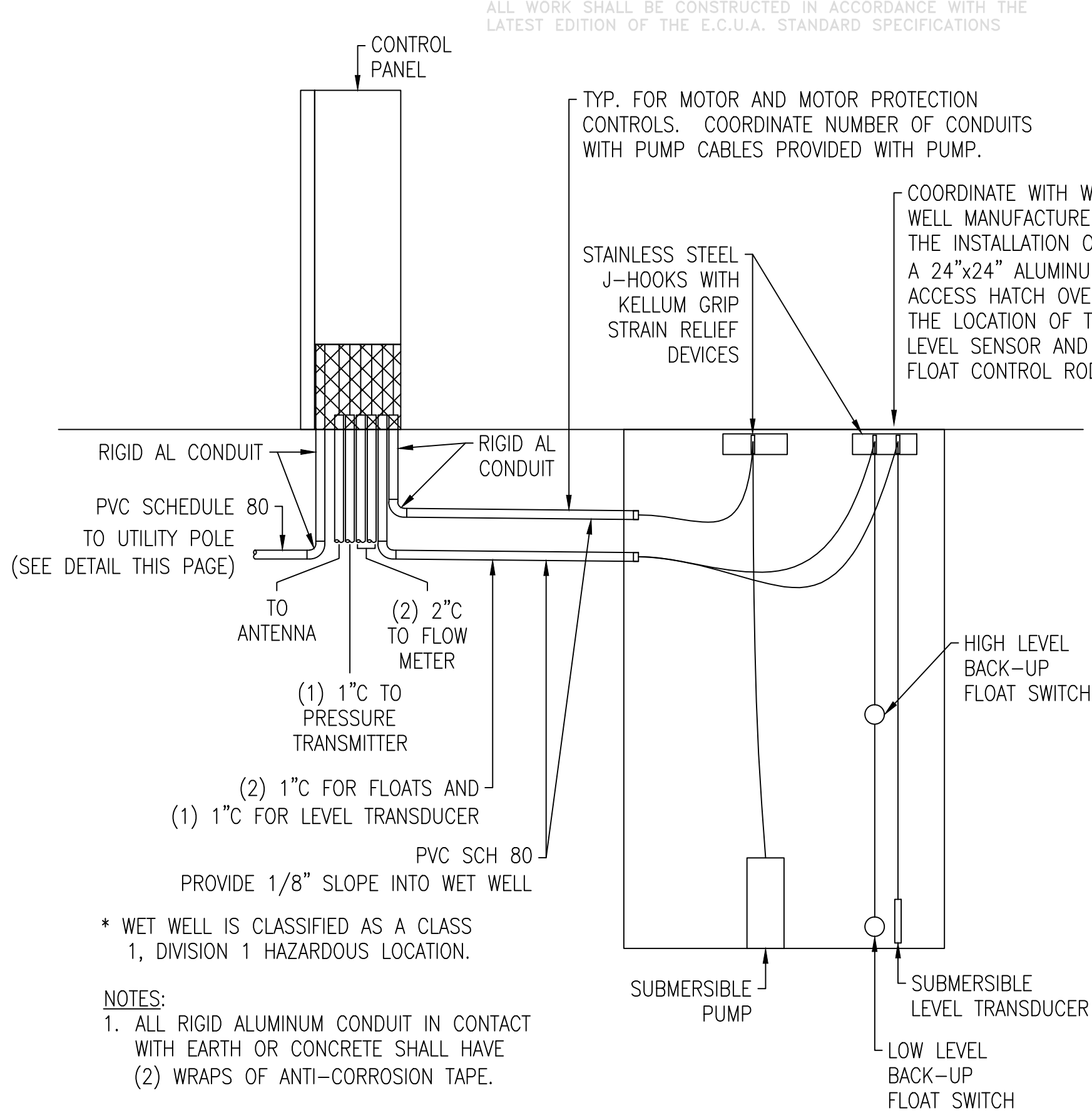
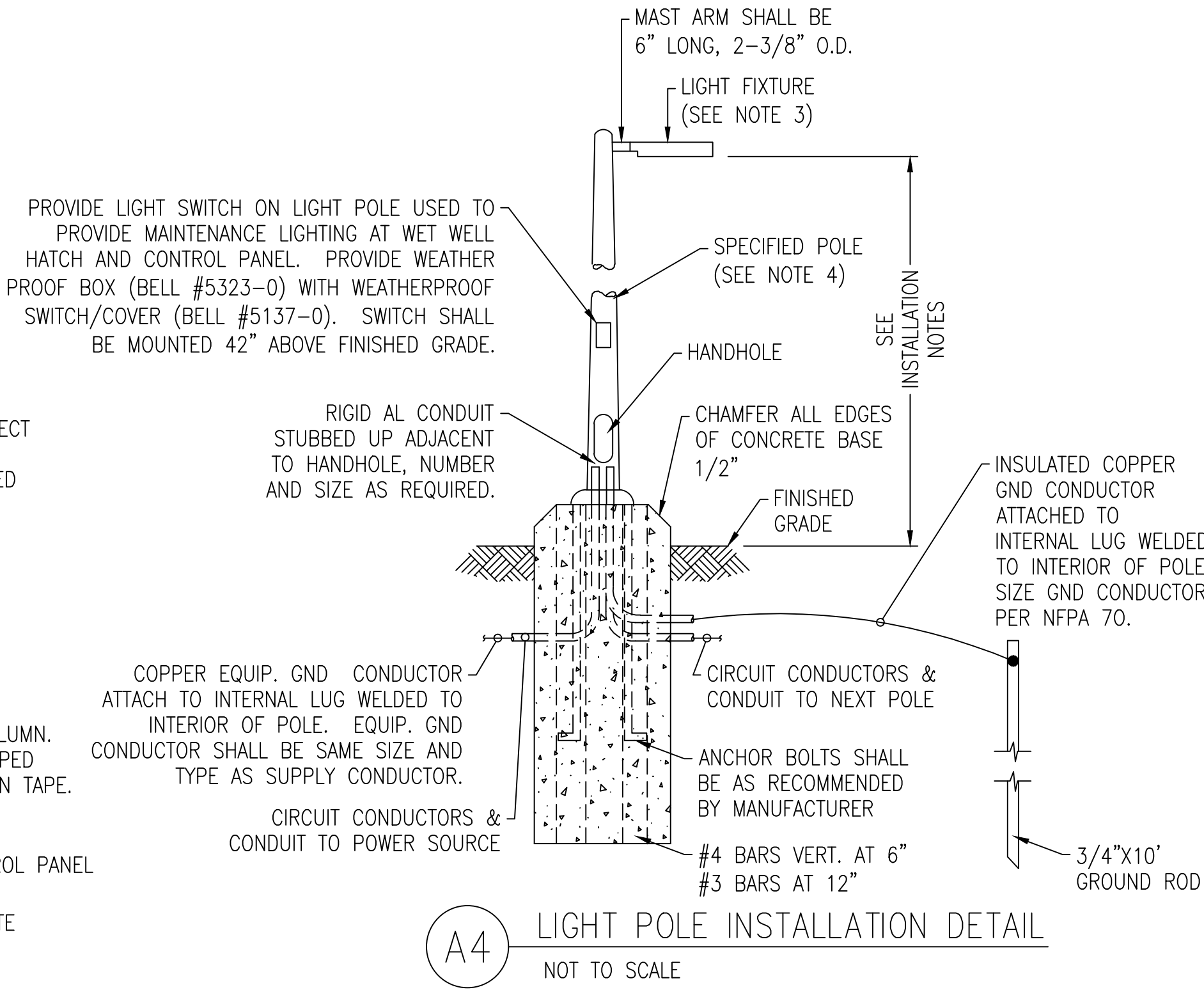
