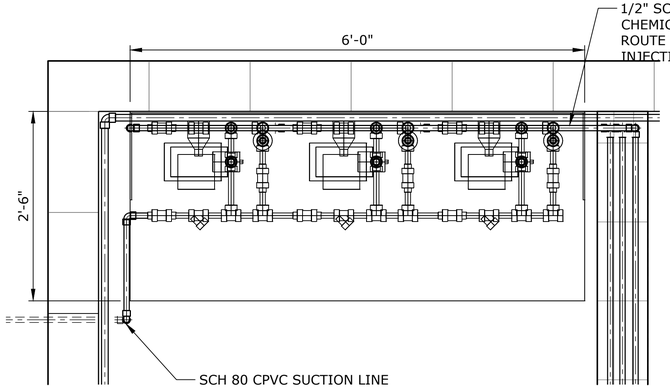
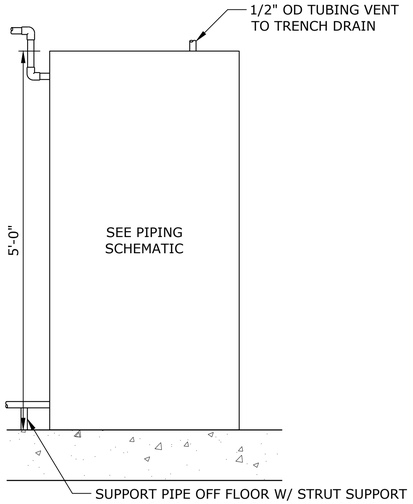
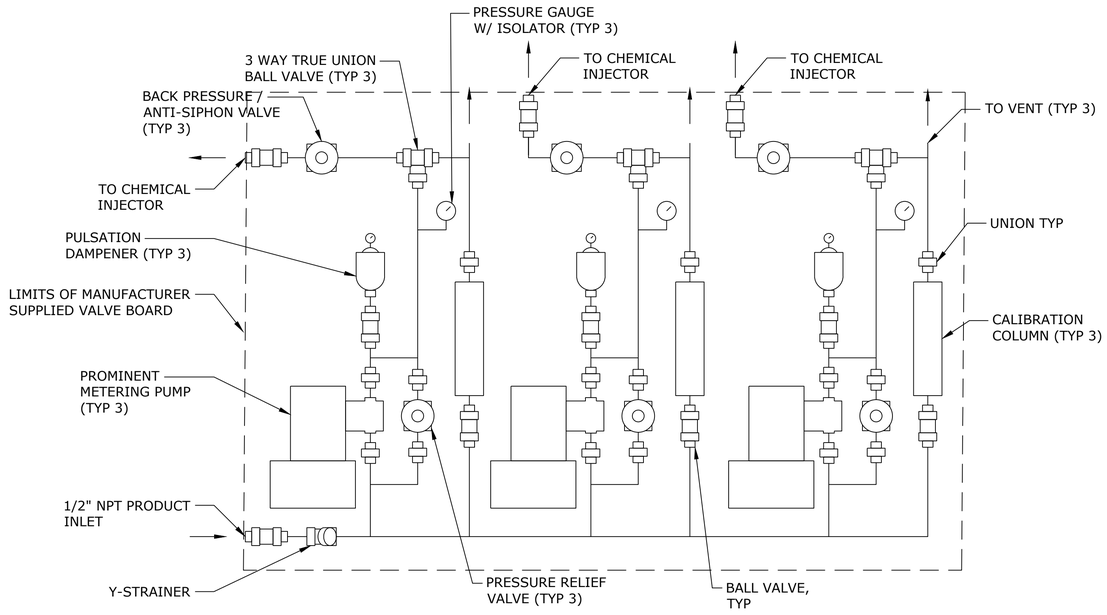


PLAN VIEW



FRONT VIEW

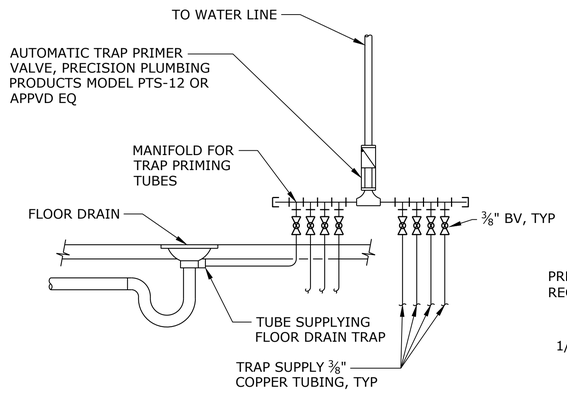


PIPING SCHEMATIC

METERING PUMP VALVE BOARD ASSEMBLY

1 / M-4

SCALE: 1" = 1'-0"



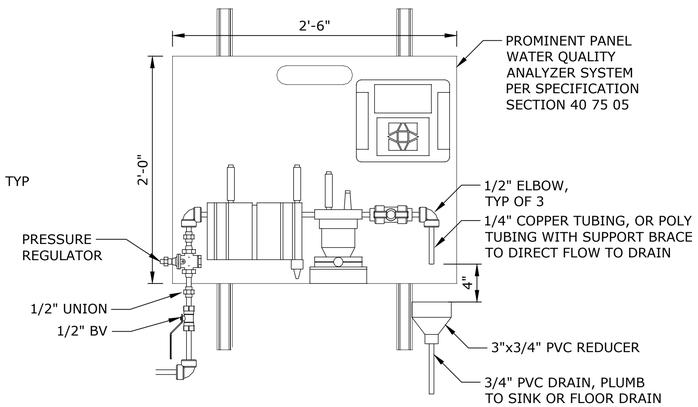
NOTES:

1. TRAP SUPPLY PIPING SHALL CONSTANTLY SLOPE DOWNWARD ON RUN HORIZONTALLY FROM TRAP PRIMER TO FLOOR DRAIN CONNECTION.
2. INSTALL TRAP PRIMER PER MANUFACTURER'S REQUIREMENTS.

FLOOR DRAIN TRAP PRIMER

2 / M-7

SCALE: NTS

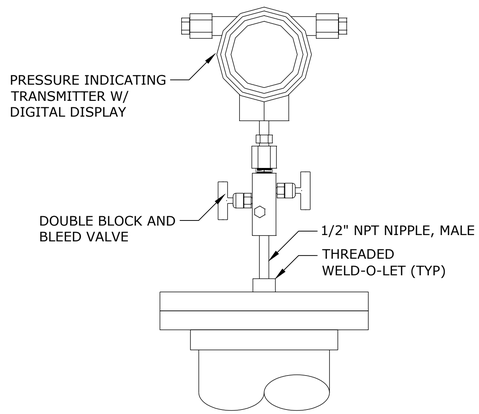


WATER QUALITY ANALYZER BOARD

3 / M-2

M-5

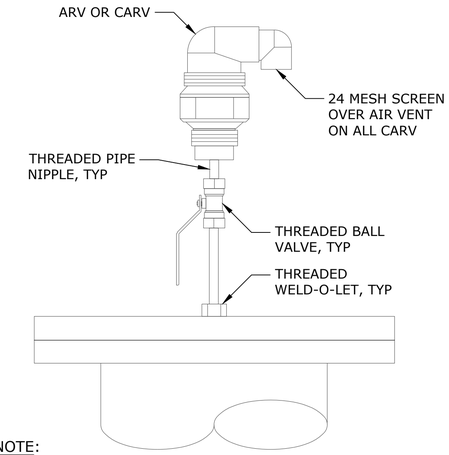
SCALE: 1 1/2" = 1'-0"



PRESSURE INDICATING TRANSMITTER

4 / M-3

SCALE: 3" = 1'-0"



NOTE:

1. PIPE, FITTING, AND VALVE SIZES SHALL MATCH AIR VALVE INLET DIAMETER UNLESS NOTED OTHERWISE.

AIR RELEASE OR COMBINATION AIR/VAC VALVE

5 / M-3

SCALE: NTS

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SWW DESIGNED

JLC DRAWN

NCR CHECKED

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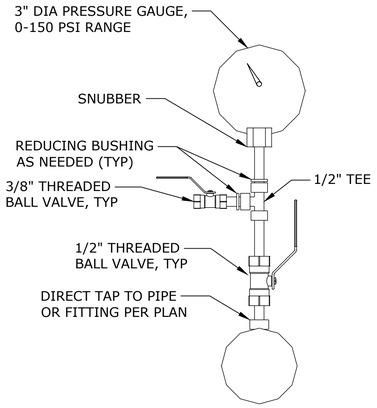
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

MECHANICAL

MISCELLANEOUS MECHANICAL DETAILS - 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
M-14

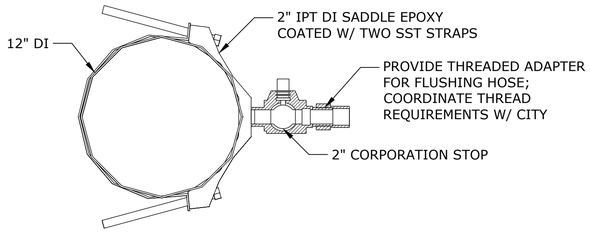


PRESSURE GAUGE

SCALE: 3" = 1'-0"

1 / M-2

M-12

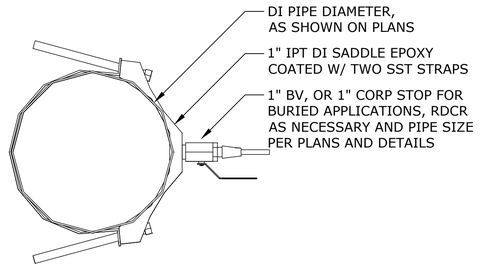


2" FLUSHING CONNECTION

SCALE: NTS

2 / M-2

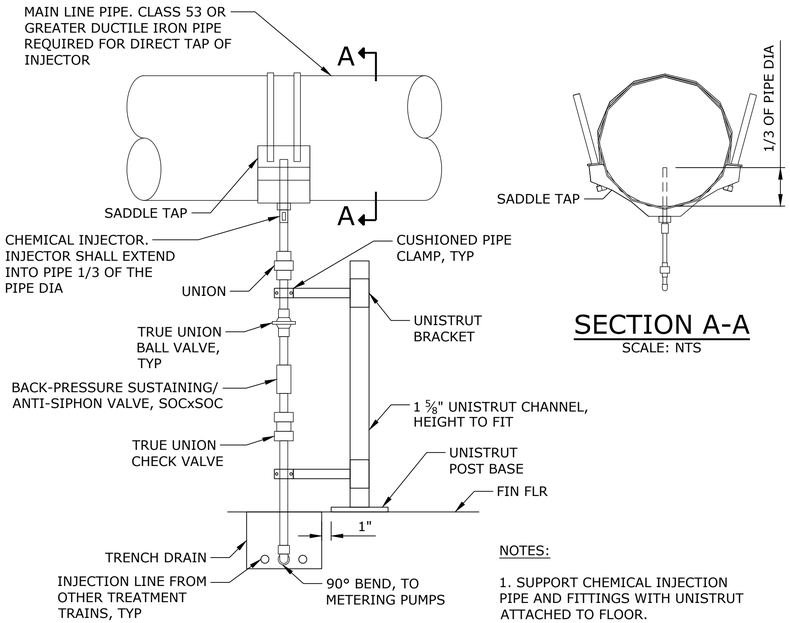
M-3



TAP DETAIL

SCALE: NTS

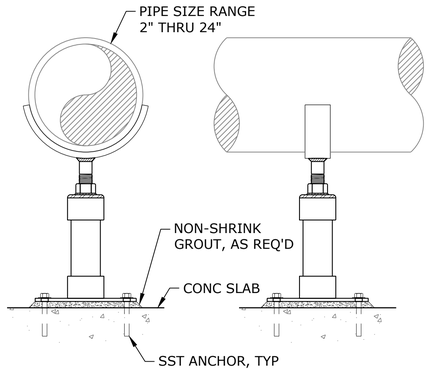
3 / M-2



CHEMICAL INJECTION ASSEMBLY

SCALE: NTS

4 / M-3

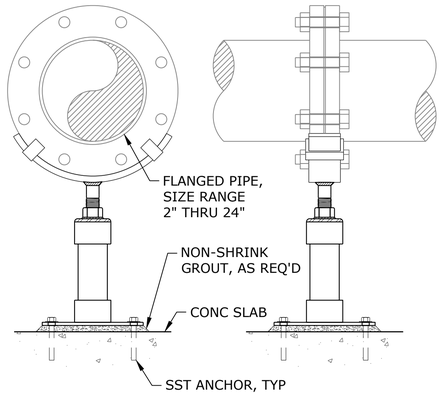


S-92 PIPE SUPPORT DETAIL

SCALE: NTS

5 / M-3

M-6

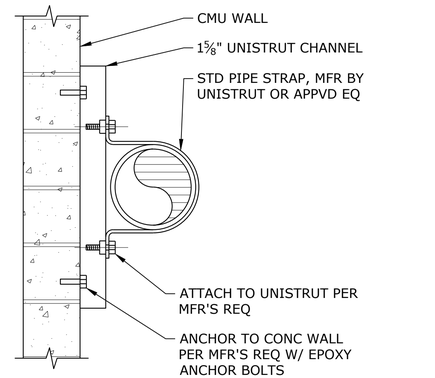


S-96 PIPE SUPPORT DETAIL

SCALE: NTS

6 / M-3

M-6



NOTES:

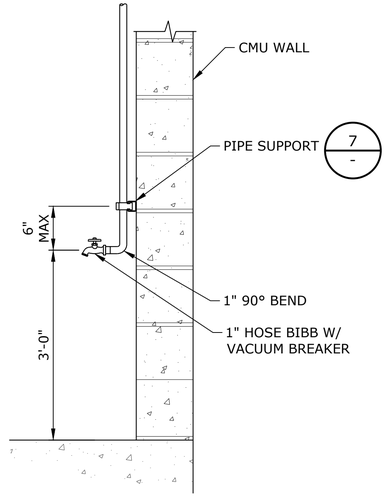
1. ORIENT UNISTRUT CHANNEL VERTICALLY OR HORIZONTALLY DEPENDING ON APPLICATION.
2. SUPPORT PIPE HORIZONTALLY EVERY 6 FEET (MINIMUM), AND VERTICALLY AT EVERY 10 FEET (MINIMUM).
3. ALL SUPPORT MATERIALS SHALL BE PER SPECIFICATION SECTION 22 05 29.

PIPE SUPPORT

SCALE: NTS

7 / M-4

M-5, M-10, M-11, M-12



TYPICAL INTERIOR HOSE BIBB CONNECTION

SCALE: NTS

8 / M-2

M-7, M-10, M-11, M-12

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SWW DESIGNED

JLC DRAWN

NCR CHECKED

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MECHANICAL

MISCELLANEOUS MECHANICAL DETAILS - 2

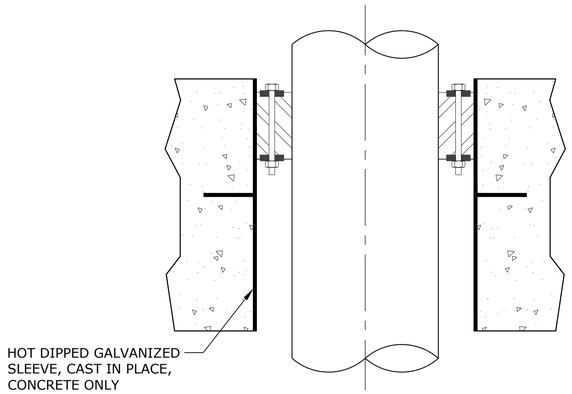
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B

SHEET

M-15

K:\TAC_Projects\21\3172 - Lacey - Westside PH Treatment\CAD\Sheets\21-3172-WA-M-14-18.dwg M-15 8/25/2023 8:40 AM JARED.CLOUD 23.0s (LMS Tech)

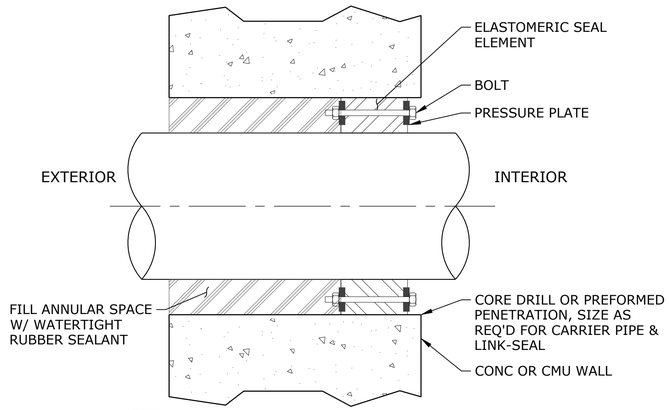


FLOOR PENETRATION DETAIL

SCALE: NTS

1 / M-4

M-5



NOTE:

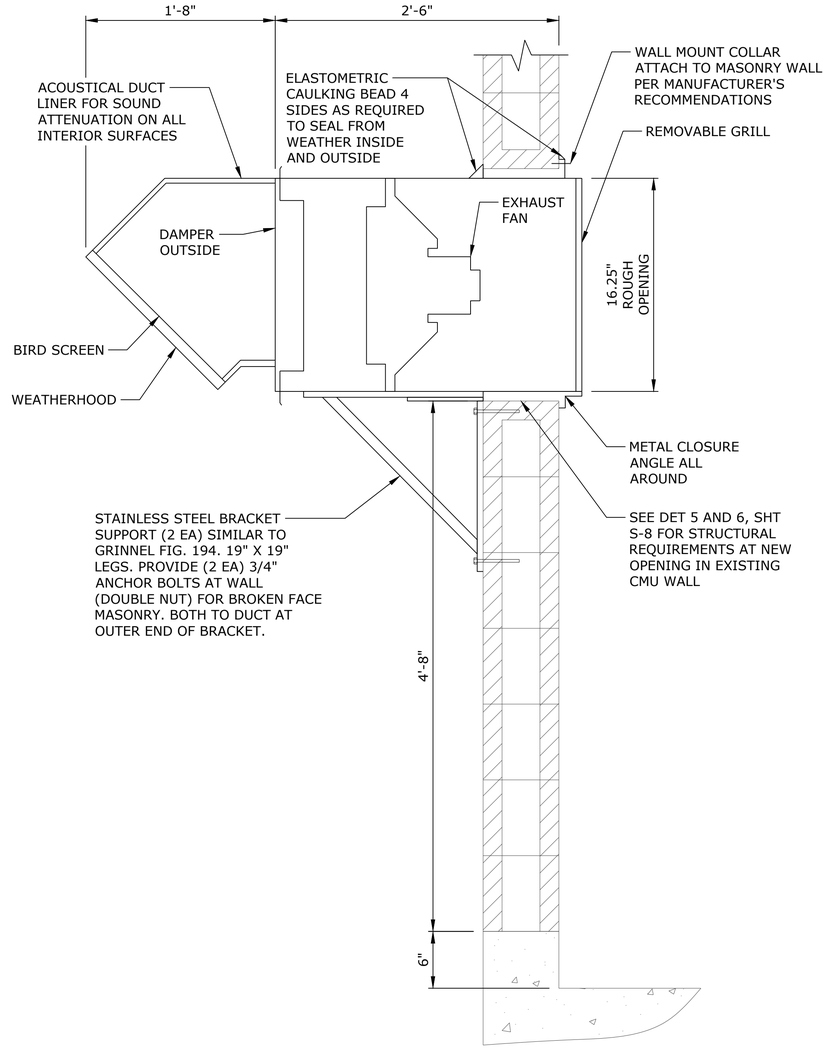
1. GROUT CMU WALL TO 12" ABOVE PENETRATION PRIOR TO CORE DRILLING.

LINK SEAL DETAIL

SCALE: NTS

2 / M-10

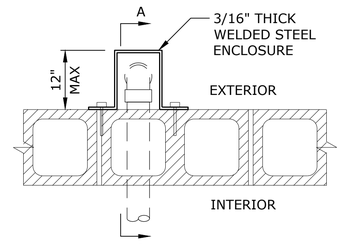
M-11, M-12



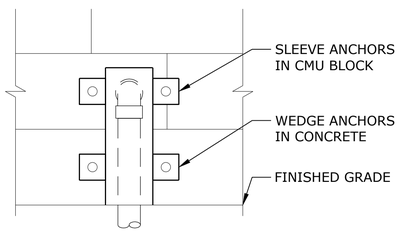
SIDEWALL MOUNTED EXHAUST FAN

SCALE: NTS

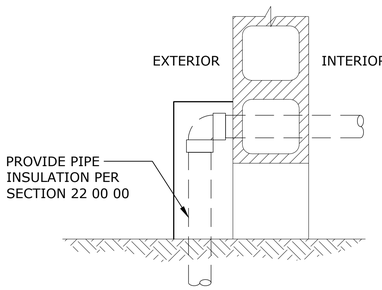
5 / M-11



PLAN



ELEVATION

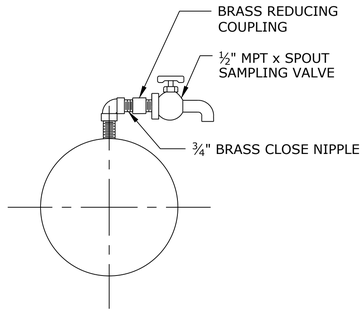


SECTION AA

PIPE ENTRANCE ENCLOSURE

SCALE: NTS

3 / M-10, M-11, M-12



NOTES:

ALL PIPING, PET COCK, FURNISHED AND INSTALLED BY CONTRACTOR.

