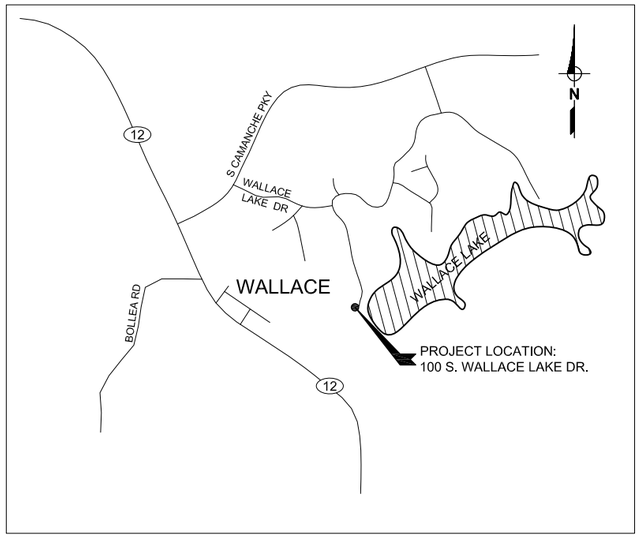
CALAVERAS COUNTY WATER DISTRICT

WALLACE LAKE ESTATES
WASTEWATER TREATMENT FACILITY
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT



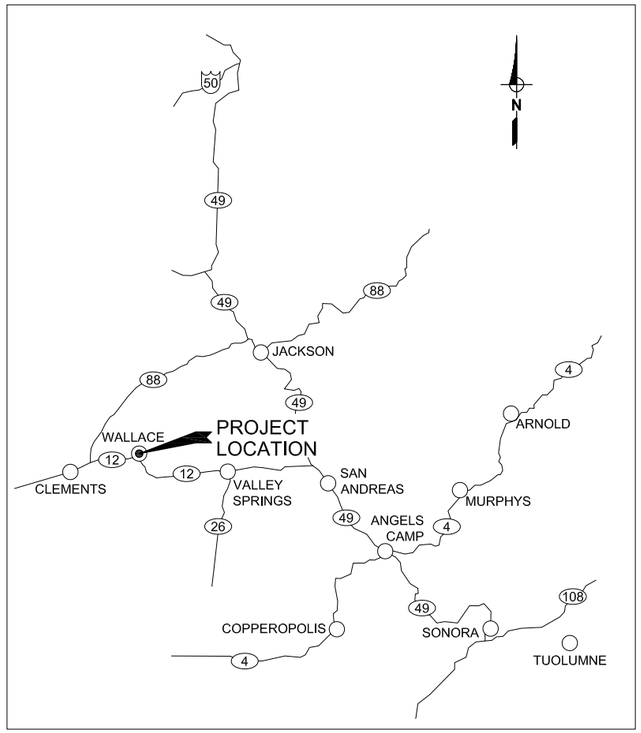
LOCATION MAP

NOT TO SCALE

OCTOBER 21, 2020
CIP NO. 15087

INDEX OF DRAWINGS

SHEET	DRAWING	TITLE
1	G1	TITLE SHEET
2	G2	SITE PLAN
3	E1	ELECTRICAL SYMBOLS & ABBREVIATIONS
4	E2	EXISTING ONE LINE DIAGRAM
5	E3	REVISED ONE LINE DIAGRAM
6	E4	PANELBOARD SCHEDULE
7	E5	STARTER PANEL (PNL100) ELEVATION AND BACKPAN
8	E6	STARTER PANEL (PNL100) ELEMENTARY DIAGRAM
9	E7	PLANT CONTROL PANEL (CP-1) ELEVATION AND BACKPAN
10	E8	PLANT CONTROL PANEL (CP-1) POWER DISTRIBUTION AND CONTROLS
11	E9	PLANT CONTROL PANEL (CP-1) 24 VDC POWER DISTRIBUTION AND CONTROLS
12	E10	EXAMPLE INTERCONNECT DIAGRAM
13	E11	TYPICAL ELECTRICAL DETAILS
14	E12	BUILDING ELECTRICAL DEMO PLAN
15	E13	BUILDING ELECTRICAL REVISED PLAN
16	I1	INSTRUMENTATION SYMBOLS & ABBREVIATIONS
17	I2	INFLUENT P&ID
18	I3	EFFLUENT P&ID
19	I4	AUXILIARY SYSTEMS P&ID
20	I5	MICROLOGIX PLC DIGITAL WIRING DIAGRAM
21	I6	MICROLOGIX PLC DIGITAL OUTPUT WIRING DIAGRAM
22	I7	PLC SLOT 1 DIGITAL INPUT WIRING DIAGRAM
23	I8	PLC SLOT 2 & 3 OUTPUT WIRING DIAGRAM



VICINITY MAP

NOT TO SCALE

HALF SIZED

DESIGNED BY:	R. GODWIN
DRAFTED BY:	R. GODWIN
CHECKED BY:	
DATE:	10/19/2020
SCALE:	NO SCALE
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — ROBERT OWEN GODWIN — No. C48045 — EXP.12-31-21 — STATE OF CALIFORNIA

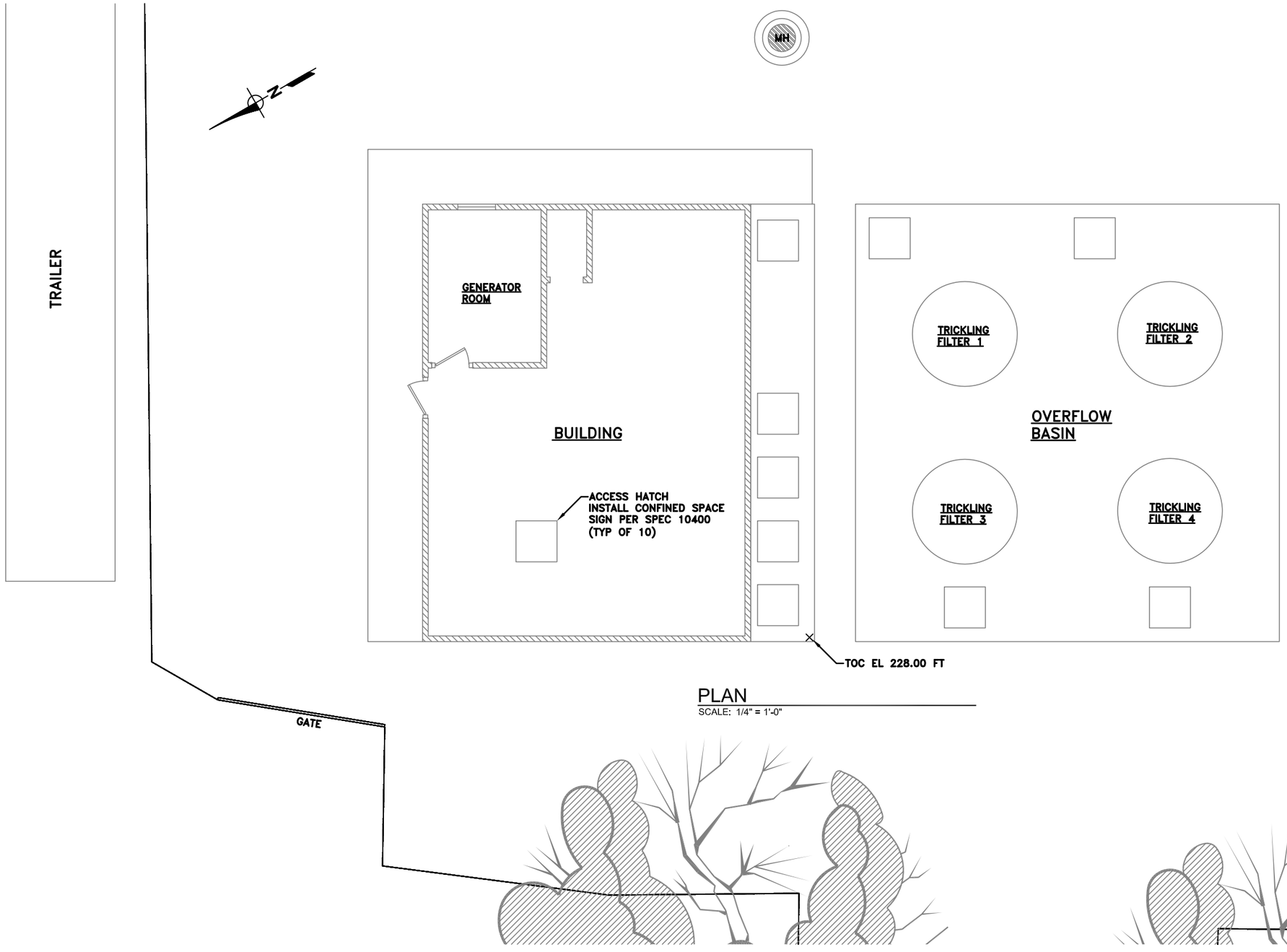
CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT

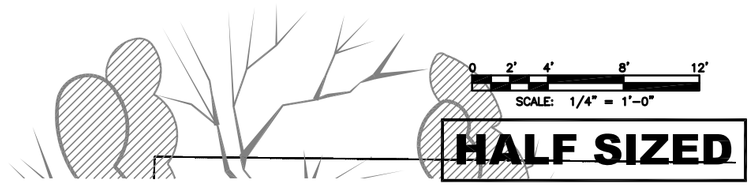
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

TITLE SHEET
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	PROJECT NUMBER
G1	DRAWING NUMBER
1 OF 23	SHEET NUMBER



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



0 2' 4' 8' 12'
SCALE: 1/4" = 1'-0"

HALF SIZED

DESIGNED BY:	R. GODWIN
DRAFTED BY:	R. GODWIN
CHECKED BY:	
DATE:	10/19/2020
SCALE:	1/4" = 1'-0"
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
ROBERT OWEN GODWIN
No. C48045
EXP.12-31-21
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY
WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

CALAVERAS COUNTY WATER DISTRICT

SITE PLAN
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	PROJECT NUMBER
G2	DRAWING NUMBER
2 OF 23	SHEET NUMBER

MISCELLANEOUS ELECTRICAL & INSTRUMENTATION ABBREVIATIONS

&	AND	HZ	HERTZ (CYCLES PER SECOND)	PT	POTENTIAL TRANSFORMER
@	AT	HZD	HAVARDOUS AREA, EXPLOSION PROOF	PTT	PUSH TO TEST
A	AMBER, AMPERES	I	INTERLOCK	PV	PROCESS VARIABLE
AC	ALTERNATING CURRENT	I/O	INPUT/OUTPUT	PVC	POLY VINYL CHLORIDE
AFF	ABOVE FINISHED FLOOR	ICR	INSTRUMENTATION CONTROL RELAY	PWM	PULSE WIDTH MODULATION
AI	ANALOG INPUT	INCAN	INCANDESCENT	PWR	POWER
AIC	AMP INTERRUPTING CAPACITY SYMMETRICAL	INST	INSTANTANEOUS	R	RED
ALT	ALTERNATOR	ISC	SHORT CKT INTERRUPTING CURRENT (SYMM)	RCT	REPEAT CYCLE TIMER
AM	AMMETER	ISR	INTRINSICALLY SAFE RELAY	REF	REFERENCE
ATS	AUTOMATIC TRANSFER SWITCH	J	JUNCTION BOX	RIO	REMOTE I/O
AO	ANALOG OUTPUT	K	KILO, PREFIX	RTD	RESISTANCE TEMPERATURE DETECTOR
AWG	AMERICAN WIRE GUAGE	L	LINE	RTM	RUN TIME METER
B	BLUE	LA	LIGHTNING ARRESTOR	RTU	REMOTE TELEMETRY UNIT
BC	BARE COPPER	LC	LIGHTING CONTACTOR	RVNR	REDUCED VOLTAGE NON-REVERSING
BFC	BELOW FINISHED CEILING	LCD	LIQUID CRYSTAL DISPLAY	(R)	REWIRE, RELOCATE, REVISE, REUSE, REPLACE
BOD	BIOCHEMICAL OXYGEN DEMAND	LED	LIGHT EMITTING DIODE	SC	SHORTING CONTACTOR
BLK	BLANK	LEL	LOWER EXPLOSIVE LIMIT	SCH	SCHEDULE
C	CONDUIT	LO	LOW	SEC	SECONDARY
CAP	CAPACITOR	LOR	LOCAL-OFF-REMOTE	SECS	SECONDS
CB	CIRCUIT BREAKER	LOS	LOCK-OUT STOP SWITCH	SEL	SELECTOR
CBL	CABLE	LP	LIGHTING PANELBOARD	SFA	SERVICE FACTOR AMPS
CH	CHANNEL	LPU	LINE PROTECTION UNIT	SP	SETPOINT
CKT	CIRCUIT	LR	LATCHING RELAY	SPD	SURGE PROTECTIVE DEVICE
COAX	COAXIAL CABLE	LS	LEVEL SWITCH	SPEC	SPECIFICATION
COMM	COMMUNICATION PORT	M	MOTOR CONTRACTOR	SS	STAINLESS STEEL
CP	CONTROL PANEL	MAX	MAXIMUM	SSS	SOLID STATE SOFT STARTER
CPT	CONTROL POWER TRANSFORMER	MCC	MOTOR CONTROL CENTER	STT	START
CR	CONTROL RELAY	MCM	THOUSAND CIRCULAR MILS	STP	STOP
CT	CURRENT TRANSFORMER	MCP	MOTOR CIRCUIT PROTECTOR	SV	SOLENOID VALVE
CTQ	CONSTANT TORQUE	MH	MANHOLE	SW	SWITCH
CU	COPPER	MHD	METAL HALIDE	SWBD	SWITCHBOARD
DC	DIRECT CURRENT	MIN	MINIMUM	SWGR	SWITCHGEAR
DET	DETAIL	MINS	MINUTES	SYMM	SYMMETRICAL
DI	DIGITAL INPUT	MISC	MISCELLANEOUS	T	TRIP
DIA	DIAGRAM	MNFR	MANUFACTURER	TB	TERMINAL BLOCK
DISC	DISCONNECT	MODEM	MODULATOR/DEMODULATOR	TC	TIME CLOCK
DIV	DIVISION	MOV	MOTOR OPERATED VALVE	TDOD	TIME DELAY ON DE-ENERGIZATION
DO	DIGITAL OUTPUT	MPS	MOTOR PROTECTION SYSTEM	TDOE	TIME DELAY ON ENERGIZATION
DPDT	DOUBLE POLE DOUBLE THROW	MS	MOISTURE SENSOR/SWITCH	TEL	TELEMETRY
DWG	DRAWING	MTR	MOTOR	TELCO	TELEPHONE COMPANY
ELEV	ELEVATION	MTS	MANUAL TRANSFER SWITCH	TEMP	TEMPERATURE
EMT	ELECTRICAL METALLIC TUBING	MUX	MULTIPLEXER	TM	THERMAL MAGNETIC
ETM	ELAPSED TIME METER	MV	MEDIUM VOLTAGE	TOC	TOTAL ORGANIC CARBON
(E)	EXISTING	N	NEUTRAL	TR	TIME DELAY RELAY
F	FRAME	NC	NORMALLY CLOSED	TRIAD	TWISTED & SHIELDED 3 CONDUCTOR
FC	FAIL CLOSED	NEC	NATIONAL ELECTRICAL CODE	TS	TEMPERATURE SWITCH
FCS	FIELD CONTROL STATION	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	TSPR	TWISTED & SHIELDED PAIR
FLA	FULL LOAD AMPS	NIC	NOT IN CONTRACT	TYP	TYPICAL
FLP	FAIL LAST POSITION	NO	NORMALLY OPEN	UG	UNDERGROUND
FO	FAIL OPEN	NP	NAMEPLATE	UL	UNDERWRITERS LABORATORIES
FLEX	FLEXIBLE, METAL LIQUID TIGHT CONDUIT	NTS	NOT TO SCALE	UON	UNLESS OTHERWISE NOTED
FS	FLOW SWITCH OR FULL SPEED	(N)	NEW	UPS	UNINTERRUPTIBLE POWER SUPPLIES
FV, FVNR	FULL VOLTAGE NON-REVERSING	OC	ON CENTER	V	VOLTAGE
FVR	FULL VOLTAGE REVERSING	OI	OPERATOR INTERFACE	VA	VOLT AMPS
FWD	FORWARD	OL	OVERLOAD	VAR	VOLT AMP REACTIVE
(F)	FUTURE	ORP	OXIDATION REDUCTION POTENTIAL	VFD	VARIABLE FREQUENCY DRIVE
G	GREEN	P	PHASE, POLE	VLV	VALVE
GALV	GALVANIZED	PB	PULL BOX	VM	VOLTMETER
GEN	GENERATOR	PC	PERSONAL COMPUTER	VTQ	VARIABLE TORQUE
GFI	GROUND FAULT CIRCUIT INTERRUPTER	PE	PHOTOCELL	W	WHITE, WATTS
GND	GROUND	PF	POWER FAIL	WHM	WATT-HOUR METER
GRS	GALVANIZED RIGID STEEL CONDUIT	PFR	POWER (PHASE) FAIL RELAY	WM	WATTMETER
GRS-PVC	PVC COATED GRS CONDUIT	PH	HYDROGEN ION CONCENTRATION	WP	WATERPROOF, WEATHER PROOF
HC	PUSHBUTTON	PLC	PROGRAMMABLE LOGIC CONTROLLER	WS	TORQUE SWITCH
HI	HIGH	PM	POWER MONITOR	XFMR	TRANSFORMER
HID	HIGH INTENSITY DISCHARGE	PMP	PUMP	XS	MISCELLANEOUS SWITCH
HIM	HUMAN INTERFACE MODULE	PNL	PANEL	Y	YELLOW
HOA	HAND-OFF-AUTO	PR	PAIR, TWISTED & SHIELDED CABLE	Z	IMPEDANCE
HOR	HAND-OFF-REMOTE	PRESS	PRESSURE	ZS	LIMIT SWITCH
HP	HORSEPOWER	PRI	PRIMARY		
HPS	HIGH PRESSURE SODIUM	PROVIDE	FURNISH, INSTALL & CONNECT		
HS	HAND SWITCH	PRR	POWER RELAY		
HTR	HEATER	PS	PRESSURE SWITCH, POWER SUPPLY		