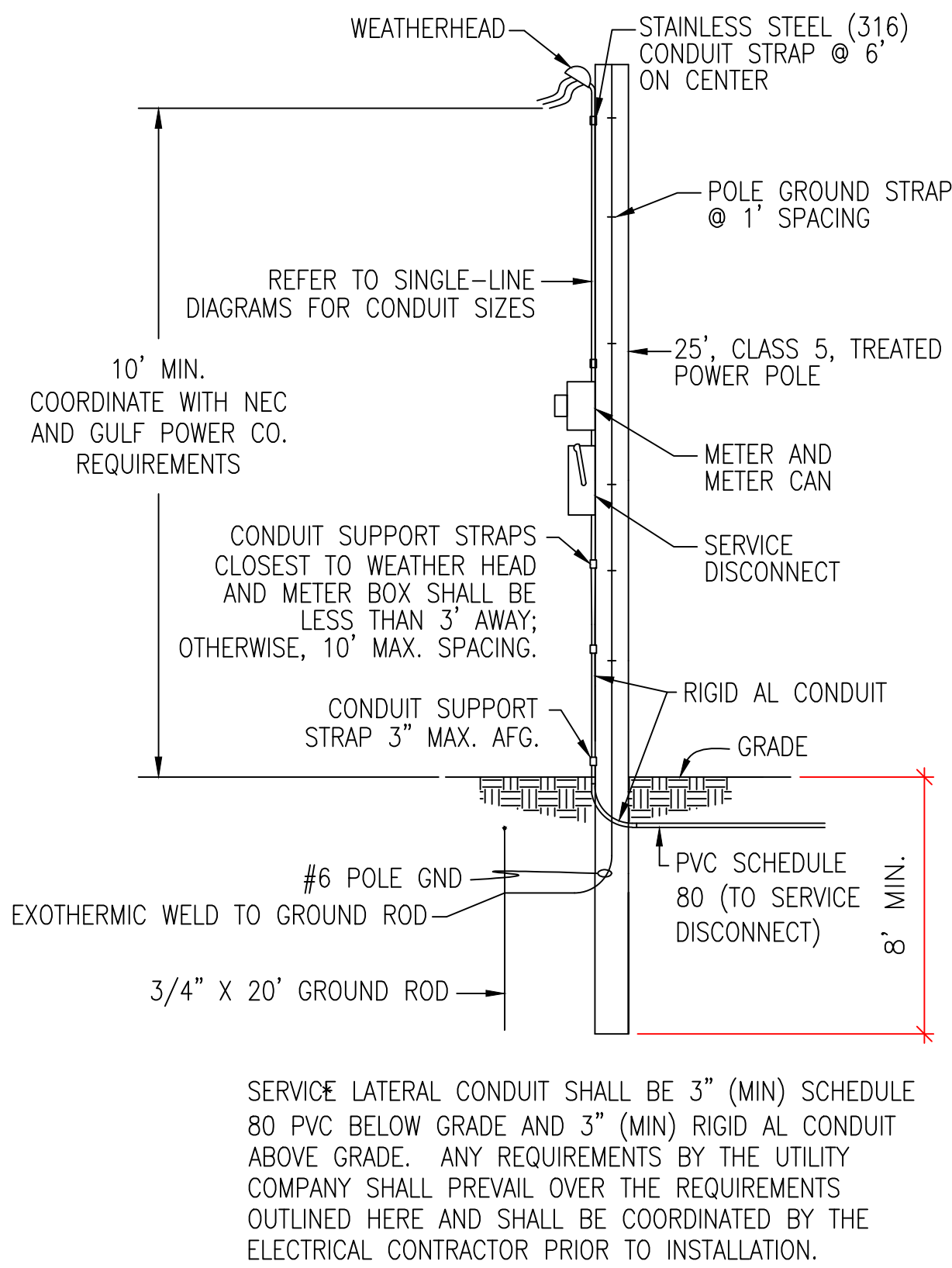
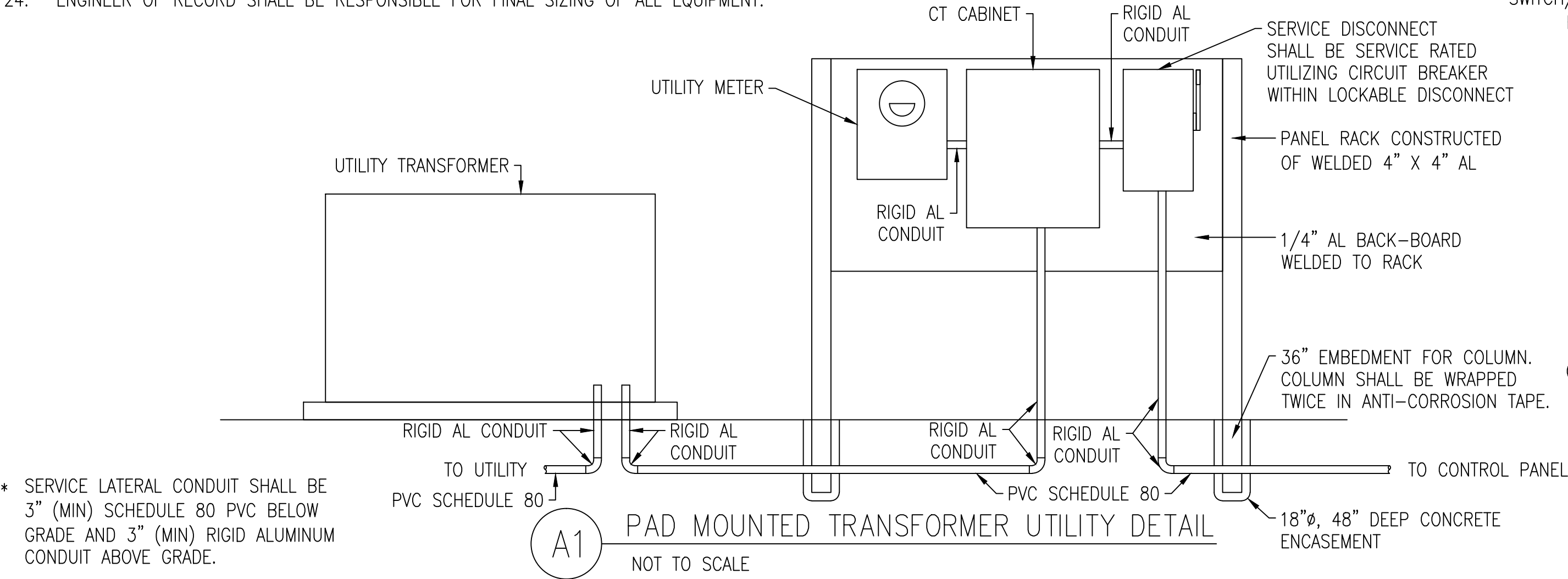
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GENERAL ELECTRICAL NOTES