PET COCK OUTLET SHALL NOT BE THREADED

SAMPLE TAP

SCALE: NTS

4 / M-12

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SWW DESIGNED

JLC DRAWN

NCR CHECKED

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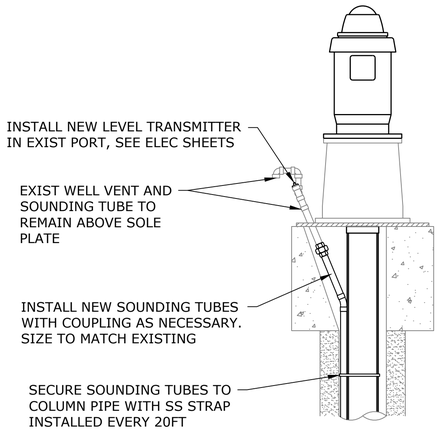
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

MECHANICAL

MISCELLANEOUS MECHANICAL DETAILS - 3

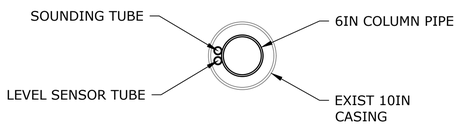
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
M-16

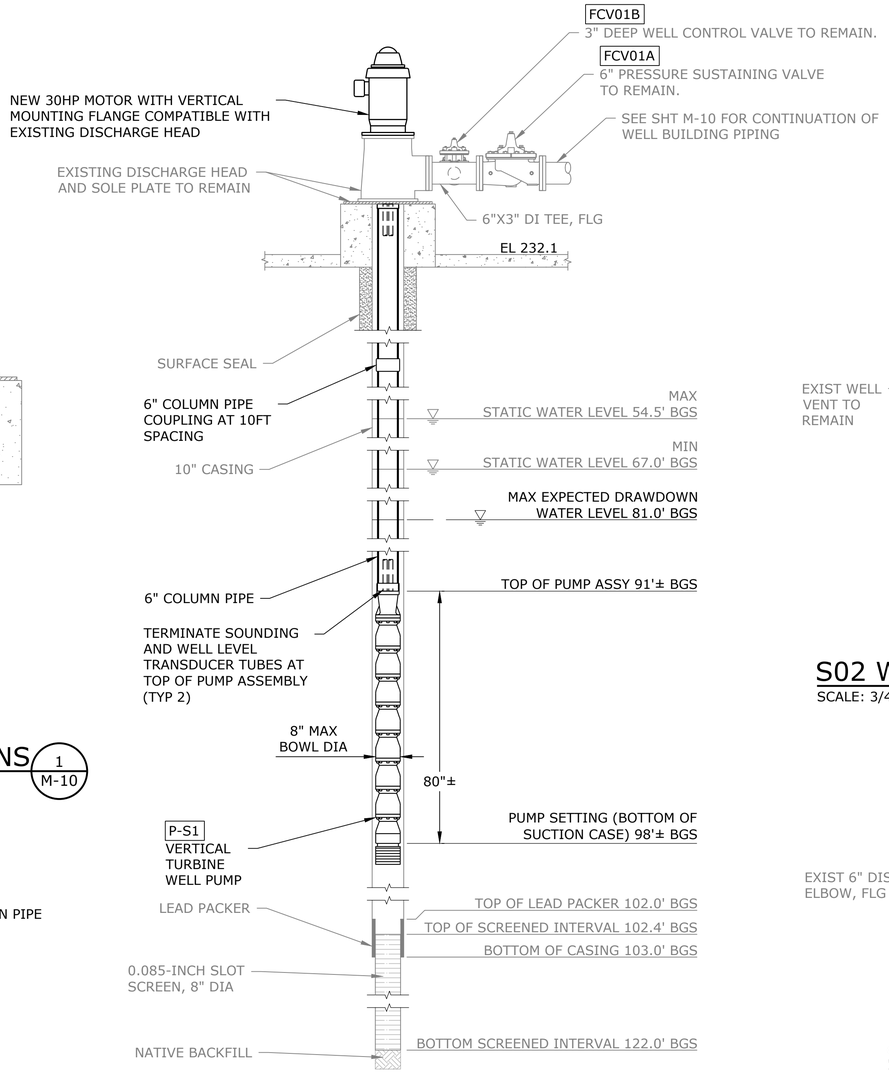


NOTE:
1. DISCHARGE PIPING NOT SHOWN FOR CLARITY
2. CONTRACTOR TO BE RESPONSIBLE FOR CONFIGURATION OF CONNECTION TO EXISTING LEVEL TRANSDUCER AND SOUNDING TUBE PORTS

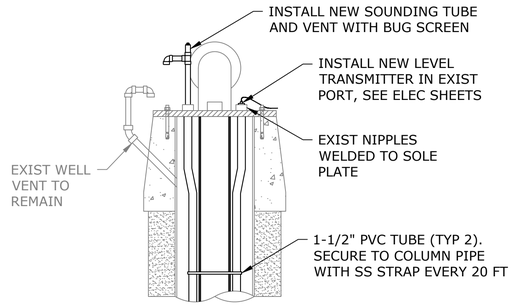
S01 WELLHEAD MODIFICATIONS (1 / M-10)
SCALE: 3/4" = 1'-0"



S01 WELL PLAN (2 / M-10)
SCALE: 1" = 1'-0"

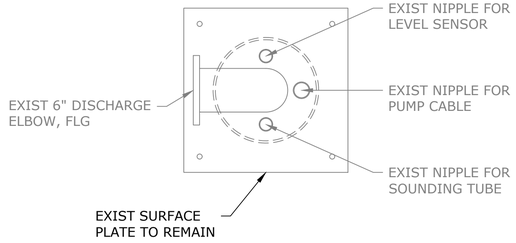


S01 WELL PUMP SETTING (3 / M-10)
SCALE: 1/2" = 1'-0"

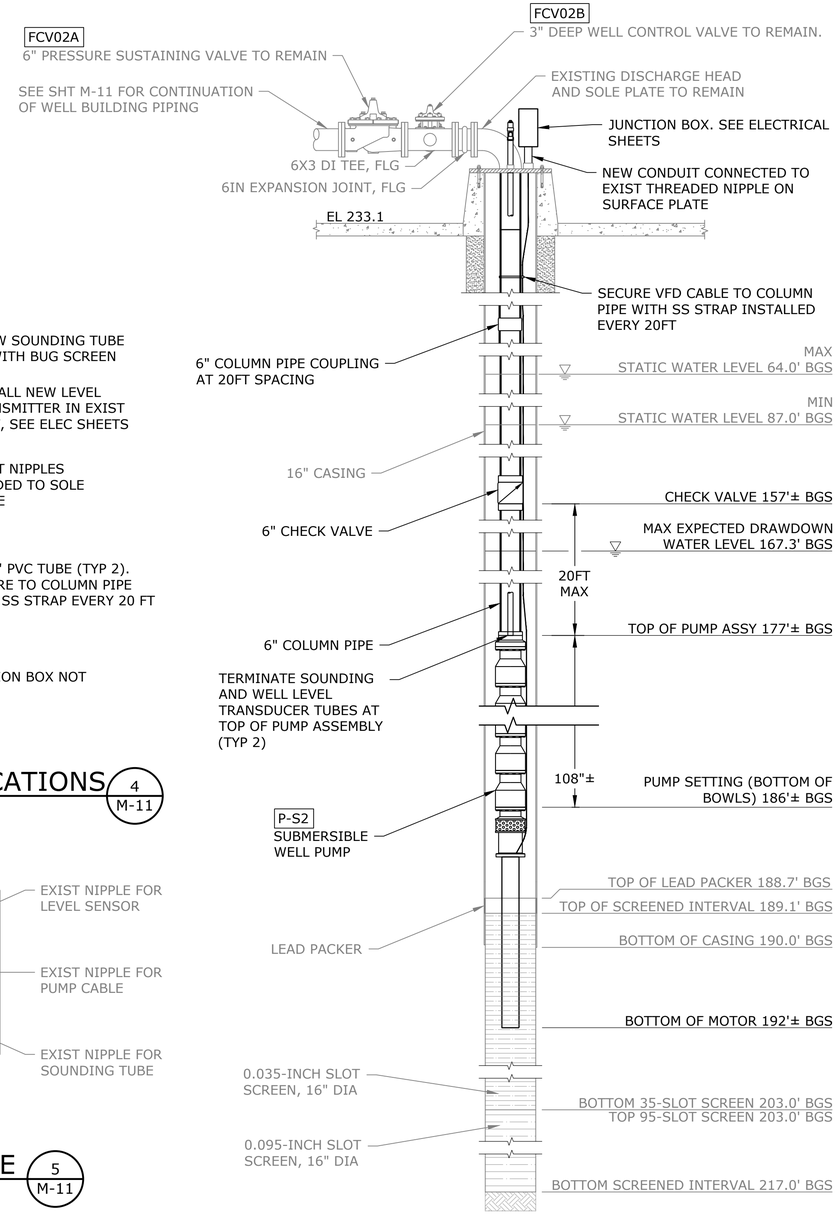


NOTE:
1. DISCHARGE PIPING AND JUNCTION BOX NOT SHOWN FOR CLARITY

S02 WELLHEAD MODIFICATIONS (4 / M-11)
SCALE: 3/4" = 1'-0"



S02 SURFACE PLATE (5 / M-11)
SCALE: 1" = 1'-0"



S02 WELL PUMP SETTING (6 / M-11)
SCALE: 1/2" = 1'-0"

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SWW DESIGNED
SWW DRAWN
NCR CHECKED

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

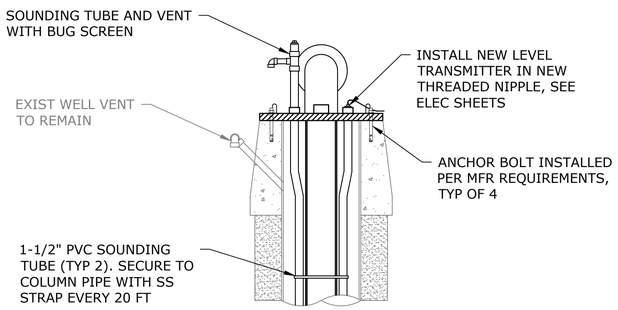
MECHANICAL

WELL SETTING DETAILS -1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
M-17

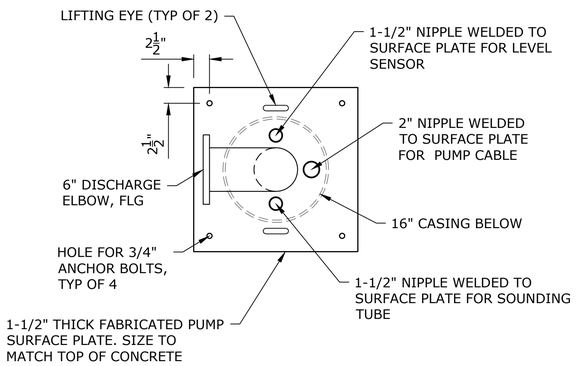
K:\TAC_Projects\21\3172 - Lacey - Westside PH Treatment\CAD\Sheets\21-3172-WA-M-14-18.dwg M-17 8/25/2023 8:40 AM JARED.CLOUD 23.0s (LMS Tech)



NOTE:
1. DISCHARGE PIPING AND JUNCTION BOX NOT SHOWN FOR CLARITY

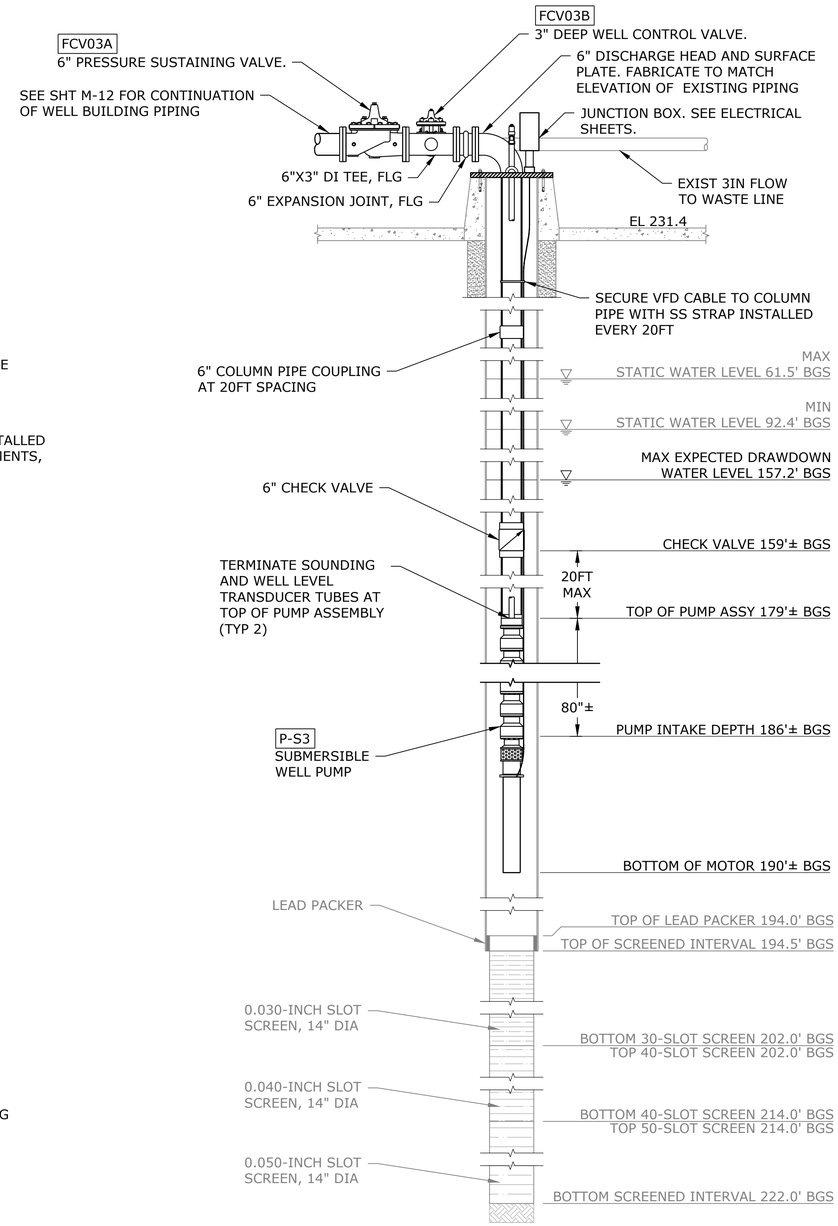
S03 WELLHEAD MODIFICATIONS (1 / M-12)

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



S03 SURFACE PLATE (2 / M-12)

SCALE: 1" = 1'-0"



S03 WELL PUMP SETTING (3 / M-12)

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

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SWW DESIGNED
SWW DRAWN
NCR CHECKED

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

MECHANICAL

WELL SETTING DETAILS - 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
M-18

GENERAL NOTES

1. ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE. INSTALLATION DRAWINGS, CONSTRUCTION SPECIFICATIONS AND LOCAL CODES. ALL MATERIALS SHALL BE NEW AND LISTED BY THE UNDERWRITERS' LABORATORY INC. (UL). ALL ELECTRICAL WORK SHALL BE INSTALLED IN A GOOD AND WORKMANLIKE MANNER.
2. REFER TO THE ELECTRICAL CIRCUIT SCHEDULE FOR CIRCUIT IDENTIFICATIONS, ROUTING, CONDUCTOR SIZES, ETC.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER DISCIPLINES AS REQUIRED TO MITIGATE INTERFERENCES.
4. CONDUIT MATERIAL SHOWN ON ELECTRICAL PLANS ARE SPECIFIC FOR THE LOCATION WHERE THE CONDUIT STARTS. CONTRACTOR IS RESPONSIBLE FOR TRANSITIONING TO APPROVED CONDUIT MATERIAL BASED ON LOCATION AND IN ACCORDANCE TO ELECTRICAL SPECIFICATIONS.

SYMBOLS

- NEW ELECTRICAL EQUIPMENT
- EXISTING ELECTRICAL EQUIPMENT
- EQUIPMENT TO BE DEMO'D OR REMOVED
- SURFACE MOUNTED LED LUMINAIRE *
- RECESSED MOUNTED LED LUMINAIRE *
- WALL MOUNTED LED LUMINAIRE *
- * SHADED LUMINAIRE INDICATES BATTERY BACKED UNIT
- WALL MOUNTED EXIT SIGN
- CEILING MOUNTED EXIT SIGN
- $ $3 — WALL SWITCH STANDARD TOGGLE, DESIGNATOR 3 = 3-WAY, D = DIMMER, T = TIMER
- $2 — MOTOR RATED 2-POLE SWITCH
- GFI — DUPLEX, QUADPLEX RECEPTACLE, W/DESIGNATOR; GFI = GROUND FAULT INTERRUPTING; WP = WEATHERPROOF; +48 = HEIGHT AFF.
- M — METERBASE W/UTILITY METER
- DISCONNECT RECEPTACLE AND PLUG
- SPECIAL EQUIPMENT CONNECTION AS SHOWN
- MOTOR CONNECTION, HORSEPOWER INDICATED
- J — JUNCTION BOX
- 20A, 30A — DISCONNECT SWITCH, AMPERAGE RATING SHOWN
- F 60/40 — FUSED DISCONNECT SWITCH, SWITCH AND FUSE RATING SHOWN 60/40 = 60A SWITCH WITH 40A FUSE
- 5A — FUSE, SIZE SHOWN
- THERMAL MAGNETIC CIRCUIT BREAKER
- 30AC 150AT — MAGNETIC ONLY CIRCUIT BREAKER (MOTOR CIRCUITS ONLY) CONTINUOUS CURRENT RATING AND TRIP SETTINGS SHOWN
- 2 — MOTOR STARTER, SIZE SHOWN
- VFD — VARIABLE FREQUENCY DRIVE (AFE DESIGNATES ACTIVE FRONT END)
- LINE OR LOAD REACTOR, IMPEDENCE SHOWN
- T — TRANSFORMER
- SPD — SURGE PROTECTIVE DEVICE
- CURRENT TRANSFORMER
- GROUND ROD
- GROUND ROD TEST WELL
- AUTOMATIC TRANSFER SWITCH
- DOUBLE THROW SWITCH
- GROUND CONNECTION PER NEC ARTICLE 250
- CR — 120V CONTROL RELAY, DPDT MINIMUM
- CR — 24VDC CONTROL RELAY, DPDT MINIMUM
- RELAY CONTACT - NO, NC
- PUSHBUTTON OR SWITCH CONTACT BLOCK - NO, NC
- HAND OFF AUTO — THREE POSITION SWITCH
- ON OFF — TWO POSITION SWITCH, KEYED
- R — PUSH-TO-TEST LED PILOT LIGHT
- FLOAT SWITCH - NO, NC
- TEMPERATURE SWITCH - NO, NC
- LIMIT SWITCH - NO, NC
- TIME DELAY CONTACTS, NORMALLY OPEN TIMED CLOSED NORMALLY CLOSED TIMED OPEN
- ETM — ELAPSED TIME METER
- CNT — COUNTER
- FU 1A — FUSED TERMINAL, SIZE SHOWN
- FIELD TERMINAL
- LOCAL TERMINAL OR LUG CONNECTION
- S — SMOKE/HEAT DETECTOR
- I — INTRUSION SWITCH
- T — THERMOSTAT/TEMPERATURE TRANSMITTER
- MD — MOTION DETECTOR/OCCUPANCY SENSOR
- CONDUIT SEAL-OFF
- CONDUIT CONCEALED UNDERFLOOR OR UNDERGROUND
- CONDUIT CONCEALED IN WALL OR ABOVE CEILING IN FINISHED AREAS, EXPOSED IN PROCESS AND EQUIPMENT AREAS.
- CONDUIT UP
- CONDUIT DOWN
- CONDUIT UP FROM UNDERGROUND RACEWAY
- CONDUIT STUB
- FLEXIBLE CONDUIT OR MFR CABLE
- XXX — HOME RUN, ELECTRICAL PANEL DESTINATION SHOWN.

1. RUNS MARKED WITH CROSS-HATCHES INDICATE NUMBER OF NO.12 WIRE. LARGER GAUGES ARE SHOWN OR NOTED ELSEWHERE. LONG CROSS HATCH INDICATES NEUTRAL, SHORT INDICATES PHASE CONDUCTOR, SLANT INDICATES GROUND WIRE PER NEC ARTICLE 250.
2. FOR UNMARKED CONDUIT RUNS, CONTRACTOR SHALL INSTALL REQUIRED NUMBER OF WIRES FOR POWER AND/OR CONTROL OF ELEMENTS IN CIRCUIT(S) SHOWN. SIZE OF WIRE SHALL BE NO. 12, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
3. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
4. DASHED LINE INDICATE CONDUITS CONCEALED UNDERGROUND OR UNDERFLOOR.
5. SOLID HOME RUN INDICATES CONDUIT ABOVE CEILING IN FINISHED AREA, CONCEALED IN WALL OR EXPOSED IN PROCESS AND EQUIPMENT AREAS.