SWITCHES – PROCESS

SYMBOL	DESCRIPTION
FS	FLOW SWITCH – CLOSES UPON INCREASING FLOW
FS	FLOW SWITCH – OPENS UPON INCREASING FLOW
LS	LEVEL SWITCH – CLOSES UPON INCREASING LEVEL
LS	LEVEL SWITCH – OPENS UPON INCREASING LEVEL
PS	PRESSURE SWITCH – CLOSES UPON INCREASING PRESSURE (INCREASING VACUUM)
PS	PRESSURE SWITCH – OPENS UPON INCREASING PRESSURE (INCREASING VACUUM)
TS	TEMPERATURE SWITCH – CLOSES UPON INCREASING TEMPERATURE
TS	TEMPERATURE SWITCH – OPENS UPON INCREASING TEMPERATURE
ZS	LIMIT SWITCH – CLOSES AT SET LIMIT
ZS	LIMIT SWITCH – OPENS AT SET LIMIT
ZS	PROXIMITY SWITCH – CLOSES UPON DECREASING DISTANCE
ZS	PROXIMITY SWITCH – OPENS UPON DECREASING DISTANCE
WS	TORQUE SWITCH – CLOSES UPON INCREASING TORQUE
WS	TORQUE SWITCH – OPENS UPON INCREASING TORQUE

DEVICES – RELAY

SYMBOL	DESCRIPTION
CR 1 / 28, 111	CONTROL RELAY CR1 WITH NORMALLY OPEN CONTACT ON LINE 28 & NORMALLY CLOSED CONTACT ON LINE 111
TR 1	TIME DELAY RELAY TR2 – ADJUSTABLE TIME DELAY RANGE & SETTING AS SHOWN
TDOE / TDOD	TIME DELAY ON ENERGIZATION / TIME DELAY ON DE-ENERGIZATION
M1	CONTACTOR OR STARTER M1
SV	SOLENOID
CR1 (105)	NORMALLY OPEN, RELAY CONTACT – ACTUATED BY RELAY CR1 COIL LOCATED ON LINE 105
CR1	NORMALLY CLOSED, RELAY CONTACT – ACTUATED BY RELAY CR1
TR2	NORMALLY OPEN, TIME DELAY RELAY CONTACT – CONTACT CLOSES AFTER TR2 IS ENERGIZED
TR2	NORMALLY CLOSED, TIME DELAY RELAY CONTACT – CONTACT OPENS AFTER TR2 IS ENERGIZED
TR2	NORMALLY OPEN, TIME DELAY RELAY CONTACT – CONTACT OPENS AFTER TR2 IS DE-ENERGIZED
TR2	NORMALLY CLOSED, TIME DELAY RELAY CONTACT – CONTACT CLOSES AFTER TR2 IS DE-ENERGIZED
TR2	CONTACT OPENS AND CLOSES IN A TIMED REPEAT CYCLE

COMPONENTS

SYMBOL	DESCRIPTION
RES	RESISTOR
	POTENTIOMETER
	CAPACITOR, FIXED
	CAPACITOR, ADJUSTABLE
	DIODE
	DIODE, ZENER
	VARISTOR TRANSIENT VOLTAGE SUPPRESSOR
	VOLTAGE SURGE SUPPRESSOR, AC
	RESISTANCE TEMPERATURE DETECTOR (RTD)
	THERMOCOUPLE (T/C)

DEVICES – MISCELLANEOUS

SYMBOL	DESCRIPTION
	AUDIBLE ALARM
+	BATTERY
HTR	HEATER
	3 PHASE HEATER
G	GENERATOR
# HP	3 PHASE MOTOR # = MOTOR HP
# HP	SINGLE PHASE MOTOR
	TRANSFORMER
	LINE REACTOR

WIRING – CONNECTIONS

SYMBOL	DESCRIPTION
	PANEL OR EQUIPMENT WIRING
	FIELD WIRING
	CONDUCTORS – NOT CONNECTED
	CONDUCTORS – CONNECTED
	GROUND
	CHASSIS OR FRAME GROUND
	PLUG AND RECEPTACLE
	INCOMING LINE
	TERMINAL BLOCKS
	TERMINALS
SHIELD / CONDUCTOR	SHIELDED CABLE

PLAN – SYMBOLS

SYMBOL	DESCRIPTION
	CONDUIT, EXPOSED
	CONDUIT, IN SLAB OR BELOW GRADE
	CONDUIT STUBBED OUT & CAPPED
	CONDUIT BENDS TOWARD OBSERVER
	CONDUIT BENDS AWAY FROM OBSERVER
	CONDUIT ENDS
	CONDUIT CHANGE IN ELEVATION
G	BARE COPPER GROUND WIRE
	GROUND CONNECTION BOLTED TYPE
	GROUND CONNECTION EXOTHERMIC WELD TYPE
	PULL BOX
	DISCONNECT SWITCH
	FIELD CONTROL STATION WITH JUNCTION BOX
#A	FIELD CONTROL STATION WITH #AMP DISCONNECT SWITCH
	SPECIAL RECEPTACLE
J	JUNCTION BOX
T	THERMOSTAT
# A a	LIGHTING, FANS, HEATERS # – CIRCUIT BREAKER NUMBER A – FIXTURE SCHEDULE REF. a – CONTROL SWITCH REFERENCE
#	DUPLEX RECEPTACLE # – CIRCUIT BREAKER NUMBER
# $ 2 a	TOGGLE SWITCH # – CIRCUIT BREAKER NUMBER SUBSCRIPT – CIRCUIT CONTROLLED SUPERSCRIPT – BLANK = 1 POLE 2 = 2 POLE 3 = 3 WAY
#	CONDUIT #
##	EQUIPMENT NUMBER

SWITCHES – OPERATOR

SYMBOL	DESCRIPTION
SW	TOGGLE OR DISCONNECT SWITCH
PB	PUSHBUTTON – NORMALLY OPEN, MOMENTARY ACTION
PB	PUSHBUTTON – NORMALLY CLOSED, MOMENTARY ACTION
PB	PUSHBUTTON, MECHANICALLY INTERLOCKED, DOUBLE CIRCUIT – NORMALLY CLOSED AND NORMALLY OPEN, MAINTAINED ACTION
H O A	SELECTOR SWITCH, 3 POSITION – CONTACT STATUS SHOWN EXISTS AT POSITION OF H–HAND, O–OFF, OR A–AUTO
2–1 1–2	SELECTOR SWITCH, 2 POSITION – CONTACT STATUS SHOWN EXISTS AT POSITION AS SHOWN

DEVICES – FRONT PANEL

SYMBOL	DESCRIPTION
X	INDICATING LIGHT, LETTER "X" INDICATES COLOR: R=RED G=GREEN, A=AMBER, W=WHITE Y=YELLOW, B=BLUE
PTT X	INDICATING LIGHT, PUSH TO TEST
AM	AMP METER
VM	VOLT METER
ETM	ELAPSED TIME METER
RTM	RUN TIME METER
XS	MULTI–POSITION SWITCH WHERE LETTER "X" IS FUNCTION: A=AMP, V=VOLT

DEVICES – PROTECTIVE

SYMBOL	DESCRIPTION
	DISCONNECT, 3 POLE
	CIRCUIT BREAKER, 3 POLE THERMAL MAGNETIC (TM) OR MOTOR CIRCUIT PROTECT (MCP)
OL	THERMAL OVERLOAD CONTACT
	THERMAL OVERLOAD ELEMENT
	FUSE WITH BLOWN FUSE INDICATING LIGHT
	FUSE
52	MEDIUM VOLTAGE DRAWOUT BREAKER
	LOW VOLTAGE DRAWOUT CIRCUIT BREAKER

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER – SHARON M. KIMIZUKA – NO. 15698 – Exp.6-30-2022 – ELECTRICAL – STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

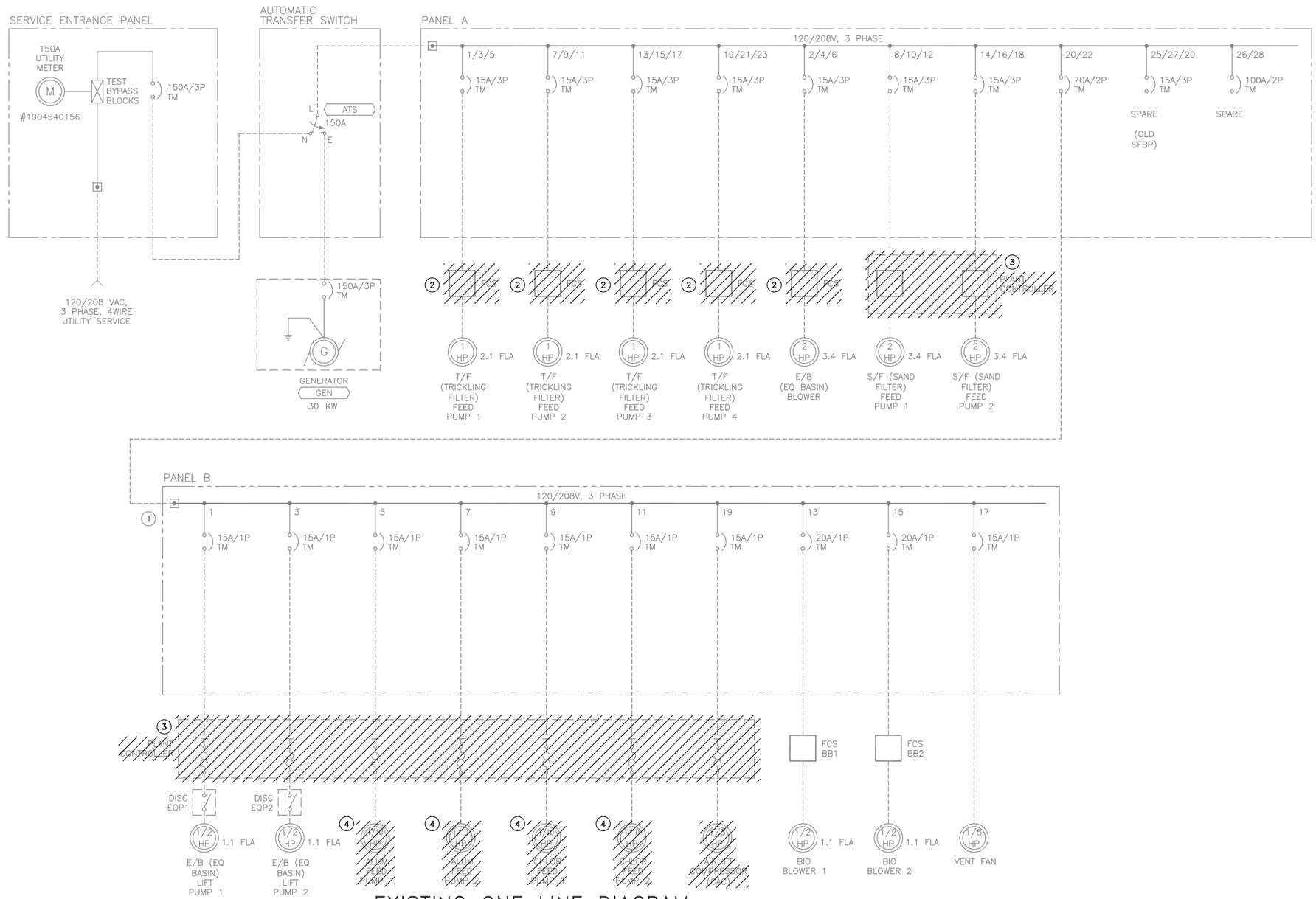
CALAVERAS COUNTY WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

CALAVERAS COUNTY WATER DISTRICT

ELECTRICAL SYMBOLS & ABBREVIATIONS
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	PROJECT NUMBER
E1	DRAWING NUMBER
3 OF 23	SHEET NUMBER

Z:\ACADDWG\2019\1909c\1909ce001.dwg 10/9/2020 1:15 PM ATEEM



EXISTING ONE LINE DIAGRAM

NOTES:
1. MOTOR LOADS SHOWN FOR CLARITY ONLY. SEE PANELBOARD SCHEDULE FOR COMPLETE SCHEDULE.
2. DEMO (E) MOTOR STARTER FIELD CONTROL STATIONS (FCS) AND REPLACE WITH STARTER PANEL 100.
3. DEMO (E) PLANT CONTROLLER, REPLACE WITH SEPERATE PLC CONTROL PANEL & STARTER PANEL.
4. REMOVED.