NEW WORK:

- ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION (UNLESS NOTED OTHERWISE) OF THE FOLLOWING CODES AND STANDARDS:
 - NATIONAL ELECTRICAL CODE (NFPA 70).
 - STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES (NFPA 820).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING ALL PROJECT SPECIFICATIONS AND WILL BE RESPONSIBLE FOR MEETING ALL REQUIREMENTS OUTLINED IN THE SPECIFICATIONS.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
- WORKING SPACE FOR ALL ELECTRICAL AND CONTROL EQUIPMENT OPERATING AT 600V VOLTS OR LESS TO GROUND AND LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED SHALL COMPLY WITH NEC, ARTICLE 110.26.
- THE ELECTRICAL DESIGN PROVIDES A NUMBER OF BRANCH CIRCUITS, AMPACITY AND OVERCURRENT PROTECTION FOR OTHER DIVISIONS DESIGN BASIS EQUIPMENT CONFORMING TO MANUFACTURER'S SPECIFICATIONS AVAILABLE AT TIME OF DESIGN. THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT LOADS PRIOR TO ROUGH-IN. IF REQUIREMENTS OF EQUIPMENT ACTUALLY PROVIDED UNDER CONTRACT FOR CONSTRUCTION ARE DIFFERENT, CONTRACTOR SHALL MAKE ALL CHANGES NECESSARY WITHOUT INCREASE IN THE CONTRACT AMOUNT. SUCH CHANGES SHALL BE BASED UPON REQUIREMENTS, NAMEPLATE VALUES AND CODE REQUIREMENTS, WHICHEVER IS MORE STRINGENT, AND MAY INCLUDE, BUT ARE NOT LIMITED TO: SIZE OF CONDUCTORS, SIZE OF CONDUIT, QUANTITY OF CONDUCTORS AND CONDUITS, TYPE AND SIZE OF CIRCUIT BREAKER OR DISCONNECT, OVERLOADS, FULL-VOLTAGE STARTERS, REDUCED VOLTAGE SOFT STARTERS, VARIABLE FREQUENCY DRIVES, AND FUSE PROTECTION.
- THE ELECTRICAL CONTRACTOR IS REQUIRED TO COORDINATE, PROVIDE, AND INSTALL A FULLY OPERATIONAL AND CODE COMPLIANT ELECTRICAL SYSTEM. THIS MAY INCLUDE THE ADDITION OF ELECTRICAL ITEMS NOT SHOWN ON THE ELECTRICAL PLANS, BUT REQUIRED FOR SYSTEM OPERATION.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL SERVICE WITH ELECTRICAL UTILITY COMPANY PROVIDING ELECTRICAL SERVICE TO FACILITY. CONTRACTOR SHALL PAY ALL FEES ASSESSED BY ELECTRICAL UTILITY COMPANY TO PROVIDE ELECTRICAL SERVICE TO FACILITY.
- CONTRACTOR SHALL EXCAVATE AND CONDUCT DEMOLITION SO AS TO AVOID DAMAGE TO EXISTING UTILITIES AND OTHER UNDERGROUND OR CONCEALED ITEMS. IF EXISTING OR NEW ITEMS ARE DAMAGED, THE CONTRACTOR SHALL NOTIFY THE OWNER AT ONCE OF ALL DAMAGE AND SHALL REPAIR (OR REPLACE IF NECESSARY) TO THE ORIGINAL CONDITION TO THE SATISFACTION OF OWNER AND ENGINEER AT NO CHARGE IN THE CONTRACT AMOUNT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DETAILED ELECTRICAL AND CONTROL EQUIPMENT LAYOUT DRAWINGS TO THE ENGINEER AND OWNER FOR APPROVAL PRIOR TO INSTALLATION.
- ALL CONDUITS NOT LOCATED UNDER SLAB SHALL HAVE A MINIMUM BURIAL DEPTH OF 42", UNLESS NOTED OTHERWISE.
- CONDUITS SHALL BE BURIED 42" (MINIMUM) BELOW GRADE WITH MARKER TAPE 6" ABOVE TOP OF CONDUIT, UNLESS NOTED OTHERWISE.
- MINIMUM SIZE CONDUIT SHALL BE 1" (UNLESS NOTED OTHERWISE).
- CONDUIT ROUTINGS AND DEVICE/EQUIPMENT LOCATIONS SHOWN ARE DIAGRAMMATIC ONLY. CONTRACTOR SHALL FIELD ROUTE AND LOCATE AS REQUIRED.
- CONTRACTOR SHALL PROVIDE PULL BOXES IN POWER CIRCUIT CONDUIT AS REQUIRED TO LIMIT THE NUMBER OF BENDS TO A MAXIMUM OF 270° OR THREE 90° BENDS.
- ALL WIRE SHALL BE COPPER.
- ALL ELECTRICAL CIRCUITS SHALL INCLUDE A GREEN GROUNDING CONDUCTOR SIZED PER NEC.
- CONDUCTORS SHALL BE TERMINATED ON TERMINAL BLOCKS.
- THE CONTRACTOR SHALL TAG ALL POWER AND CONTROL SYSTEM CABLING AT ALL TERMINATION POINTS.
- FINAL CONNECTION TO ALL EQUIPMENT IS SHOWN DIAGRAMMATIC. PROVIDE FINAL CONNECTION AS REQUIRED PER MANUFACTURER OF EQUIPMENT.
- CONTRACTOR SHALL MAINTAIN A SET OF PRINTS AND MARK-UP DURING CONSTRUCTION TO REFLECT "AS-BUILT" CONDITIONS. PRINTS SHALL BE DELIVERED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.
- ALL HARDWARE SHALL BE STAINLESS STEEL.
- ALUMINUM CONDUIT SHALL BE COATED WITH (2) WRAPS OF ANTI-CORROSION TAPE OR RUN THROUGH A SCHEDULE 80 PVC SLEEVE TO WHEN IN CONTACT WITH CONCRETE.
- BARE COPPER SHALL BE COATED WITH (2) WRAPS OF ANTI-CORROSION TAPE OR RUN THROUGH A SCHEDULE 80 PVC SLEEVE TO WHEN IN CONTACT WITH CONCRETE.
- ENGINEER OF RECORD SHALL BE RESPONSIBLE FOR FINAL SIZING OF ALL EQUIPMENT.



ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE E.C.U.A. STANDARD SPECIFICATIONS

LIGHTING PERFORMANCE CRITERIA:

- LIGHTING FIXTURE LAYOUT SHALL BE BASED UPON ACHIEVING 20 FOOT CANDLES (+/- 20%) AT THE FRONT OF THE CONTROL PANEL (WORK-PLANE OF 24" AFG) AND AT THE WET WELL ACCESS HATCH (WORKPLANE OF 0" AFG).
- GENERAL SECURITY LIGHTING SHALL ENCOMPASS ACCESS GATE AND ALL PIPING/EQUIPMENT AT A MIN: AVERAGE 1 FOOT-CANDLE (+/- 20%, AT WORKPLANE OF 0" AFG).
- REFER TO LIGHTING CONTROL DIAGRAM ON SHEET No. 18 FOR ADDITIONAL REQUIREMENTS.

LIGHT POLE INSTALLATION NOTES:

- BURIAL AND DIAMETER DIMENSIONS INDICATED ARE FOR NOMINAL MINIMAL SIZES ONLY. FINAL DIMENSIONS SHALL BE DETERMINED BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE OF FLORIDA. BASED UPON FIXTURES PROVIDED. PROVIDE SIGNED, DATED, AND SEALED PLANS FOR EACH INSTALLATION TYPE AND FIXTURE TYPE AS PART OF LIGHTING SUBMITTAL PACKAGE.
- THE POLE AND FOUNDATION DESIGN SHALL BE BY A DELEGATED PROFESSIONAL ENGINEER TO MEET THE FOLLOWING CRITERIA:
 - DESIGN WIND SPEED 160 MPH WITH A 1.3 GUST FACTOR. EXPOSURE CATEGORY C.
 - SIZE EMBEDMENT FOR A MAXIMUM PERMANENT POLE DEFLECTION AFTER DESIGN WIND SPEED EVENT OF 1.00". ALUMINUM, ROUND OR SQUARE, TAPERED.
 - FIXTURE SHALL BE AMERICAN ELECTRIC LIGHTING ATB2 FIXTURE, 40 LED, 1000mA DRIVER, 120V, TYPE 4, WITH PHOTOCONTROL.
- REFER TO SPECIFICATIONS SECTION 16521 "EXTERIOR LIGHTING" FOR ADDITIONAL REQUIREMENTS.
- LIGHT FIXTURES SHALL BE MOUNTED AT 15'-0" (MAXIMUM) ABOVE FINISHED GRADE.

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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM
LIFT STATION CONSTRUCTION DETAILS
ELECTRICAL STANDARDS



