

ANSI D 22" x 34"

Approved: R.HILLER

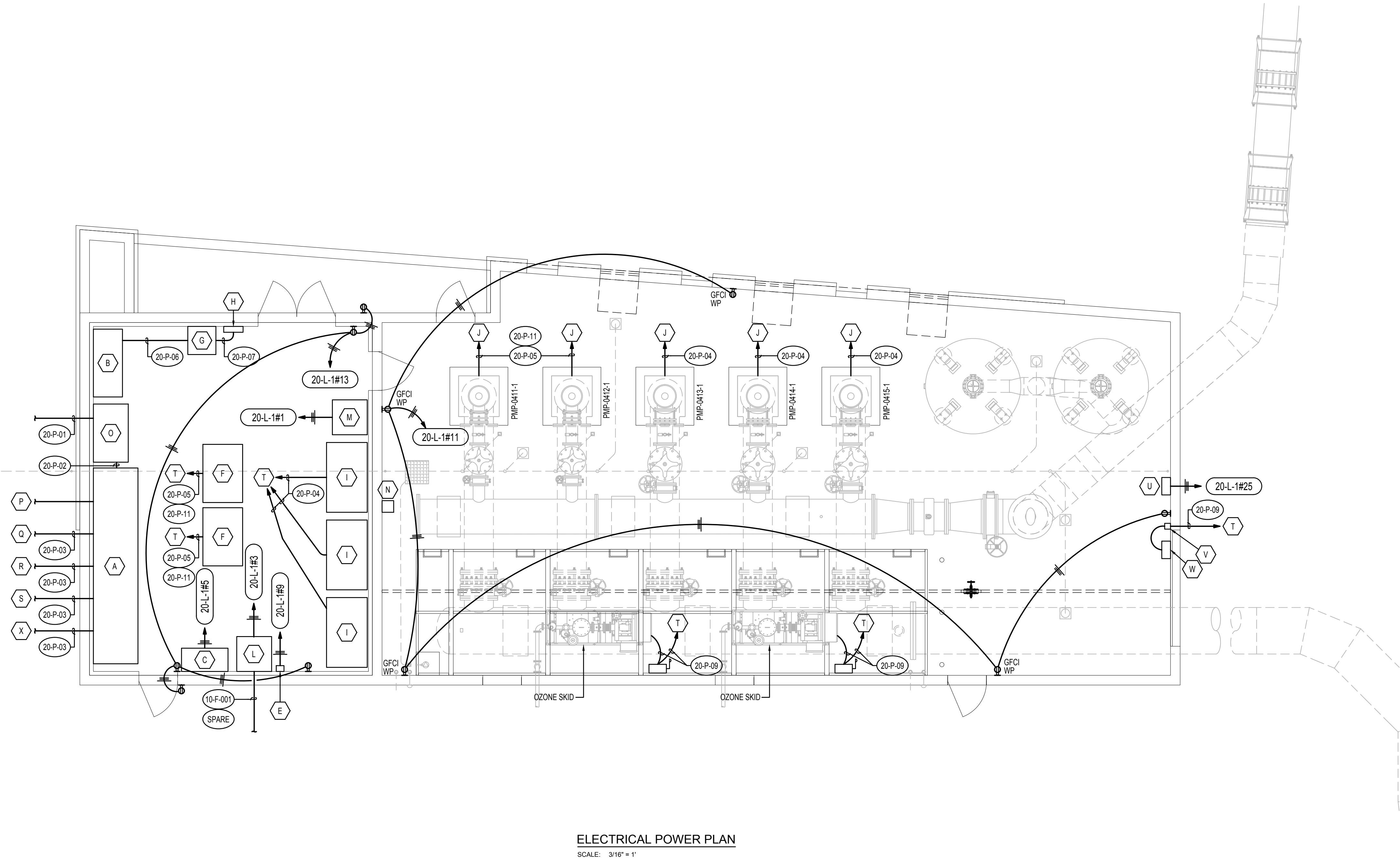
Checked: R.HILLER

Designer: R.HILLER

Drafter: HEATH ENGINEERING

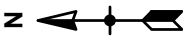
Project Manager: R.HILLER

Last Plotted: 14.04.2023
Filename: I:\203701-DWG\REP\2037-PS-G-TBLK.dwg



ELECTRICAL POWER PLAN
SCALE: 3/16" = 1'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING



KEY NOTES

- A GENERATOR MAIN DISTRIBUTOR PANEL 01-GDP-1
- B MAIN DISTRIBUTION PANEL 20-MDP-1
- C PLC CABINET
- D NOT USED
- E FLOW TRANSMITTER
- F 300HP VFD CABINET WITH LOCKABLE DISCONNECT
- G 120 / 208V 3PH TRANSFORMER '20-X-1'
- H 120 / 208 PANEL '20-L-1'
- I 600HP VFD CABINET WITH LOCKABLE DISCONNECT
- J TO CORRESPONDING VFD CABINET
- K TO MDP. SEE SCHEDULE
- L NETWORK PANEL 'NET-0000-3'
- M SECURITY SYSTEM CONTROL PANEL 'NET-0000-4'
- N J-BOX WITH DUPLEX RJ45 RECEPTACLE FOR WIRELESS ACCESS POINT MOUNTED 10' AFF
- O AUTOMATIC TRANSFER SWITCH WITH BYPASS 20-ATS-1
- P TO FILTER BUILDING ATS
- Q TO GENERATOR 01-G-1
- R TO GENERATOR 01-G-2
- S TO GENERATOR 01-G-3
- T TO MDP. SEE SCHEDULE.
- U WATER QUALITY ANALYZER. AIT 0418-1A (CL). AIT 0418-1B (PH).
- V OVERHEAD DOOR CONTROLLER
- W OVERHEAD DOOR MOTOR
- X TO RESISTIVE LOAD. SEE SITE PLAN.



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

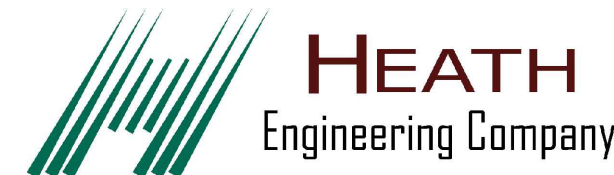
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CONSULTANTS

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REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
B	2023-04-07	ISSUED FOR BID
A	2023-01-20	ISSUED FOR 90%

PROJECT NUMBER

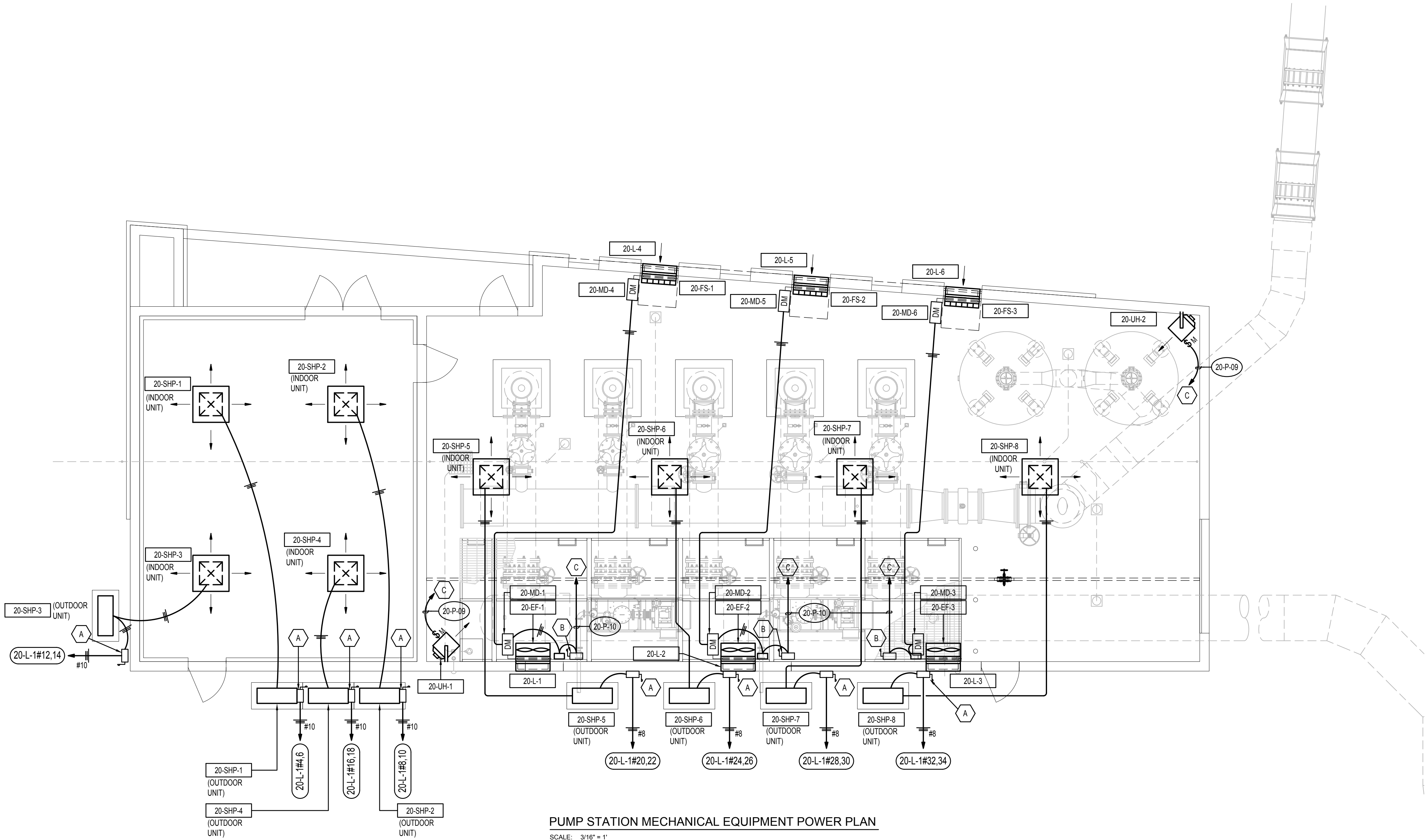
AECOM Project No. - 60670884
HAL Project No. - 035.15.420

SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
PUMP STATION POWER
PLAN

DRAWING NUMBER

20-E101



VERIFY SCALE
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KEY NOTES

- A DISCONNECT 30A 2-POLE 240V NEMA 3R HEAVY DUTY. FUSE PER NAMEPLATE.
- B DISCONNECT 20A 3-POLE 600V NEMA 12 HEAVY DUTY. FUSE PER NAMEPLATE.
- C TO '20-MDP-1'



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

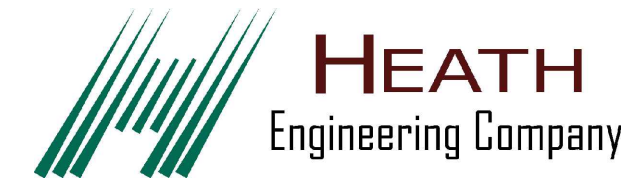
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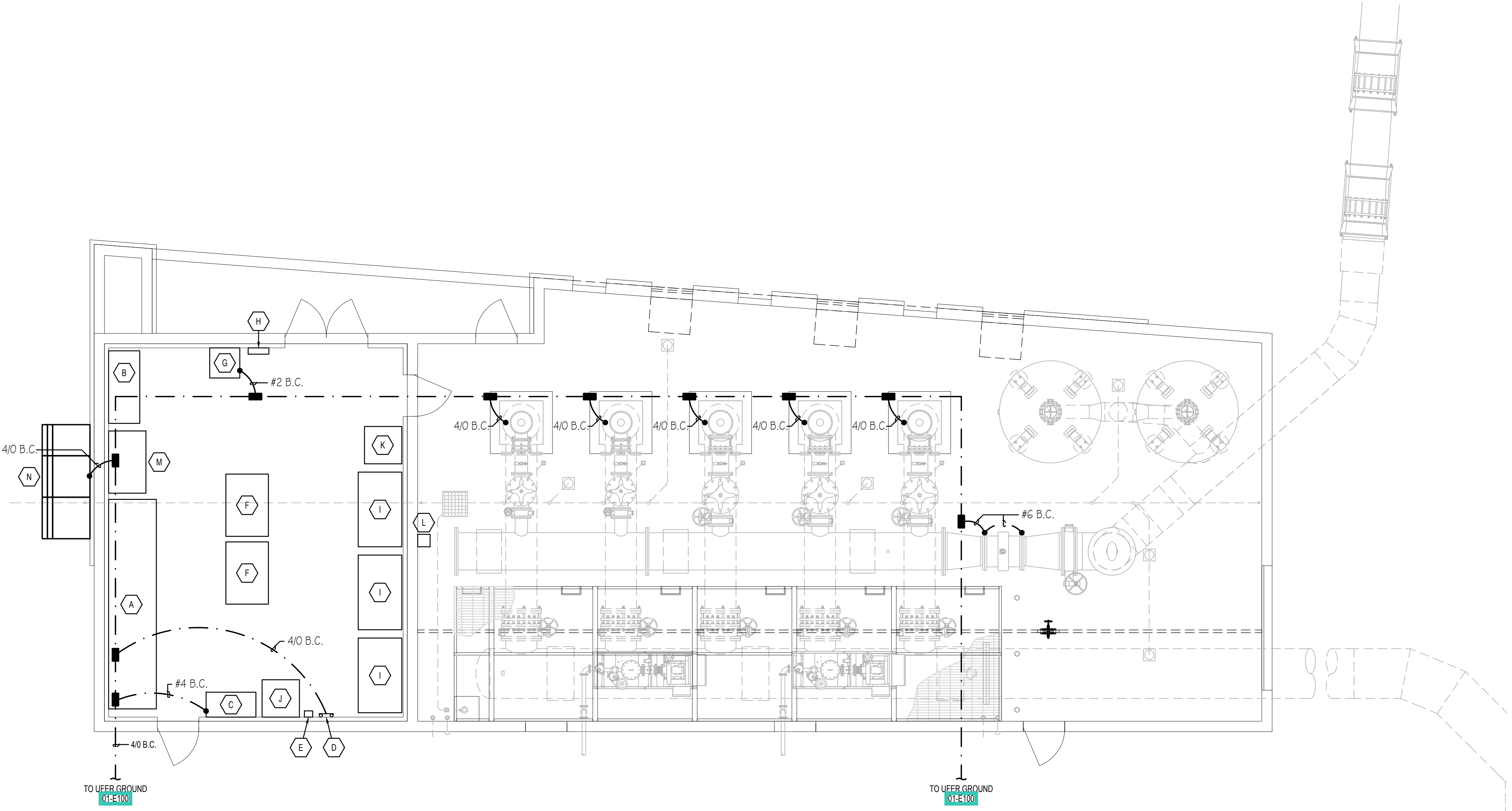
SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
PUMP STATION MECH
EQUIP POWER PLAN

DRAWING NUMBER

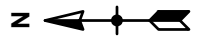
20-E102

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ELECTRICAL GROUNDING PLAN
SCALE: 3/16" = 1'

VERIFY SCALE
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KEY NOTES

- A GENERATOR MAIN DISTRIBUTOR PANEL 01-GDP-1
- B MAIN DISTRIBUTION PANEL 20-MDP-1
- C PLC CABINET
- D GROUND BUS. SEE 03-E701 DETAIL E013.
- E FLOW TRANSMITTER
- F 300HP VFD CABINET
- G 120 / 208V 3PH TRANSFORMER '20-X-1'
- H 120 / 208 PANEL '20-L-1'
- I 600HP VFD CABINET
- J NETWORK PANEL 'NET-0000-3'
- K SECURITY SYSTEM CONTROL PANEL 'NET-0000-4'
- L J-BOX WITH DUPLEX RJ45 RECEPTACLE FOR WIRELESS ACCESS POINT MOUNTED 10" AFF
- M AUTOMATIC TRANSFER SWITCH WITH BYPASS 20-ATS-1
- N METER AND DISCONNECT



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

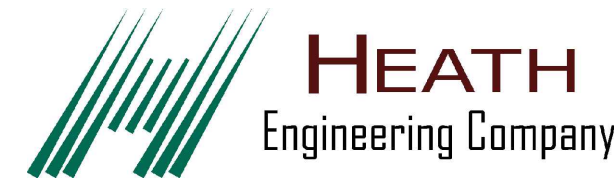
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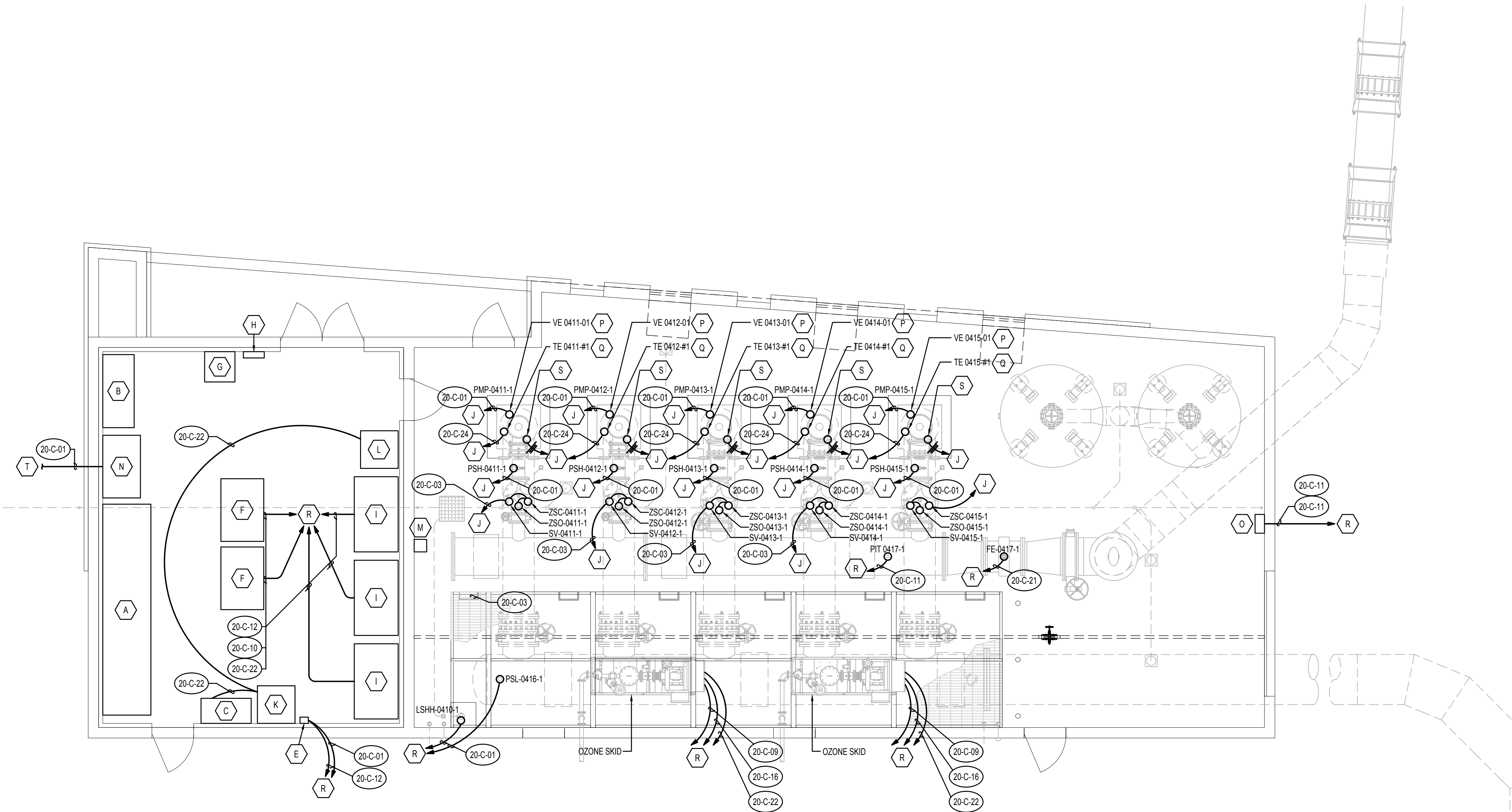
SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
PUMP STATION
GROUNDING PLAN