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

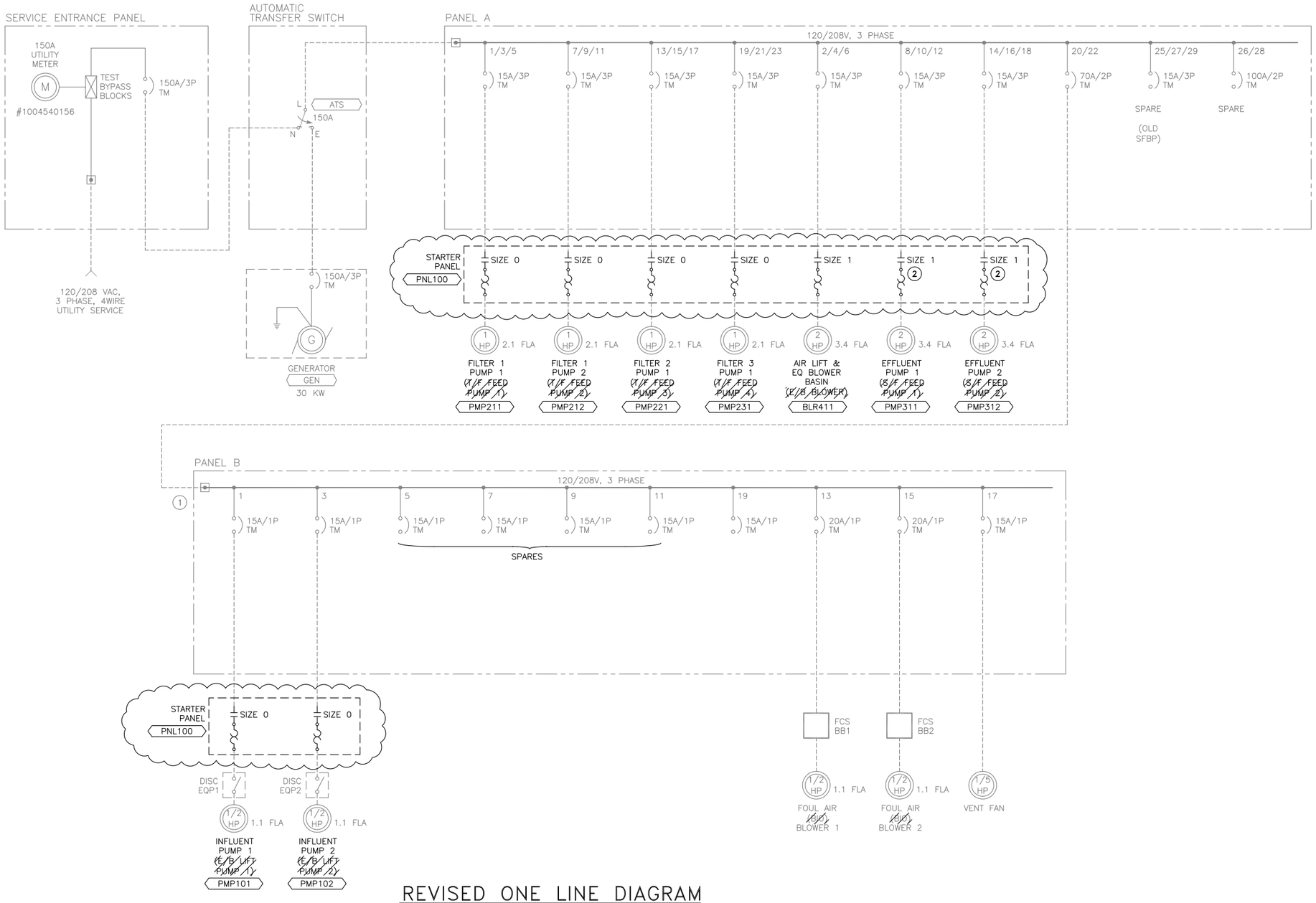
CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

CALAVERAS COUNTY WATER DISTRICT

EXISTING ONE LINE DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E2
DRAWING NUMBER	4 OF 23
SHEET NUMBER	



REVISED ONE LINE DIAGRAM

NOTES: (1) MOTOR LOADS SHOWN FOR CLARITY ONLY. SEE PANELBOARD SCHEDULE FOR COMPLETE SCHEDULE.

(2) EXTEND CONDUITS & WIRE TO NEW STARTER LOCATION.

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

REVISED ONE LINE DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

PROJECT NUMBER	15087
	E3
DRAWING NUMBER	5 OF 23
SHEET NUMBER	

DWG REF: E2 | MOUNTING: FLUSH | VOLTS: 120 / 208 | BUS AMPS: 200A | ENTRY: BOTTOM
NAMEPLATE:PANEL A | PHASE: 3 | MAIN BKR: | NEMA:
LOCATION: CONTROL BUILDING | WIRE: 4 | KAIC RATING: | SPD:

BKR NO.	LOAD DESCRIPTION	LOAD VA	LINE AMPS	BKR AMP/ POLE	BKR NO.	PHASE	BKR NO.	BKR AMP/ POLE	LINE AMPS	LOAD VA	LOAD DESCRIPTION	BKR NO.
1	T/F FEED PUMP 1	492	4	15/3	1	A	2	15/3	8	936	EQ BASIN BLOWER	2
3		492	4		3	B	4		8	936		4
5		492	4		5	C	6		8	936		6
7	T/F FEED PUMP 2	492	4	15/3	7	A	8	15/3	8	936	S/F FEED PUMP 1	8
9		492	4		9	B	10		8	936		10
11		492	4		11	C	12		8	936		12
13	T/F FEED PUMP 3	492	4	15/3	13	A	14	15/3	8	936	S/F FEED PUMP 2	14
15		492	4		15	B	16		8	936		16
17		492	4		17	C	18		8	936		18
19	T/F FEED PUMP 4	492	4	15/3	19	A	20	70/2	47	5,664	PANEL B	20
21		492	4		21	B	22		44	5,328		22
23		492	4		23	C	24		0	0	EMPTY	24
25	SPARE	0	0	15/3	25	A	26	100/2	0	0	SPARE	26
27		0	0		27	B	28		0	0		28
29		0	0		29	C	30		0	0	EMPTY	30

PHASE	A	B	C
LEFT SIDE AMPS	16	16	16
LEFT SIDE KVA	1.97	1.97	1.97

TOTAL KVA	25.32
TOTAL AMPS @ 208V, 3P	70.3
DIVERSITY FACTOR	0.80
LOAD KVA	20.26

NEUTRAL

GROUND

350	B	C	PHASE
71	68	23	RIGHT SIDE AMPS
8.47	8.14	2.81	RIGHT SIDE KVA
1.97	1.97	1.97	LEFT SIDE KVA
10.44	10.10	4.78	TOTAL PHASE KVA
87	84	40	TOTAL PHASE AMPS
124	120	57	% OF AVERAGE

NOTES: 1. MEANS OF WIRE COLOR CODING SHALL BE POSTED ON PANELBOARD PER NEC 210.5
2. (G) INDICATES GFI BREAKER REQUIRED WITH 30 MA SENSITIVITY.
3. (H) INDICATES HACR RATED BREAKER.
4. (L) PROVIDE PADLOCKING PROVISION IN ORDER TO LOCK BREAKER IN THE OFF POSITION.

EXISTING PANELBOARD A (A / –)
NOT TO SCALE

DWG REF: E2 | MOUNTING: SURFACE | VOLTS: 120 / 240 | BUS AMPS: 100A | ENTRY: -
NAMEPLATE: – | PHASE: 1 | MAIN BKR: 100A | NEMA: 3R
LOCATION: CONTROL BUILDING | WIRE: 3 | KAIC RATING: 10 | SPD: NO

BKR NO.	LOAD DESCRIPTION	LOAD VA	LINE AMPS	BKR AMP/ POLE	BKR NO.	PHASE	BKR NO.	BKR AMP/ POLE	LINE AMPS	LOAD VA	LOAD DESCRIPTION	BKR NO.
1	E/B LIFT PUMP 1	1,392	12	15/1	1	A	2	15/1	3	360	PROG CONTROLLER	2
3	E/B LIFT PUMP 2	1,392	12	15/1	3	B	4	20/1	2	240	SUMP PUMP	4
5	ALUM FEED PUMP 1	360	3	15/1	5	A	6	15/1	12	1,440	MISC CONTROL	6
7	ALUM FEED PUMP 2	360	3	15/1	7	B	8	20/1	5	600	OUTLETS	8
9	CHLOR FEED PUMP 1	360	3	15/1	9	A	10	15/1	8	960	OUTLETS	10
11	CHLOR FEED PUMP 2	360	3	15/1	11	B	12	15/1	0	0	SPARE	12
13	BIO BLOWER 1	1,176	10	20/1	13	A	14	15/1	2	240	SPRINKLER CONTROLLER	14
15	BIO BLOWER 2	1,176	10	20/1	15	B	16	20/1	10	1,176	GEN BLOCK HEATER	16
17	VENT FAN	600	5	15/1	17	A	18	20/2	10	1,176	AIR COMPRESSOR	18
19	AIR COMPRESSOR	864	7	15/1	19	B	20	15/1	10	1,176	AIR COMPRESSOR	20
21	OUTLET	600	5	20/1	21	A	22	20/1	5	600	FILTER BLDG LIGHTS	22
23	NEW AIR COMPRESSOR	1,176	10	30/2	23	B	24	20/1	5	600	FILTER BLDG LIGHTS	24
25	NEW AIR COMPRESSOR	1,176	10	30/2	25	A	26		0	0	SPACE	26
27	SPACE	0	0		27	B	28		0	0	SPACE	28
29	SPACE	0	0		29	A	30		0	0	SPACE	30

PHASE	A	B
LEFT SIDE AMPS	47	44
LEFT SIDE KVA	5.66	5.33

TOTAL KVA	19.56
TOTAL AMPS @ 240V, 1P	81.5
DIVERSITY FACTOR	0.90
LOAD KVA	17.60

NEUTRAL

GROUND

A	B	PHASE
40	32	RIGHT SIDE AMPS
4.78	3.79	RIGHT SIDE KVA
5.66	5.33	LEFT SIDE KVA
10.44	9.12	TOTAL PHASE KVA
87	76	TOTAL PHASE AMPS
107	93	% OF AVERAGE

NOTES: 1. MEANS OF WIRE COLOR CODING SHALL BE POSTED ON PANELBOARD PER NEC 210.5
2. (G) INDICATES GFI BREAKER REQUIRED WITH 30 MA SENSITIVITY
3. (H) INDICATES HACR RATED BREAKER.
4. (L) PROVIDE PADLOCKING PROVISION IN ORDER TO LOCK BREAKER IN THE OFF POSITION.

EXISTING PANELBOARD B (B / –)
NOT TO SCALE

DWG REF: E2 | MOUNTING: FLUSH | VOLTS: 120 / 208 | BUS AMPS: 200A | ENTRY: BOTTOM
NAMEPLATE:PANEL A | PHASE: 3 | MAIN BKR: | NEMA:
LOCATION: CONTROL BUILDING | WIRE: 4 | KAIC RATING: | SPD:

BKR NO.	LOAD DESCRIPTION	LOAD VA	LINE AMPS	BKR AMP/ POLE	BKR NO.	PHASE	BKR NO.	BKR AMP/ POLE	LINE AMPS	LOAD VA	LOAD DESCRIPTION	BKR NO.
1		492	4	15/3	1	A	2	15/3	8	936	AIR LIFT &	2
3	FILTER 1 PUMP 1	492	4		3	B	4		8	936	EQ BASIN BLOWER	4
5		492	4		5	C	6		8	936		6
7		492	4	15/3	7	A	8	15/3	8	936		8
9	FILTER 1 PUMP 2	492	4		9	B	10		8	936	EFFLUENT PUMP 1	10
11		492	4		11	C	12		8	936		12
13		492	4	15/3	13	A	14	15/3	8	936		14
15	FILTER 2 PUMP 1	492	4		15	B	16		8	936	EFFLUENT PUMP 2	16
17		492	4		17	C	18		8	936		18
19		492	4	15/3	19	A	20	70/2	31	3,768	PANEL B	20
21	FILTER 3 PUMP 1	492	4		21	B	22		21	2,568		22
23		492	4		23	C	24		0		SPACE	24
25	SPARE	0	0	15/3	25	A	26	100/2	0	0	SPARE	26
27		0	0		27	B	28		0	0		28
29		0	0		29	C	30		0	0	SPACE	30

PHASE	A	B	C
LEFT SIDE AMPS	16	16	16
LEFT SIDE KVA	1.97	1.97	1.97

TOTAL KVA	20.66
TOTAL AMPS @ 208V, 3P	57.4
DIVERSITY FACTOR	0.80
LOAD KVA	16.53

NEUTRAL

GROUND

350	B	C	PHASE
55	45	23	RIGHT SIDE AMPS
6.58	5.38	2.81	RIGHT SIDE KVA
1.97	1.97	1.97	LEFT SIDE KVA
8.54	7.34	4.78	TOTAL PHASE KVA
71	61	40	TOTAL PHASE AMPS
124	107	69	% OF AVERAGE

NOTES: 1. MEANS OF WIRE COLOR CODING SHALL BE POSTED ON PANELBOARD PER NEC 210.5
2. (G) INDICATES GFI BREAKER REQUIRED WITH 30 MA SENSITIVITY.
3. (H) INDICATES HACR RATED BREAKER.
4. (L) PROVIDE PADLOCKING PROVISION IN ORDER TO LOCK BREAKER IN THE OFF POSITION.

REVISED PANELBOARD A (C / –) (1) (2)
NOT TO SCALE

NOTES: (1) PROVIDE NEW REMOVABLE PANELBOARD SCHEDULE.
(2) PROVIDE NEW PANELBOARD CIRCUIT NUMBERS.

DWG REF: E2 | MOUNTING: SURFACE | VOLTS: 120 / 240 | BUS AMPS: 100A | ENTRY: -
NAMEPLATE: LP-B | PHASE: 1 | MAIN BKR: 100A | NEMA: 3R
LOCATION: CONTROL BUILDING | WIRE: 3 | KAIC RATING: 10 | SPD: NO

BKR NO.	LOAD DESCRIPTION	LOAD VA	LINE AMPS	BKR AMP/ POLE	BKR NO.	PHASE	BKR NO.	BKR AMP/ POLE	LINE AMPS	LOAD VA	LOAD DESCRIPTION	BKR NO.
1	INFLUENT PUMP 1	1,392	12	15/1	1	A	2	15/1	3	360	PROG CONTROLLER	2
3	INFLUENT PUMP 2	1,392	12	15/1	3	B	4	20/1	0	0	SPARE	4
5	SPARE	0	0	15/1	5	A	6	15/1	12	1,440	MISC CONTROL	6
7	SPARE	0	0	15/1	7	B	8	20/1 (G)	5	600	OUTLETS	8
9	SPARE	0	0	15/1	9	A	10	15/1	8	960	OUTLETS	10
11	SPARE	0	0	15/1	11	B	12	15/1	0	0	SPARE	12
13	FOUL AIR BLOWER 1	1,176	10	20/1	13	A	14	15/1	0	0	SPARE	14
15	FOUL AIR BLOWER 2	1,176	10	20/1	15	B	16	20/1	10	1,176	GEN BLOCK HEATER	16
17	VENT FAN	600	5	15/1	17	A	18	20/2	10	1,176	AIR COMPRESSOR	18
19	SPARE	0	0	15/1	19	B	20		10	1,176		20
21	OUTLET	600	5	20/1	21	A	22	20/1	5	600	FILTER BLDG LIGHTS	22
23	SPARE	0	0	30/2	23	B	24	20/1	5	600	FILTER BLDG LIGHTS	24
25		0	0		25	A	26		0	0	SPACE	26
27	SPACE	0	0		27	B	28		0	0	SPACE	28
29	SPACE	0	0		29	A	30		0	0	SPACE	30

PHASE	A	B
LEFT SIDE AMPS	31	21
LEFT SIDE KVA	3.77	2.57

TOTAL KVA	14.42
TOTAL AMPS @ 240V, 1P	60.1
DIVERSITY FACTOR	0.90
LOAD KVA	12.98

NEUTRAL

GROUND

A	B	PHASE
38	30	RIGHT SIDE AMPS
4.54	3.55	RIGHT SIDE KVA
3.77	2.57	LEFT SIDE KVA
8.30	6.12	TOTAL PHASE KVA
69	51	TOTAL PHASE AMPS
115	85	% OF AVERAGE

NOTES: 1. MEANS OF WIRE COLOR CODING SHALL BE POSTED ON PANELBOARD PER NEC 210.5
2. (G) INDICATES GFI BREAKER REQUIRED WITH 30 MA SENSITIVITY
3. (H) INDICATES HACR RATED BREAKER.
4. (L) PROVIDE PADLOCKING PROVISION IN ORDER TO LOCK BREAKER IN THE OFF POSITION.