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IMPROVEMENTS TO WASTEWATER COLLECTION SYSTEM

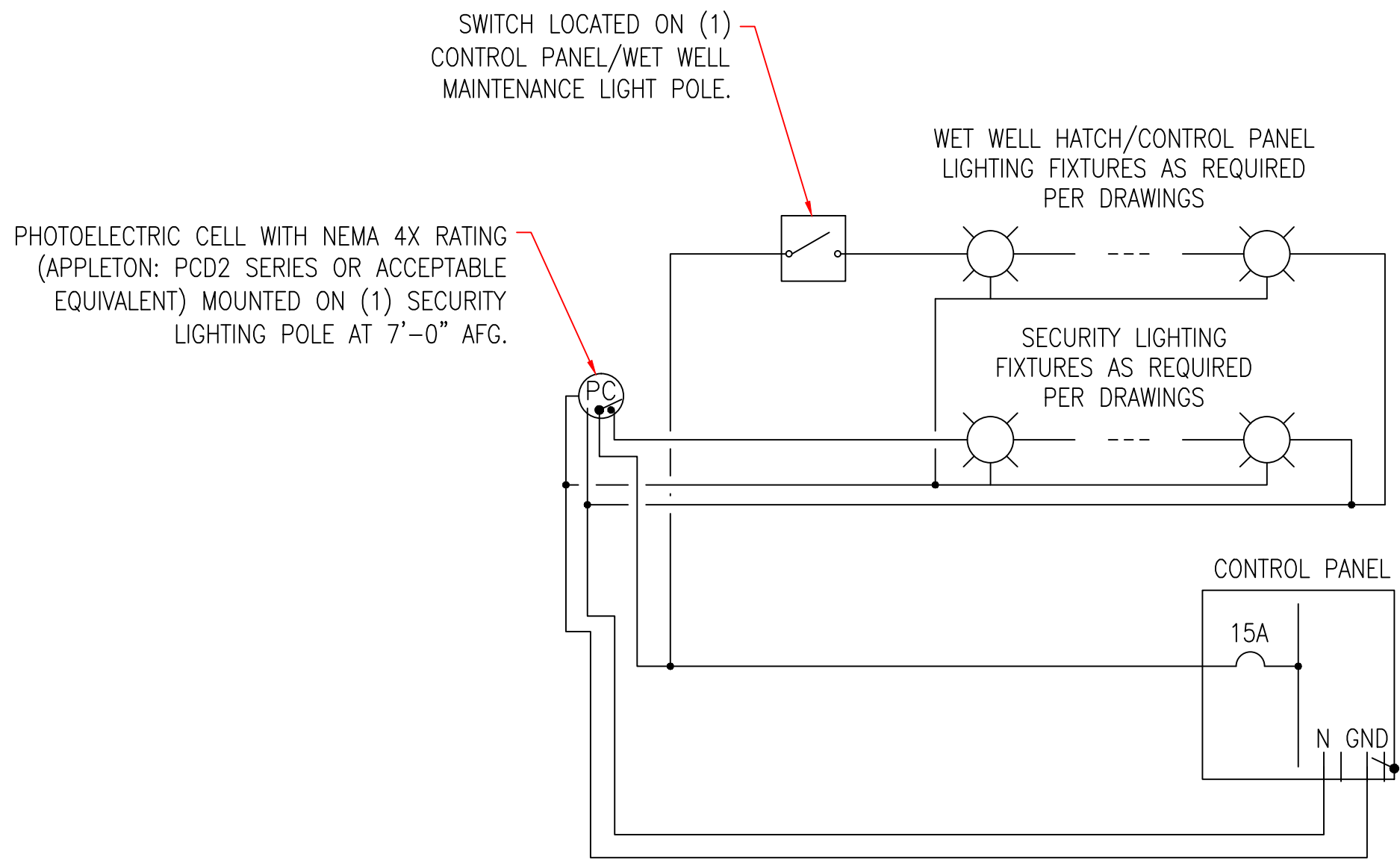
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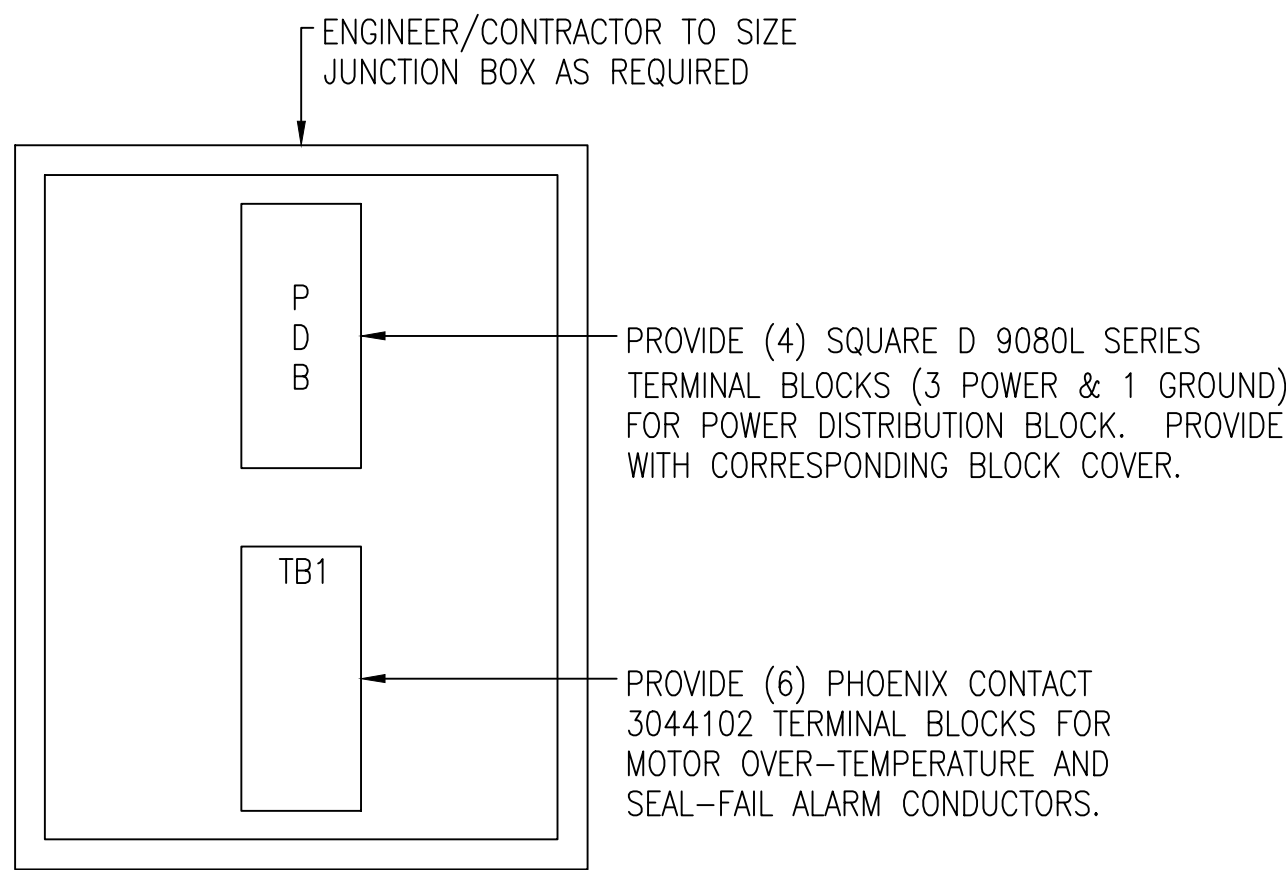