- P1 — ELECTRICAL CIRCUIT IDENTIFICATION
- P1 P2 / C1 C2 — MULTIPLE ELECTRICAL CIRCUITS, SEPARATE CONDUITS
- 1"C P1 P2 / P3 P4 — MULTIPLE ELECTRICAL CIRCUITS, COMMON CONDUIT (SIZE SHOWN)

ABBREVIATIONS

a	CIRCUIT BREAKER AUX. CONTACT, CLOSED WHEN BREAKER IS CLOSED
A	AMMETER, AMPERES
AC	ALTERNATING CURRENT
A/D	ANALOG TO DIGITAL
AF	AMPERE FRAME
AFE	ACTIVE FRONT END (VFD)
AIC	AMPERES INTERRUPTING CAPACITY
ALT	ALTERNATOR
A/M	AUTO/MANUAL CONTROLLER
ANN	ANNUNCIATOR
AS	AMMETER SWITCH
ASD	ADJUSTABLE SPEED DRIVE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAGE
b	CIRCUIT BREAKER AUX. CONTACT, CLOSED WHEN BREAKER IS OPEN
BCG	BARE COPPER GROUND
C	CONDUIT, CONTACTOR
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CC	CONTROL CABLE, CLOSING COIL
CHH	COMMUNICATION HANDHOLE
CL	CHLORINE
CKT	CIRCUIT
CMH	COMMUNICATION MANHOLE
CO	CONDUIT ONLY
COMM	COMMUNICATION
CON	CONTACTOR
COND	CONDUCTOR
CONT	CONTINUED, CONTINUATION
CPT	CONTROL POWER TRANSFORMER
CP	CONTROL PANEL
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CWP	COLD WATER PIPE
DC	DIRECT CURRENT
DIAG	DIAGRAM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DP	DISTRIBUTION PANEL
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
(E)	EXISTING
EF	EXHAUST FAN
EHH	ELECTRICAL HANDHOLE
ELEM	ELEMENTARY
EMERG	EMERGENCY
EFFL	EFFLUENT
EQ	EQUAL
EQUIP	EQUIPMENT
ETM	ELAPSED TIME METER
FACP	FIRE ALARM CONTROL PANEL
FIN FL	FINISHED FLOOR
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
FO	FIBER OPTIC
FREQ	FREQUENCY
FU	FUSE
FUT	FUTURE
FVNR	FULL VOLTAGE, NON REVERSING
FVR	FULL VOLTAGE, REVERSING
FWD	FORWARD
GA	GAUGE
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GRS	GALVANIZED RIGID STEEL
H_2O_2	HYDROGEN PEROXIDE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTOMATIC
HOR	HAND-OFF-REMOTE
HORZ	HORIZONTAL
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
HZ	HERTZ (CYCLES PER SECOND)
IND LT	INDICATING LIGHT
INCAND	INCANDESCENT
I/O	INPUT/OUTPUT
JB	JUNCTION BOX
KA	KILOAMPERES
KCMIL	THOUSANDS OF CIRCULAR MILS
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KVARH	KILOVOLT AMPERES REACTIVE HOURS
KW	KILOWATTS
KWH	KILOWATT HOURS
LCP	LIGHTING CONTROL PANEL
LP	LIGHTING PANEL
LPS	LOW PRESSURE SODIUM
LTG	LIGHTING
LT(S)	LIGHT(S)
(M)	MODIFIED
Ma	MILLIAMPERES
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MOV	MOTOR OPERATED VALVE
MS	MOTOR STARTER
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
(N)	NEW
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOC.
NEUT	NEUTRAL
NO	NORMALLY OPEN, NUMBER
NTS	NOT TO SCALE
OVHD	OVERHEAD
OL	THERMAL OVERLOAD RELAY
OT	OVER TEMPERATURE
PB	PULLBOX, PUSHBUTTON
PD	POSITIVE DISPLACEMENT
PE	PHOTOELECTRIC
PEC	PHOTOELECTRIC CELL
PF	POWER FACTOR
pH	MEASURE OF ACIDITY OR ALKALINITY
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PNLBD	PANELBOARD
PRI	PRIMARY
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PWR	POWER
(RL)	RELOCATE
(RLD)	RELOCATED
RCPT	RECEPTACLE
RCT	REPEAT CYCLE TIMER
RPM	REVOLUTIONS PER MINUTE
RT	RESET TIMER
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SDBC	SOFT-DRAWN BARE COPPER
SEC	SECONDS, SECONDARY
SECT	SECTION
SF	SUPPLY FAN
SHH	SIGNAL HANDHOLE
SIG	SIGNAL
SN	SOLID NEUTRAL
SPEC	SPECIFICATIONS
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SS	STAINLESS STEEL, SOLID STATE SWITCH
SW	STATE SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYNC	SYNCHRONIZING TERMINAL
TB	BOX, TERMINAL BOARD
TC	TELEPHONE CABINET
TEMP	TEMPERATURE
TP	TWISTED PAIR UNSHIELDED
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UH	UNIT HEATER
UV	ULTRA VIOLET
V	VOLTS
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
VAR	VOLT AMPERES REACTIVE
VERT	VERTICAL
VH	VAR-HOUR
VS	VOLTMETER SWITCH
W	WIRE, WATTS
WHM	WATTHOUR METER
WHDM	WATTHOUR DEMAND METER
WP	WEATHERPROOF
WTRT	WATERTIGHT
WTP	WATER TREATMENT PLANT
XDCR	TRANSDUCER
XMTR	TRANSMITTER

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PROJECT#:21.47.01

P:\Projects\21.47.01_MSA_Lacey_Westside_pH_Treatment\DWG\21-3172-WA-E-1.dwg E-1 8/14/2023 4:47 PM ROBERTC 23.1s (LMS Tech)

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

RSC DESIGNED
RSC DRAWN
TBC CHECKED

JAMES E. MITCHELL, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER #25495
DocuSigned by: James Mitchell 3E38...46C
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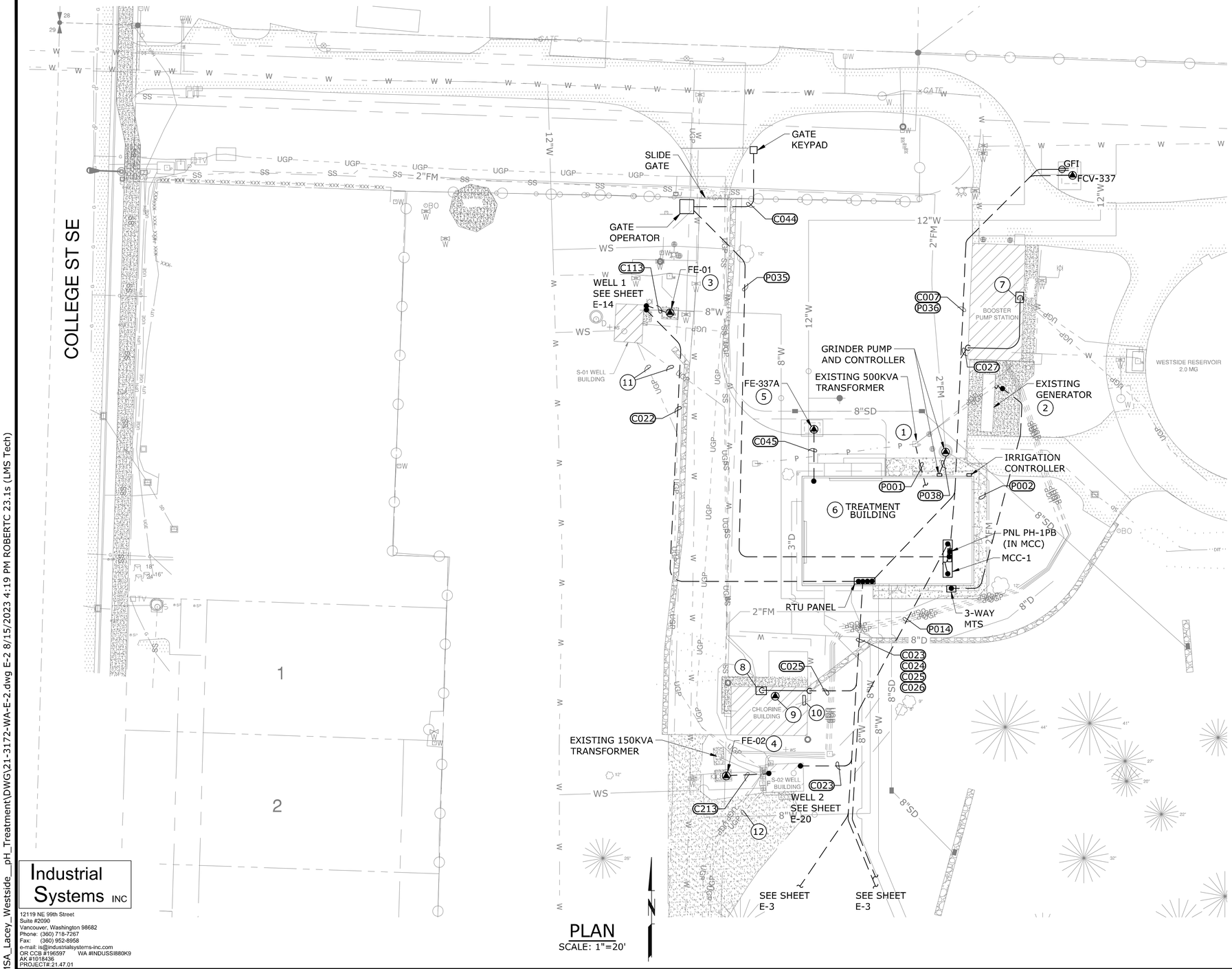
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

ELECTRICAL GENERAL NOTES AND ABBREVIATIONS

SCHEDULE B
SHEET E-1

PROJECT NO.: 21-3172 SCALE: AS SHOWN DATE: AUGUST 2023



PLAN
SCALE: 1"=20'

KEY NOTES

1. CONNECT SERVICE CONDUCTORS FOR NEW PH BUILDING TO SECONDARY OF EXISTING 500KVA CITY OWNED TRANSFORMER.
2. COMPLETE UNDERGROUND LOCATE IN THE AREA BEFORE BEGINNING WORK. EXTEND BACKUP POWER TO NEW PH BUILDING FROM EXISTING GENERATOR. SAW CUT SLAB ON EAST SIDE OF GENERATOR TO ALLOW FOR INSTALLATION OF CONDUIT FOR CIRCUIT P002. SAW CUT FROM EAST TOWARD GENERATOR UNTIL THICKENED SLAB IS ENCOUNTERED. HAND DIG UNDER SLAB AREA AND TO THE IMMEDIATE EAST OF THE SLAB AS SEVERAL EXISTING CONDUITS ARE EXPECTED IN THIS AREA. INSTALL CONDUIT JUST BELOW SLAB AND UP INSIDE TERMINATION COMPARTMENT OF GENERATOR. COORDINATE AND VERIFY LOCATION WITH MANUFACTURER OF LOCATION OF PENETRATION. USE FLEXIBLE WATER-TIGHT CONDUIT TO ROUTE OUT OF THE GROUND UP AND AROUND THE EDGE OF THE THICKENED SLAB.
3. WELL 1 FLOWMETER (FIT-01) WALL MOUNTED INTERIOR TO BUILDING. FLOW ELEMENT IN VAULT.
4. WELL 2 FLOWMETER (FIT-02) WALL MOUNTED INTERIOR TO BUILDING. FLOW ELEMENT IN VAULT.
5. 337 ZONE ENTRY POINT FLOWMETER (FIT-337A) WALL MOUNTED INTERIOR TO BUILDING. FLOW ELEMENT IN FLOWMETER VAULT.
6. SEE SHEET E-4 THROUGH E-6.
7. EXISTING BOOSTER PUMP STATION CONTROL PANEL TO BE MODIFIED. SEE SHEET E-29.
8. EXISTING CHLORINE BUILDING TELEMETRY INTERFACE BOX TO BE REPLACED WITH RIO CONTROL PANEL. SEE SHEETS E-29.
9. CONTRACTOR TO REPLACE EXISTING AC-POWERED SMOKE DETECTOR WITH NEW DC-POWERED UNIT MATCHING WELL AND TREATMENT BUILDINGS. RE-WIRE AS REQUIRED, SEE SHEET I-31.
10. EXISTING CHLORINE PUMP AND ANALYZER SKIDS TO BE REMOVED AND SALVAGED TO OWNER, SEE M-SHEETS. REMOVE EXISTING CONDUCTORS FOR POWER FEED (PNL L) AND CONTROLS FROM EXISTING CONDUITS TO EXISTING BUILDING TELEMETRY INTERFACE BOX AND CAP.
11. EXISTING MUTLI-CONDUCTOR CONTROL CABLES IN CONDUIT BETWEEN WELL BUILDING 1 AND CHLORINE BUILDING AND WELL BUILDING 1 AND WELL BUILDING 2 TO BE REMOVED AFTER NEW ETHERNET COMMUNICATIONS IS ESTABLISHED AT EACH BUILDING.
12. EXISTING MUTLI-CONDUCTOR CONTROL CABLES IN CONDUIT BETWEEN WELL BUILDING 2 AND WELL BUILDING 3 TO BE REMOVED AFTER NEW ETHERNET COMMUNICATIONS IS ESTABLISHED AT EACH BUILDING.

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JSC DRAWN
TBC CHECKED

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Digitally signed by James Mitchell
233E38[illegible]46C
8/15/2023

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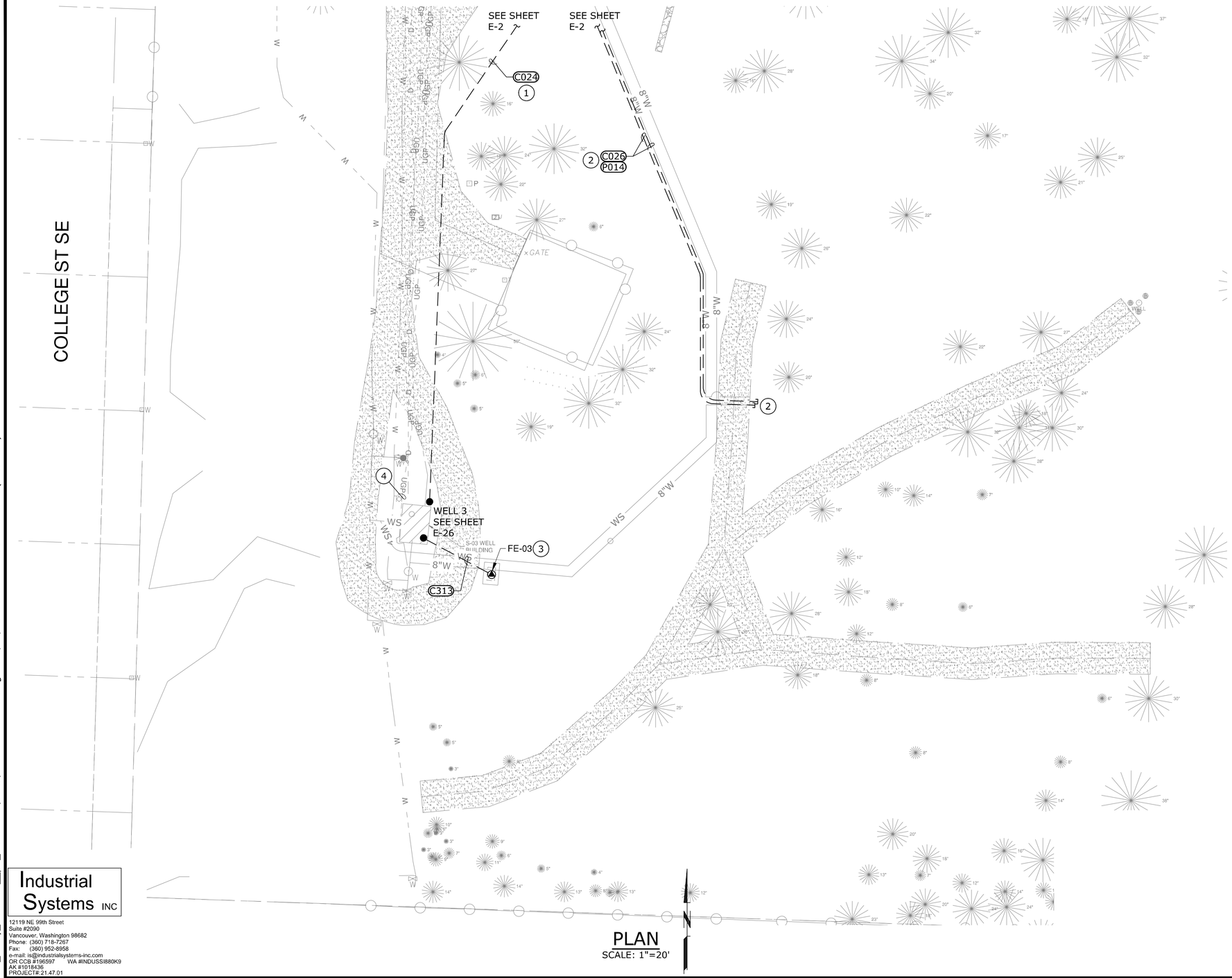
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

SITE PLAN NEW ELECTRICAL SHEET 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-2



PLAN
SCALE: 1"=20'

KEY NOTES

1. CONDUIT ROUTED FROM PH BUILDING TO WELL #3 FOR ETHERNET COMMUNICATIONS.
2. CONDUITS ROUTED FROM PH BUILDING TO FUTURE WELL AREA. STUB AND CAP CONDUIT FOR FUTURE COMMUNICATIONS AND POWER.
3. WELL 3 FLOWMETER (FIT-03) WALL MOUNTED INTERIOR TO BUILDING. FLOW ELEMENT IN VAULT.
4. EXISTING MUTLI-CONDUCTOR CONTROL CABLES IN CONDUIT BETWEEN WELL BUILDING 2 AND WELL BUILDING 3 TO BE REMOVED AFTER NEW ETHERNET COMMUNICATIONS IS ESTABLISHED AT EACH BUILDING.

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Docusigned by: James Mitchell 8/15/2023

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CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

SITE PLAN NEW ELECTRICAL SHEET 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-3

(E) 12.5KV PRIMARY FEEDER

(E) CITY OWNED PRIMARY JUNCTION VAULT

(E) 12.5KV PRIMARY FEEDER

(E) TO SERVICE DISCONNECT FUSED SWITCH

(E) CITY OWNED XFMR 500KVA 12.47KV-480Y/277V 3ø. 4W Z%=2.3%

(E) CITY OWNED XFMR 150KVA 12.47KV-480Y/277V 3ø. 4W Z%=1.7%

(E) BOOSTER BUILDING

E N L 600A 600AF 500AT BLDG LOADS

E N L 400A 400AF 400AT

(E) FEEDERS

(E) FEEDERS

3

(E) WELL NO. 2 EXTERIOR WALL

POWER DIST. ENCLOSURE

400A

100A 100A 200A 100A

(E) FEEDERS

(E) FEEDER

(E)CL2 TREATMENT BLDG

(E)WELL SOURCE 01

(E)WELL SOURCE 02

(E)WELL SOURCE 03

GENERATOR BREAKERS

400AF 400AT

400AF 400AT

4

800AF 700AT

(E) 500KW DIESEL STANDBY GENERATOR 480Y/277V, 3Ø, 4W

P001

P002

P003

3-WAY MTS

800A 400A 1 400A

PORTABLE LOAD BANK CONNECTION

PORTABLE GENERATOR CONNECTION

400A LSI 1

E N L

1/0 AWG BTCW (TYP)

G N

PH TREATMENT BUILDING

MCC-1, NEMA 12, 480VAC, 600A, 3ϕ, 4W, 42kAIC

2 POWER MONITOR

2 SPD

70A 3P

30KVA 480-208Y/120V 3Ø, 4W

100A 3P

PNL 'PH-1PB' 225A, 208Y/120 3ϕ, 4W 42 CKT

SP

60A 3P

2 AFE VFD

2 AFE VFD

2 5% VFD

2 AFE VFD

2 AFE VFD

2 5% VFD

TO EXISTING SITE ELECTRODE SYSTEM

1/0 AWG BTCW (TYP)

GND BAR

3/4"x10' GROUND RODS

WATER PIPE

BUILDING REBAR

GROUND RODS 20'-0" MIN. SPACING

P005

VENTILATION CONTROL PANEL

P009 P007 P011 P012 P010 P013 P008 P021 P015 P016 P017 P018 P019 P020

P037 P038

1/4 EF-1 EXHAUST FAN

1/4 EF-2 EXHAUST FAN

2 AH-1 TREATMENT ROOM

2 AH-2 BLOWER ROOM

2 AH-3 ELECT ROOM

2 AH-4 REST ROOM

2 AH-5 STORAGE ROOM

WH-1 WATER HEATER

60A HPU-1 HEAT PUMP

60A HPU-2 HEAT PUMP

20 B-1 BLOWER 1

20 B-2 BLOWER 2

10 B-3 BLOWER 3

40 P-T1 TREATED WATER PUMP 1

40 P-T2 TREATED WATER PUMP 2

15 P-T3 TREATED WATER PUMP 3

GENERAL NOTES

1. ALL GROUNDING TO BE PER NEC ARTICLE 250.
2. ARC FLASH STUDY AND LABELING TO BE PERFORMED. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

KEY NOTES

1. PROVIDE WARNING SIGN READING "UTILITY SERVICE DISCONNECT DOES NOT DISCONNECT GENERATOR".
2. OVERCURRENT DEVICE AND SIZE FOR EQUIPMENT TO BE PROVIDED PER MFR. RECOMMENDATIONS.
3. NEW CONNECTION TO EXISTING TRANSFORMER. CONTRACTOR TO VERIFY SECONDARY LUG CONNECTIONS AND PROVIDE IF REQUIRED.
4. INSTALL AND CONNECT NEW 3-WAY 800A MANUAL TRANSFER SWITCH TO EXISTING LOAD BANK CIRCUIT BREAKER.

LOAD SUMMARY

Voltage		480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
1	BLOWER 1	22.45	20.00	27.0
1	BLOWER 2	22.45	20.00	27.0
1	BLOWER 3	11.64	10.00	14.0
1	TREATED WATER PUMP 1	43.23	40.00	52.0
1	TREATED WATER PUMP 2	43.23	40.00	52.0
1	TREATED WATER PUMP 3	17.46	15.00	21.0
	NON MOTOR LOADS			
1	TRANSFORMER	30.0		36.0
1	WATER HEATER	36.0		43.0
	SUBTOTAL		145.0	272.0
	LARGEST MOTOR X 25%	10.81		13.0
	NON-MOTOR LOADS X 25%	7.48		9.0
	SPARE CAPACITY (20%)	45.23		54.4
	TOTAL			348.4

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NO.	DATE	BY	REVISION

NOTICE

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RSC DESIGNED

RSC DRAWN

TBC CHECKED

JAMES E. MITCHELL STATE OF WASHINGTON #25495 REGISTERED PROFESSIONAL ENGINEER

Registered PE
James Mitchell
433E381[illegible]6C...
8/15/2023

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CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

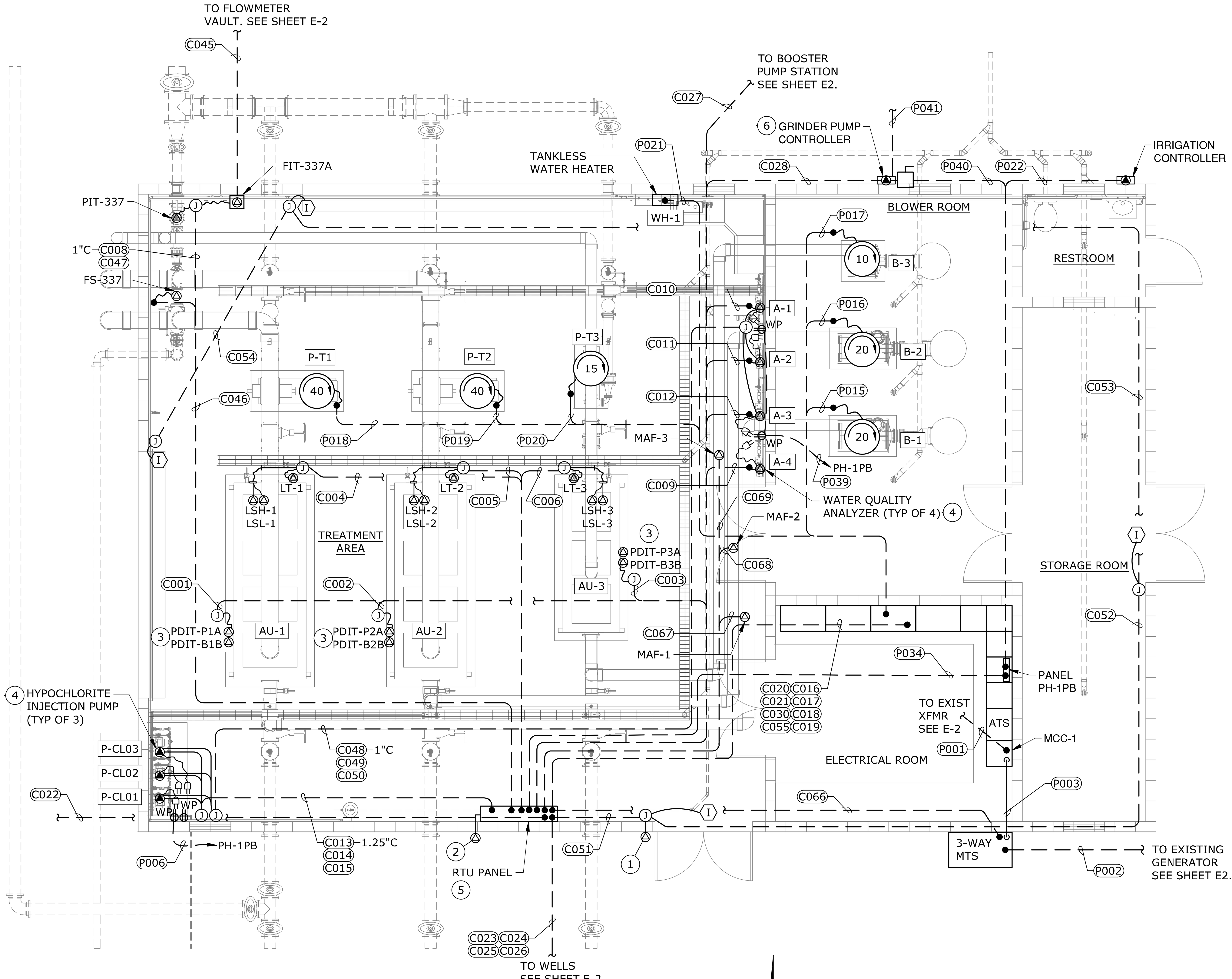
ONE-LINE DIAGRAM & LOAD SUMMARY pH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-4

KEY NOTES

1. BUILDING INTRUSION BYPASS SWITCH.
2. RTU PANEL CELL MODEM ANTENNA TO BE MOUNTED ON EXTERIOR OF BUILDING. SEE SHEET E-7.
3. MOUNT VENDOR SUPPLIED AIR PRESSURE DISPLAY BOARD FOR FILTER AND AERATOR PRESSURE ON AERATION UNITS.
4. SEE SHEET DETAIL 2/E-11 FOR INJECTION PUMP W/REMOTE STATION AND ANALYZER CONTROL DETAILS.
5. SEE I-2 FOR RTU PANEL.
6. GRINDER PUMP CONTROL PANEL PER CITY STD DWGS 7-40.1 & 7-40.2, SEE SHEET E-7.