REVISED PANELBOARD B (D / –) (1) (2)
NOT TO SCALE

NOTES: (1) PROVIDE NEW REMOVABLE PANELBOARD SCHEDULE.
(2) PROVIDE NEW PANELBOARD CIRCUIT NUMBERS.

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — SHARON M. KIMIZUKA — NO. 15698 — Exp.6-30-2022 — ELECTRICAL — STATE OF CALIFORNIA

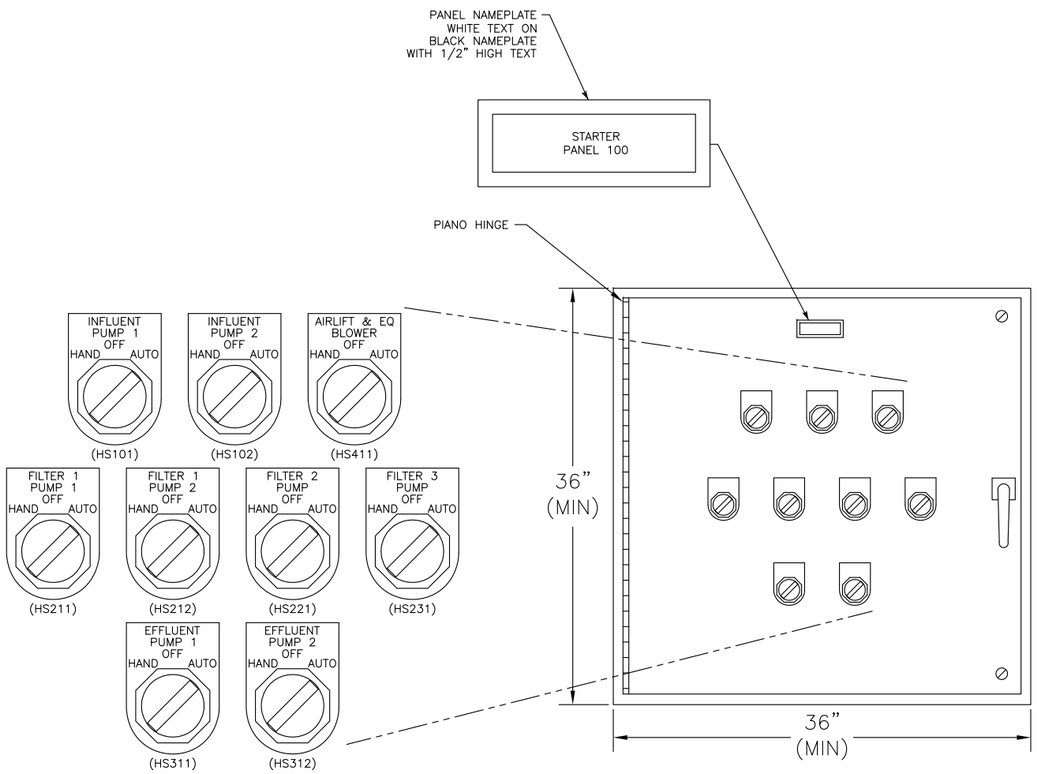
CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

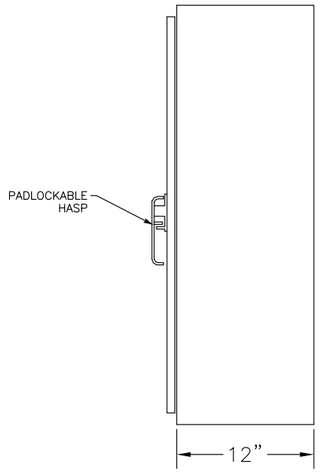
PANELBOARD SCHEDULES
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	PROJECT NUMBER
E4	DRAWING NUMBER
6 OF 23	SHEET NUMBER

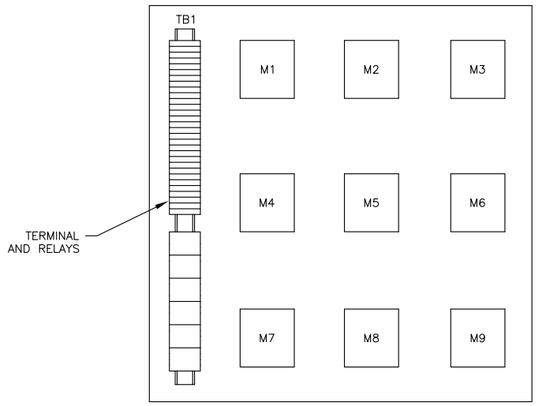
Z:\ACADDWG\2019\1909c\1909ce004.dwg 10/9/2020 12:52 PM ATEEM



STARTER PANEL (PNL100) ELEVATION DETAILS (A / E5)
NOT TO SCALE



STARTER PANEL SIDE VIEW (B / E5)
NOT TO SCALE



STARTER PANEL BACKPAN LAYOUT (C / E5) (2) (3)
NOT TO SCALE

PANEL FABRICATION METHODS

1. NEMA 12 FOR INSIDE INSTALLATION.
2. ALL OUTER DOORS SEALED WITH PERMANENT TYPE GASKETING.
3. EXTERIOR FABRICATED FROM HOT DIPPED GALVANIZED SHEET STEEL.
4. 12 GAUGE CONSTRUCTION.
5. ALL SEAMS CONTINUOUS WELDED.
6. OUTER DOOR TO BE PADLOCKABLE.
7. DOOR HINGES AND PINS SHALL BE 316 STAINLESS STEEL.
8. NO SCREWS, RIVETS, OR BOLTS SHALL PROTRUDE EXTERNALLY.
9. INTERNAL SCREWS, RIVETS, BOLTS, AND NUTS SHALL BE STAINLESS STEEL.
10. EXTERIOR FULL HEIGHT PANEL COLOR: LIGHT GREY.
11. PHENOLIC SCREW MOUNTED NAMEPLATES SHALL BE PROVIDED FOR ALL DEVICES ON DEADFRONT.
12. FABRICATION AND WIRING SHALL CONFORM TO U.L. AND NEMA STANDARDS.
13. ALL WIRING SHALL BE PERMANENTLY LABELED WITH WIRE MARKERS ON BOTH ENDS.
14. WIRING DIAGRAMS SHALL BE PLACED IN A PLASTIC DRAWING HOLDER PERMANENTLY ATTACHED TO THE INSIDE OF THE FRONT DOOR.
15. AS – BUILT WIRING DIAGRAMS SHALL BE SHIPPED WITH PANEL.

NOTES:
(1) PROVIDE ADDITIONAL DIN RAIL TO ADD A MINIMUM OF EIGHT TERMINAL BLOCKS TO EACH TERMINAL STRIP.
(2) STARTER PANEL SHALL BE CONSTRUCTED BY AN U.L. APPROVED PANEL SHOP AND BEAR A U.L. LABEL.

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

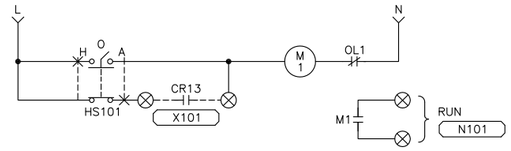
CALAVERAS COUNTY WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

CALAVERAS COUNTY WATER DISTRICT

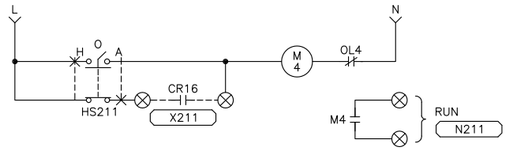
STARTER PANEL (PNL100) ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E5
DRAWING NUMBER	7 OF 23
SHEET NUMBER	

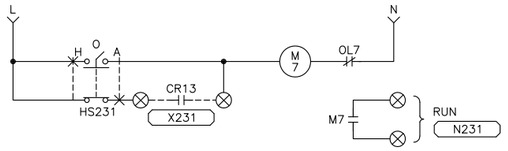
Z:\ACADDWG\2019\1909c\1909ce005.dwg 10/9/2020 12:53 PM ATEEM



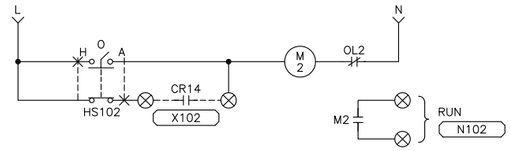
INFLUENT PUMP 1 PMP101



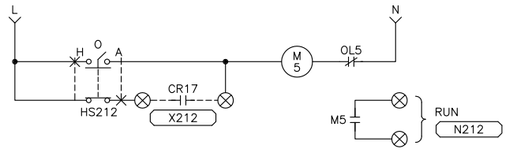
FILTER 1 PUMP 1 PMP211



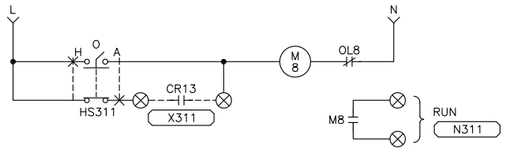
FILTER 3 PUMP 1 PMP231



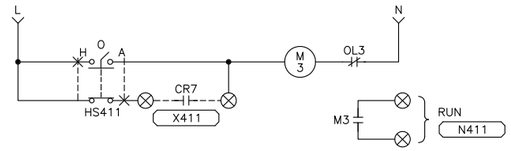
INFLUENT PUMP 2 PMP102



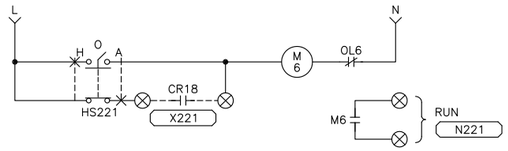
FILTER 1 PUMP 2 PMP212



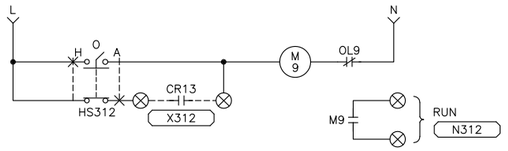
EFFLUENT PUMP 1 PMP311



AIR LIFT & EQ BASIN BLOWER BLR411



FILTER 2 PUMP 1 PMP221



EFFLUENT PUMP 2 PMP312

STARTER PNL100 ELEMENTARY DIAGRAM

T.E.E.M.
(916) 457-8144

HALF SIZED

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT

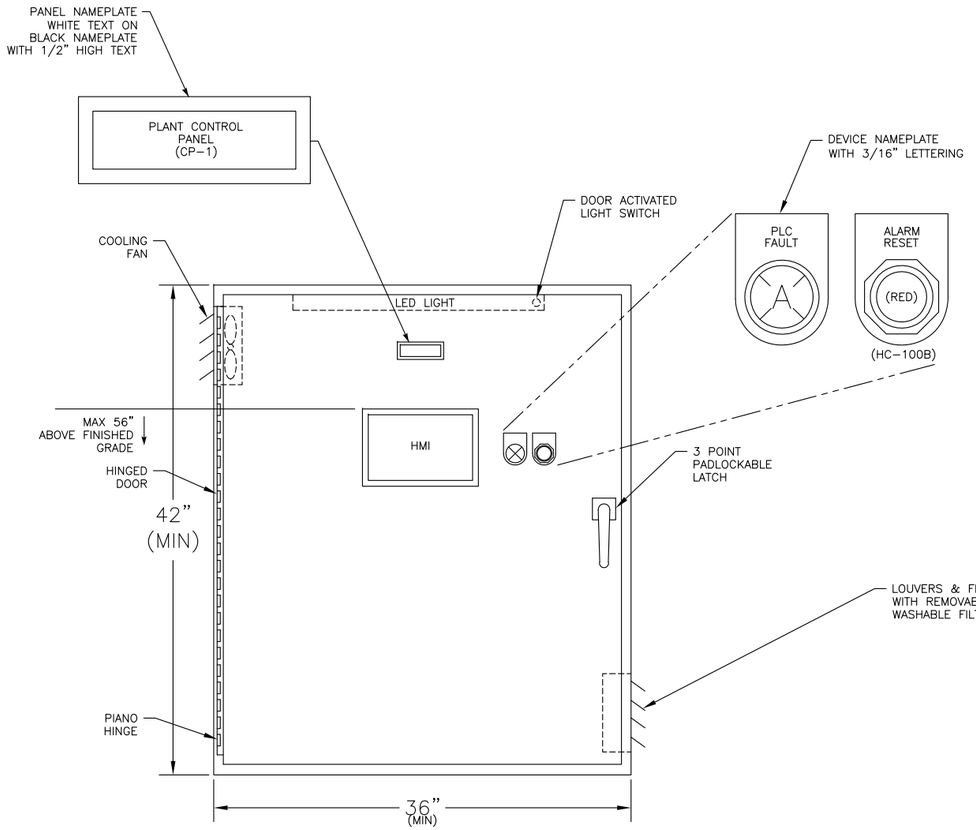
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

CALAVERAS COUNTY WATER DISTRICT

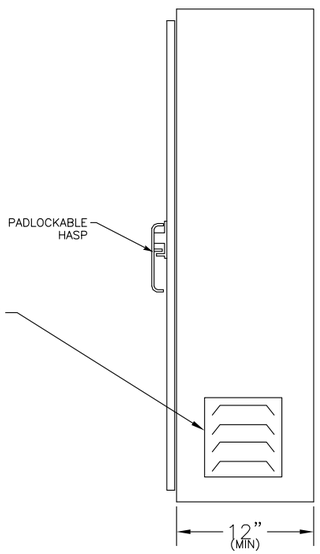
STARTER PANEL (PNL100) ELEMENTARY DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E6
DRAWING NUMBER	8 OF 23
SHEET NUMBER	