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C2 TYPICAL LIGHTING CONTROL DIAGRAM
NOT TO SCALE

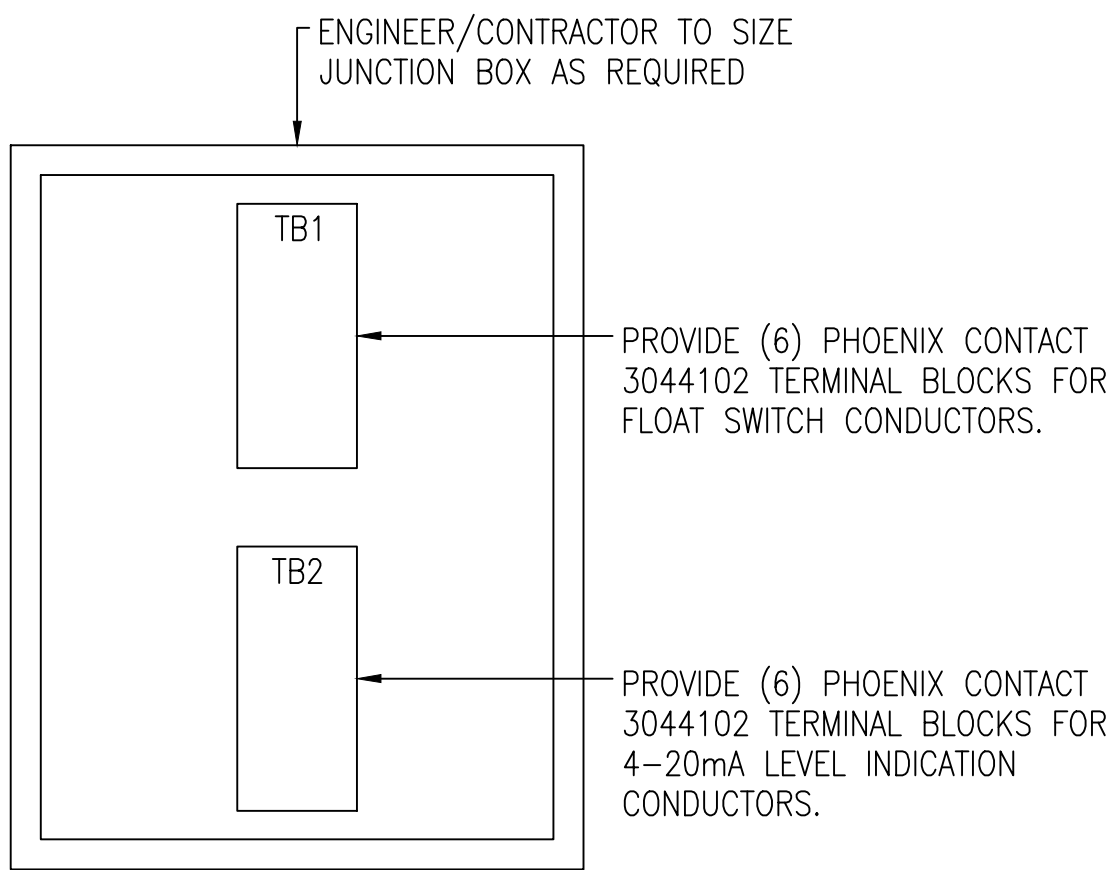


INTERIOR ELEVATION

DETAIL NOTES:

1. ALL TERMINAL BLOCKS SHALL BE PROVIDED WITH CORRESPONDING END BRACKETS AND END COVERS.
2. PROVIDE SEPARATE GROUND LUG IN EACH JUNCTION BOX, BONDED TO JUNCTION BOX.