DRAWING NUMBER

20-E103

ANSI D 22" x 34" Approved: R.HILLYER Checked: R.HILLYER Designer: R.HILLYER Drafter: HEATH ENGINEERING Project Manager: R.HILLYER Last Plotted: 14.04.2023 Filename: I:\203701-DWG\REF\2037-PS-G-TBLK.dwg



ELECTRICAL CONTROLS PLAN
SCALE: 3/16" = 1'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING



KEY NOTES

- A GENERATOR MAIN DISTRIBUTOR PANEL 01-GDP-1
- B MAIN DISTRIBUTION PANEL 20-MDP-1
- C PLC CABINET
- D NOT USED
- E FLOW TRANSMITTER FIT-0417-1 WITH FSL-0417-1 SWITCH
- F 300HP VFD CABINET
- G 120 / 208V 3PH TRANSFORMER '20-X-1'
- H 120 / 208 PANEL '20-L-1'
- I 600HP VFD CABINET
- J TO CORRESPONDING VFD CABINET
- K NETWORK PANEL 'NET-0000-3'
- L SECURITY SYSTEM CONTROL PANEL 'NET-0000-4'
- M J-BOX WITH DUPLEX RJ45 RECEPTACLE FOR WIRELESS ACCESS POINT MOUNTED 10" AFF
- N AUTOMATIC TRANSFER SWITCH WITH BYPASS 20-ATS-1
- O WATER QUALITY ANALYZER. AIT 0418-1A (CL). AIT 0418-1B (pH).
- P VIBRATION SWITCH
- Q RTD'S 6 WINDING AND ONE PER BEARING
- R TO PLC
- S WINDING HEATER
- T TO FIRST GENERATOR CONTROLLER



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

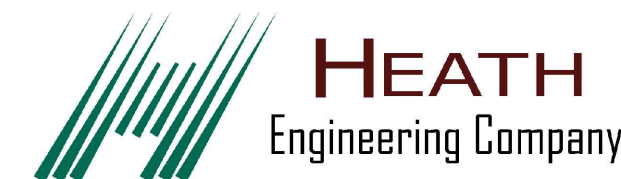
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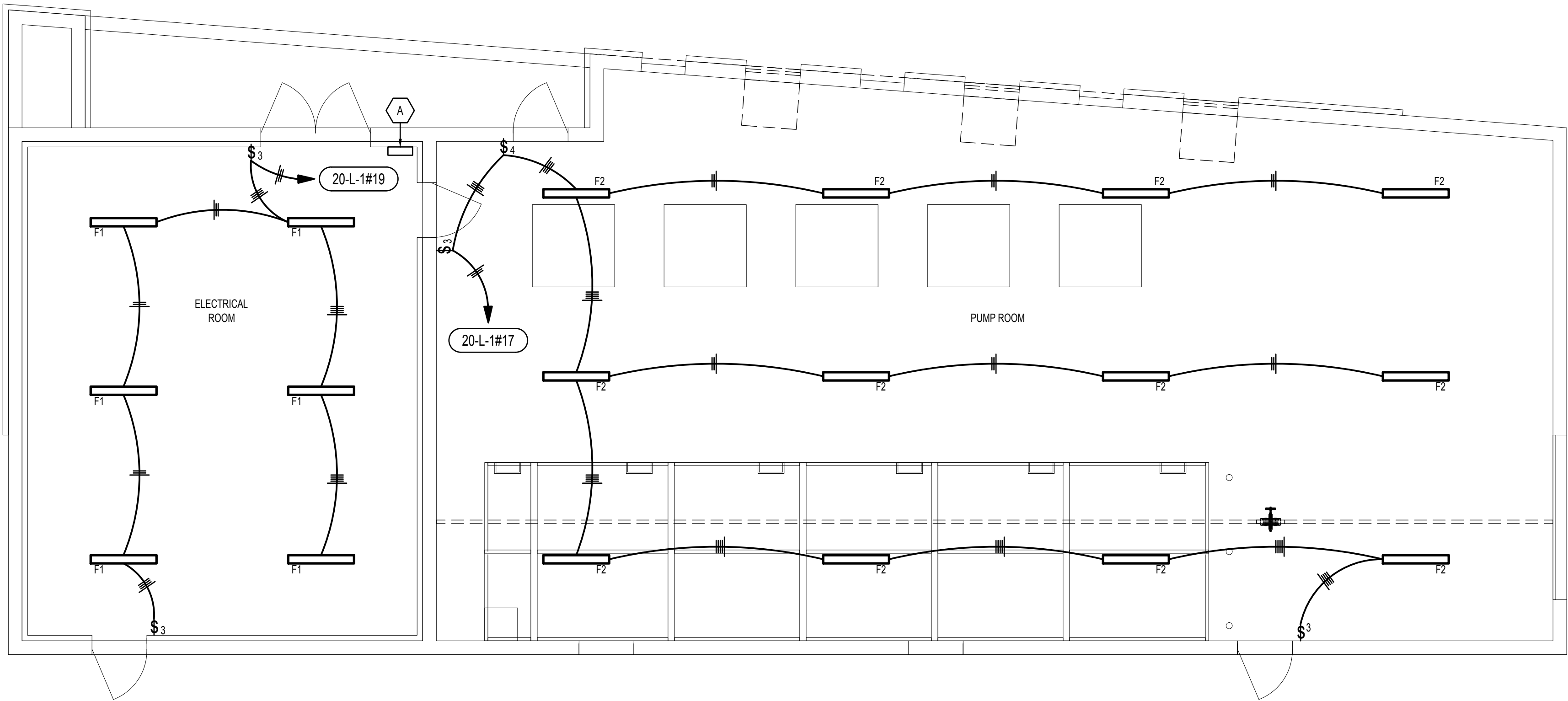
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HAL Project No. - 035.15.420

SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
PUMP STATION
CONTROLS PLAN

DRAWING NUMBER

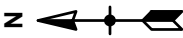
20-E104



ELECTRICAL LIGHTING PLAN

SCALE: 3/16" = 1'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING



KEY NOTES

- A LIGHTING CONTACTOR FOR THE EXTERIOR LIGHTS. SEE 01-E101 FOR EXTERIOR LIGHT LOCATIONS.

GENERAL NOTES

- FIXTURES IN ELECTRICAL ROOM MOUNTED AT 10ft SUSPENDED FROM CEILING.
- FIXTURES IN PUMP ROOM MOUNTED AT 17ft SUSPENDED FROM CEILING.
- SEE SHEET 20-E602 FOR LIGHTING FIXTURE SCHEDULE



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

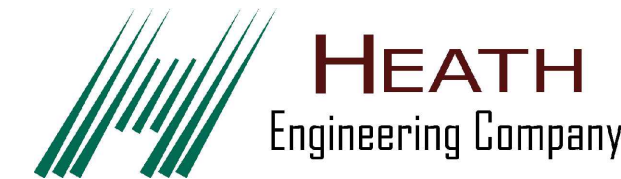
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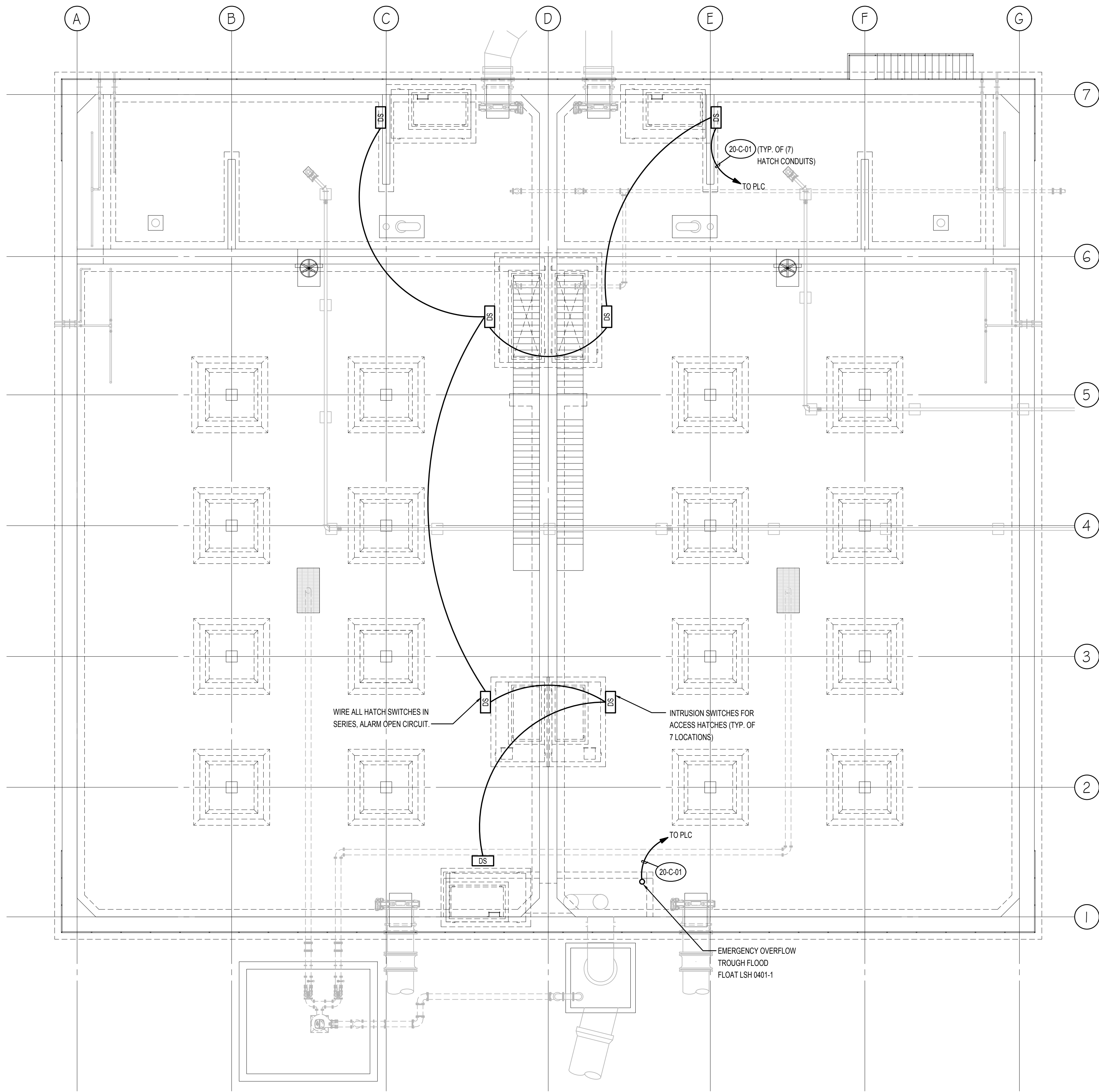
CLEARWELL AND
PUMP STATION
ELECTRICAL
PUMP STATION LIGHTING
PLAN