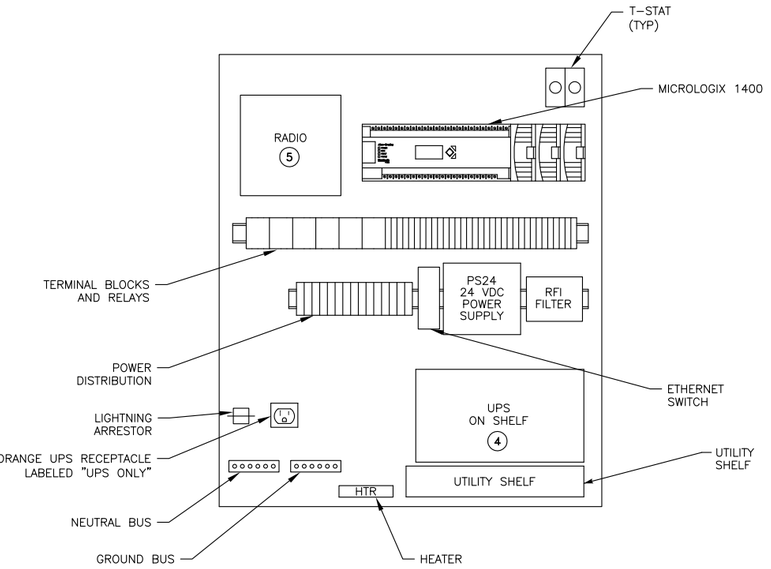
Z:\ACADDWG\2019\1909c\1909ce006.dwg 10/9/2020 12:55 PM ATEEM



PLANT CONTROL PANEL (CP-1) ELEVATION DETAILS (A / E12)
NOT TO SCALE



CP-1 PANEL SIDE VIEW (B / E12)
NOT TO SCALE



CP-1 BACKPAN LAYOUT (C / E12) (2)(3)
NOT TO SCALE

PANEL FABRICATION METHODS

1. NEMA 12 FOR INSIDE INSTALLATION.
2. ALL OUTER DOORS SEALED WITH PERMANENT TYPE GASKETING.
3. EXTERIOR FABRICATED FROM HOT DIPPED GALVANIZED SHEET STEEL.
4. 12 GAUGE CONSTRUCTION.
5. ALL SEAMS CONTINUOUS WELDED.
6. OUTER DOOR TO BE PADLOCKABLE.
7. DOOR HINGES AND PINS SHALL BE 316 STAINLESS STEEL.
8. NO SCREWS, RIVETS, OR BOLTS SHALL PROTRUDE EXTERNALLY.
9. INTERNAL SCREWS, RIVETS, BOLTS, AND NUTS SHALL BE STAINLESS STEEL.
10. EXTERIOR FULL HEIGHT PANEL COLOR: LIGHT GREY.
11. PHENOLIC SCREW MOUNTED NAMEPLATES SHALL BE PROVIDED FOR ALL DEVICES ON DEADFRONT.
12. FABRICATION AND WIRING SHALL CONFORM TO U.L. AND NEMA STANDARDS.
13. ALL WIRING SHALL BE PERMANENTLY LABELED WITH WIRE MARKERS ON BOTH ENDS.
14. WIRING DIAGRAMS SHALL BE PLACED IN A PLASTIC DRAWING HOLDER PERMANENTLY ATTACHED TO THE INSIDE OF THE FRONT DOOR.
15. AS – BUILT WIRING DIAGRAMS SHALL BE SHIPPED WITH PANEL.

NOTES:
(1) PROVIDE ADDITIONAL DIN RAIL TO ADD A MINIMUM OF EIGHT TERMINAL BLOCKS TO EACH TERMINAL STRIP.
(2) PROVIDE SIDEPANS ON BOTH SIDES OF ENCLOSURE FOR ADDITIONAL MOUNTING SPACE.
(3) CONTROL PANEL SHALL BE CONSTRUCTED BY AN U.L. APPROVED PANEL SHOP AND BEAR A U.L. LABEL.
(4) SECURE UPS TO SHELF WITH 2 SS STRAPS.
(5) RADIO PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

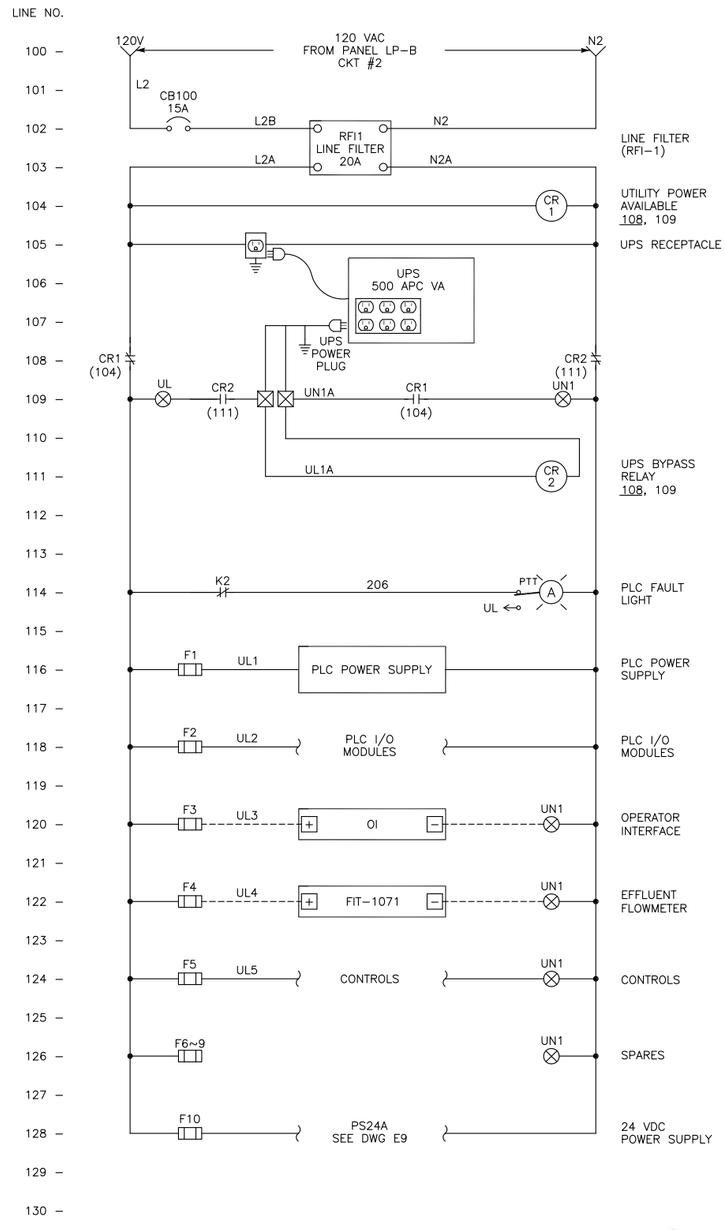
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

PLANT CONTROL PANEL (CP-1) ELEVATION AND BACKPAN
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

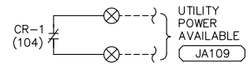
15087	PROJECT NUMBER
E7	DRAWING NUMBER
9 OF 23	SHEET NUMBER

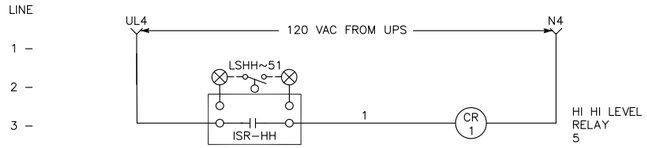
Z:\ACADDWG\2019\1909c\1909ce007.dwg 10/9/2020 12:56 PM ATEEM



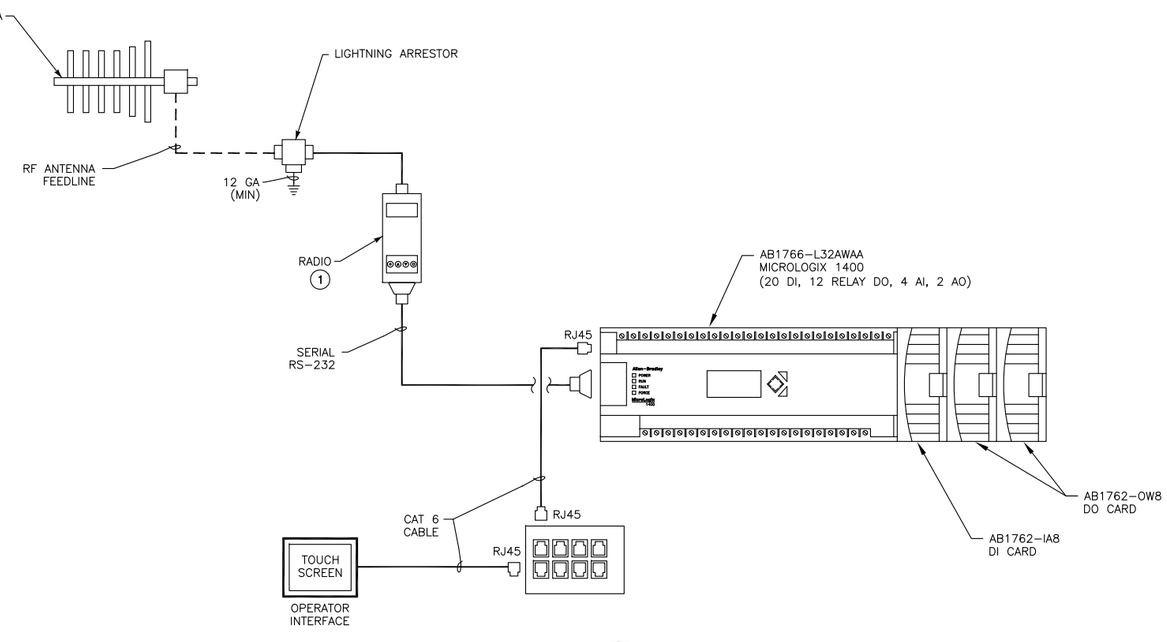
CP-1 120 VAC POWER DISTRIBUTION DIAGRAM (A / E8)

NOTES:
(1) DISTRIBUTION DIAGRAM REPRESENTATIVE OF MAJOR COMPONENTS ONLY. ADDITIONAL FUSES, CIRCUITS, AND COMPONENT CONNECTIONS MAY BE REQUIRED FOR A FUNCTIONAL SYSTEM.





TYPICAL INTRINSIC SAFE RELAY (B / E8)



PLC BLOCK DIAGRAM (C / E8)

NOTES:
(1) RADIO PROVIDED BY OWNER FOR CONTRACTOR INSTALLATION.

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

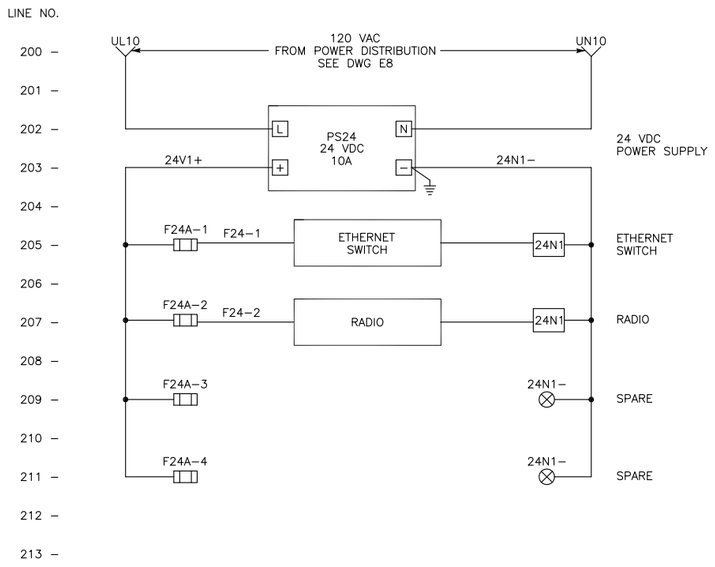
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

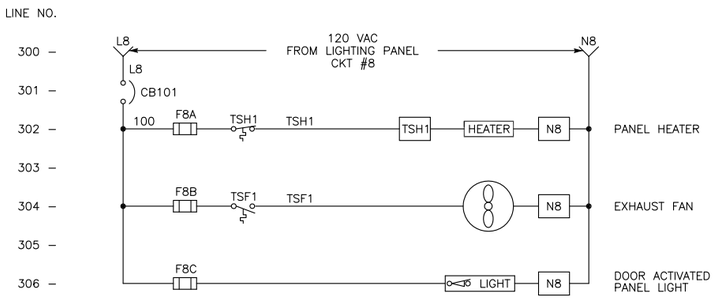
PLANT CONTROL PANEL (CP-1)
POWER DISTRIBUTION AND CONTROLS
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E8
DRAWING NUMBER	10 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ce008.dwg 10/9/2020 12:59 PM ATEEM



CP−1 24 VDC POWER DISTRIBUTION DIAGRAM



CP−1 CONTROL DIAGRAM

T.E.E.m.
(916) 457-8144

HALF SIZED

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

PLANT CONTROL PANEL (CP−1)
24 VDC POWER DISTRIBUTION AND CONTROLS
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E9
DRAWING NUMBER	11 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ce009.dwg 10/9/2020 1:00 PM ATEEM

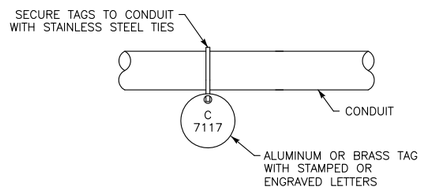
NOTES:

1. CONDUIT SIZE & TYPE; WIRE FILL FOR CONDUITS TO BE DESIGNATED NEXT TO CONDUIT NUMBER ELLIPSE.
2. THESE ARE THE CONTRACTOR DESIGNATED DRAWING NUMBERS.
3. NOT MORE THAN TWO WIRES PER TERMINAL BLOCK.
4. ALL TERMINAL BLOCKS TO BE PLACED IN NUMERICAL ORDER.
5. ALL NEUTRALS SHALL BE WHITE WIRE COLOR.
6. #12 GND TO DEVICES SHALL BE BONDED TO #8 GND LUG.