BUILDING PLAN

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

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BUILDING ELECTRICAL PLAN
PH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

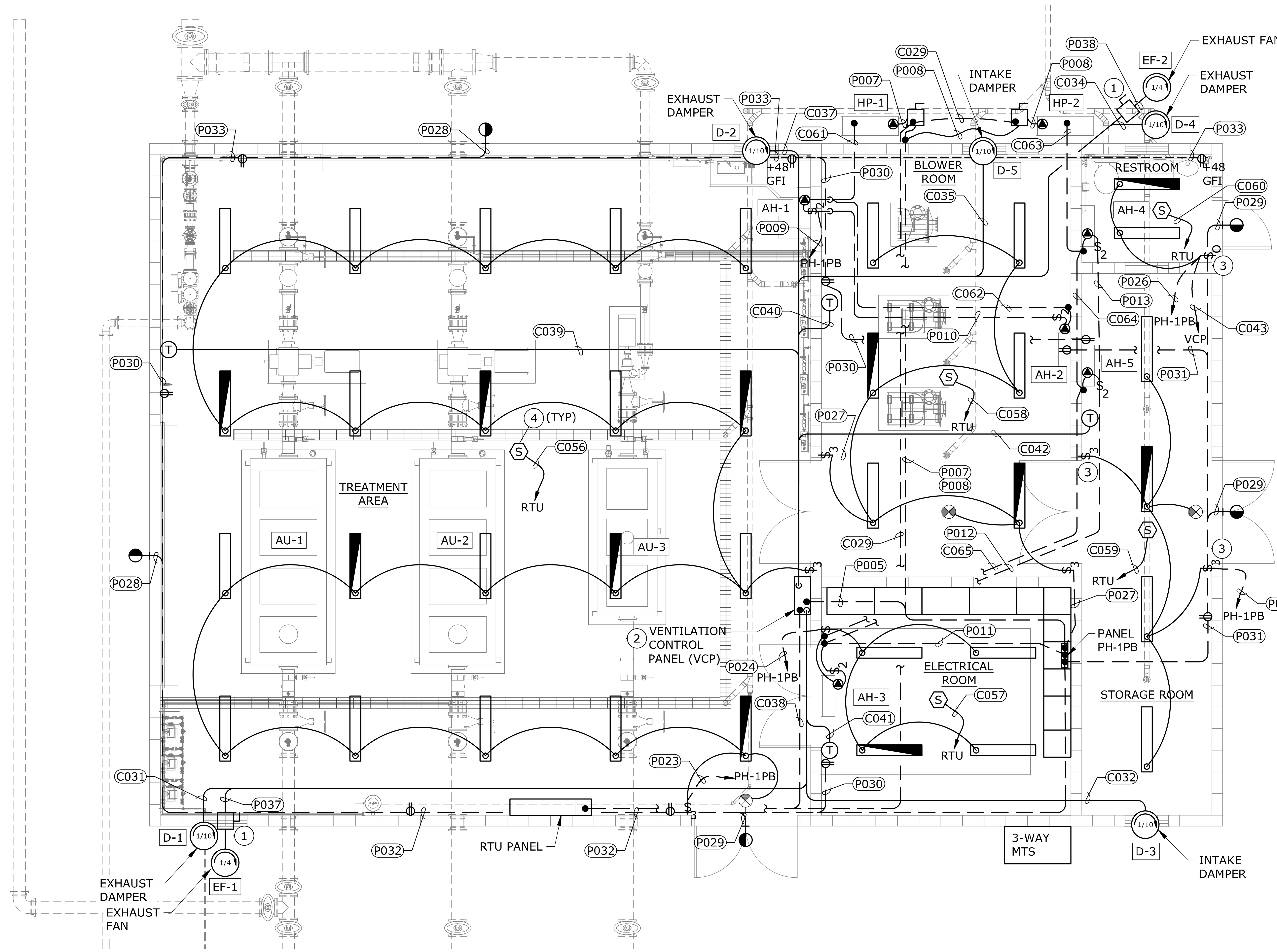
SCHEDULE B
SHEET
E-5

GENERAL NOTES

1. SEE SHEET E-8, E-9, AND E-10 FOR LUMINAIRE, PANEL AND CIRCUIT SCHEDULES.
2. ALL CONDUITS TO BE ROUTED UNDERGROUND, IN-SLAB, OR CONCEALED WHEREVER POSSIBLE OR PRACTICAL.
3. ALL "IN-WALL" CONDUIT TO BE GRS. UNDERSLAB CONDUIT MAY BE PVC, UNLESS OTHERWISE NOTED.
4. ALL RECEPTACLES TO BE LOCATED 18" AFF, UNLESS OTHERWISE NOTED.
5. ROUTE UN-SWITCHED POWER CIRCUIT TO ALL BATTERY BACKED LUMINAIRES.
6. TOTAL LIGHTING LOAD 1453.8 VA
7. EXCEPT FOR THE BATHROOM AND STORAGE ROOM; PURSUANT TO WSEC SECTION C405.2.5 EXCEPTION #4, THE INTERIOR LIGHTING IS EXEMPT FROM AUTOMATED LIGHTING CONTROLS TO ENSURE SAFETY OF OPERATIONS PERSONNEL. THE BATHROOM AND STORAGE ROOM WILL HAVE LOCAL CONTROLS TO PROVIDE MANUAL "ON-OFF" AND FULL RANGE DIMMING TRIGGERED BY A SWITCH MOUNTED OCCUPANCY SENSOR WITH AUTOMATIC TURN OFF SET AT 30 MINUTES OF OCCUPANTS LEAVING THE SPACE.

KEY NOTES

1. EXHAUST FAN DISCONNECT TO BE PROVIDED IF NOT INTEGRAL TO EXHAUST FAN UNIT.
2. SEE I-33 FOR VENTILATION CONTROL PANEL.
3. SWITCH TO BE PROVIDED WITH OCCUPANCY AND FAN RELAY OPTIONS.
4. 4-WIRE SMOKE DETECTOR WITH FORM 'C' RELAY, SYSTEM SENSOR 4WTAR-B, SIMPLEX 4098-9602 W/ 4098-9682 BASE OR AS APPROVED. PROVIDE WITH END-OF-LINE RESISTORS AS REQUIRED.



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

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DocuSigned by: James E. Mitchell
8/2023

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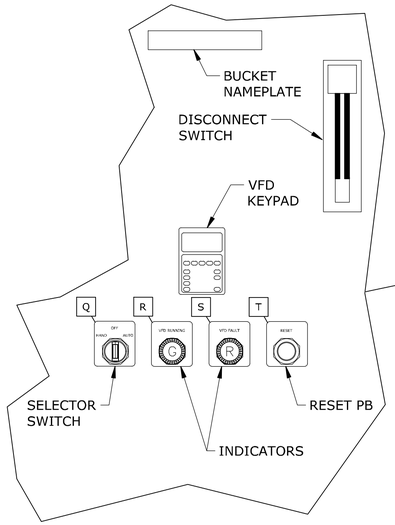
CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

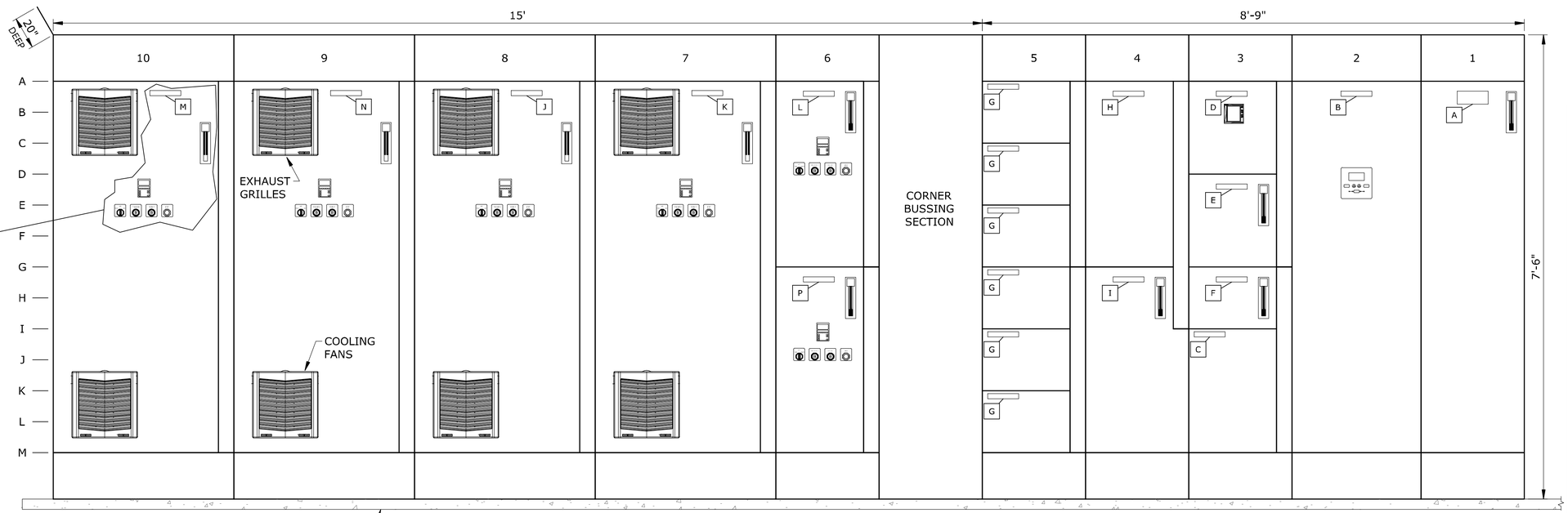
BUILDING ELECTRICAL
HVAC AND LIGHTING PLAN
PH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-6



DETAIL (TYP 6)

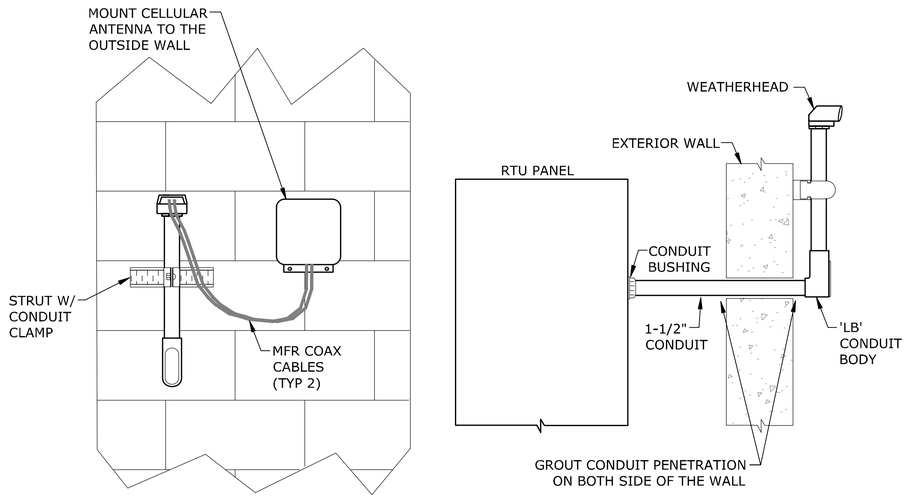


MCC ELEVATION (1/-)
SCALE: NONE

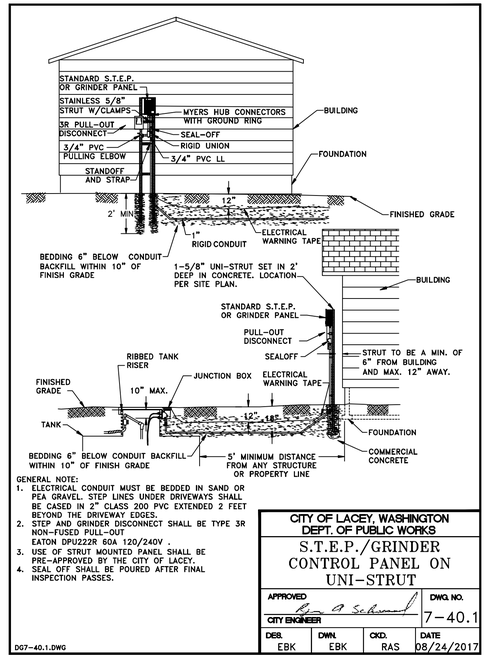
A	ITEM	NAMEPLATE SCHEDULE
	A	MCC MAIN DISCONNECT - UTILITY SERVICE DISCONNECT DOES NOT DISCONNECT GENERATOR
	B	AUTOMATIC TRANSFER SWITCH
	C	MAIN LUGS
	D	POWER MONITOR
	E	SURGE PROTECTIVE DEVICE
	F	HOT WATER HEATER WH-1
	G	SPACE
	H	LIGHTING PANEL "PH-1PB"
	I	PANEL "PH-1PB" XFMR
	J	BLOWER 1 (B-1) VFD
	K	BLOWER 2 (B-2) VFD
	L	BLOWER 3 (B-3) VFD
	M	TREATED WATER PUMP 1 (P-T1) VFD PANEL
	N	TREATED WATER PUMP 2 (P-T2) VFD PANEL
	P	TREATED WATER PUMP 3 (P-T3) VFD PANEL
	Q	HAND / OFF / AUTO
	R	VFD RUNNING
	S	VFD FAULT
	T	RESET

GENERAL NOTES

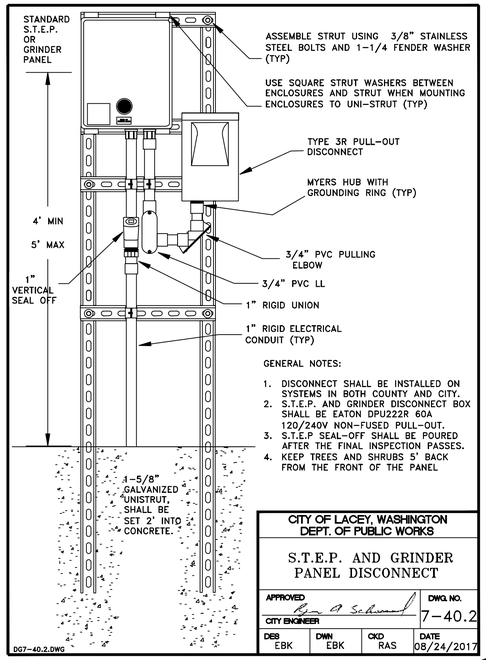
1. SEE SHEET DETAIL 1/E-11 FOR MCC VFD CONTROL WIRING DIAGRAM.



CELL ANTENNA INSTALLATION DETAIL (2/-)
SCALE: NONE



CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS
S.T.E.P./GRINDER CONTROL PANEL ON UNI-STRUT
APPROVED: CITY ENGINEER
DWG. NO. 7-40.1
DES. EBK | DWN. EBK | CKD. RAS | DATE 08/24/2017



CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS
S.T.E.P. AND GRINDER PANEL DISCONNECT
APPROVED: CITY ENGINEER
DWG. NO. 7-40.2
DES. EBK | DWN. EBK | CKD. RAS | DATE 08/24/2017

GRINDER PANEL DISCONNECT AND CONTROL PANEL DETAILS (3/-)
SCALE: NONE

Industrial Systems INC
12119 NE 99th Street
Suite #2090
Vancouver, Washington 98682
Phone: (360) 718-7267
Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

JSC DESIGNED
JSC DRAWN
TBC CHECKED

JAMES E. MITCHELL — STATE OF WASHINGTON — #25495 — REGISTERED PROFESSIONAL ENGINEER — 8/15/2023

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CITY OF LACEY

CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

SECTIONS AND DETAILS pH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-7

LUMINAIRE AND RECEPTACLE SCHEDULE				
DEVICE/LOCATION/USE	DESCRIPTION	VOLTS	WATTS	SUGGESTED MANUFACTURER & CATALOG NUMBER
BUILDING INTERIOR LIGHT	4064 LUMEN LED LUMINAIRE FEM SERIES 48"	120V	23.8	LITHONIA FEM L48 4000LM IMAFL MD MVOLT GZ10 40K 80CRI OR EQUAL
BUILDING INTERIOR LIGHT, BATTERY BACKED	4064 LUMEN LED LUMINAIRE FEM SERIES 48" WITH BUILT IN BATTERY BACKUP	120V	23.8	LITHONIA FEM L48 4000LM IMAFL MD MVOLT GZ10 40K 80CRI WITH E10WMCP OR EQUAL
WALL MOUNT LUMINAIRE LED TYPE INTERIOR/EXTERIOR	3,132 LUMEN LED LUMINAIRE WALL PACK DESIGN WITH BUILT IN BATTERY BACKUP AND PHOTOCELL.	120V	18	LITHONIA WDGE2 LED P3 40K 80CRI T2M MVOLT SRM PE E10WH DBLXD OR EQUAL
CEILING MOUNTED EXIT SIGN	SELF-CONTAINED BATTERY EMERGENCY EXIT LIGHT FIXTURE RED EXIT SIGN	120V	1.0	LITHONIA EXR LED EL M6 OR EQUAL
WALL MOUNTED EXIT SIGN	SELF-CONTAINED BATTERY EMERGENCY EXIT LIGHT FIXTURE RED EXIT SIGN WALL MOUNT	120V	1.0	LITHONIA EXR LED EL M6 OR EQUAL
GFCI RECEPTACLE	RECEPTACLE, 20A, 120V, MOUNTED IN UL LISTED HOUSING	120V	-	HUBBELL STD RECEPTACLE HBL5362W OR EQUAL HUBBELL GFCI RECEPTACLE GFR5362SGW OR EQUAL WHEATHERPROOF HOUSING HUBBELL MX-3200 OR EQUAL
ON/OFF 3 WAY SWITCH	SENSOR SWITCH, 3 WAY CAPABLE LIGHT SWITCH	-	-	SENSOR SWITCH SPODMR WR WH
ON/OFF OCCUPANCY SWITCH	ON/OFF WALL SWITCH W/ SMALL MOTION DUAL TECHNOLOGY (PDT) DETECTION W/ SELF CONTAINED RELAYS FOR LUMINAIRE AND FAN.	-	-	SENSOR SWITCH WSX PDT 2P FAN WH

LUMINAIRE SCHEDULE 1/-
SCALE: NONE

PANEL: PNL-PH-1PB	VOLTAGE: 208Y/120, 3PH, 4 WIRE	MOUNTING: IN MOTOR CONTROL CENTER
LOCATION: Ph TREATMENT BUILDING (IN MCC-1)	BUS: 225A COPPER	AIC: 10,000
FEEDER: SEE POWER RISER	MAIN: 100A	

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	LOAD VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	TREATMENT AREA LIGHTING	1	20	476	A	720	1	20	OUTLETS WEST	2
3	ELECTRICAL ROOM LIGHTING	1	20	95.2	B	360	1	20	OUTLETS EAST	4
5	STORAGE ROOM LIGHTING	1	20	95.2	C	360	1	20	OUTLETS SOUTH	6
7	RESTROOM LIGHTING	1	20	47.6	A	540	1	20	OUTLETS NORTH	8
9	BLOWER ROOM LIGHTING	1	20	142.8	B		1	20	SPARE	10
11	EXTERIOR NORTH/WEST LIGHTING	1	20	36	C	54	1	20	EXTERIOR EAST/SOUTH LIGHTING	12
13	RTU PANEL	1	20	800	A	3448	2	40	HEAT PUMP 1	14
15	VENTILATION CONTROL PANEL	1	20	1179.5	B	3448				16
17	IRRIGATION CONTROLLER	1	20	250	C	104	2	20	AIR HANDLER AH-1 & 2	18
19	GRINDER PUMP STATION CONTROLLER	1	30	1250	A	104				20
21	SPARE	1	20		B	3448	2	40	HEAT PUMP 2	22
23	ENTRANCE GATE CONTROLLER	1	20	1440	C	3448				24
25					A	91.52	2	20	AIR HANDLER AH-3,4,5	26
27					B	91.52				28
29					C					30
31					A					32
33					B					34
35					C					36
37					A					38
39					B					40
41					C					42

LOAD PER PHASE		
PHASE A	7.5	KVA
PHASE B	8.8	KVA
PHASE C	5.8	KVA

TOTAL LOAD	22.0	KVA
TOTAL AMPS	61	AMPS

PANEL PH-1PB SCHEDULE 2/-
SCALE: NONE

Industrial Systems INC
12119 NE 99th Street
Suite #2090
Vancouver, Washington 98682
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Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
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PROJECT#:21.47.01

NO.	DATE	BY	REVISION

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RSC DESIGNED
JSC DRAWN
TBC CHECKED