DRAWING NUMBER

20-E105

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ELECTRICAL CLEARWELL ROOF DECK CONTROL PLAN
SCALE: 3/8" = 1"

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

N
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PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

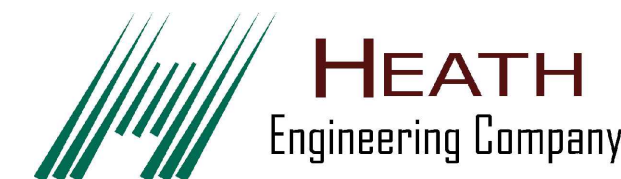
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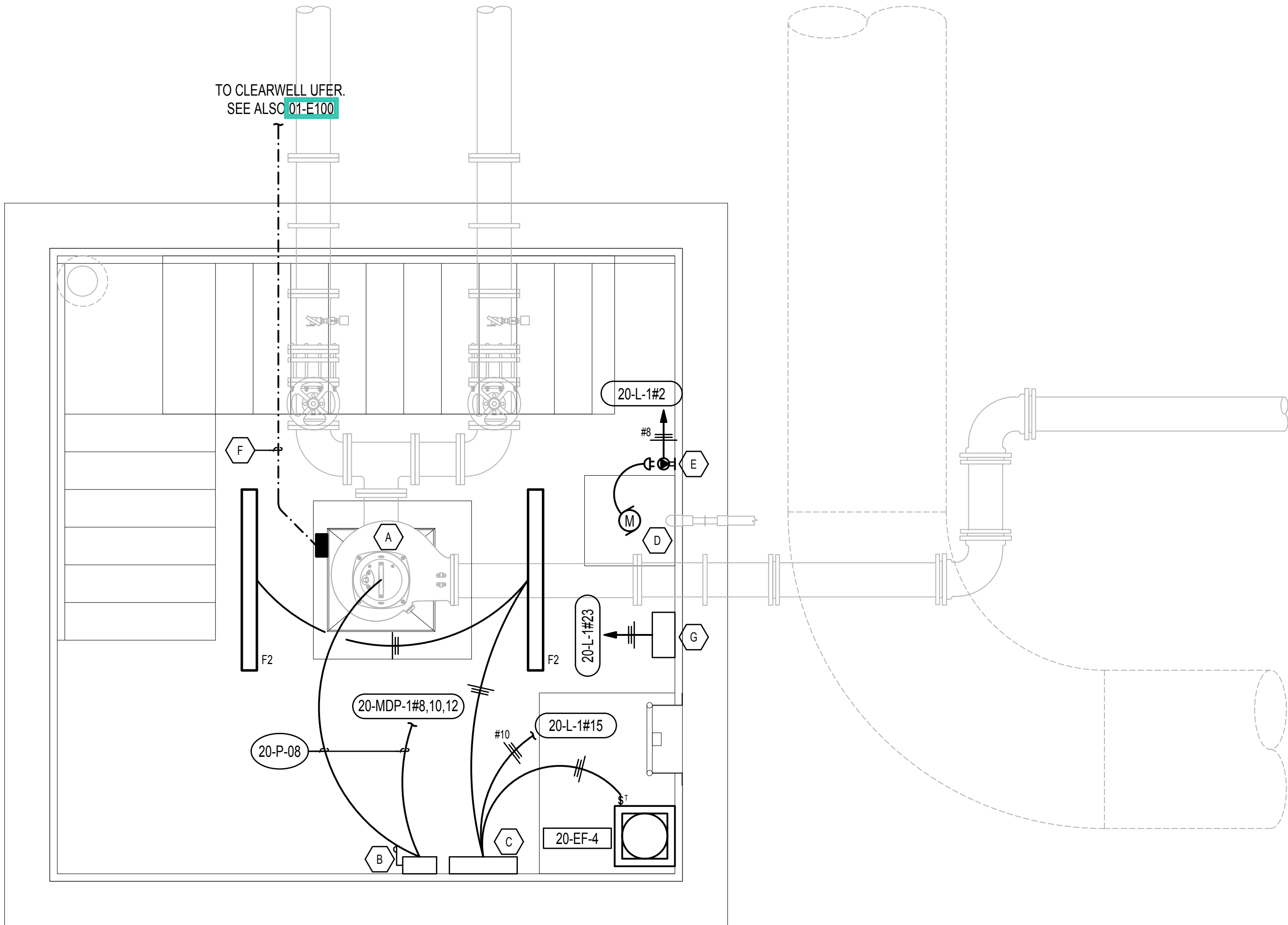
AECOM Project No. - 60670884
HAL Project No. - 035.15.420

SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
CLEARWELL ROOF DECK
CONTROL PLAN

DRAWING NUMBER

20-E106

**DRAIN VAULT ELECTRICAL POWER PLAN**

SCALE: 1/2" = 1'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING

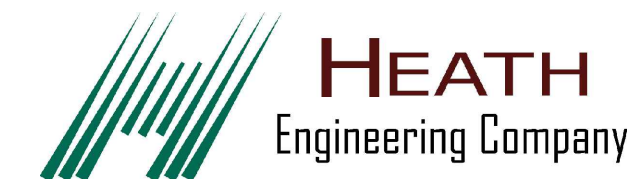
**KEY NOTES**

- A DRAIN PUMP PMP-0403-1
- B DRAIN PUMP CONTROL PANEL LCP-0403-1 NEMA 4X
- C LIGHTING CONTROL BOX. DOOR SWITCHES ON THE ENTRY AND PUMP HATCHES TURN ON LIGHTS AND EXHAUST FAN AND SENDS INTRUSION ALARM NEMA 4X. SEE ALSO 20-E108
- D SUMP PUMP PMP-0403-02
- E 120V 20A LOCKING RECEPTACLE FOR SUMP
- F #8 B.C. GROUNDING ELECTRODE
- G CHLORINE ANALYZER. AE 0403-1 / AIT 0403-1