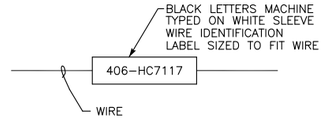
REFERENCE DOCUMENTS

DRAWING #	DESCRIPTION	MANUFACTURER
P712	P&ID DIAGRAM	DESIGN
E717	ELECTRICAL SITE PLAN	DESIGN
PAGE 32, 36	CONDUIT AND CABLE SCHEDULE	DESIGN
(2) 1354-11	LOOP DIAGRAM	CONTRACTOR
(2) 1354-68	ELEMENTARY DIAGRAM	CONTRACTOR

TYPICAL CONDUIT MARKING SYSTEM



TYPICAL WIRE LABEL

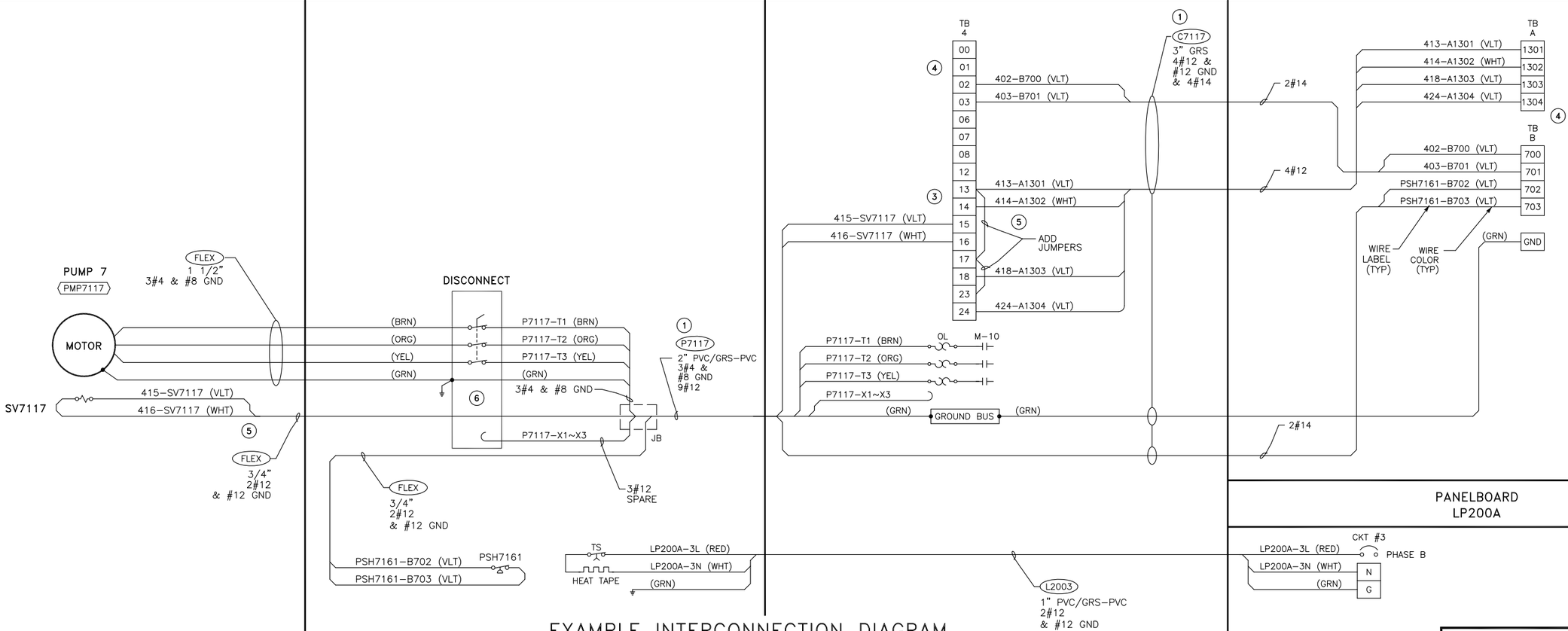


EQUIPMENT

FIELD

MCC-4 SECTION 1 CUBICLE A~E

CONTROL PANEL NO.2



EXAMPLE INTERCONNECTION DIAGRAM

(THIS DRAWING ILLUSTRATES THE FORMAT THAT SHALL BE FOLLOWED IN PREPARATION OF ALL INTERCONNECT DWGS)

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — SHARON M. KIMIZUKA — NO. 15698 — Exp.6-30-2022 — ELECTRICAL — STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

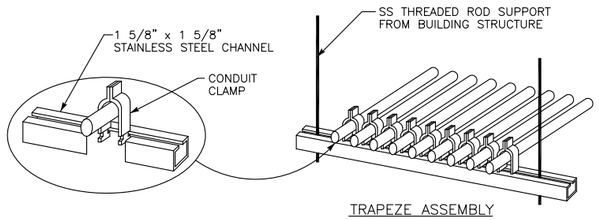
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

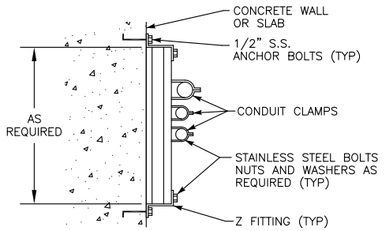
EXAMPLE INTERCONNECT DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

PROJECT NUMBER	15087
	E10
DRAWING NUMBER	12 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ce010.dwg 10/9/2020 1:28 PM ATEEM



TRAPEZE ASSEMBLY

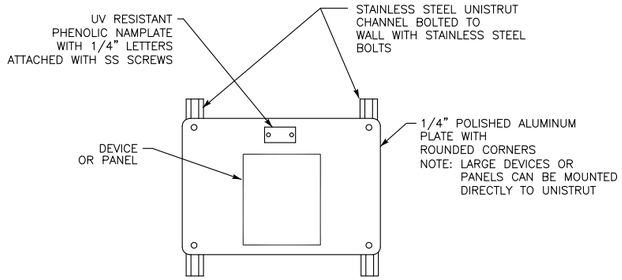


CONDUIT SUPPORT

CONDUIT UNISTRUT MOUNTING DETAIL

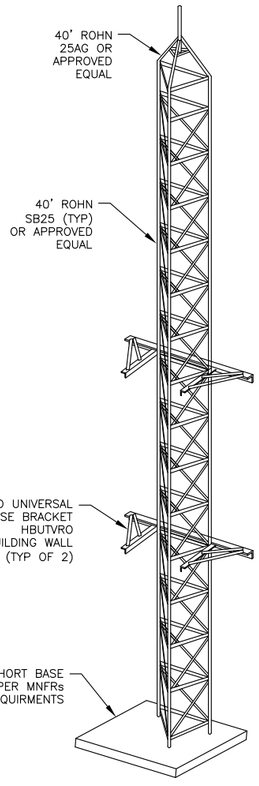
NOT TO SCALE — A / E11

NOTES:
1. THIS DETAIL TYPICAL FOR BOTH VERTICAL AND HORIZONTAL MOUNTING.
2. CHANNEL AND ALL SUPPORT DEVICES TO BE NEMA RATED PER AREA CLASSIFICATION. FIELD COAT ALL CUTS, ETC. TO MATCH.
3. CHANNELS TO BE SPACED 5' MAXIMUM.



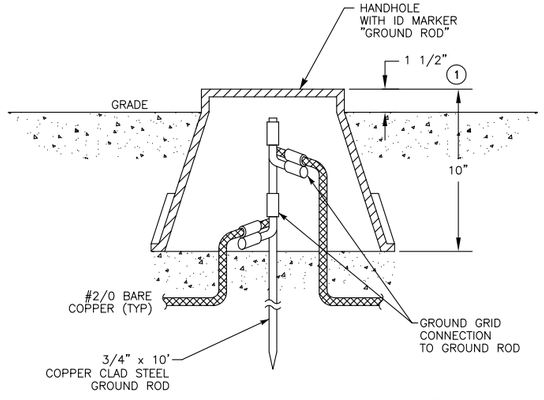
WALL PLATE SUPPORT DETAIL

NOT TO SCALE — B / E11



ANTENNA BRACKETED TOWER DETAIL

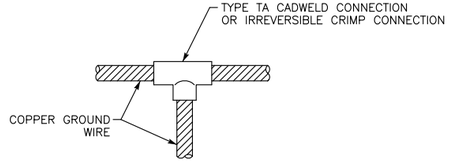
NOT TO SCALE — E / E11



HANDHOLE GROUNDING DETAIL

NOT TO SCALE — C / E11

NOTES: 1. FLUSH IN PAVED AREAS.



GROUND CABLE CONNECTION DETAIL

NOT TO SCALE — D / E11

T.E.E.M.
(916) 457-8144

HALF SIZED

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — SHARON M. KIMIZUKA — NO. 15698 — Exp.6-30-2022 — ELECTRICAL — STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

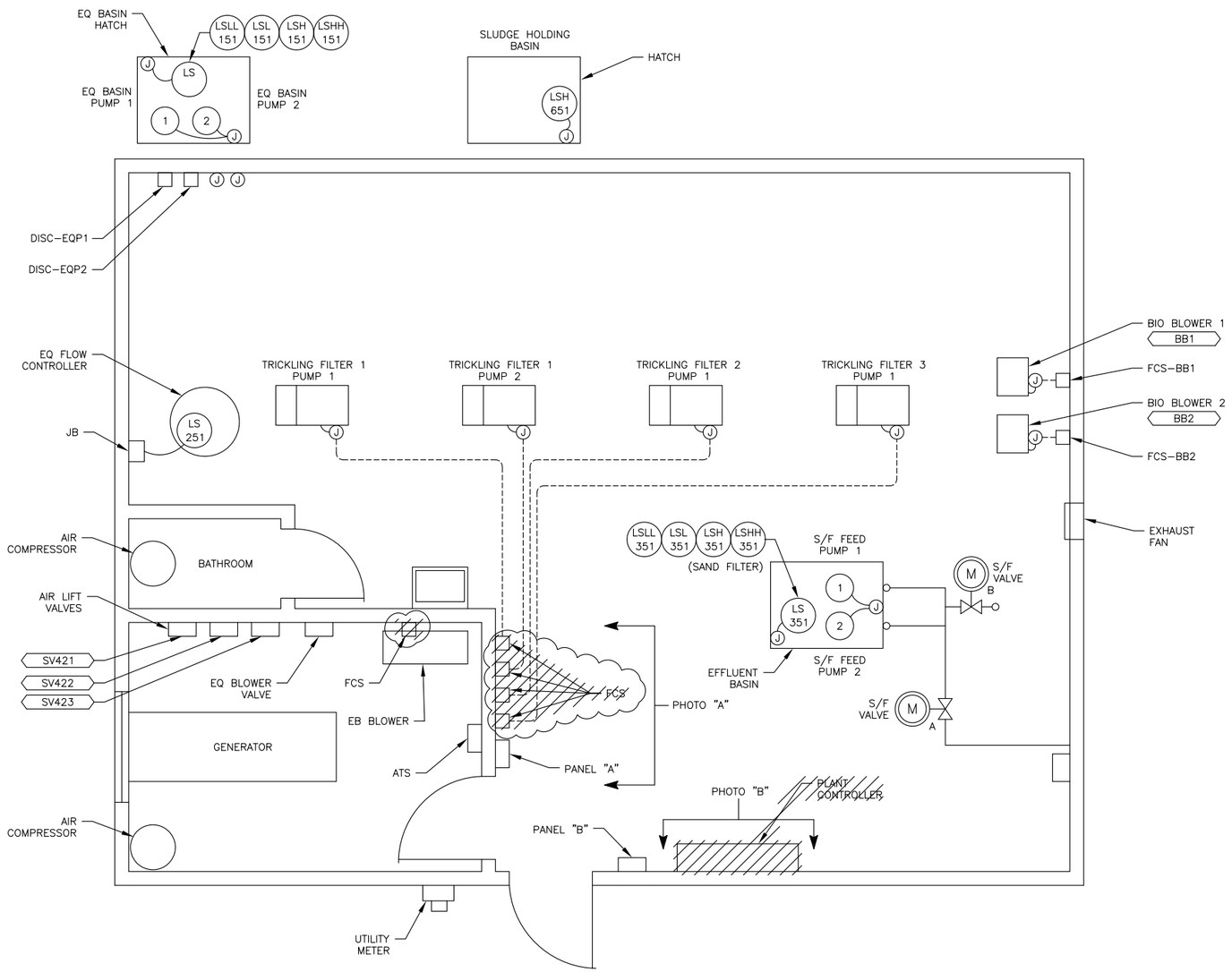
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

TYPICAL ELECTRICAL DETAILS
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E11
DRAWING NUMBER	13 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ce011.dwg 10/9/2020 1:02 PM ATEEM

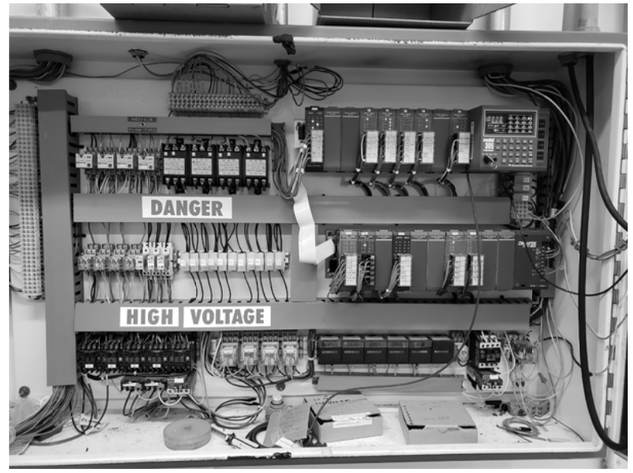


EXISTING BUILDING ELECTRICAL DEMO PLAN ①②

NOTES: ① NOT ALL EXISTING CONDUITS SHOWN.

② DEMO (E) STARTERS AND PANELS WHERE SHOWN. REUSE (E) CONDUIT & WIRE TO RECONNECT (E) EQUIPMENT. EXTEND CONDUIT & WIRE WHERE NECESSARY. CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT ANY DAMAGE TO THOSE WIRES.

PANEL & FCS (A PHOTO)



PLANT CONTROLLER (B PHOTO)

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — SHARON M. KIMIZUKA — NO. 15698 — Exp.6-30-2022 — ELECTRICAL — STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

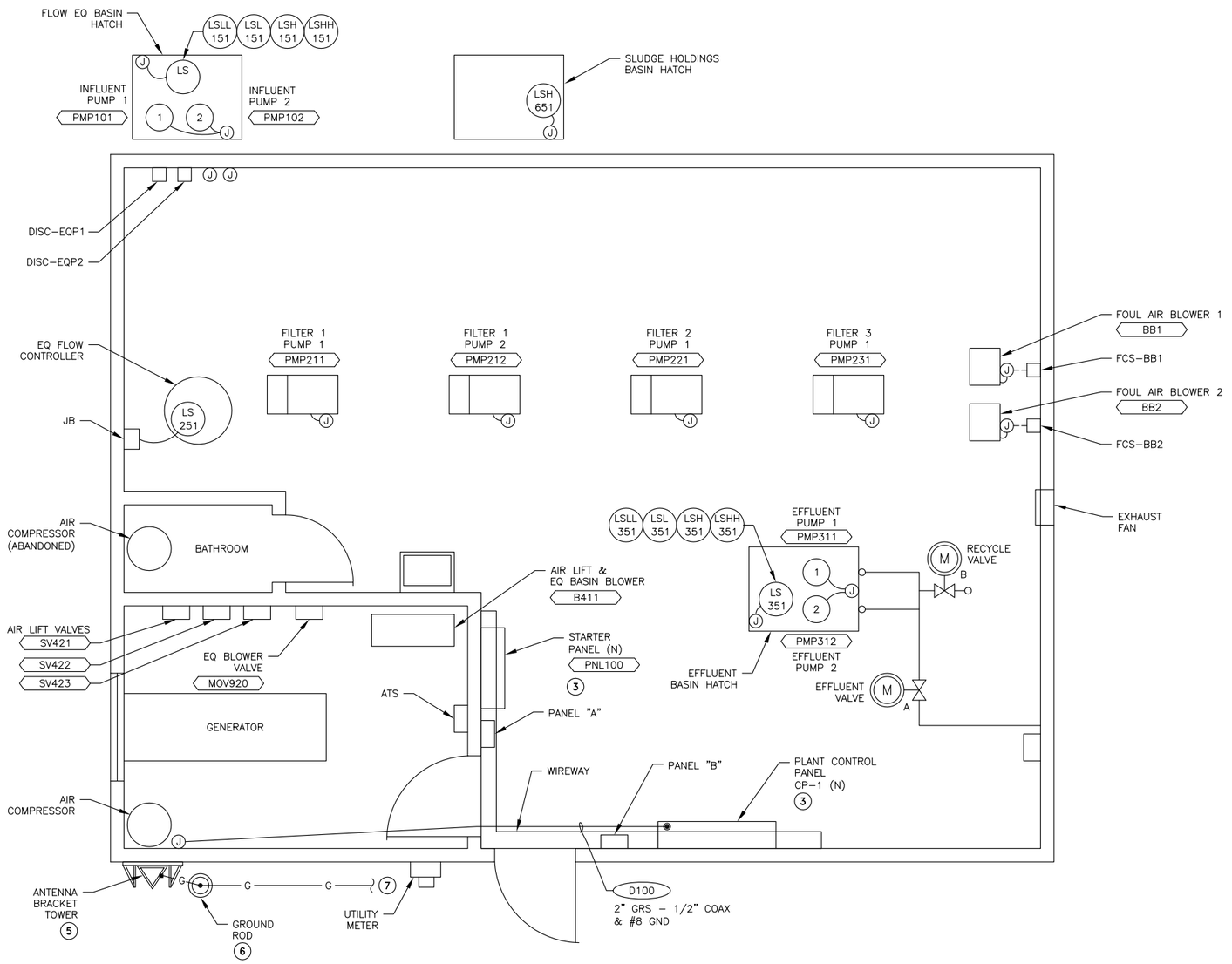
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