JAMES E. MITCHELL — STATE OF WASHINGTON — #25495 — REGISTERED PROFESSIONAL ENGINEER
Docusigned by: James Mitchell 283E3812...
8/28/2023

consor

Shaping our community together
CITY OF LACEY

CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

SCHEDULES
pH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-8

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE DIAMOND SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
P001	EXISTING 500 KVA TRANSFORMER	400 AMP ATS	(6) 3/0 AWG, P (2) 3/0 AWG, N (2) 1/0 AWG, G	(2) 2"	400 AMP SERVICE
P002	EXISTING GENERATOR	3 WAY MTS	(3) 500KCMIL, P (2) 500KCMIL, N (2) 2/0 AWG G	(2) 4"	
P003	3 WAY MTS	400 AMP ATS	(6) 3/0 AWG, P (2) 3/0 AWG, N (2) 1/0 AWG, G	(2) 2"	
P004	UNUSED				
* P005	PNL PH-1PB	VENTILATION CONTROL PANEL	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P006	PNL PH-1PB	CHLORINE PUMP RECEPTACLES	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
* P007	PNL PH-1PB	HEAT PUMP HPU 1	(2) #8 AWG, P (1) #10 AWG, G	3/4"	
* P008	PNL PH-1PB	HEAT PUMP HPU 2	(2) #8 AWG, P (1) #10 AWG, G	3/4"	
P009	PNL PH-1PB	AIR HANDLER AH 1	(2) #12 AWG, P (1) #12 AWG, G	3/4"	PH-1PB CIRCUIT POWERS AH 1 AND AH 2 DAISY CHAIN POWER
P010	AIR HANDLER AH 1	AIR HANDLER AH 2	(2) #12 AWG, P (1) #12 AWG, G	3/4"	
P011	PNL PH-1PB	AIR HANDLER AH 3	(2) #12 AWG, P (1) #12 AWG, G	3/4"	PH-1PB CIRCUIT POWERS AH 3, AH 4 AND AH 5 DAISY CHAIN POWER
P012	AIR HANDLER AH 3	AIR HANDLER AH 5	(2) #12 AWG, P (1) #12 AWG, G	3/4"	
P013	AIR HANDLER AH 5	AIR HANDLER AH 4	(2) #12 AWG, P (1) #12 AWG, G	3/4"	
P014	MCC 1	AREA OF FUTURE WELL SITE	PULL CORD	2"	
P015	MCC 1	BLOWER B-1	(3) #10 AWG, P (3) #16 AWG, G	1"	VFD CABLE
P016	MCC 1	BLOWER B-2	(3) #12 AWG, P (3) #16 AWG, G	1"	VFD CABLE
P017	MCC 1	BLOWER B-3	(3) #12 AWG, P (3) #16 AWG, G	1"	VFD CABLE
P018	MCC 1	PUMP P-T1	(3) 6 AWG, P (1) 6 AWG, G	1 1/2"	VFD CABLE
P019	MCC 1	PUMP P-T2	(3) 6 AWG, P (1) 6 AWG, G	1 1/2"	VFD CABLE
P020	MCC 1	PUMP P-T3	(3) #10 AWG, P (1) #10 AWG, G	1"	VFD CABLE
P021	MCC 1	WATER HEATER WH-1	(3) 6 AWG, P (1) #10 AWG, G	1"	36 KW WATER HEATER
P022	PNL PH-1PB	IRRIGATION CONTROLLER	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P023	PNL PH-1PB	LIGHTING TREATMENT AREA	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P024	PNL PH-1PB	LIGHTING ELECTRICAL ROOM	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P025	PNL PH-1PB	LIGHTING STORAGE ROOM	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P026	PNL PH-1PB	LIGHTING RESTROOM	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P027	PNL PH-1PB	LIGHTING BLOWER ROOM	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P028	PNL PH-1PB	LIGHTING EXTERIOR NORTH/WEST	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P029	PNL PH-1PB	LIGHTING EXTERIOR SOUTH/EAST	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P030	PNL PH-1PB	OUTLETS WEST	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P031	PNL PH-1PB	OUTLETS EAST	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P032	PNL PH-1PB	OUTLETS SOUTH	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P033	PNL PH-1PB	OUTLETS NORTH	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P034	PNL PH-1PB	RTU PANEL	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P035	PNL PH-1PB	ENTRANCE GATE OPERATOR	(1) #10 AWG, P (1) #10 AWG, N (1) #10 AWG, G	1"	
P036	PNL PH-1PB	CONTROL VALVE VAULT RECEPTACLE	(1) #10 AWG, P (1) #10 AWG, N (1) #10 AWG, G	1"	
P037	VENTILATION CONTROL PANEL	EXHAUST FAN 1	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P038	VENTILATION CONTROL PANEL	EXHAUST FAN 2	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P039	PNL PH-1PB	CHLORINE ANALYZER RECEPTACLES	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
* P040	PNL PH-1PB	GRINDER PUMP STATION CONTROLLER	(1) #10 AWG, P (1) #10 AWG, N (1) #10 AWG, G	3/4"	
* P041	GRINDER PUMP STATION CONTROLLER	GRINDER PUMP STATION PUMP CONNECTION	(1) 6-#12 COND TC CABLE	1"	COORDINATE WITH MFR.

CIRCUIT SCHEDULE (1 / -)

SCALE: NONE

Industrial Systems INC
12119 NE 99th Street
Suite #2090
Vancouver, Washington 98682
Phone: (360) 718-7267
Fax: (360) 952-8958
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OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#: 21.47.01

NO.	DATE	BY	REVISION

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RSC DESIGNED
JSC DRAWN
TBC CHECKED

JAMES E. MITCHELL
STATE OF WASHINGTON
#25495
REGISTERED PROFESSIONAL ENGINEER
DocuSigned by:
8/2023

consor

CITY OF LACEY
Shaping our community together

CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

SCHEDULES
pH TREATMENT BUILDING

PROJECT NO.: 21-3172 SCALE: AS SHOWN DATE: AUGUST 2023

SCHEDULE B
SHEET
E-9

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CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
C001	REMOTE TELEMETRY UNIT (RTU PANEL)	AERATION TREATMENT UNIT #1 AIR PRESSURE DISPLAY BOARD	(2) #14 AWG, P (2) #18 TSP, C (1) #14 AWG, G	3/4"	PDIT B-1A, PDIT B-1B
C002	REMOTE TELEMETRY UNIT (RTU PANEL)	AERATION TREATMENT UNIT #2 AIR PRESSURE DISPLAY BOARD	(2) #14 AWG, P (2) #18 TSP, C (1) #14 AWG, G	3/4"	PDIT B-2A, PDIT B-2B
C003	REMOTE TELEMETRY UNIT (RTU PANEL)	AERATION TREATMENT UNIT #3 AIR PRESSURE DISPLAY BOARD	(2) #14 AWG, P (2) #18 TSP, C (1) #14 AWG, G	3/4"	PDIT B-3A, PDIT B-3B
C004	REMOTE TELEMETRY UNIT (RTU PANEL)	AERATION TREATMENT UNIT #1	(2) #14 AWG, P (1) #18 TSP, C (4) #14 AWG, C (1) #14 AWG, G	3/4"	LSL, LSH, LT 2 SPARE
C005	REMOTE TELEMETRY UNIT (RTU PANEL)	AERATION TREATMENT UNIT #2	(2) #14 AWG, P (1) #18 TSP, C (4) #14 AWG, C (1) #14 AWG, G	3/4"	LSL, LSH, LT 2 SPARE
C006	REMOTE TELEMETRY UNIT (RTU PANEL)	AERATION TREATMENT UNIT #3	(2) #14 AWG, P (1) #18 TSP, C (4) #14 AWG, C (1) #14 AWG, G	3/4"	LSL, LSH, LT 2 SPARE
C007	REMOTE TELEMETRY UNIT (RTU PANEL)	FCV 337	(4) #14 AWG, C (1) #14 AWG, G	3/4"	ZONE 337 PRESSURE REDUCING VALVE
C008	REMOTE TELEMETRY UNIT (RTU PANEL)	FIT 337A	(2) #14 AWG, P (1) #18 TSP, C (2) #14 AWG, C (1) #14 AWG, G	3/4"	DC POWER FLOW SIGNAL PULSE
C009	REMOTE TELEMETRY UNIT (RTU PANEL)	WATER QUALITY METER COMBINED - A4	(2) #14 AWG, P (2) #18 TSP, C (1) #14 AWG, G	3/4"	
C010	REMOTE TELEMETRY UNIT (RTU PANEL)	WATER QUALITY METER WQ 1 - A1	(4) #14 AWG, C (3) #18 TSP, C (1) #14 AWG, G	1"	
C011	REMOTE TELEMETRY UNIT (RTU PANEL)	WATER QUALITY METER WQ 2 - A2	(4) #14 AWG, C (3) #18 TSP, C (1) #14 AWG, G	1"	
C012	REMOTE TELEMETRY UNIT (RTU PANEL)	WATER QUALITY METER WQ 3 - A3	(4) #14 AWG, C (3) #18 TSP, C (1) #14 AWG, G	1"	
C013	REMOTE TELEMETRY UNIT (RTU PANEL)	HYPOCHLORITE PUMP P-CL01	(4) #14 AWG, C (1) #18 TSP, C (1) #14 AWG, G	3/4"	
C014	REMOTE TELEMETRY UNIT (RTU PANEL)	HYPOCHLORITE PUMP P-CL02	(4) #14 AWG, C (1) #18 TSP, C (1) #14 AWG, G	3/4"	
C015	REMOTE TELEMETRY UNIT (RTU PANEL)	HYPOCHLORITE PUMP P-CL03	(4) #14 AWG, C (1) #18 TSP, C (1) #14 AWG, G	3/4"	
C016	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER B-1 VFD	(6) #14 AWG, C (2) #18 TSP, C (1) CAT 6 (1) #14, AWG, G	1 "	
C017	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER B-2 VFD	(6) #14 AWG, C (2) #18 TSP, C (1) CAT 6 (1) #14, AWG, G	1 "	
C018	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER B-3 VFD	(6) #14 AWG, C (2) #18 TSP, C (1) CAT 6 (1) #14, AWG, G	1 "	
C019	REMOTE TELEMETRY UNIT (RTU PANEL)	PUMP P-T1 VFD	(6) #14 AWG, C (2) #18 TSP, C (1) CAT 6 (1) #14, AWG, G	1 "	
C020	REMOTE TELEMETRY UNIT (RTU PANEL)	PUMP P-T2 VFD	(6) #14 AWG, C (2) #18 TSP, C (1) CAT 6 (1) #14, AWG, G	1 "	
C021	REMOTE TELEMETRY UNIT (RTU PANEL)	PUMP P-T3 VFD	(6) #14 AWG, C (2) #18 TSP, C (1) CAT 6 (1) #14, AWG, G	1 "	
C022	REMOTE TELEMETRY UNIT (RTU PANEL)	WELL #1 RTU	(1) CAT 6	1 "	
C023	REMOTE TELEMETRY UNIT (RTU PANEL)	WELL #2 RTU	(1) CAT 6	1 "	
C024	REMOTE TELEMETRY UNIT (RTU PANEL)	WELL #3 RTU	(1) CAT 6	1 "	
C025	REMOTE TELEMETRY UNIT (RTU PANEL)	CHLORINE BUILDING CONTROL PANEL	(1) CAT 6	1 "	
C026	REMOTE TELEMETRY UNIT (RTU PANEL)	AREA OF FUTURE WELL SITE	PULL CORD	1"	
C027	REMOTE TELEMETRY UNIT (RTU PANEL)	EXISTING BOOSTER STATION	(1) CAT 6	1"	
C028	REMOTE TELEMETRY UNIT (RTU PANEL)	GRINDER PUMP STATION	(2) #14 AWG, C (1) #14 AWG, G	3/4"	
C029	REMOTE TELEMETRY UNIT (RTU PANEL)	HEAT PUMP DISCONNECTS	(4) #14 AWG, C (1) #14 AWG, G	3/4"	
* C030	REMOTE TELEMETRY UNIT (RTU PANEL)	AUTOMATIC TRANSFER SWITCH (ATS)	(5) #14 AWG, C (1) #14 AWG, G	3/4"	
C031	VENTILATION CONTROL PANEL	EXHAUST DAMPER D-1	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	TREATMENT AREA
C032	VENTILATION CONTROL PANEL	INTAKE DAMPER D-3	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	STORAGE
C033	UNUSED				
C034	VENTILATION CONTROL PANEL	EXHAUST DAMPER D-4	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	RESTROOM
* C035	VENTILATION CONTROL PANEL	INTAKE DAMPER D-5	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G (2) #14 AWG, C	3/4"	BLOWER ROOM OPEN LIMIT SWITCH
C036	UNUSED				
C037	VENTILATION CONTROL PANEL	INTAKE DAMPER D-2	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	TREATMENT AREA
* C038	VENTILATION CONTROL PANEL	REMOTE TELEMETRY UNIT (RTU PANEL)	(6) #14 AWG, C (1) #14 AWG, G	3/4"	
C039	VENTILATION CONTROL PANEL	THERMOSTAT T-1	(2) #14 AWG, C (1) #14 AWG, G	3/4"	TREATMENT AREA
C040	VENTILATION CONTROL PANEL	THERMOSTAT T-2	(2) #14 AWG, C (1) #14 AWG, G	3/4"	BLOWER ROOM
C041	VENTILATION CONTROL PANEL	THERMOSTAT T-3	(2) #14 AWG, C (1) #14 AWG, G	3/4"	ELECTRIC ROOM
C042	VENTILATION CONTROL PANEL	THERMOSTAT T-4	(2) #14 AWG, C (1) #14 AWG, G	3/4"	STORAGE ROOM
* C043	VENTILATION CONTROL PANEL	BATHROOM FAN/LIGHT SWITCH	(2) #14 AWG, C (1) #14 AWG, G	3/4"	FAN EF-2 CONTROL
C044	ENTRANCE GATE OPERATOR	ENTRANCE GATE KEYPAD	SEE NOTE	3/4"	COORDINATE CONDUCTORS WITH MANUFACTURER
C045	FLOWMETER FIT-337A	FLOW ELEMENT (TUBE) IN VAULT	(2) MFR CABLES	1"	COIL & ELECTRODE CABLES
C046	REMOTE TELEMETRY UNIT (RTU PANEL)	FLOW SWITCH FS-337	(3) #14 AWG, C (1) #14 AWG, G	3/4"	
C047	REMOTE TELEMETRY UNIT (RTU PANEL)	PRESSURE XDCR PIT-337	(1) #18 TSP, C (1) #14 AWG, G	3/4"	
C048	WATER QUALITY METER WQ 1 - A1	HYPOCHLORITE PUMP P-CL01	(1) #18 TSP, C (1) #14 AWG, G	3/4"	
C049	WATER QUALITY METER WQ 2 - A2	HYPOCHLORITE PUMP P-CL02	(1) #18 TSP, C (1) #14 AWG, G	3/4"	
C050	WATER QUALITY METER WQ 3 - A3	HYPOCHLORITE PUMP P-CL03	(1) #18 TSP, C (1) #14 AWG, G	3/4"	
C051	REMOTE TELEMETRY UNIT (RTU PANEL)	SOUTH DOOR BUILDING INTRUSION & BYPASS SWITCHES	(4) #14 AWG, C (1) #14 AWG, G	3/4"	
C052	SOUTH DOOR BUILDING INTRUSION SWITCH	STORAGE DOOR BUILDING INTRUSION SWITCH	(2) #14 AWG, C (1) #14 AWG, G	3/4"	
C053	STORAGE DOOR BUILDING INTRUSION SWITCH	NORTH ROLL-UP DOOR BUILDING INTRUSION SWITCH	(2) #14 AWG, C (1) #14 AWG, G	3/4"	
C054	NORTH ROLL-UP DOOR BUILDING INTRUSION SWITCH	WEST ROLL-UP DOOR BUILDING INTRUSION SWITCH	(2) #14 AWG, C (1) #14 AWG, G	3/4"	
* C055	REMOTE TELEMETRY UNIT (RTU PANEL)	POWER MONITOR IN MCC	(1) CAT 6	3/4"	
C056	REMOTE TELEMETRY UNIT (RTU PANEL)	TREATMENT AREA SMOKE DETECTOR	(3) #14 AWG, C (1) #14 AWG, G	3/4"	
C057	REMOTE TELEMETRY UNIT (RTU PANEL)	ELECTRICAL ROOM SMOKE DETECTOR	(3) #14 AWG, C (1) #14 AWG, G	3/4"	
C058	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER AREA SMOKE DETECTOR	(3) #14 AWG, C (1) #14 AWG, G	3/4"	
C059	REMOTE TELEMETRY UNIT (RTU PANEL)	STORAGE AREA SMOKE DETECTOR	(3) #14 AWG, C (1) #14 AWG, G	3/4"	
C060	REMOTE TELEMETRY UNIT (RTU PANEL)	BATHROOM SMOKE DETECTOR	(3) #14 AWG, C (1) #14 AWG, G	3/4"	
C061	HEAT PUMP HPU 1	AIR HANDLER AH 1	(1) #16 AWG, TSP (1) #14 AWG, G	3/4"	DAISY CHAIN COMMS
C062	AIR HANDLER AH 1	AIR HANDLER AH 2	(1) #16 AWG, TSP (1) #14 AWG, G	3/4"	DAISY CHAIN COMMS
C063	HEAT PUMP HPU 2	AIR HANDLER AH 4	(1) #16 AWG, TSP (1) #14 AWG, G	3/4"	DAISY CHAIN COMMS
C064	AIR HANDLER AH 4	AIR HANDLER AH 5	(1) #16 AWG, TSP (1) #14 AWG, G	3/4"	DAISY CHAIN COMMS
C065	AIR HANDLER AH 5	AIR HANDLER AH 3	(1) #16 AWG, TSP (1) #14 AWG, G	3/4"	DAISY CHAIN COMMS
* C066	REMOTE TELEMETRY UNIT (RTU PANEL)	MANUAL TRANSFER SWITCH	(2) #14 AWG, C (1) #14 AWG, G	3/4"	
C067	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER B-1 MASS AIR FLOW METER	(2) #14 AWG, P (1) #18 TSP, C (1) #14 AWG, G	3/4"	MAF-1
C068	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER B-2 MASS AIR FLOW METER	(2) #14 AWG, P (1) #18 TSP, C (1) #14 AWG, G	3/4"	MAF-2
C069	REMOTE TELEMETRY UNIT (RTU PANEL)	BLOWER B-3 MASS AIR FLOW METER	(2) #14 AWG, P (1) #18 TSP, C (1) #14 AWG, G	3/4"	MAF-3

CIRCUIT SCHEDULE CONTINUED (1/-)

SCALE: NONE

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PROJECT#:21.47.01

NO.	DATE	BY	REVISION

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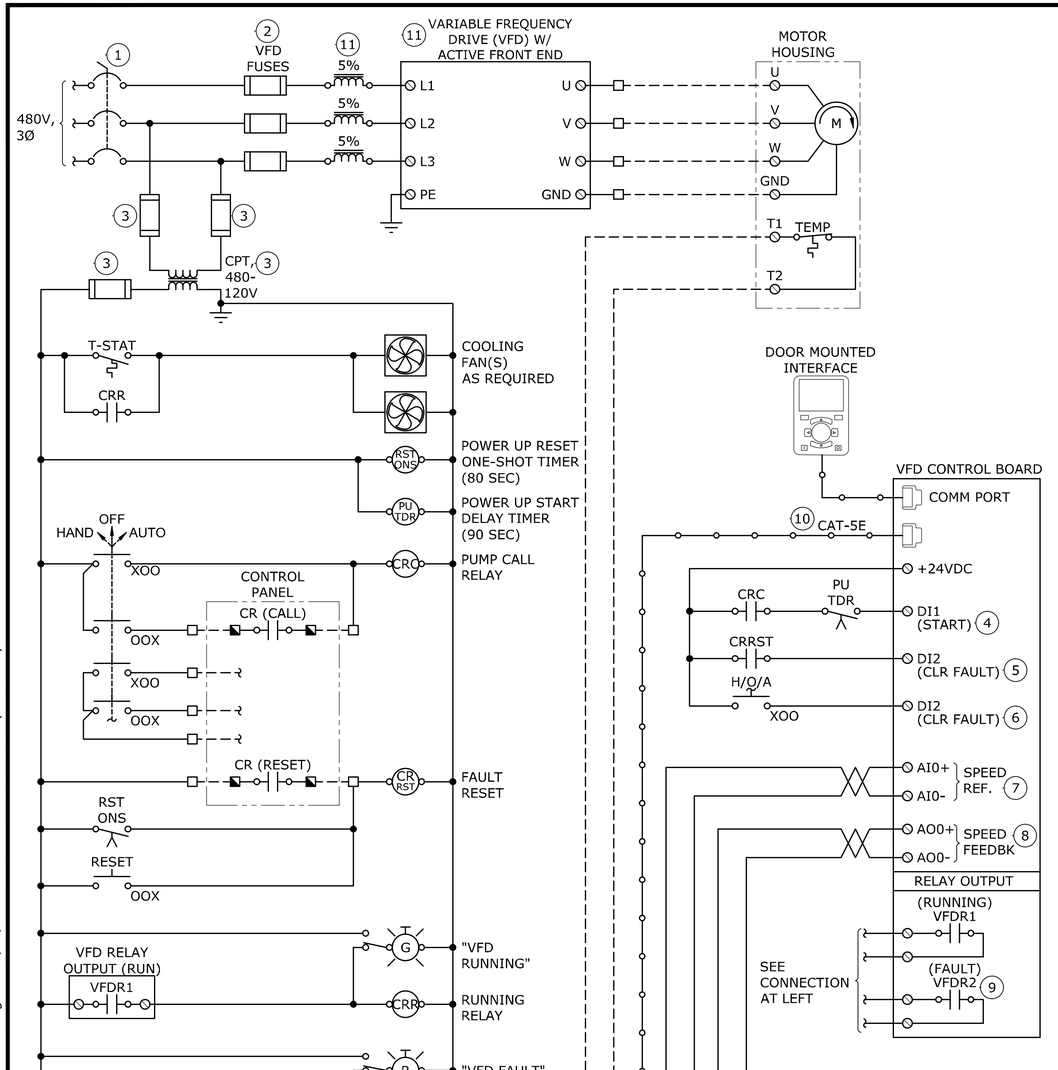
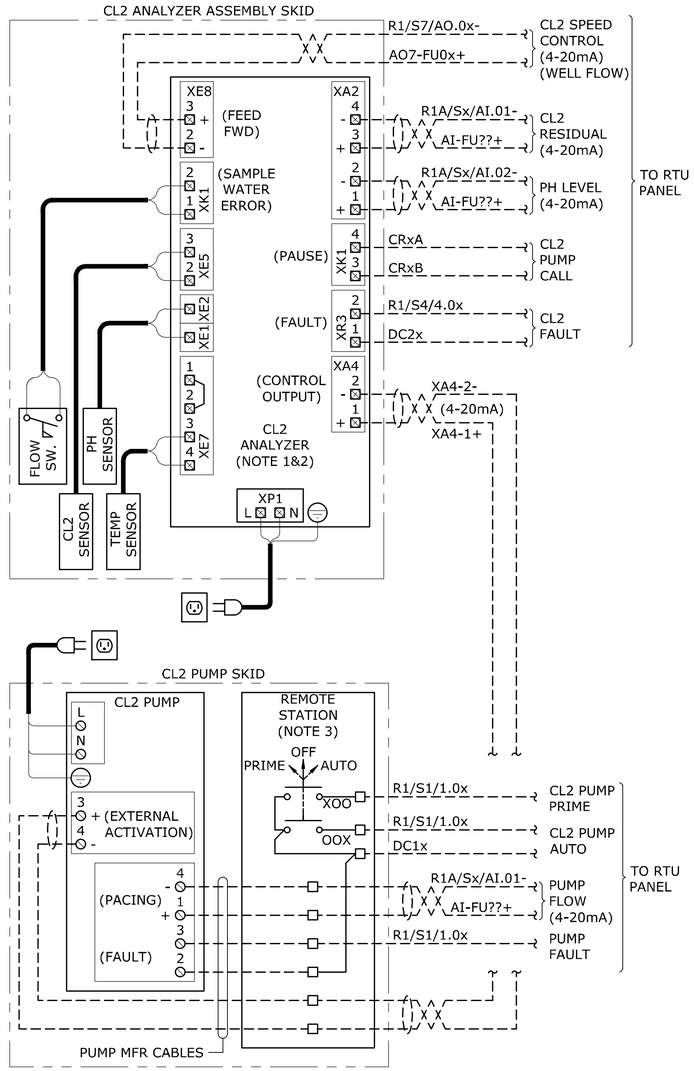
CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

SCHEDULES
pH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET E-10





KEY NOTES

1. CIRCUIT BREAKER SIZING AS REQUIRED BY MANUFACTURER.
2. FUSING FOR SCR PROTECTION, IF REQUIRED BY MANUFACTURER.
3. FUSING AND CPT SIZED PER MANUFACTURER'S RECOMMENDATIONS.
4. CONFIGURE DIGITAL INPUT FOR 2-WIRE RUN CONTROL.
5. CONFIGURE DIGITAL INPUT FOR CLEAR FAULT.
6. CONFIGURE VFD INPUT TO SELECT LOCAL KEYPAD FOR START/STOP AND SPEED CONTROL.
7. CONFIGURE ANALOG INPUT FOR SPEED REFERENCE. SET FOR 4-20MA.
8. CONFIGURE ANALOG OUTPUT FOR SPEED FEEDBACK. SET FOR 4-20MA CURRENT.
9. VFD FAULT PROGRAM CONTACT TO BE NORMALLY CLOSED HELD OPEN AND CLOSES ON FAULT OR POWER LOSS.
10. ETHERNET COMMUNICATIONS USED FOR STATUS ONLY.
11. ACTIVE FRONT END VFD'S FOR PUMPS P-T1, P-T2 AND BLOWERS B-1 AND B-2. SIX PULSE DRIVES WITH LINE REACTORS FOR PUMP P-T3 AND BLOWER B-3.