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WATER TREATMENT
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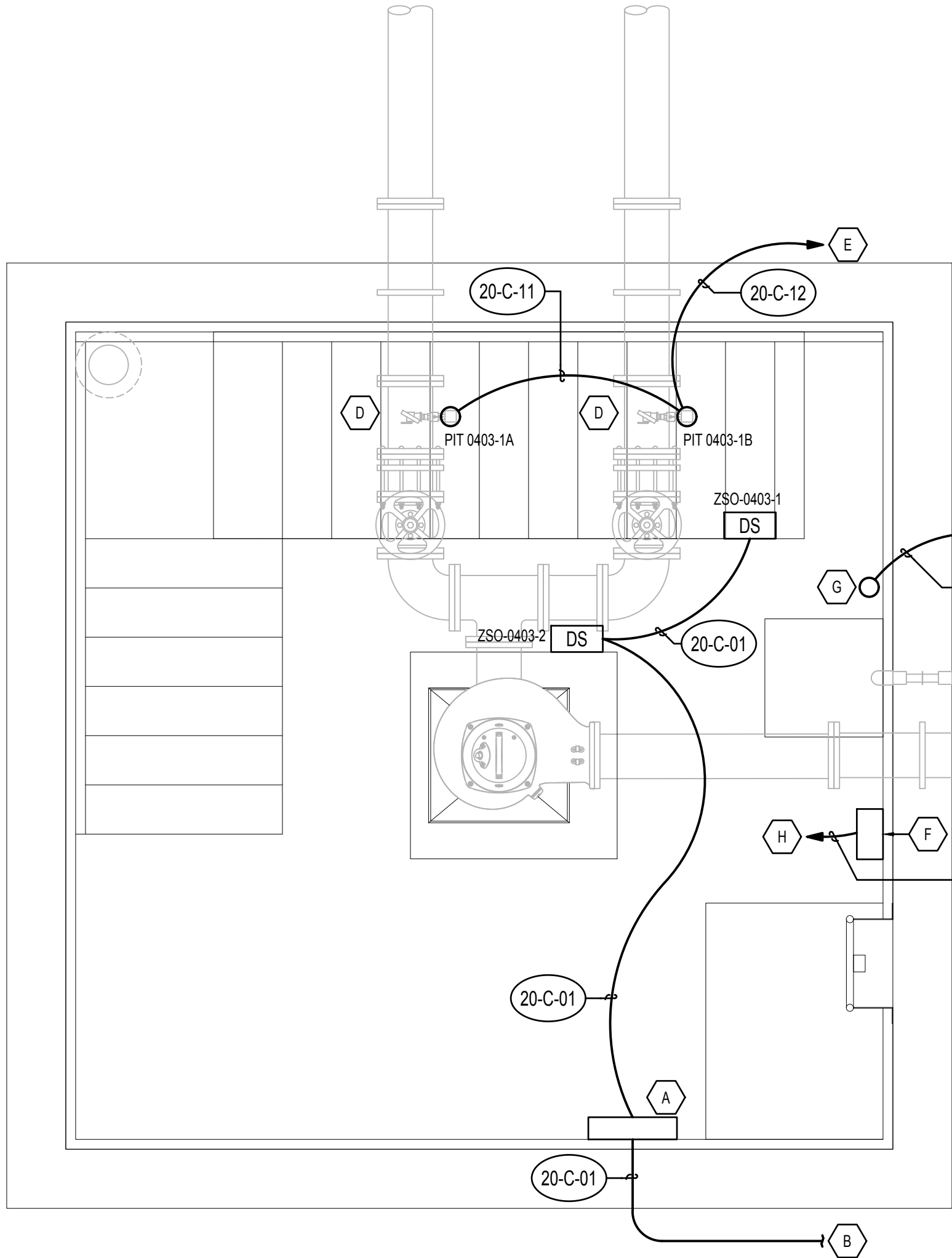
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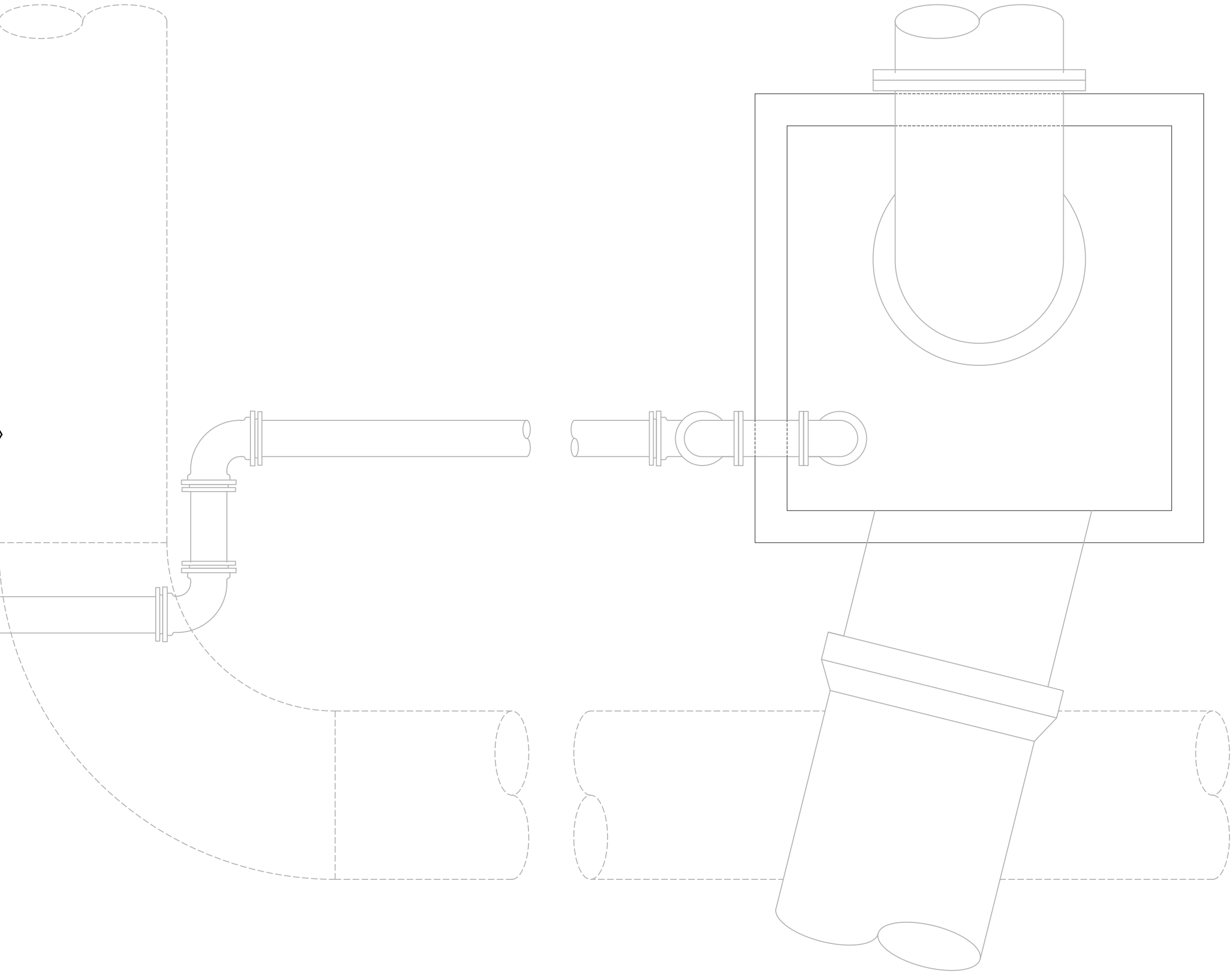
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HAL Project No. - 035.15.420**SHEET TITLE****CLEARWELL AND
PUMP STATION
ELECTRICAL
DRAIN VAULT POWER
PLAN****DRAWING NUMBER****20-E107**



DRAIN VAULT ELECTRICAL CONTROL PLAN
SCALE: 1/2" = 1'



EMERGENCY OVERFLOW BOX CONTROL PLAN
SCALE: 1/2" = 1'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING

N

- KEY NOTES
- A

 LIGHTING CONTROL BOX
- B

 TO PLC INTRUSION ALARM
- C

 TO PLC FLOOD ALARM
- D

 PRESSURE TRANSDUCER FOR TANK LEVEL
- E

 TO PLC TANK LEVEL
- F

 CHLORINE ANALYZER AE 0403-1 / AIT 0403-1
- G

 FLOOD FLOAT LSHH 043-1
- H

 TO PLC CHLORINE VALVE



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

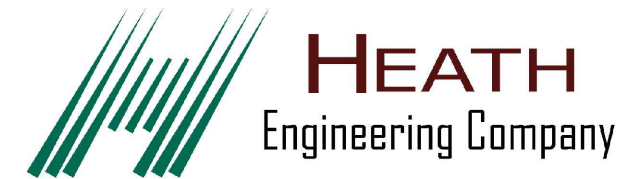
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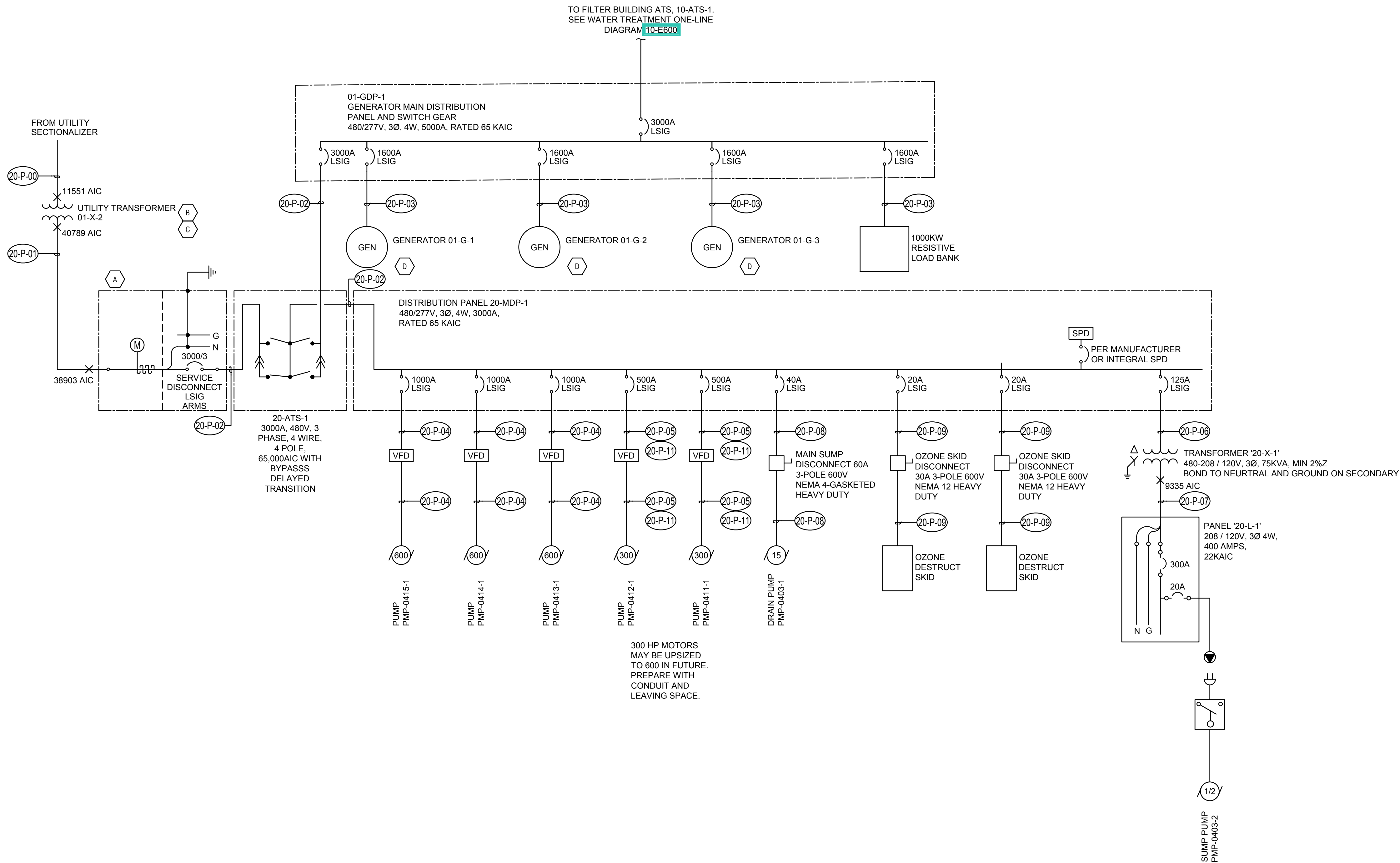
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HAL Project No. - 035.15.420

SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
DRAIN VAULT / OF BOX
CONTROL PLAN

DRAWING NUMBER

20-E108



BAR IS ONE INCH ON ORIGINAL DRAWING

A	UTILITY METERING SECTION. UTILITY METERING SECTION NEMA 3R. PROVIDE COVER OVER METERING SECTION. INCLUDE SHORTING BLOCKS, TEST BLOCKS AT METER. CT'S AND METERING EQUIPMENT PROVIDED BY UTILITY.
B	UTILITY TRANSFORMER 480 / 277V, 3Ø, 4W
C	PAD VAULT BY CONTRACTOR
D	STANDBY GENERATOR 1000KW 480 / 277V

PROJECT

PROVO RIVER WATER TREATMENT PLANT

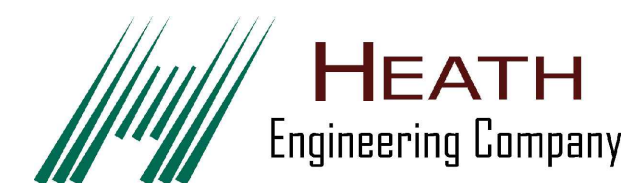
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SHEET TITLE

CLEARWELL AND PUMP STATION ELECTRICAL ONE-LINE DIAGRAM

DRAWING NUMBER

20-E601

POWER CONDUIT SCHEDULE

20-P-00	2	WIRE BY UTILITY	4"
20-P-01	7	P: 3 - 500 N: 1 - 500 G: NONE	3-12"
20-P-02	7	P: 3 - 500 N: 1 - 500 G: 1 - 350	3-12"
20-P-03	5	P: 3 - 500 N: NONE G: 1 - 400	3"
20-P-04	3	P: 3 - 500 VFD N: NONE G: 1 - 200	3"
20-P-05	2	P: 3 - 250 VFD N: NONE G: 1 - #2	3"
20-P-06	1	P: 3 - 100 N: NONE G: 1 - #2	1-12"
20-P-07	1	P: 3 - 350 N: 1 - 350 G: 1 - #4	3"
20-P-08	1	P: 3 - #10 N: NONE G: 1 - #10	3/4"
20-P-09	1	P: 3 - #12 N: NONE G: 1 - #12	3/4"
20-P-10	1	P: 3 - #12 N: NONE G: 1 - #12	3/4"
20-P-11	1	SPARE	3"
20-P-12	1	P: 2 - #1 N: 1 - #1 G: 1 - #8	2"

CONTROL CONDUIT SCHEDULE

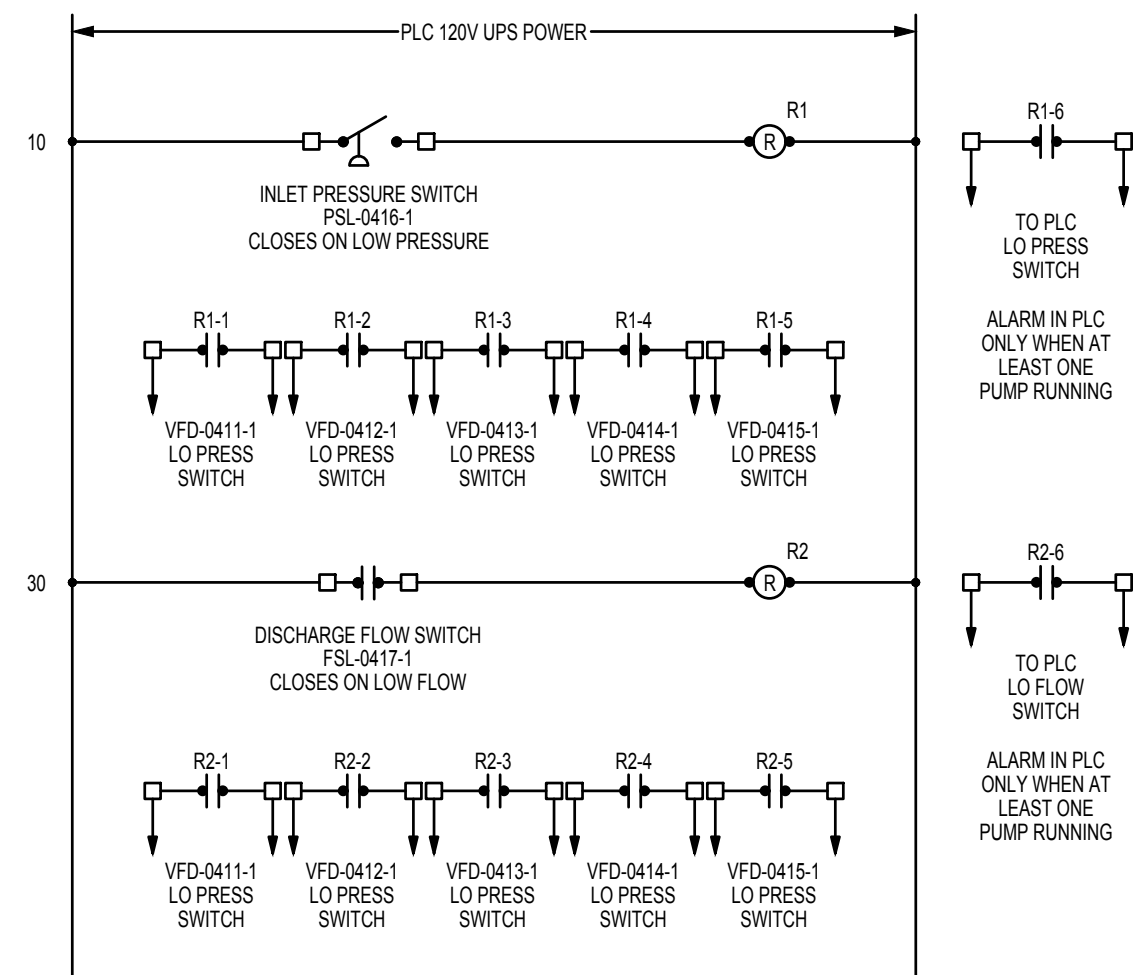
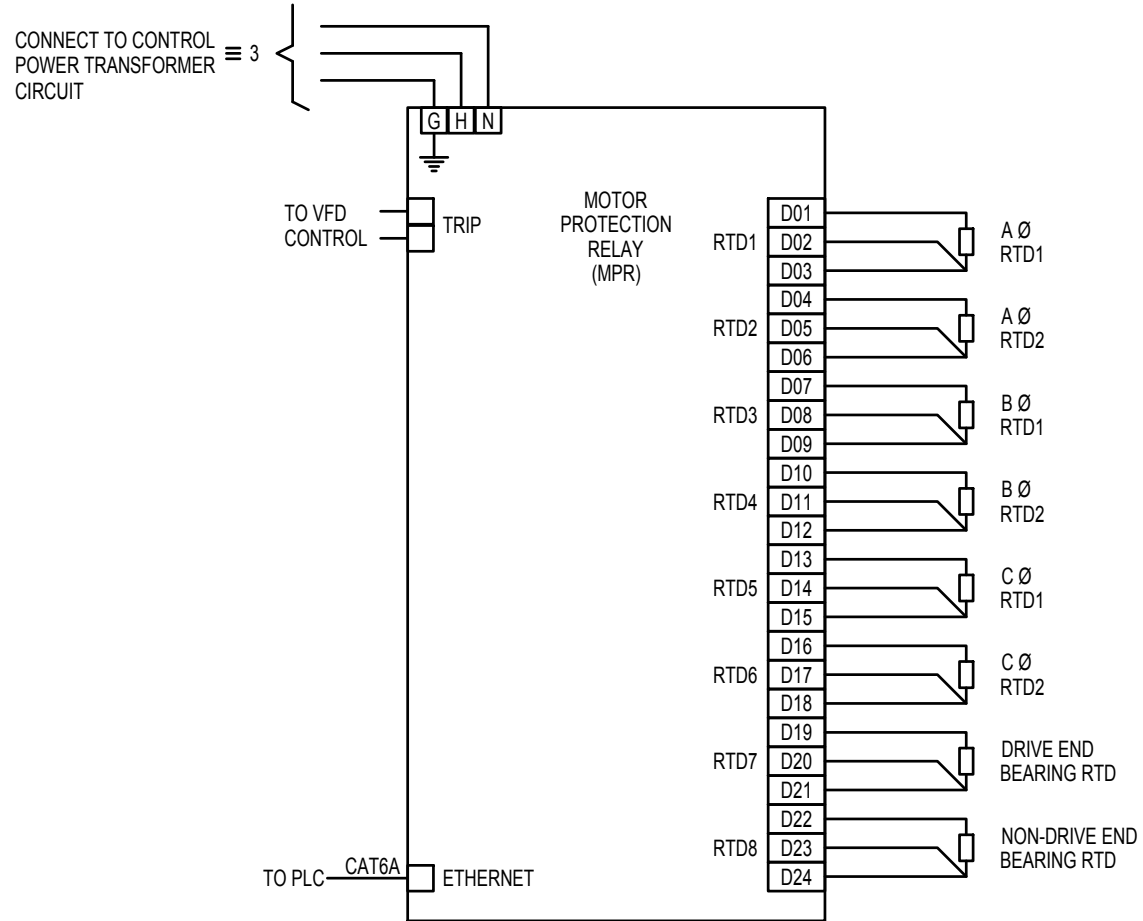
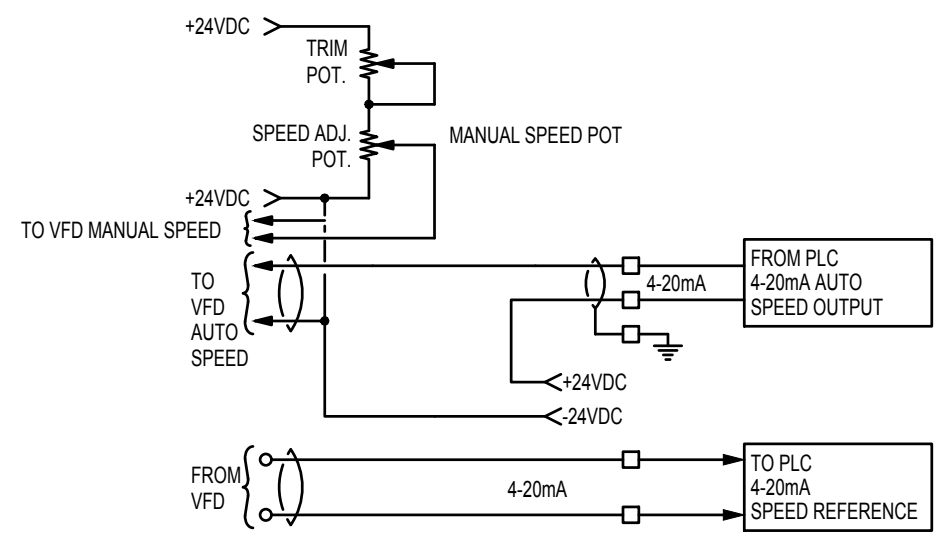
20-C-01	4 - #14, 1 - #14 GND, 3/4"C
20-C-03	8 - #14, 1 - #14 GND, 3/4"C
20-C-09	20 - #14, 1 - #14 GND, 1"C
20-C-10	24 - #14, 1 - #14 GND, 1-1/4"C
20-C-11	1 - #16 TSP, 1 - #14 GND, 3/4"C
20-C-12	2 - #16 TSP, 1 - #14 GND, 3/4"C
20-C-16	6 - #16 TSP, 1 - #14 GND, 1"C
20-C-21	MANUFACTURER'S CABLE, 1"C
20-C-22	(1) CAT 6 CABLE, 1"C
20-C-23	(2) CAT 6 CABLE, 1"C
20-C-24	RTD CABLES, 1-#16 GND, 1"C