A1 TYPICAL PUMP JUNCTION BOX ELEVATION
NOT TO SCALE

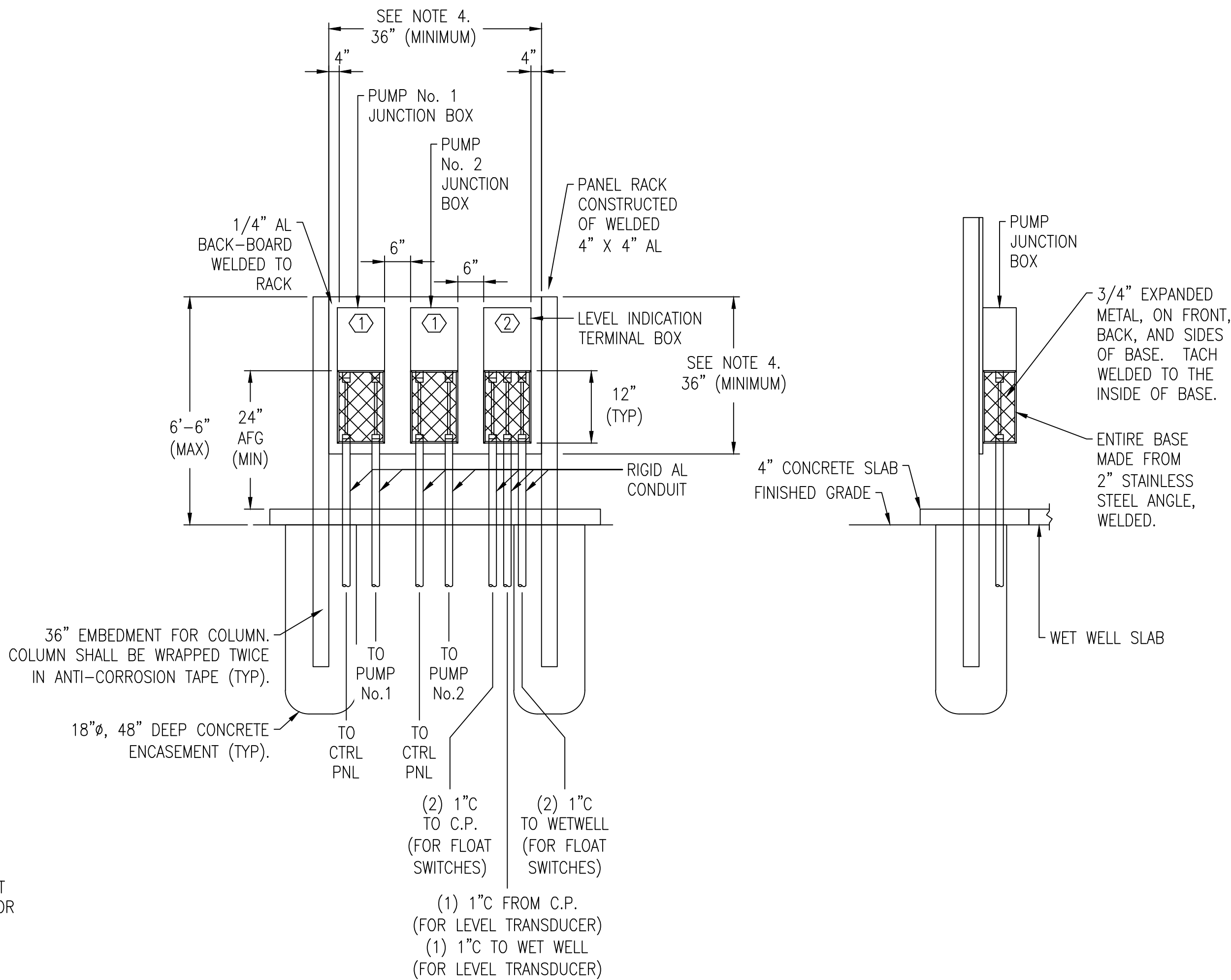


INTERIOR ELEVATION

DETAIL NOTES:

1. ALL TERMINAL BLOCKS SHALL BE PROVIDED WITH CORRESPONDING END BRACKETS AND END COVERS.
2. PROVIDE SEPARATE GROUND LUG IN EACH JUNCTION BOX, BONDED TO JUNCTION BOX.

A3 TYPICAL LEVEL INDICATION JUNCTION BOX ELEVATION
NOT TO SCALE



FRONT ELEVATION

SIDE ELEVATION

DETAIL NOTES:

1. THIS DETAIL SHALL ONLY APPLY WHEN THE CONTROL PANEL CANNOT BE PLACED WITHIN 10'-0" OF THE WET WELL TO ALLOW FOR CONNECTION OF STANDARD 50 FOOT PUMP CABLE CONNECTIONS.
2. BACKBOARD SHALL BE PLACED AT THE EDGE OF THE WET WELL SLAB BETWEEN THE WET WELL AND CONTROL PANEL.
3. JUNCTION BOXES SHALL BE MOUNTED SUCH THAT THEY ARE FACING THE WET WELL.
4. ENGINEER/CONTRACTOR SHALL SIZE JUNCTION BOXES AND BACKBOARDS BASED UPON INSTALLATION REQUIREMENTS PROVIDED AT TIME OF DESIGN.

KEY NOTES

- ① REFER TO "TYPICAL PUMP JUNCTION BOX ELEVATION" (THIS SHEET) FOR ADDITIONAL REQUIREMENTS.
- ② REFER TO "TYPICAL LEVEL INDICATION JUNCTION BOX ELEVATION" (THIS SHEET) FOR ADDITIONAL REQUIREMENTS.

A4 TYPICAL PUMP JUNCTION BOXES
NOT TO SCALE