DETAIL NOTES:

1. "MODULE A" OPTION REQUIRED FOR ANALYZER BUILD.
2. ANALYZER SET "ADD BASIC LOAD" TO 85% OF DEMAND.
3. FACILITY INTEGRATOR TO BUILD REMOTE STATION. SELECTOR SWITCH PRIME POSITION TO BE MOMENTARY AND AUTO POSITION TO BE MAINTAINED.
4. TYPICAL FOR ANALYZER 1-3 WITH PUMP. ANALYZER 4 DOES NOT REQUIRE CL2 SPEED CONTROL (FEED FWD), PUMP CALL (PAUSE) OR CONTROL OUTPUT CONNECTION.
5. WIRE NUMBER SHOWN WITH 'x' CHANGE BASED ON ACTUAL CONNECTION. SEE I/O SHEETS FOR FULL WRING ID.

VFD CONTROL DIAGRAM

SCALE: NONE

1 / -

CL2 ANALYZER/PUMP CONTROL DETAIL

SCALE: NONE

2 / -

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LACEY CONTRACT #PW 2022-37

VFD CONTROL DIAGRAMS
pH TREATMENT BUILDING

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

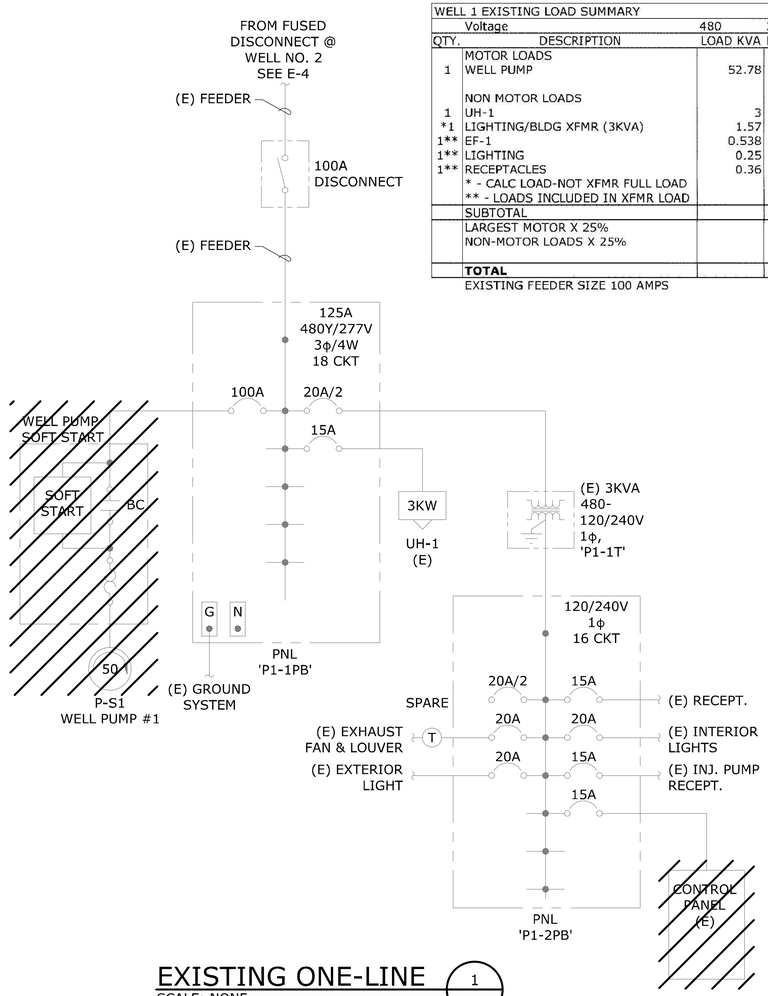
SCHEDULE B
SHEET
E-11

WELL 1 EXISTING LOAD SUMMARY				
	Voltage	480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
	MOTOR LOADS			
1	WELL PUMP	52.78	50.00	65.0
	NON MOTOR LOADS			
1	UH-1	3		3.6
*1	LIGHTING/BLDG XFMR (3KVA)	1.57		3.3
1**	EF-1	0.538		
1**	LIGHTING	0.25		
1**	RECEPTACLES	0.36		
	* - CALC LOAD-NOT XFMR FULL LOAD			
	** - LOADS INCLUDED IN XFMR LOAD			
	SUBTOTAL		**50.0**	**71.9**
	LARGEST MOTOR X 25%			16.3
	NON-MOTOR LOADS X 25%			1.7
	TOTAL		**50.0**	**89.8**

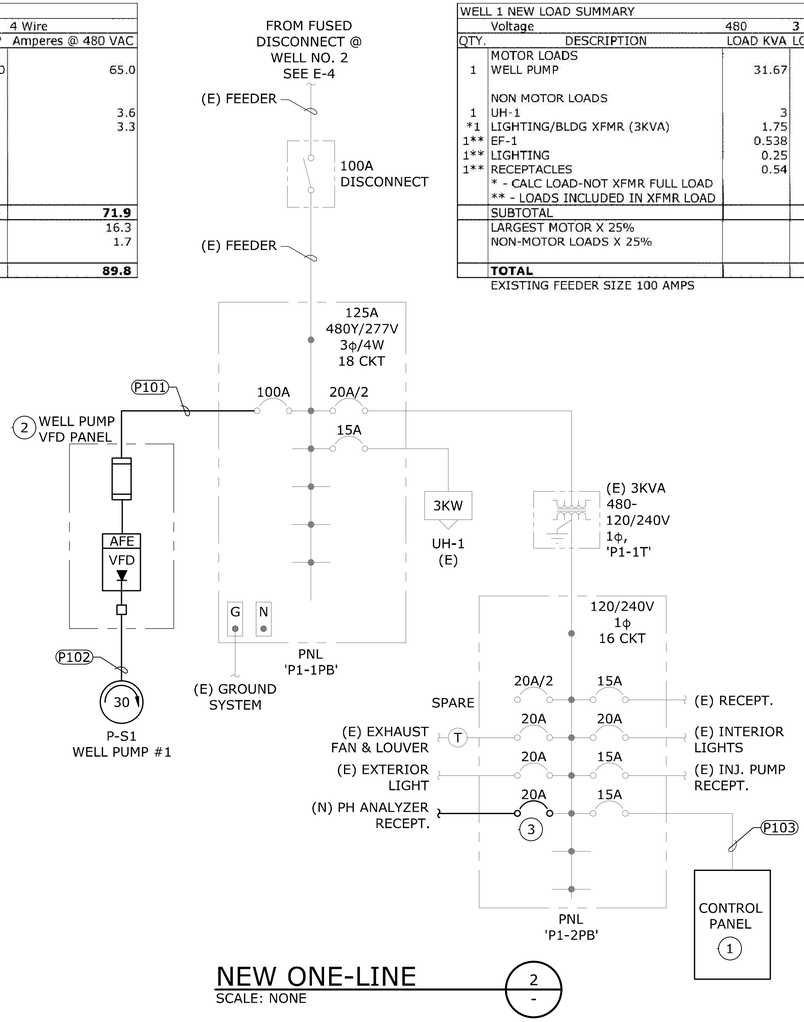
EXISTING FEEDER SIZE 100 AMPS

WELL 1 NEW LOAD SUMMARY				
	Voltage	480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
	MOTOR LOADS			
1	WELL PUMP	31.67	30.00	40.0
	NON MOTOR LOADS			
1	UH-1	3		3.6
*1	LIGHTING/BLDG XFMR (3KVA)	1.75		3.3
1**	EF-1	0.538		
1**	LIGHTING	0.25		
1**	RECEPTACLES	0.54		
	* - CALC LOAD-NOT XFMR FULL LOAD			
	** - LOADS INCLUDED IN XFMR LOAD			
	SUBTOTAL		**30.0**	**46.9**
	LARGEST MOTOR X 25%			10.0
	NON-MOTOR LOADS X 25%			1.7
	TOTAL		**30.0**	**58.6**

EXISTING FEEDER SIZE 100 AMPS



EXISTING ONE-LINE (1 / -)
SCALE: NONE



NEW ONE-LINE (2 / -)
SCALE: NONE

GENERAL NOTES

1. ALL GROUNDING TO BE PER NEC ARTICLE 250.
2. ARC FLASH STUDY AND LABELING TO BE PERFORMED. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

KEY NOTES

1. NEW CONTROL PANEL TO BE RE-CONNECTED TO EXISTING BREAKER IN PANEL. INSTALL NEW CONDUCTOR AND EXTEND CONDUIT AS REQUIRED.
2. NEW WELL PUMP VFD PANEL TO BE RE-CONNECTED TO EXISTING BRANCH BREAKER IN PANEL. INSTALL NEW CONDUCTORS IN EXISTING WIREWAY AND CONDUIT AS REQUIRED.
3. INSTALL NEW BREAKER FOR CONNECTION OF PH ANALYZER RECEPTACLE.

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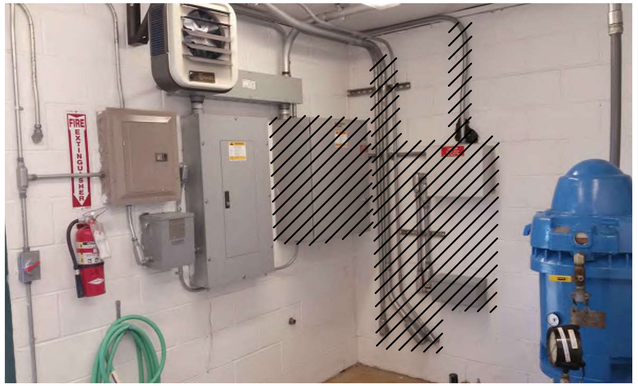
ONE-LINE DIAGRAMS WELL 1

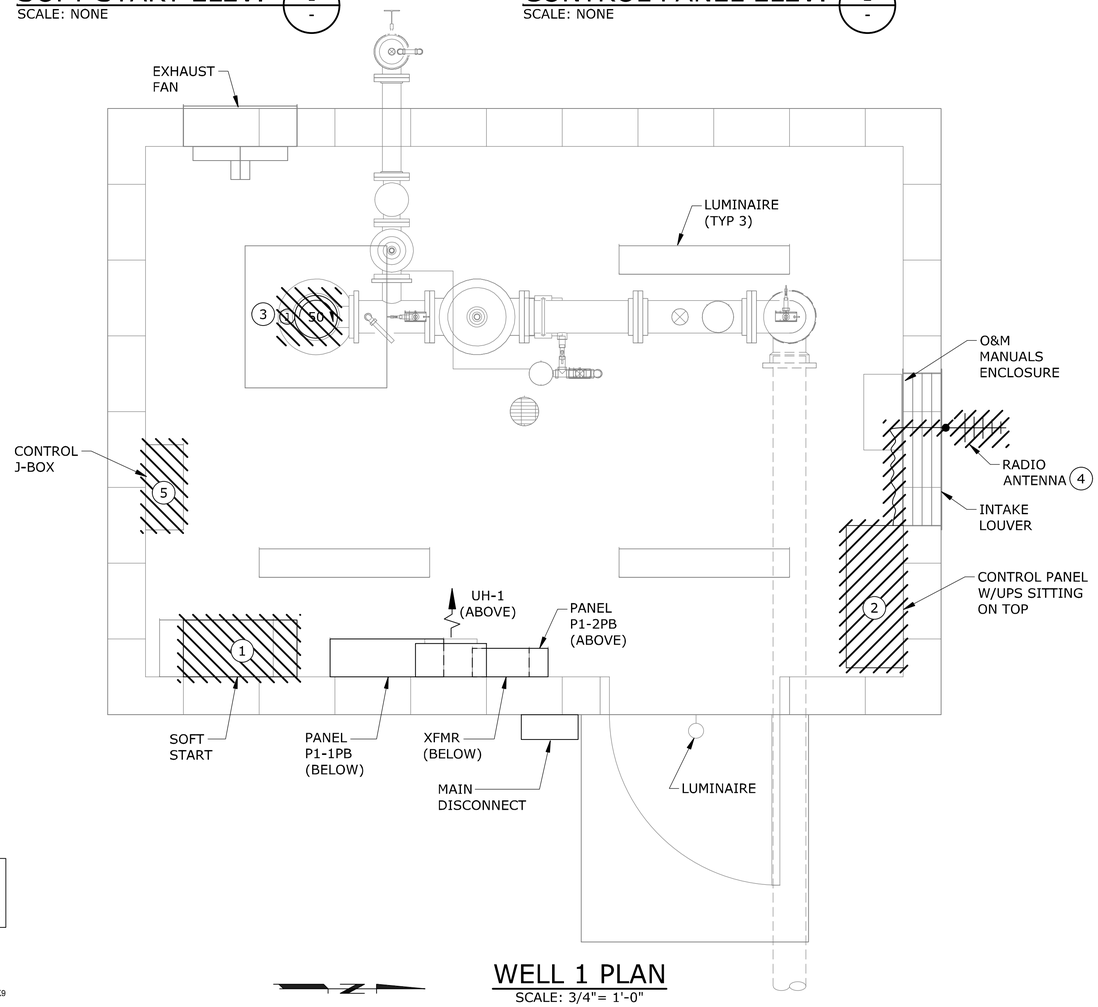
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-12



SOFT START ELEV. (1/-)
SCALE: NONE

CONTROL PANEL ELEV. (2/-)
SCALE: NONE



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

GENERAL NOTES

1. PANELS AND EQUIPMENT BEING REMOVED ARE TO BE SALVAGED TO THE CITY.
2. EXISTING POWER DISTRIBUTION EQUIPMENT, RECEPTACLES, HEATING AND VENTILATION CONTROLS AND EQUIPMENT TO REMAIN.

KEY NOTES

1. SEE DETAIL 1, THIS SHEET. SOFT START TO BE REPLACED WITH NEW VFD PANEL. SEE SHEET E-14 FOR ADDITIONAL INFORMATION.
2. SEE DETAIL 2, THIS SHEET. CONTROL PANEL TO BE REPLACED WITH NEW UNIT. SEE SHEET E-14 FOR ADDITIONAL INFORMATION.
3. EXISTING WELL PUMP AND MOTOR TO BE REPLACED. SEE MECHANICAL SHEETS FOR ADDITIONAL DETAILS.
4. EXISTING RADIO ANTENNA AND CABLING TO BE REMOVED.
5. EXISTING CONTROL J-BOX, WIREWAY AND EMPTY CONDUITS TO BE REMOVED AND PENETRATIONS GROUTED WITH NON-SHRINK GROUT AFTER FINAL COMMUNICATIONS HAVE BEEN ESTABLISHED. SEE DETAIL 1, THIS SHEET.

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8/15/2023

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CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BUILDING ELECTRICAL AND LIGHTING PLAN
WELL 1 - DEMO

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

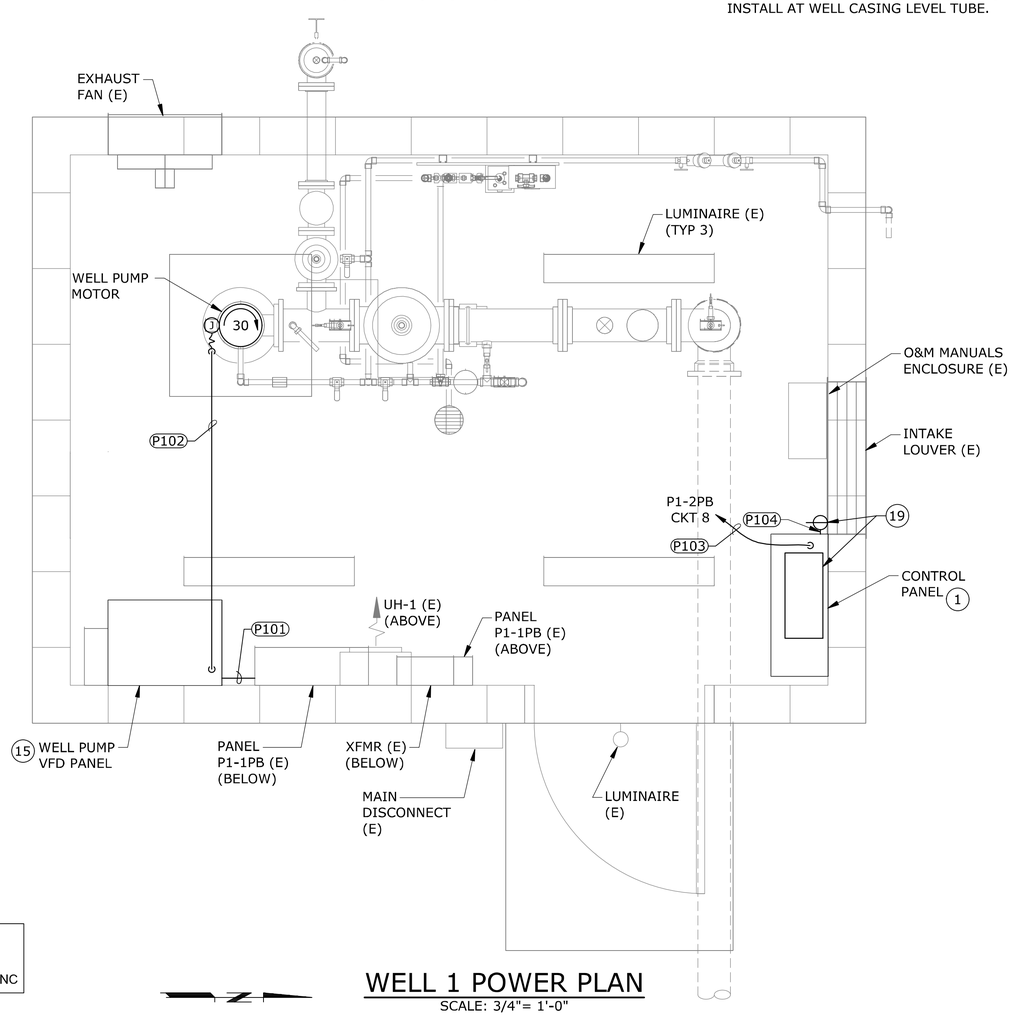
SCHEDULE B
SHEET
E-13

GENERAL NOTES

1. ALL CONNECTIONS TO EXISTING CONTROL INSTRUMENTS TO BE ROUTED TO THE NEW CONTROL PANEL USING NEW CONDUIT UNLESS EXISTING ROUTING IS UNOBSTRUCTED AND IN GOOD CONDITION.
2. CONDUCTORS TO EXISTING FIELD INSTRUMENTS ARE PROPOSED AS NEW.