PANEL 20-L-1

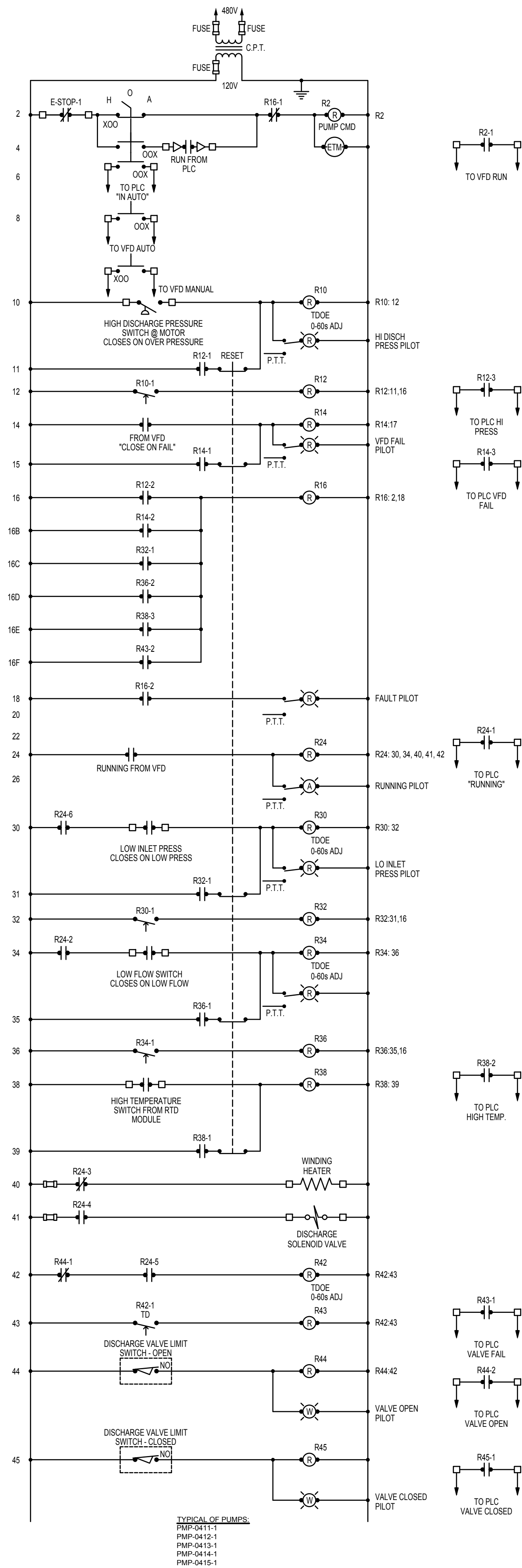
VOLTAGE: 208/120 V 3Ø 4W				CIRCUIT BREAKER TYPE:				I-LINE				MOUNTING: SURFACE							
ENCLOSURE: NEMA 1				INTERRUPTING CAPACITY:				22 KAIC				COVER TYPE: DOOR-IN-DOOR							
												LOCATION: PUMP BUILDING ELECTRICAL ROOM							
BRANCH CIRCUIT BREAKER				CONNECTION		DESCRIPTION			PHASE			DESCRIPTION		CONNECTION		BRANCH CIRCUIT BREAKER			
NOTES	#	AMP	P.	LOAD (VA)					A	B	C			LOAD (VA)		P.	AMP	#	NOTES
	L-1	20	1	200		SECURITY PANEL			1376			SMALL SUMP		1176		1	20	L-2	
	L-3	20	1	200		NETWORK PANEL				2280		SPLIT A/C 20-SHP-1		2080		2	30	L-4	1
	L-5	20	1	1000		PLC					3080	-----		2080		--	--	L-6	
	L-7	20	1			SPARE			2080			SPLIT A/C 20-SHP-2		2080		2	30	L-8	1
	L-9	20	1	150		FLOW TRANSMITTER FIT-0417-1				2230		-----		2080		--	--	L-10	
	L-11	20	1	900		PUMP ROOM RECEPTACLES					2980	SPLIT A/C 20-SHP-3		2080		2	30	L-12	1
	L-13	20	1	900		ELEC ROOM RECEPTACLES			2980			-----		2080		--	--	L-14	
	L-15	20	1	752		DRAIN VAULT LIGHTS AND FAN				2832		SPLIT A/C 20-SHP-4		2080		2	30	L-16	1
	L-17	20	1	900		PUMP ROOM LIGHTS					2980	-----		2080		--	--	L-18	
	L-19	20	1	303		ELEC ROOM LIGHTS			2383			SPLIT A/C 20-SHP-5		2080		2	30	L-20	1
	L-21	20	1	381		EXTERIOR LIGHTS VIA LIGHTING RELAY				2461		-----		2080		--	--	L-22	
	L-23	20	1	150		CHLORINE ANALYZER 0418-1B					2230	SPLIT A/C 20-SHP-6		2080		2	30	L-24	1
	L-25	20	1	150		WATER QUALITY ANALYZER 0418-1A			2230			-----		2080		--	--	L-26	
	L-27	20	1	150		EAST CLEARWELL LEVEL LIT-0401-1				2230		SPLIT A/C 20-SHP-7		2080		2	30	L-28	1
	L-29	20	1	150		EAST CLEARWELL LEVEL LIT-0402-1					2230	-----		2080		--	--	L-30	
1	L-31	100	2	8640		GENERATOR 01-G-1 AUXILIARIES			10720			SPLIT A/C 20-SHP-8		2080		2	30	L-32	1
	L-33	--	--	8640		-----				10720		-----		2080		--	--	L-34	
1	L-35	100	2	8640		GENERATOR 01-G-2 AUXILIARIES					9045	TRANSMISSION PIPELINE VALVE VAULT		405		1	20	L-36	
	L-37	--	--	8640		-----			8640			SPARE						L-38	
	L-39	100	2	8640		GENERATOR 01-G-2 AUXILIARIES				8640		SPARE						L-40	
	L-41	--	--	8640		-----					8640	SPARE						L-42	
	L-43	20	1			SPARE			0			SPARE						L-44	
	L-45	20	1			SPARE				0		SPARE						L-46	
	L-47	20	1			SPARE					0	SPARE						L-48	
	L-49	20	1			SPARE			0			SPARE						L-50	
	L-51	20	1			SPARE				0		SPARE						L-52	
	L-53	20	1			SPARE					0	SPARE						L-54	
PHASE SUBTOTALS (VA)									30409	31393	31185								
PHASE TOTALS (KVA)									30.4	31.4	31.2								
PHASE TOTALS @ 120V (AMPS)									253.4	261.6	259.9								
NOTES:																			
GEN PROVIDE INTEGRAL SPD																			
1 GENERATOR HEATING ELEMENTS AND A/C UNITS NOT EXPECTED TO RUN AT THE SAME TIME.																			
2																			
3																			