CALAVERAS COUNTY WATER DISTRICT

BUILDING ELECTRICAL DEMO PLAN
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

PROJECT NUMBER	15087
DRAWING NUMBER	E21
SHEET NUMBER	14 OF 23

Z:\ACADDWG\2019\1909c\1909ce021.dwg 10/9/2020 1:03 PM ATEEM



BUILDING ELECTRICAL REVISED PLAN ①②④

NOTES:

1. NOT ALL EXISTING CONDUITS SHOWN, CONDUITS SHOWN ARE THOSE ASSOCIATED WITH NEW WORK.
2. EXPOSED CONDUITS PER DWG E11, DETAIL "A".
3. SECURE TO WALL PER DWG E11, DETAIL "B".
4. REUSE EXISTING WIRES TO RECONNECT (E) EQUIPMENT, CONTRACTOR SHALL PERFORM USING EXTREME CAUTION TO PREVENT ANY DAMAGE TO THOSE WIRES.
5. INSTALL ANTENNA PER DWG E11, "E". COORDINATE WITH OWNER'S REPRESENTATIVE FOR EXACT LOCATION.
6. INSTALL GROUND ROD PER DWG E11, DETAIL "C" & CABLE CONNECTION PER DWG E11, DETAIL "D".
7. GROUND BOND TO CONSIST OF #2/0 BARE COPPER WITH 30" MINIMUM COVER. COORDINATE WITH DISTRICT TO LOCATE (E) GROUND ROD.

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — SHARON M. KIMIZUKA — NO. 15698 — Exp.6-30-2022 — ELECTRICAL — STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

BUILDING ELECTRICAL REVISED PLAN
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	E22
DRAWING NUMBER	15 OF 23
SHEET NUMBER	

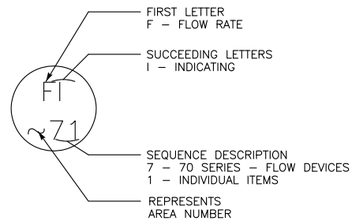
Z:\ACADDWG\2019\1909c\1909ce022.dwg 10/9/2020 1:04 PM ATEEM

SYMBOL	DESCRIPTION
	P & I DIAGRAM SYMBOLS
XXX / XXX	FIELD MOUNTED INSTRUMENT
XXX / XXX	FACE MOUNTED INSTRUMENT ON LOCAL PANEL, OPERATOR ACCESSIBLE
XXX / XXX	FACE MOUNTED INSTRUMENT ON FIELD PANEL, OPERATOR ACCESSIBLE
XXX / XXX	INSTRUMENT MOUNTED IN LOCAL PANEL, OPERATOR INACCESSIBLE
XXX / XXX	INSTRUMENT MOUNTED IN FIELD PANEL, OPERATOR INACESSIBLE
I	OPERATION PERFORMED WITH LOGIC OR HARDWIRED DEVICES
DWG #	– REFERENCE ELEMENTARY DWG. #
XXX / XXX	PLC OR COMPUTER FUNCTION PERFORMING OPERATION WITH VISUAL INDICATION
XXX / XXX	PLC OR COMPUTER FUNCTION PERFORMING OPERATION WITH VISUAL ALARM INDICATION
XXX / XXX	PLC OR COMPUTER PERFORMING INTERNAL OPERATION
XXX / XXX	PLC OR COMPUTER PERFORMING INTERNAL ALARM OPERATION
$\propto \int \frac{\partial}{\partial t}$	PROPORTIONAL, INTEGRAL, AND DIFFERENTIAL PARAMETERS
% +/−	RATIO AND BIAS PARAMETERS
	AUDIBLE ALARM (BUZZER OR HORN)
R#–C#	ANNUNCIATOR WINDOW R – ROW # C – COLUMN #
X	LAMP INDICATION (STATUS OR ALARM)
XXXXX	DISCRETE INPUT
	DISCRETE OUTPUT
	ANALOG INPUT
	ANALOG OUTPUT
a XXXX	JUMP TAG FROM ONE AREA TO ANOTHER AREA OF DRAWING "a" TAG CONNECT POINT ON EACH DRAWING
XXXX a	
P–X	CONTINUED ON DWG P–X
P–X	
#	AUTODIALER PRIORITY # PC BASED SOFTWARE

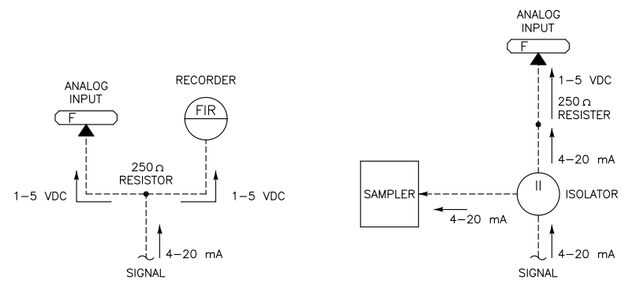
SYMBOL		DESCRIPTION
		P & I DIAGRAM SYMBOLS
OPEN	CLOSED	
		VALVE (GENERAL)
		GATE (GENERAL)
		CHECK VALVE (GENERAL)
		PUMP (GENERAL)
		BLOWER (GENERAL)
XXXX		VALVE/GATE NUMBER
XXXXX		EQUIPMENT NUMBER
		ELECTRIC SIGNAL
		LOGIC OR DATA SIGNAL
		PNEUMATIC SIGNAL
		CAPILLARY TUBING (FILLED SYSTEM)
		HYDRAULIC SIGNAL
ES / AS		SONIC OR ELECTROMAGNETIC SIGNAL
E		ELECTRIC SUPPLY FROM PANELBOARD CKT
SA		SERVICE AIR
IA		INSTRUMENT AIR

INSTRUMENT IDENTIFICATION LETTERS

	FIRST – LETTER	SUCCEEDING – LETTER			
	MEASURED OF INITIATING VARIABLE	MODIFIER	READOUT PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY			CONTROLLER	
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GENERAL		GLASS VIEWING DEVICE		
H	HAND				HIGH, OPENED
I	CURRENT (ELEC.)		INDICATING, INDICATOR		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW, CLOSED
M	MOISTURE	MOMENTARY			MIDDLE
N	STATUS		STATUS	USER'S CHOICE	USER'S CHOICE
O	OPERATOR		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTERGRATE, TOTALIZE			
R	RESET		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMITTER	TEST
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECH. ANALYSIS			VALVE, DAMPER LOUVER	
W	WEIGHT, FORCE		WELL		
X	SWITCH	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTER, CONVERTOR	
Z	POSITION DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSEIFIED FINAL CONTROL ELEMENT	



P&ID INSTRUMENT IDENTIFICATION EXAMPLE



TYPICAL SIGNAL FLOWS

NUMBERING SEQUENCE	
SEQUENCE NUMBER	DESCRIPTION
00	COMMON ALARM
01–09	INDIVIDUAL ITEMS
10	MECHANICAL
20	MECHANICAL
30	MECHANICAL
40	MECHANICAL
50	LEVEL DEVICES
60	PRESSURE DEVICES
70	FLOW DEVICES
80	ANALYTICAL DEVICES
90	SAFETY & SECURITY DEVICES

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

INSTRUMENTATION SYMBOLS & ABBREVIATIONS
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087
PROJECT NUMBER
I1
DRAWING NUMBER
16 OF 23
SHEET NUMBER

Z:\ACADDWG\2019\1909c\1909cI001.dwg 10/9/2020 1:06 PM ATEEM

PROGRAMMABLE LOGIC CONTROLLER PLC (N)

AIR LIFT EQ BLOWER: RUNNING N411 | CALL X411 | VALVE OPEN X420

FLOW EQ BASIN: HI HI LEVEL LSHH151 | HI LEVEL LSH151 | LO LEVEL LSL151 | LO LO LEVEL LSLL151

INFLUENT PUMP 1: RUNNING N101 | CALL X101

INFLUENT PUMP 2: RUNNING N102 | CALL X102

EQ FLOW CONTROL HI LEVEL LSH251

AIR LIFT VALVE 1 OPEN X421

AIR LIFT VALVE 2 OPEN X422

AIR LIFT VALVE 3 OPEN X423

SLUDGE HOLDING BASIN HI HI LEVEL LSHH651

PLC (N)

CONTROL PANEL 1 CP1 (N)

I

ISR

CP1 (N)

HOA HS 411

HOA HS 101

HOA HS 102

STARTER PANEL PNL100 (N)

PNL100 (N)

FIELD

DISC EQP1

DISC EQP2

RECYCLE FROM EFFLUENT BASIN I3

INFLUENT SEWER –

LSHH 151

LSH 151

LSL 151

LSLL 151

LSH 251

EQ FLOW CONTROLLER

I3 TO SECONDARY BASIN 1

M

FLOW EQ BASIN

AIR LIFT & EQ BASIN BLOWER BLR411

MOV420

INFLUENT PUMP 1 PMP101

INFLUENT PUMP 2 PMP102

SV 421 SV421

SV 422 SV422

SV 423 SV423

AIR LIFT PUMP 1

AIR LIFT PUMP 2

AIR LIFT PUMP 3

FROM SECONDARY BASIN 1 I3

LSHH 651

I3 FROM SECONDARY BASIN 2 & 3

TO TANKER TRUCK FOR DISPOSAL

SLUDGE HOLDING BASIN

WALLACE WWTP– INFLUENT

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER — SHARON M. KIMIZUKA — NO. 15698 — Exp.6-30-2022 — ELECTRICAL — STATE OF CALIFORNIA

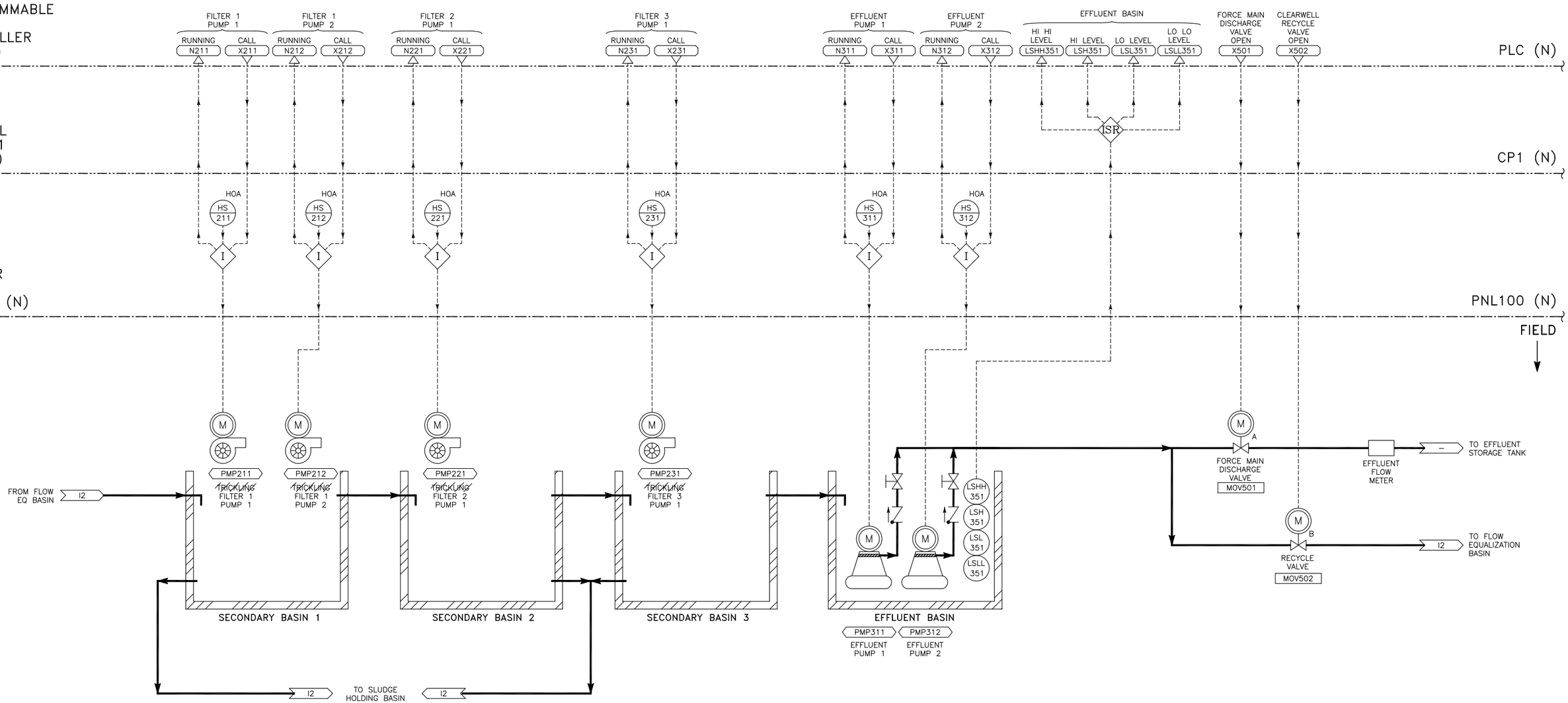
CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

WALLACE WWTP – INFLUENT P&ID
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	I2
DRAWING NUMBER	17 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909cl002.dwg 10/9/2020 1:09 PM ATEEM



WALLACE WWTP – EFFLUENT

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

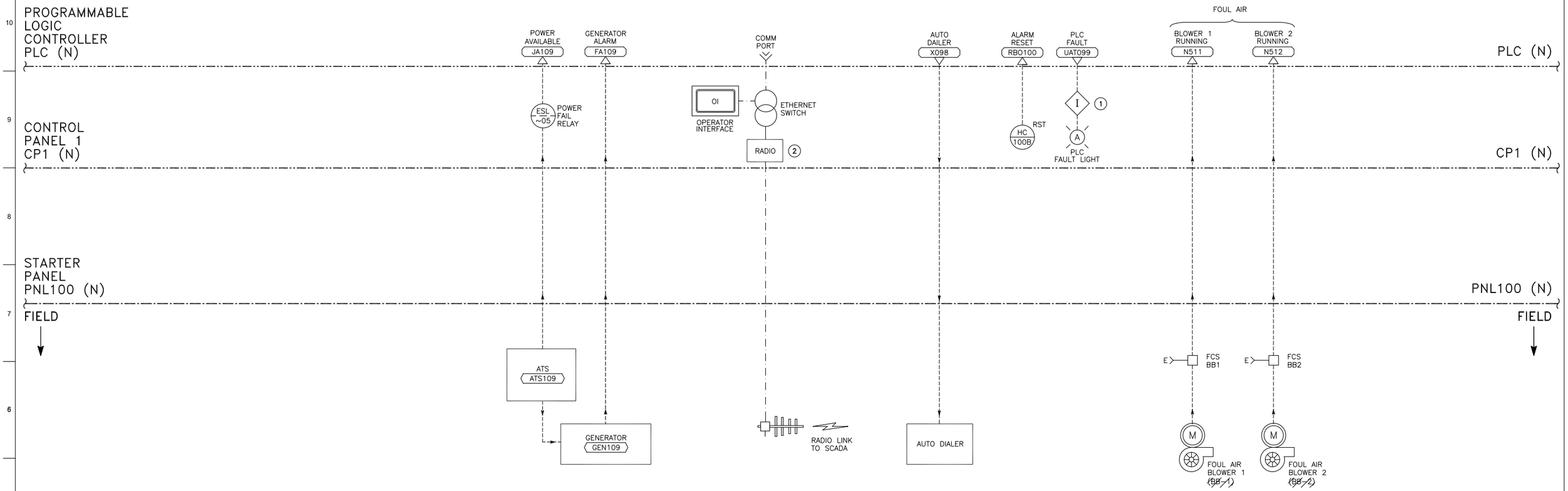
CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

WALLACE WWTP – EFFLUENT P&ID
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	13
DRAWING NUMBER	18 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ci003.dwg 10/9/2020 1:09 PM ATEEM



AUXILIARY SYSTEMS

NOTES: (1) WIRE SWITCH WIRING IN SERIES ON TERMINAL BLOCKS AND INSTALL 24VDC ISOLATION RELAY.