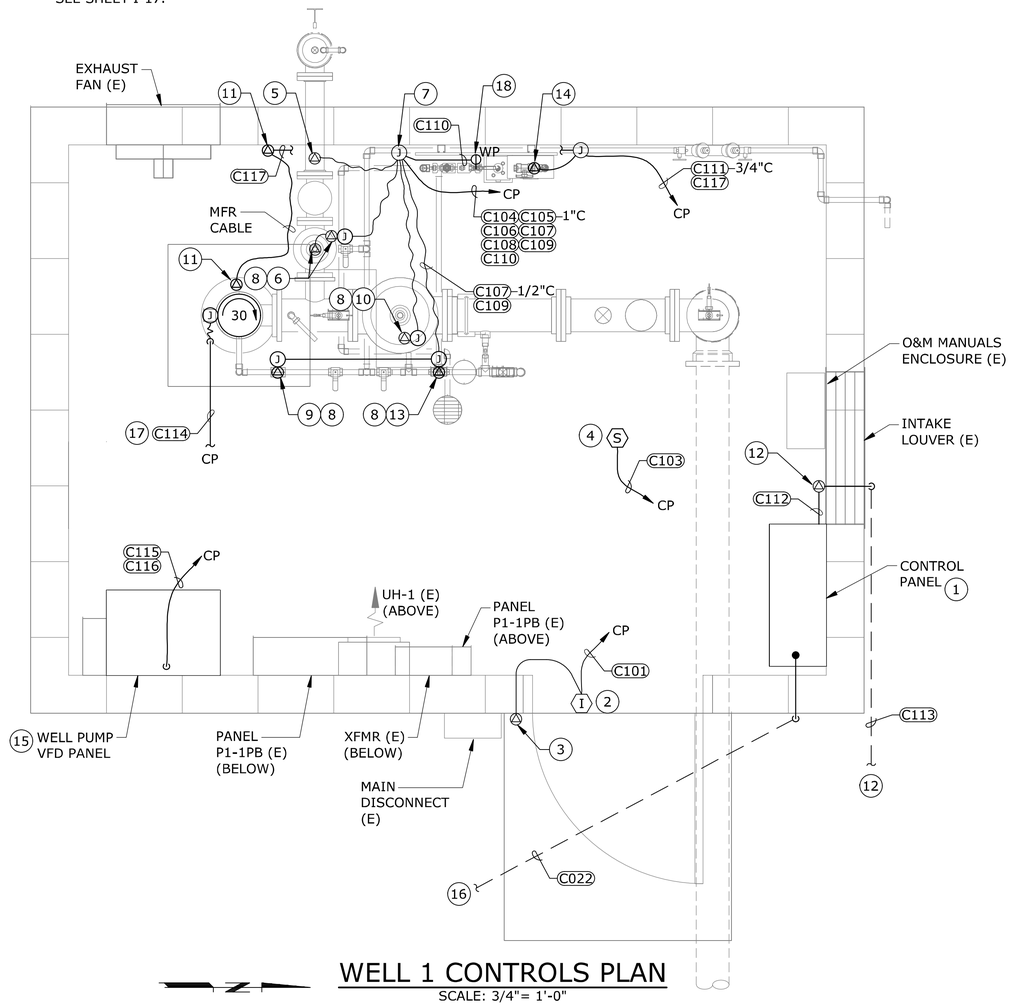
KEY NOTES

1. NEW REMOTE I/O CONTROL PANEL. SEE SHEETS I-14 THROUGH I-18 FOR ADDITIONAL INFORMATION. CONNECT TO EXISTING PANELBOARD THROUGH EXISTING CONDUIT ROUTE.
2. EXISTING DOOR INTRUSION SWITCH TO BE RE-CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-17.
3. EXISTING INTRUSION KEYED BYPASS SWITCH TO BE RECONNECTED TO NEW CONTROL PANEL. SEE SHEET I-17.
4. NEW SMOKE DETECTOR TO BE CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-17.
5. EXISTING FLOW TO WASTE SENSOR TO BE SALVAGED TO CITY AND REPLACED WITH NEW. RE-CONNECT TO EXISTING J-BOX WITH INDICATOR LIGHT AND TO NEW CONTROL PANEL. SEE SHEET I-17.
6. EXISTING FLOW TO WASTE SOLENOID AND LIMIT SWITCH. RE-CONNECT TO NEW CONTROL PANEL VIA EXISTING J-BOX WITH INDICATOR LIGHT. SEE SHEETS I-16 AND I-17.
7. EXISTING J-BOX WITH INDICATORS FOR FLOW TO WASTE SENSOR, SOLENOID, AND LIMIT SWITCH AND SYSTEM VALVE SOLENOID. RE-USE AND REPLACE COVER OR REPLACE ALL TOGETHER WITH NEW J-BOX. VERIFY SIZE AND FILL IF RE-USED.
8. SINGLE GANG BELL BOX WITH GREEN NEON INDICATOR LIGHT, WAMCO WL-1052C5 FOR CONNECTION AT SOLENOID VALVE. SEE SHEET I-16.
9. NEW PRE-LUBE SOLENOID VALVE. CONNECT TO NEW CONTROL PANEL VIA EXISTING INDICATOR J-BOX. ROUTE RIGID CONDUIT ALONG PIPING WITH STRUT. SEE SHEET I-16.
10. NEW SYSTEM VALVE SOLENOID. CONNECT TO NEW CONTROL PANEL VIA EXISTING J-BOX WITH INDICATOR LIGHT. SEE SHEETS I-16 AND I-17.
11. NEW WELL LEVEL XMTR TO BE CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-18. PROVIDE AND INSTALL SENSOR TERMINATION BOX AT EXISTING UNIT LOCATION. SALVAGE EXISTING TO OWNER. PROVIDE CABLE GRIP FOR SENSOR INSTALL AT WELL CASING LEVEL TUBE.
12. NEW FLOWMETER TRANSMITTER FIT-01. MOUNT ABOVE EXISTING INTAKE LOUVER NEAR CONTROL PANEL. CONDUIT TO EXISTING FLOWMETER VAULT FOR CONNECTION TO FLOW ELEMENT. SEE SHEET E-2.
13. NEW PH SAMPLE SOLENOID VALVE. CONNECT TO NEW CONTROL PANEL VIA EXISTING INDICATOR J-BOX. ROUTE RIGID CONDUIT ALONG PIPING WITH STRUT. SEE SHEET I-16.
14. NEW RAW WATER PH ANALYZER ON ASSEMBLY SKID. SEE MECHANICAL DRAWINGS FOR DETAILS. CONNECT TO NEW CONTROL PANEL. SEE SHEET I-18.
15. NEW WELL PUMP VFD PANEL. SEE SHEET E-15 FOR ADDITIONAL INFORMATION.
16. TO PH TREATMENT BUILDING. CONNECTION OF ETHERNET TO PH TREATMENT BUILDING RTU CONTROL PANEL FOR REMOTE I/O COMMUNICATIONS LINK.
17. THERMAL SWITCH CONNECTION ROUTED WITH POWER CABLING. SEE SHEET I-17.
18. INSTALL NEW SIMPLEX RECEPTACLE WITH WP "IN-USE COVER" AT ASSEMBLY SKID FOR ANALYZER POWER. LABEL "ANALYZER ONLY".
19. UPS AND SHELF MOUNTED NEAR TOP CORNER OF CONTROL PANEL. SHELF TO BE LARGE ENOUGH AND HEAVY ENOUGH TO SUPPORT THE FULL WEIGHT AND DIMENSIONS OF UPS PROVIDED. UPS STRAPPED TO SHELF FOR EARTHQUAKE READINESS. PROVIDE DEDICATED RECEPTACLE FED FROM CONTROL PANEL FOR UPS.



WELL 1 POWER PLAN

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



WELL 1 CONTROLS PLAN

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

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8/15/2023

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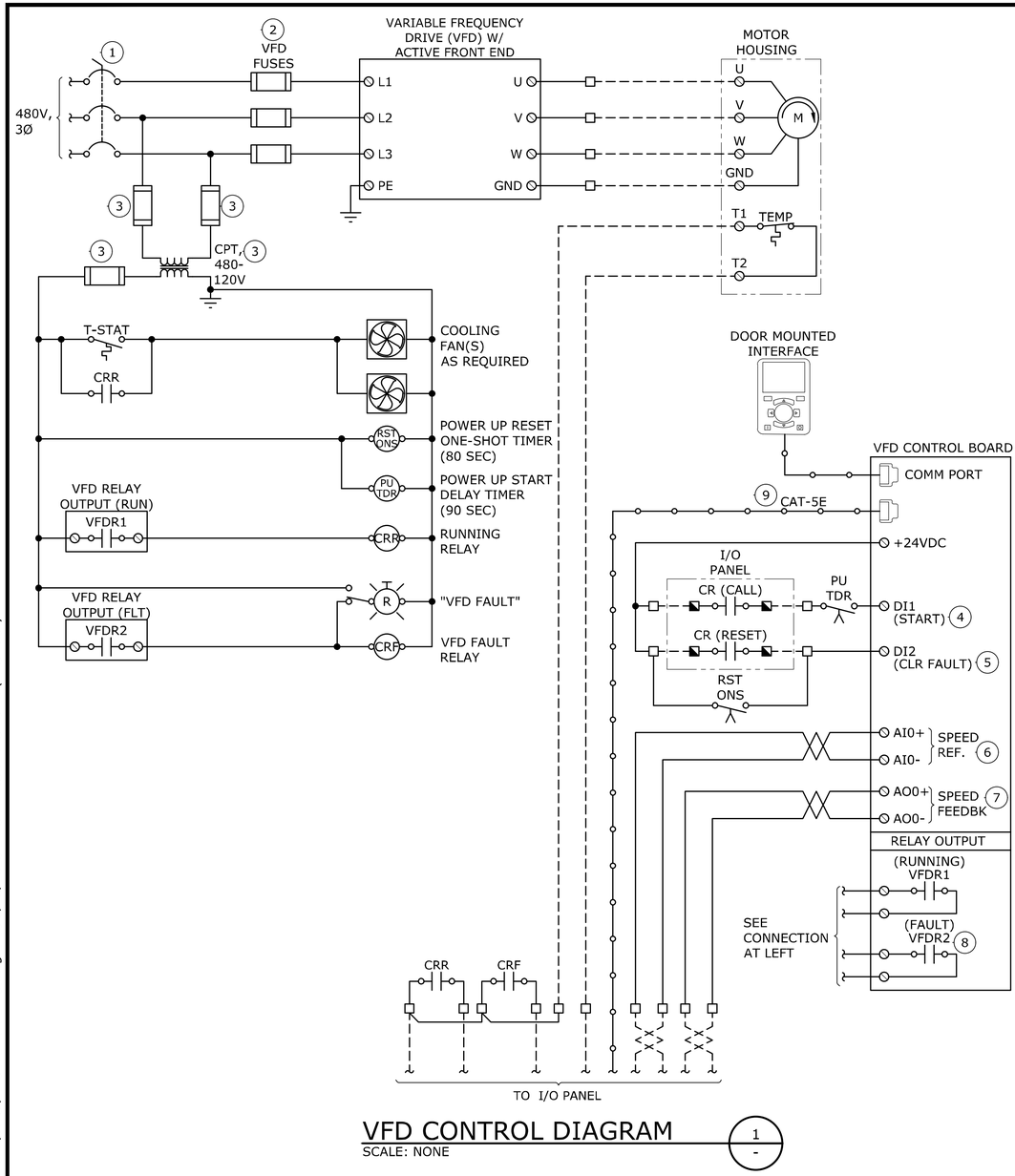
BUILDING ELECTRICAL AND LIGHTING PLAN WELL 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-14

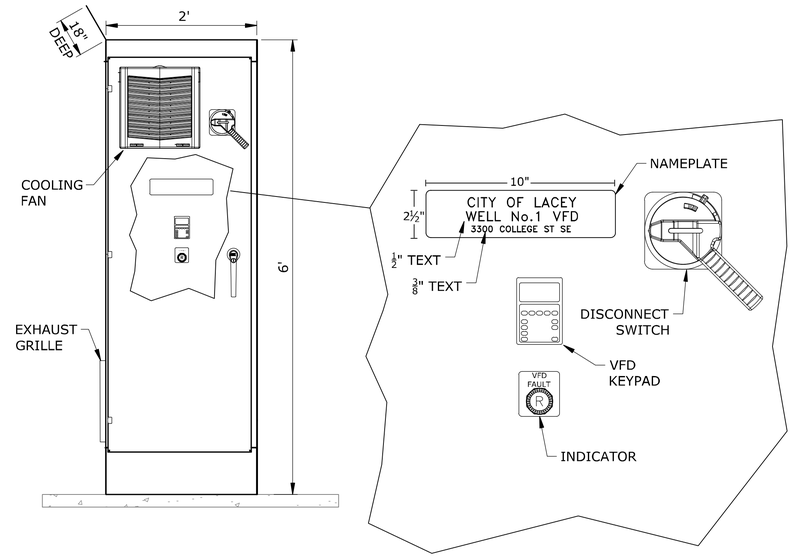


VFD CONTROL DIAGRAM

SCALE: NONE

1

-



DETAIL

WELL PUMP VFD PANEL ELEVATION

SCALE: NONE

2

-

KEY NOTES

1. CIRCUIT BREAKER SIZING AS REQUIRED BY MANUFACTURER.
2. FUSING FOR SCR PROTECTION, IF REQUIRED BY MANUFACTURER.
3. FUSING AND CPT SIZED PER MANUFACTURER'S RECOMMENDATIONS.
4. CONFIGURE DIGITAL INPUT FOR 2-WIRE RUN CONTROL.
5. CONFIGURE DIGITAL INPUT FOR CLEAR FAULT.
6. CONFIGURE ANALOG INPUT FOR SPEED REFERENCE. SET FOR 4-20MA.
7. CONFIGURE ANALOG OUTPUT FOR SPEED FEEDBACK. SET FOR 4-20MA CURRENT.
8. VFD FAULT PROGRAM CONTACT TO BE NORMALLY CLOSED HELD OPEN AND CLOSES ON FAULT OR POWER LOSS.
9. ETHERNET COMMUNICATIONS USED FOR STATUS ONLY.

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Designed by:
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8/15/2023

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LACEY CONTRACT #PW 2022-37

SECTIONS AND DETAILS
WELL 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-15

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE ELLIPSE SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, TSP - FOR TWISTED SHIELDED PAIR, TST - TWISTED SHIELDED TRIAD AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
P101	PANEL P1-1PB	WELL PUMP VFD PANEL	(3) #2 AWG, P (1) #8 AWG, G	1.25"	
P102	WELL PUMP VFD PANEL	WELL PUMP MOTOR	(3) #8 AWG, P (1) #8 AWG, G	2"	VFD CABLE
P103	PANEL P1-2PB	CONTROL PANEL	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P104	CONTROL PANEL	RECEPTACLE FOR UPS	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1/2"	
C101	BUILDING INTRUSION SWITCH	CONTROL PANEL	(4) #14 AWG, C (1) #14 AWG, G	EXIST 1/2"	EXTEND W/NEW CONDUIT AS NEEDED
C102	NOT USED				
C103	SMOKE DETECTOR	CONTROL PANEL	(3) #14 AWG, C (1) #14 AWG, G	1/2"	
C104	FLOW TO WASTE SWITCH	CONTROL PANEL	(3) #14 AWG, C (1) #14 AWG, G	1/2"	
C105	FLOW TO WASTE VALVE LIMIT SWITCH	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C106	FLOW TO WASTE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C107	PRE-LUBE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C108	SYSTEM VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C109	PH SAMPLE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C110	RAW WATER PH ANALYZER RECEPTACLE	CONTROL PANEL	(1) #14 AWG, P (1) #14 AWG, N (1) #14 AWG, G	1/2"	ANALYZER POWER (AC)
C111	RAW WATER PH ANALYZER	CONTROL PANEL	(1) #18 AWG, TSP (1) #14 AWG, G	1/2"	PH SIGNAL
C112	FLOWMETER	CONTROL PANEL	(4) #14 AWG, C (1) #18 AWG, TSP (1) #14 AWG, G	3/4"	FLOWMETER POWER & PULSE (DC) FLOW SIGNAL EXTEND W/NEW CONDUIT AS NEEDED
C113	FLOWMETER	FLOW ELEMENT (TUBE) IN VAULT	(2) MFR CABLES	1	COIL AND ELECTRODE CABLES
C114	WELL PUMP VFD PANEL	WELL PUMP MOTOR	(2) #14 AWG, C (1) #14 AWG, G	EXIST 1/2"	OVERTEMP SWITCH
C115	WELL PUMP VFD PANEL	CONTROL PANEL	(4) #14 AWG, C (2) #14 AWG, SP (1) #14 AWG, G	3/4"	PUMP STATUS (AC)
C116	WELL PUMP VFD PANEL	CONTROL PANEL	(4) #14 AWG, C (2) #18 AWG, TSP (1) CAT 5E (1) #14 AWG, G	1.25"	PUMP CALL & RESET (DC) PUMP ANALOG
C117	WELL LEVEL SENSOR TERMINATION ENCLOSURE	CONTROL PANEL	(1) #18 AWG, TSP (1) #14 AWG, G	1/2"	LEVEL SIGNAL

CIRCUIT SCHEDULE (1)
SCALE: NONE

PANEL: P1-1PB (EXIST)	VOLTAGE: 480Y/277, 3PH, 4 WIRE	MOUNTING: SURFACE MOUNT
LOCATION: SOURCE 1 WELL BUILDING	BUS: 225A COPPER	AIC: 22,000
FEEDER: SEE POWER RISER	MAIN: MLO	

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	LOAD VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	WELL PUMP VFD PANEL - 30HP	3	100	11085	A	1100	2	20	TRANSFORMER P1-1T	2
3	-	-	-	11085	B	700	-	-	-	4
5	-	-	-	11085	C	1000	3	15	UNIT HEATER HT-1	6
7	SPACE				A	1000	-	-	-	8
9	SPACE				B	1000	-	-	-	10
11	SPACE				C				SPACE	12
13	SPACE				A				SPACE	14
15	SPACE				B				SPACE	16
17	SPACE				C				SPACE	18

LOAD PER PHASE

PHASE A	13.2	KVA
PHASE B	12.8	KVA
PHASE C	12.1	KVA

TOTAL LOAD	38.1	KVA
TOTAL AMPS	46	AMPS

PANEL: P1-2PB (EXIST)	VOLTAGE: 240/120, 1PH, 3WIRE	MOUNTING: SURFACE MOUNT
LOCATION: SOURCE 1 WELL BLDG	BUS: 100A COPPER	AIC: 10,000
FEEDER: SEE POWER RISER	MAIN: MLO	

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	SPARE	2	20		A	180	1	20	RECEPTACLE	2
3	-	-	-		B	210	1	20	INTERIOR LIGHTING	4
5	EXHAUST FAN & LOUVER	1	20	538	A	180	1	15	INJECTION PUMP RECEPTACLE	6
7	EXTERIOR LIGHTING	1	15	40	B	420	1	15	CONTROL PANEL	8
9	PH ANALYZER RECEPTACLE **(INSTALLNEW BREAKER)**	1	20	180	A				SPACE	10
11	SPACE				B				SPACE	12
13	SPACE				A				SPACE	14
15	SPACE				B				SPACE	16

LOAD PER PHASE

PHASE A	1.1	KVA
PHASE B	0.7	KVA

TOTAL LOAD	1.7	KVA
TOTAL AMPS	7	AMPS

PANEL SCHEDULES (2)
SCALE: NONE

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NO.	DATE	BY	REVISION

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CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

SCHEDULES WELL 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-16

NOT USED

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LACEY CONTRACT #PW 2022-37

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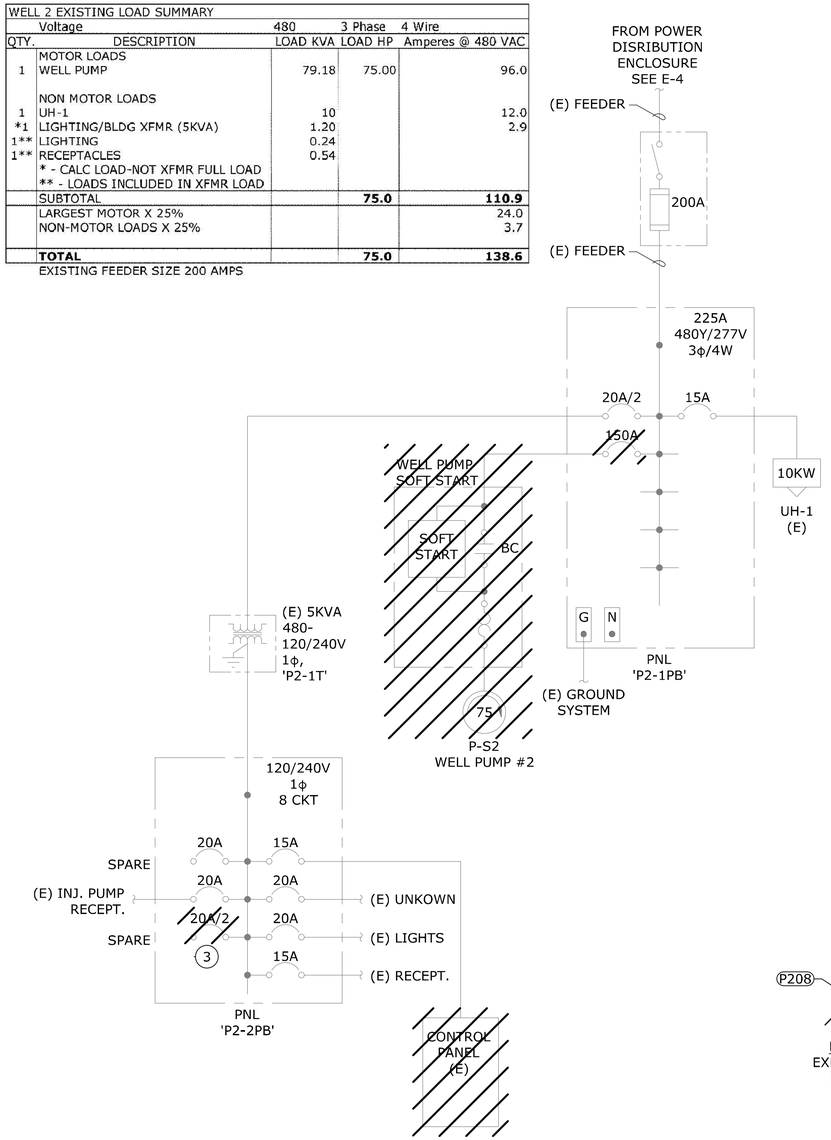
SCHEDULE B
SHEET
E-17

WELL 2 EXISTING LOAD SUMMARY				
Voltage		480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
	MOTOR LOADS			
1	WELL PUMP	79.18	75.00	96.0
	NON MOTOR LOADS			
1	UH-1	10		12.0
*1	LIGHTING/BLDG XFMR (5KVA)	1.20		2.9
1**	LIGHTING	0.24		
1**	RECEPTACLES	0.54		
	* - CALC LOAD-NOT XFMR FULL LOAD			
	** - LOADS INCLUDED IN XFMR LOAD			
	SUBTOTAL		**75.0**	**110.9**
	LARGEST MOTOR X 25%			24.0
	NON-MOTOR LOADS X 25%			3.7
	TOTAL		**75.0**	**138.6**

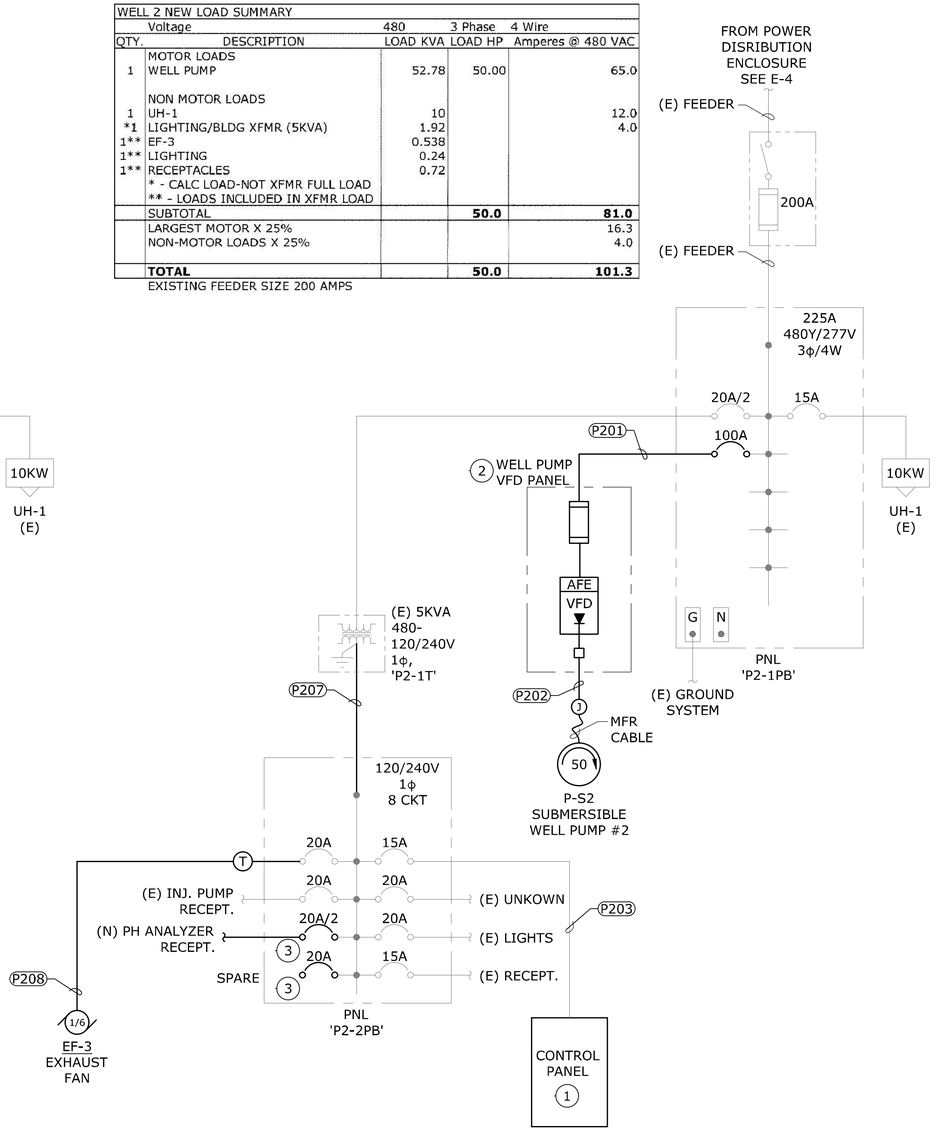
EXISTING FEEDER SIZE 200 AMPS



EXISTING ONE-LINE 1
SCALE: NONE

WELL 2 NEW LOAD SUMMARY				
Voltage		480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
	MOTOR LOADS			
1	WELL PUMP	52.78	50.00	65.0
	NON MOTOR LOADS			
1	UH-1	10		12.0
*1	LIGHTING/BLDG XFMR (5KVA)	1.92		4.0
1**	EF-3	0.538		
1**	LIGHTING	0.24		
1**	RECEPTACLES	0.72		
	* - CALC LOAD-NOT XFMR FULL LOAD			
	** - LOADS INCLUDED IN XFMR LOAD			
	SUBTOTAL		**50.0**	**81.0**
	LARGEST MOTOR X 25%			16.3
	NON-MOTOR LOADS X 25%			4.0
	TOTAL		**50.0**	**101.3**

EXISTING FEEDER SIZE 200 AMPS



NEW ONE-LINE 2
SCALE: NONE

GENERAL NOTES

1. ALL GROUNDING TO BE PER NEC ARTICLE 250.
2. ARC FLASH STUDY AND LABELING TO BE PERFORMED. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

KEY NOTES

1. NEW CONTROL PANEL TO BE RE-CONNECTED TO EXISTING BREAKER IN PANEL. INSTALL NEW CONDUCTOR AND EXTEND CONDUIT AS REQUIRED.
2. NEW WELL PUMP VFD PANEL TO BE CONNECTED TO NEW BRANCH BREAKER IN PANEL. REPLACE EXISTING CIRCUIT BERAKER AS SHOWN AND INSTALL NEW CONDUCTORS AND CONDUIT AS REQUIRED.
3. REPLACE EXISTING 2-POLE BREAKER AND INSTALL (2) NEW 1-POLE BREAKERS. USE ONE BREAKER FOR CONNECTION OF PH ANALYZER RECEPTACLE.