PANEL 20-MDP-1

VOLTAGE: 480/277 V 3Ø 4W				CIRCUIT BREAKER TYPE:				I-LINE				MOUNTING: SURFACE							
ENCLOSURE: NEMA 1				INTERRUPTING CAPACITY:				65 KAIC				COVER TYPE: DOOR-IN-DOOR							
												LOCATION: PUMP BUILDING ELECTRICAL ROOM							
BRANCH CIRCUIT BREAKER				CONNECTION		DESCRIPTION			PHASE			DESCRIPTION		CONNECTION		BRANCH CIRCUIT BREAKER			
NOTES	#	AMP	P.	LOAD (VA)					A	B	C			LOAD (VA)		P.	AMP	#	NOTES
	MDP-1	500	3	99997		PUMP PMP-0411-1			130406			TRANSFORMER 20-X-1		30409		3	125	MDP-2	
	MDP-3	--	--	99997		-----				131390		-----		31393		--	--	MDP-4	
	MDP-5	--	--	99997		-----					131182	-----		31185		--	--	MDP-6	
	MDP-7	500	3	99997		PUMP PMP-0412-1			105814			MAIN SUMP PMP-0403-1		5817		3	40	MDP-8	
	MDP-9	--	--	99997		-----				105814		-----		5817		--	--	MDP-10	
	MDP-11	--	--	99997		-----					105814	-----		5817		--	--	MDP-12	
	MDP-13	1000	3	204980		PUMP PMP-0413-1			207251			OZONE SKID		2271		3	20	MDP-14	
	MDP-15	--	--	204980		-----				207251		-----		2271		--	--	MDP-16	
	MDP-17	--	--	204980		-----					207251	-----		2271		--	--	MDP-18	
	MDP-19	1000	3	204980		PUMP PMP-0414-1			207251			OZONE SKID		2271		3	20	MDP-20	
	MDP-21	--	--	204980		-----				207251		-----		2271		--	--	MDP-22	
	MDP-23	--	--	204980		-----					207251	-----		2271		--	--	MDP-24	
1	MDP-25	1000	1			PUMP PMP-0415-1			4167			ELECTRIC UNIT HEATER 20-UH-1		4167		3	20	MDP-26	
	MDP-27	--	--			-----				4167		-----		4167		--	--	MDP-28	
	MDP-29	--	--			-----					4167	-----		4167		--	--	MDP-30	
	MDP-31	20	3	582		EXHAUST FAN 20-EF-1			4748.7			ELECTRIC UNIT HEATER 20-UH-2		4167		3	20	MDP-32	
	MDP-33	--	--	582		-----				4748.7		-----		4167		--	--	MDP-34	
	MDP-35	--	--	582		-----					4748.7	-----		4167		--	--	MDP-36	
	MDP-37	20	3	582		EXHAUST FAN 20-EF-2			1163.4			EXHAUST FAN 20-EF-3		582		3	20	MDP-38	
	MDP-39	--	--	582		-----				1163.4		-----		582		--	--	MDP-40	
	MDP-41	--	--	582		-----					1163.4	-----		582		--	--	MDP-42	
	MDP-43					PROVISION			1330			OVERHEAD DOOR		1330		3	20	MDP-44	
	MDP-45					PROVISION				1330		-----		1330		--	--	MDP-46	
	MDP-47					PROVISION					1330	-----		1330		--	--	MDP-48	
	MDP-49					PROVISION			0			PROVISION						MDP-50	
	MDP-51					PROVISION				0		PROVISION						MDP-52	
	MDP-53					PROVISION					0	PROVISION						MDP-54	
PHASE SUBTOTALS (VA)									662131	663115	662907								
PHASE TOTALS (KVA)									662.1	663.1	662.9								
PHASE TOTALS @ 277V (AMPS)									2390.4	2393.9	2393.2								
NOTES:																			
1 LOAD NOT INCLUDED. MAXIMUM OF 1800HP AT ANY ONE TIME. EXHAUST FAN AND HEATER WON'T RUN AT THE SAME TIME.																			
2																			
3																			
4																			



SIGNAL REPLICATION WITHIN PLC CABINET



HIGH SERVICE PUMP VFD CONTROL DIAGRAM

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

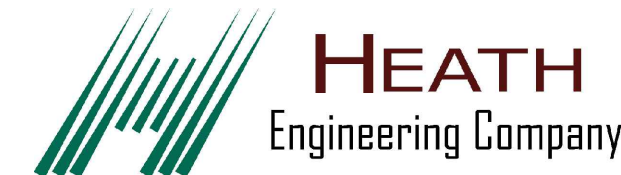
CLIENT

PROVO CITY
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1377 South 350 East
Provo, UT 84606
Tel: (801) 852-6700



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South Jordan, UT 84095
Tel: (801) 566-6599
http:// www.hansenallenluce.com



REGISTRATION



ISSUE/REVISION

B	2023-04-07	ISSUED FOR BID
A	2023-01-20	ISSUED FOR 90%
I/R	DATE	DESCRIPTION

PROJECT NUMBER

AECOM Project No. - 60670884
HAL Project No. - 035.15.420

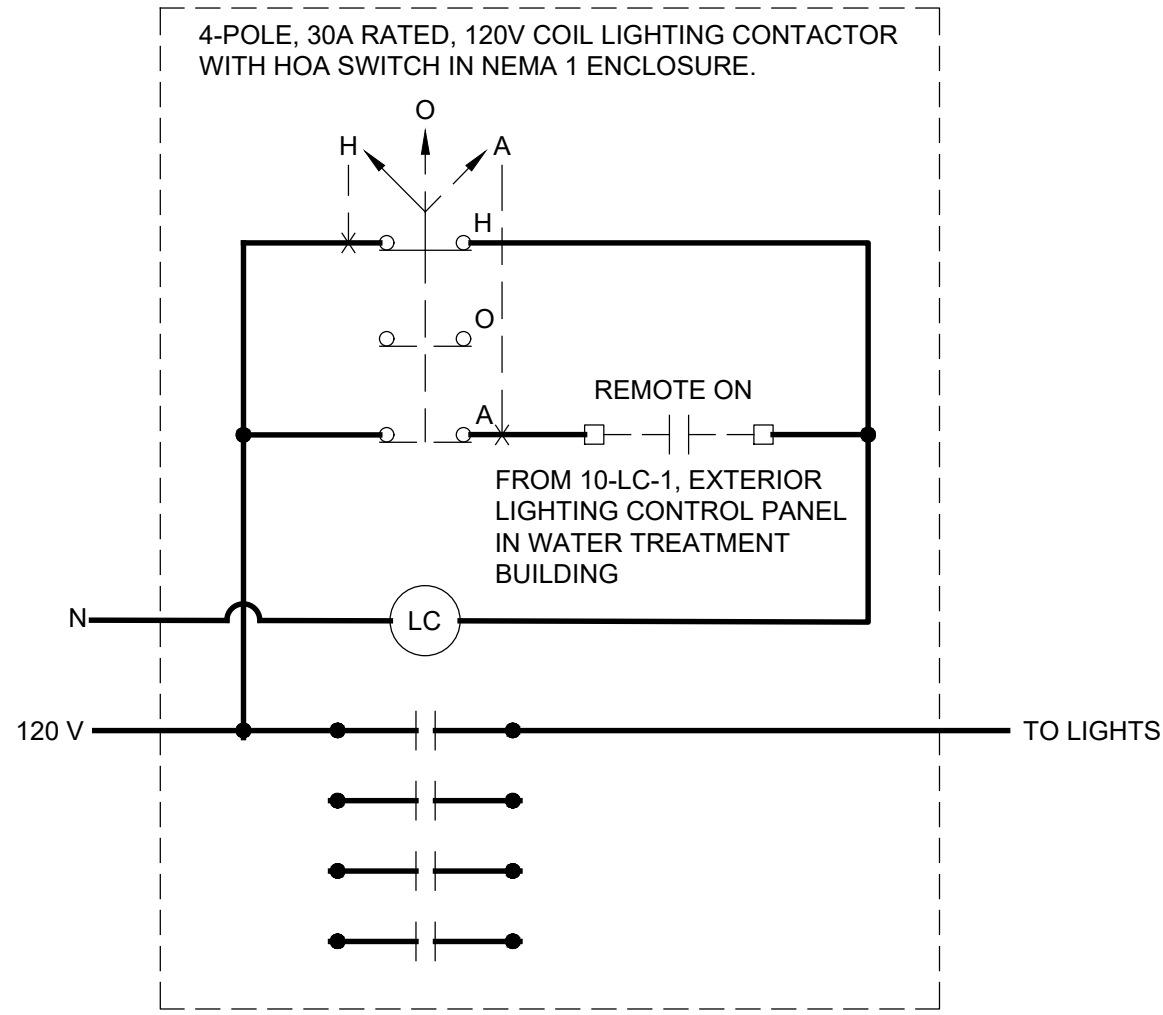
SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
TYPICAL CONTROL
DIAGRAM

DRAWING NUMBER

20-E603

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING



20-LX-1 - EXTERIOR LIGHTING CONTROL DIAGRAM
SCALE: NOT TO SCALE



PROJECT

PROVO RIVER
WATER TREATMENT
PLANT

CLIENT

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REGISTRATION

ISSUE/REVISION

D	2023-04-07	ISSUED FOR BID
C	2023-01-20	ISSUED FOR 90%
B	2022-10-14	ISSUED FOR 60%
A	2022-07-01	ISSUED FOR 30%
I/R	DATE	DESCRIPTION

PROJECT NUMBER

AECOM Project No. - 60670884
HAL Project No. - 035.15.420

SHEET TITLE

CLEARWELL AND
PUMP STATION
ELECTRICAL
EXTERIOR LIGHTING
CONTROL DIAGRAM

DRAWING NUMBER

20-E604