(2) OWNER SUPPLIED RADIO INSTALLED BY CONTRACTOR.

T.E.E.M.
(916) 457-8144

HALF SIZED

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER SHARON M. KIMIZUKA NO. 15698 Exp.6-30-2022 ELECTRICAL STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

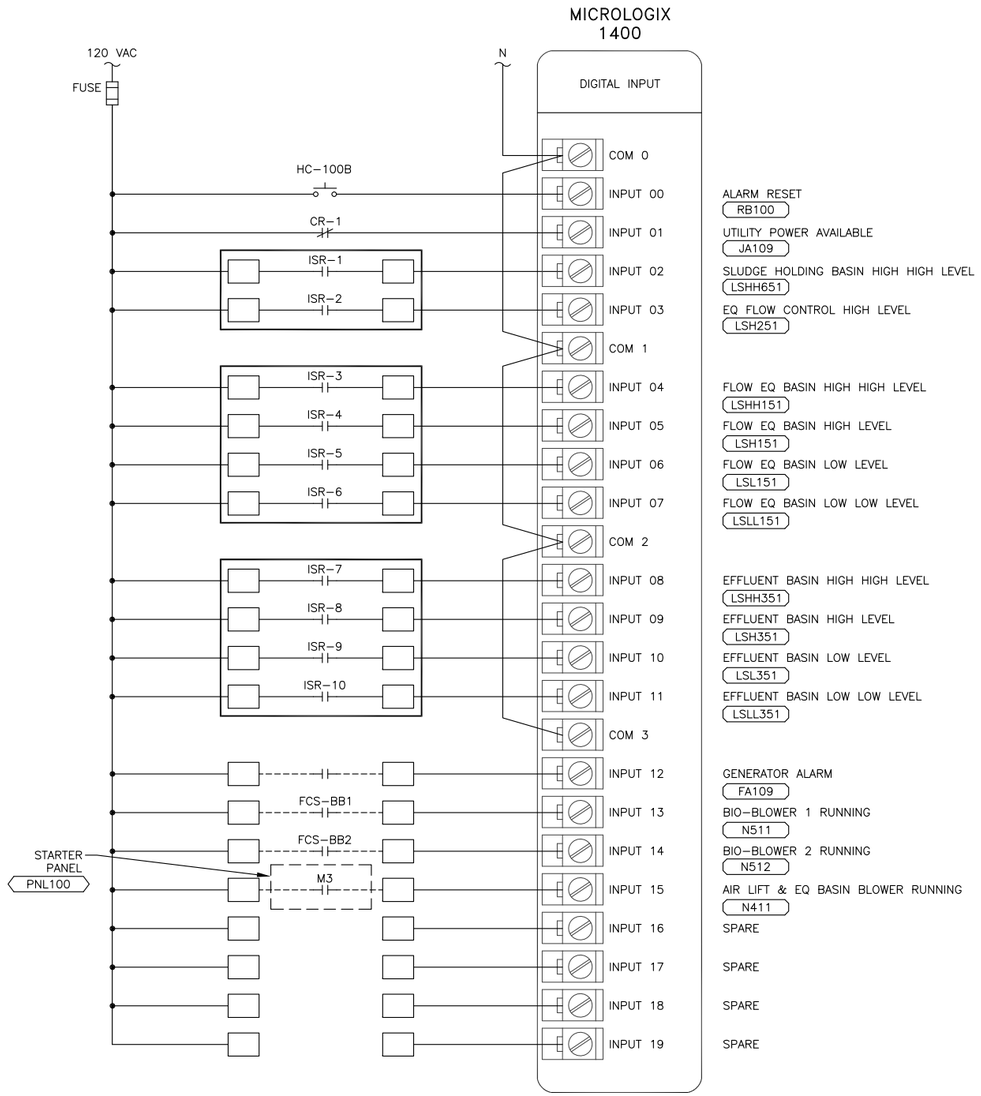
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

AUXILIARY SYSTEMS P&ID
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

	15087
PROJECT NUMBER	14
DRAWING NUMBER	19 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ci004.dwg 10/9/2020 1:10 PM ATEEM



MICROLOGIX PLC – DIGITAL INPUT WIRING DIAGRAM

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

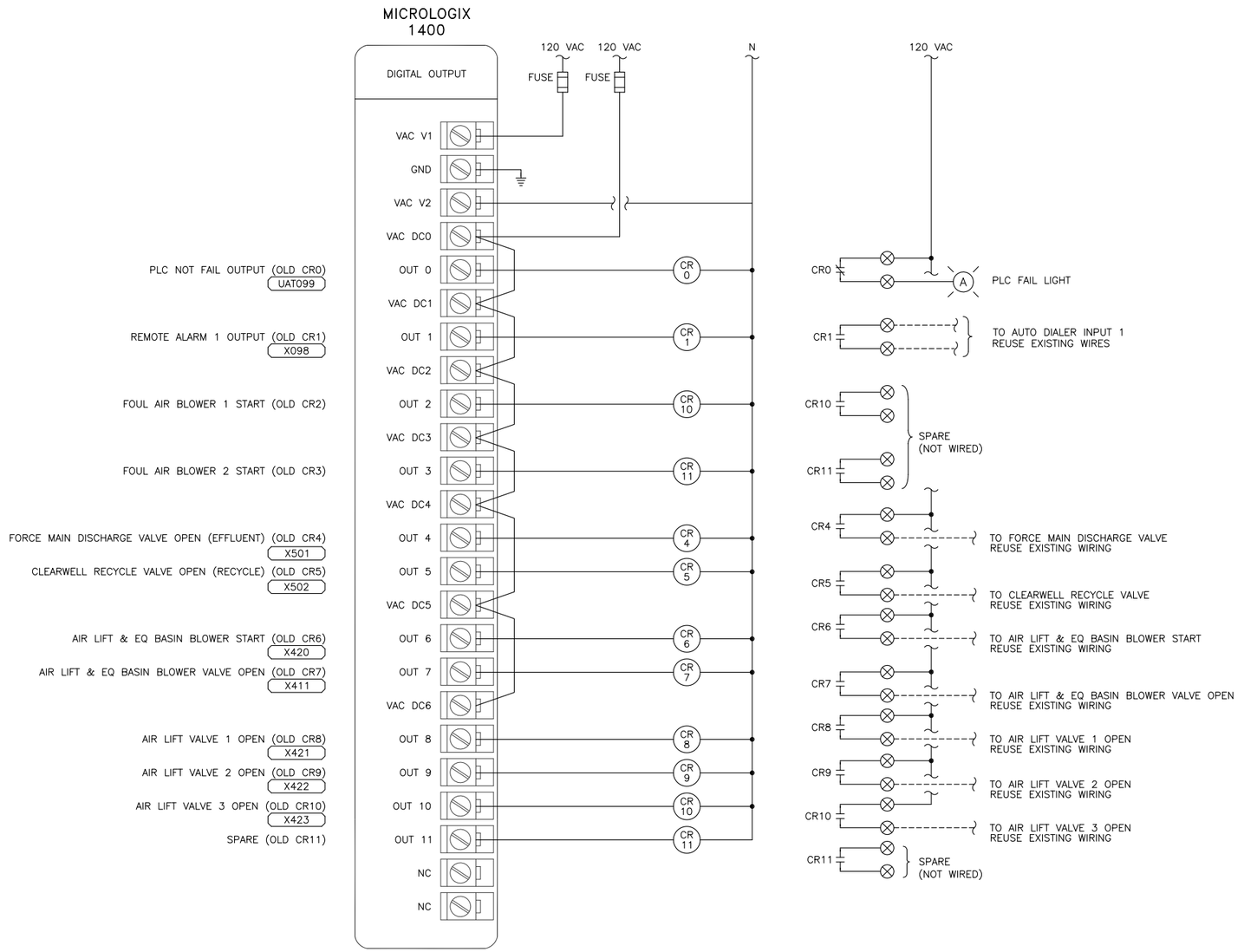
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

MICROLOGIX PLC DIGITAL INPUT WIRING DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

PROJECT NUMBER	15087
DRAWING NUMBER	I5
SHEET NUMBER	20 OF 23

Z:\ACADDWG\2019\1909c\1909ci005.dwg 10/9/2020 1:11 PM ATEEM



MICROLOGIX PLC – DIGITAL OUTPUT WIRING DIAGRAM

HALF SIZED

T.E.E.M.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

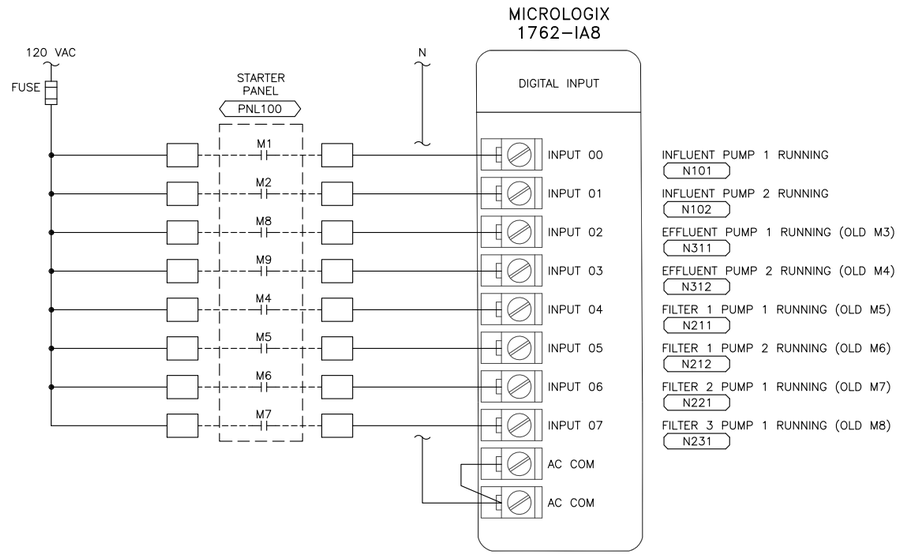
CALAVERAS COUNTY WATER DISTRICT

CALAVERAS COUNTY
WATER DISTRICT
120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

MICROLOGIX PLC DIGITAL OUTPUT WIRING DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	16
DRAWING NUMBER	21 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ci006.dwg 10/9/2020 1:13 PM ATEEM



PLC SLOT 1 – DIGITAL INPUT WIRING DIAGRAM

T.E.E.M.
(916) 457-8144

HALF SIZED

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

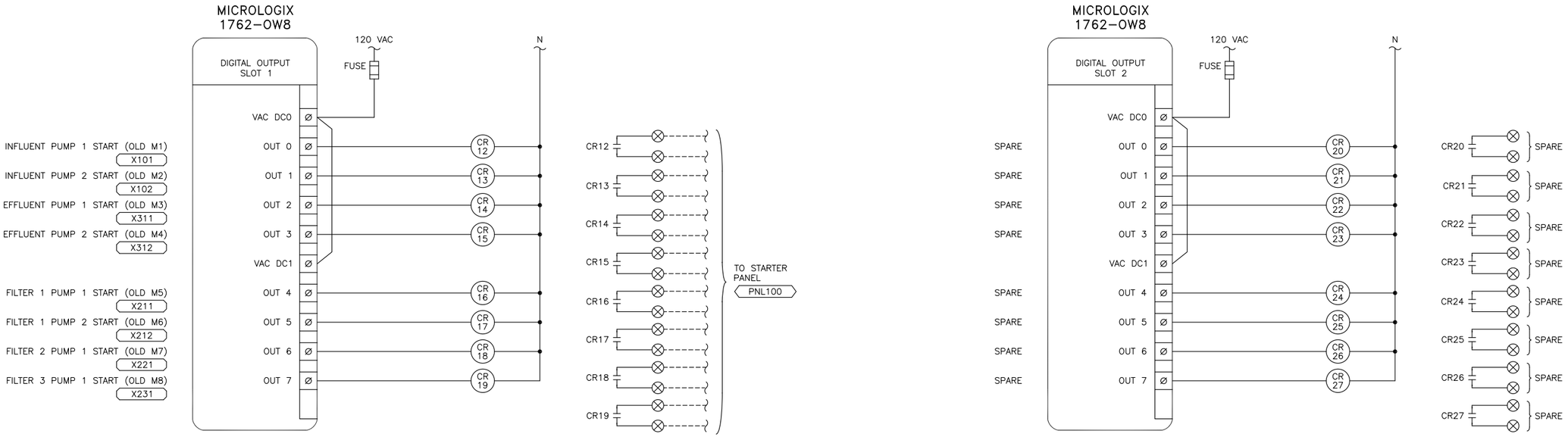
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

PLC SLOT 1 DIGITAL INPUT WIRING DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	I7
DRAWING NUMBER	22 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909ci007.dwg 10/9/2020 1:14 PM ATEEM



PLC SLOT 2 & 3 – DIGITAL OUTPUT WIRING DIAGRAM

HALF SIZED

T.E.E.m.
(916) 457-8144

DESIGNED BY:	S. KIMIZUKA
DRAFTED BY:	Z. VOGLER
CHECKED BY:	X. LI
DATE:	10/9/2020
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

REGISTERED PROFESSIONAL ENGINEER
SHARON M. KIMIZUKA
NO. 15698
Exp.6-30-2022
ELECTRICAL
STATE OF CALIFORNIA

CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

PLC SLOT 2 & 3 DIGITAL OUTPUT WIRING DIAGRAM
ELECTRICAL AND INSTRUMENTATION IMPROVEMENT PROJECT
ARNOLD WASTEWATER TREATMENT FACILITY
WALLACE LAKE ESTATES

15087	
PROJECT NUMBER	18
DRAWING NUMBER	23 OF 23
SHEET NUMBER	

Z:\ACADDWG\2019\1909c\1909c1008.dwg 10/9/2020 1:15 PM ATEEM