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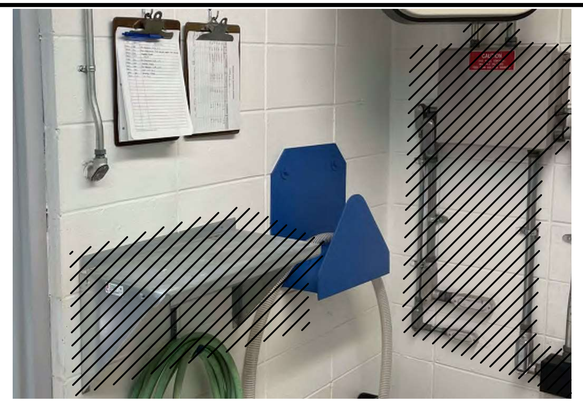
ONE-LINE DIAGRAMS WELL 2

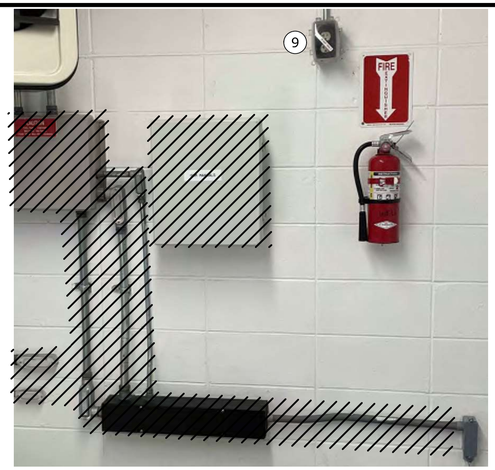
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-18

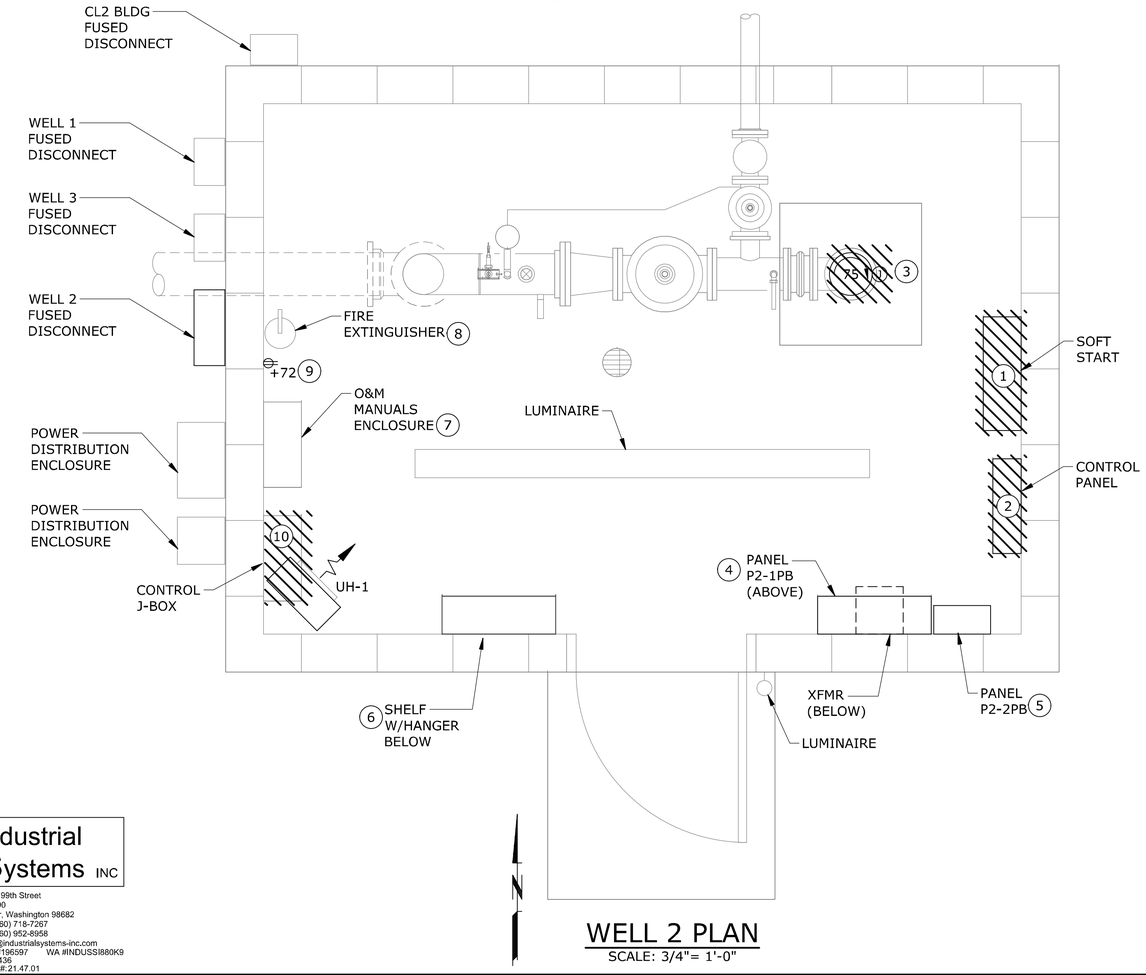
SOFT START & CONTROL PANEL ELEV. (1)
SCALE: NONE



SHELF ELEV. (2)
SCALE: NONE



O&M ENCLOSURE ELEV. (3)
SCALE: NONE



WELL 2 PLAN
SCALE: 3/4"= 1'-0"

GENERAL NOTES

1. PANELS AND EQUIPMENT BEING REMOVED ARE TO BE SALVAGED TO THE CITY.
2. EXISTING POWER DISTRIBUTION EQUIPMENT, RECEPTACLES, HEATING AND VENTILATION CONTROLS AND EQUIPMENT TO REMAIN.

KEY NOTES

(1) SEE DETAIL 1, THIS SHEET. SOFT START TO BE REPLACED WITH NEW VFD PANEL. SEE SHEET E-20 FOR ADDITIONAL INFORMATION.

(2) SEE DETAIL 1, THIS SHEET. CONTROL PANEL TO BE REPLACED WITH NEW UNIT. SEE SHEET E-20 FOR ADDITIONAL INFORMATION.

(3) EXISTING SUBMERSIBLE WELL PUMP AND MOTOR TO BE REPLACED. SEE MECHANICAL SHEETS FOR ADDITIONAL DETAILS.

(4) EXISTING SOFT START FEEDER CIRCUIT BREAKER TO BE REPLACED WITH NEW BREAKER. SEE SHEET E-18.

(5) EXISTING 120V PANEL TO BE RELOCATED TO OTHER SIDE OF DOOR. SEE SHEET E-20.

(6) SEE DETAIL 2, THIS SHEET. EXISTING SHELF WITH HANGER TO BE REMOVED FOR RELOCATION OF 120V PANEL P2-2PB. RELOCATE TO EAST WALL. SEE SHEET E-20.

(7) SEE DETAIL 3, THIS SHEET. O&M MANUAL ENCLOSURE TO BE RELOCATED TO ACCOMMODATE NEW CONTROL PANEL. COORDINATE LOCATION WITH THE CITY. SEE SHEET E-20.

(8) SEE DETAIL 3, THIS SHEET. FIRE EXTINGUISHER TO BE SLIGHTLY SHIFTED NORTH TO ACCOMMODATE NEW CONTROL PANEL. SEE SHEET E-20.

(9) SEE DETAL 3, THIS SHEET. EXISTING INJECTION PUMP RECEPTACLE TO BE RE-LOCATED. SEE SHEET E-20.

(10) EXISTING CONTROL J-BOX, WIREWAY AND EMPTY CONDUITS TO BE REMOVED AND PENETRATIONS GROUTED WITH NON-SHRINK GROUT AFTER FINAL COMMUNICATIONS HAVE BEEN ESTABLISHED. SEE DETALS 2 AND 3, THIS SHEET.

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BUILDING ELECTRICAL AND LIGHTING PLAN
WELL 2 - DEMO

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

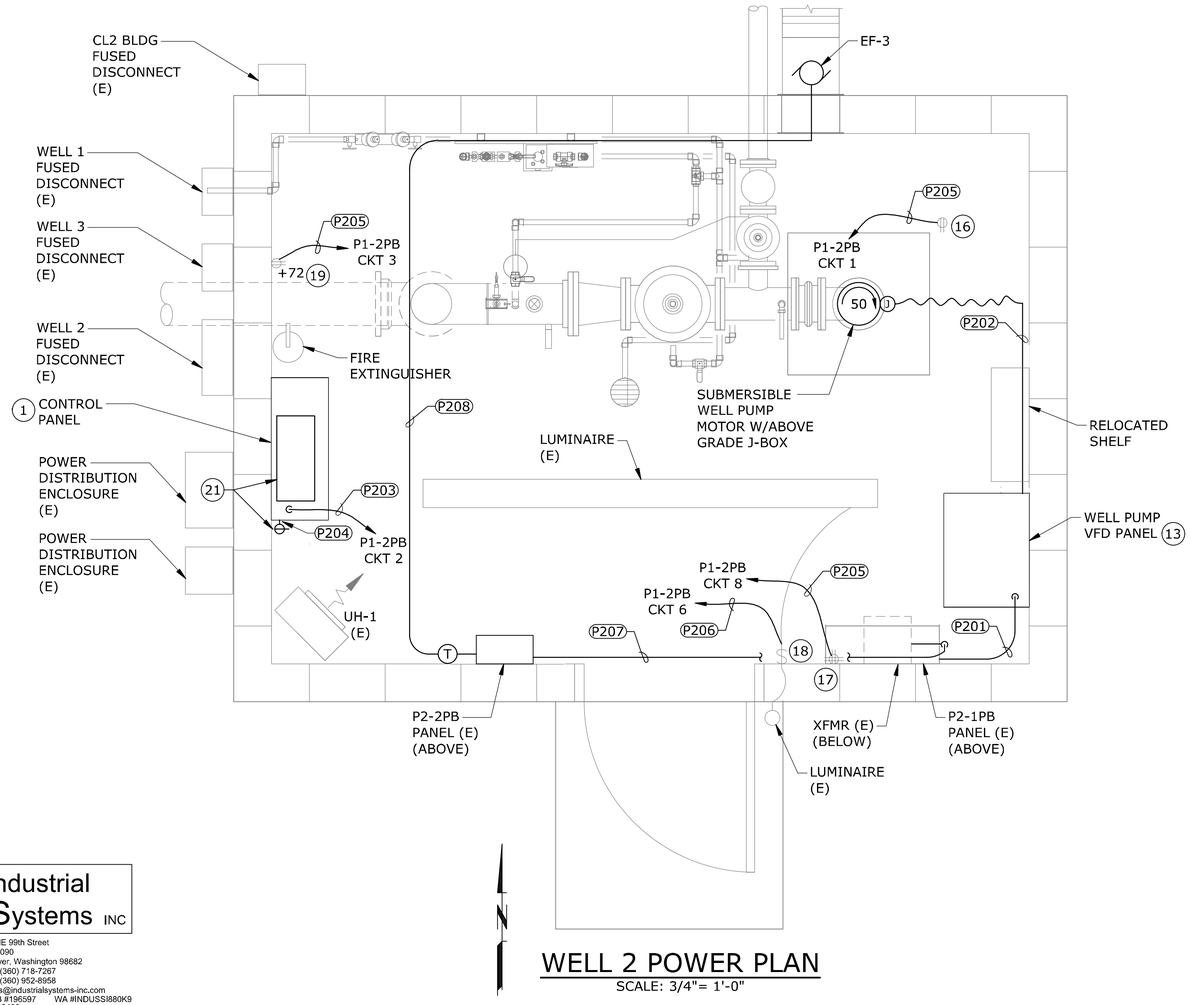
SCHEDULE B
SHEET
E-19

GENERAL NOTES

1. ALL CONNECTIONS TO EXISTING CONTROL INSTRUMENTS TO BE ROUTED TO THE NEW CONTROL PANEL USING NEW CONDUIT UNLESS EXISTING ROUTING IS UNOBSTRUCTED AND IN GOOD CONDITION.
2. CONDUCTORS TO EXISTING FIELD INSTRUMENTS ARE PROPOSED AS NEW.

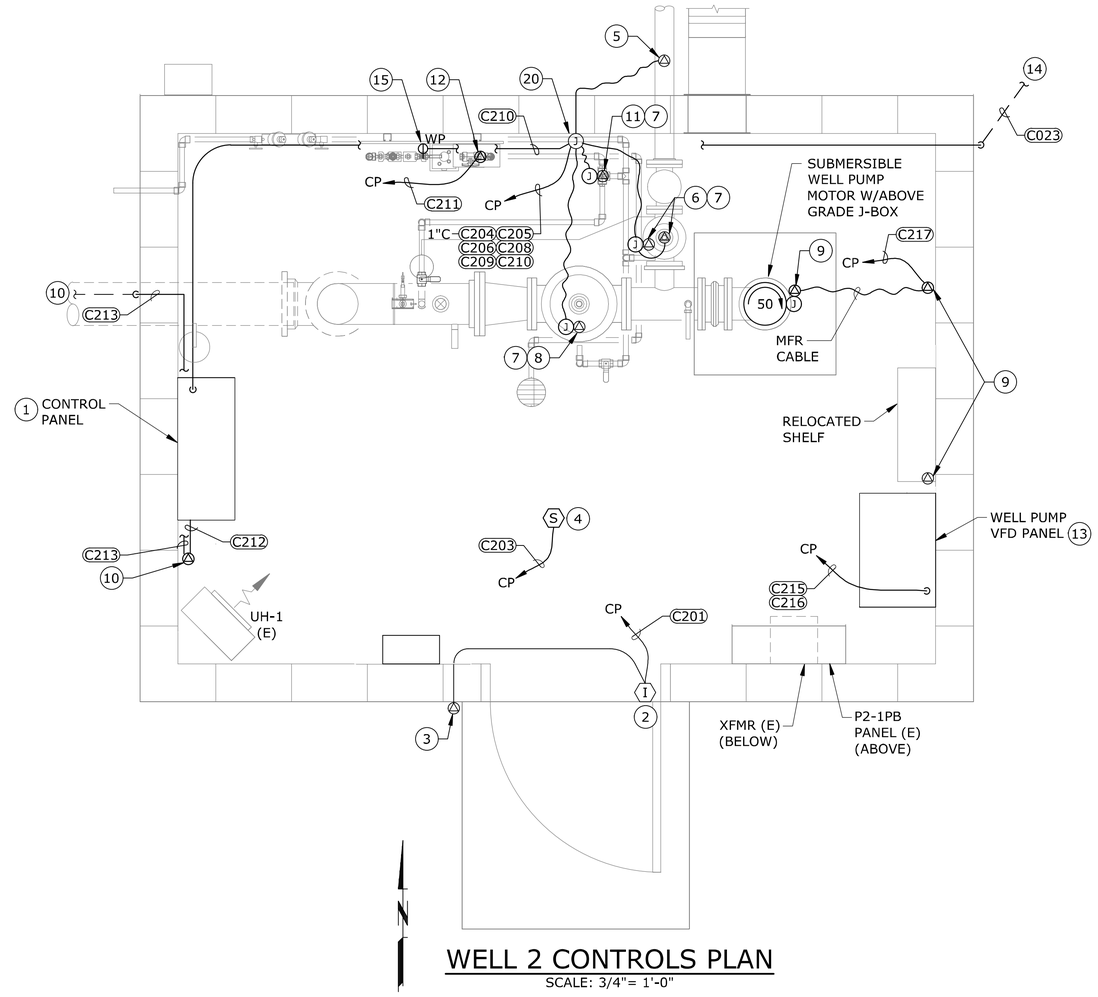
KEY NOTES

1. NEW REMOTE I/O CONTROL PANEL. SEE SHEETS I-14 THROUGH I-23 FOR ADDITIONAL INFORMATION. CONNECT TO EXISTING PANELBOARD THROUGH EXISTING CONDUIT ROUTE.
2. EXISTING DOOR INTRUSION SWITCH TO BE RE-CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-22.
3. EXISTING INTRUSION KEYED BYPASS SWITCH TO BE RECONNECTED TO NEW CONTROL PANEL. SEE SHEET I-22.
4. NEW SMOKE DETECTOR TO BE CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-22.
5. EXISTING FLOW TO WASTE SENSOR TO BE SALVAGED TO CITY AND REPLACED WITH NEW. RE-CONNECT TO NEW CONTROL PANEL VIA J-BOX. SEE SHEET I-22.
6. EXISTING FLOW TO WASTE SOLENOID AND LIMIT SWITCH. RE-CONNECT TO NEW CONTROL PANEL VIA J-BOX. SEE SHEETS I-21 AND I-22.
7. SINGLE GANG BELL BOX WITH GREEN NEON INDICATOR LIGHT, WAMCO WL-1052C5 FOR CONNECTION AT SOLENOID VALVE. SEE SHEET I-16.
8. NEW SYSTEM VALVE SOLENOID. CONNECT TO NEW NEW CONTROL PANEL VIA J-BOX. SEE SHEETS I-21 AND I-22.
9. NEW WELL LEVEL XMTR TO BE CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-18. PROVIDE AND INSTALL SENSOR TERMINATION BOX. SALVAGE EXISTING TO OWNER. PROVIDE CABLE GRIP FOR SENSOR INSTALL AT WELL CASING LEVEL TUBE.
10. NEW FLOWMETER TRANSMITTER FIT-02. RE-USE CONDUIT TO EXISTING FLOWMETER VAULT FOR CONNECTION TO FLOW ELEMENT. SEE SHEET E-2. EXTEND CONDUIT AS NEEDED.
11. NEW PH SAMPLE SOLENOID VALVE. CONNECT TO NEW CONTROL PANEL VIA J-BOX. SEE SHEET I-21.
12. NEW RAW WATER PH ANALYZER ON ASSEMBLY SKID. SEE MECHANICAL DRAWINGS FOR DETAILS. CONNECT TO NEW CONTROL PANEL. SEE SHEET I-23.
13. NEW WELL PUMP VFD PANEL. SEE SHEET E-21 FOR ADDITIONAL INFORMATION.
14. TO PH TREATMENT BUILDING. CONNECTION OF ETHERNET TO PH TREATMENT BUILDING RTU CONTROL PANEL FOR REMOTE I/O COMMUNICATIONS LINK.
15. INSTALL NEW SIMPLEX RECEPTACLE WITH WP "IN-USE COVER" AT ASSEMBLY SKID FOR ANALYZER POWER. LABEL "ANALYZER ONLY".
16. EXISTING RECEPTACLE LOCATED ON CEILING TO BE RE-CONNECTED TO RELOCATED 120V PANEL.
17. EXISTING RECEPTACLES LOCATED BELOW 480V PANEL TO BE RE-CONNECTED TO RELOCATED 120V PANEL.
18. EXISTING LIGHTING SWITCH AND CIRCUIT TO BE RE-CONNECTED TO RELOCATED 120V PANEL.
19. RE-LOCATE EXISTING INJECTION PUMP RECEPTACLE AND RE-CONNECTED TO RELOCATED 120V PANEL.
20. NEW POLYCARB JUNCTION BOX TO REPLACE EXISTING FOR CONNECTION OF SOLENOIDS AND EXISTING CONNECTION TO LB FOR FLOW SWITCH.
21. UPS AND SHELF MOUNTED NEAR TOP CORNER OF CONTROL PANEL. SHELF TO BE LARGE ENOUGH AND HEAVY ENOUGH TO SUPPORT THE FULL WEIGHT AND DIMENSIONS OF UPS PROVIDED. UPS STRAPPED TO SHELF FOR EARTHQUAKE READINESS. PROVIDE DEDICATED RECEPTACLE FED FROM CONTROL PANEL FOR UPS.



WELL 2 POWER PLAN

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



WELL 2 CONTROLS PLAN

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

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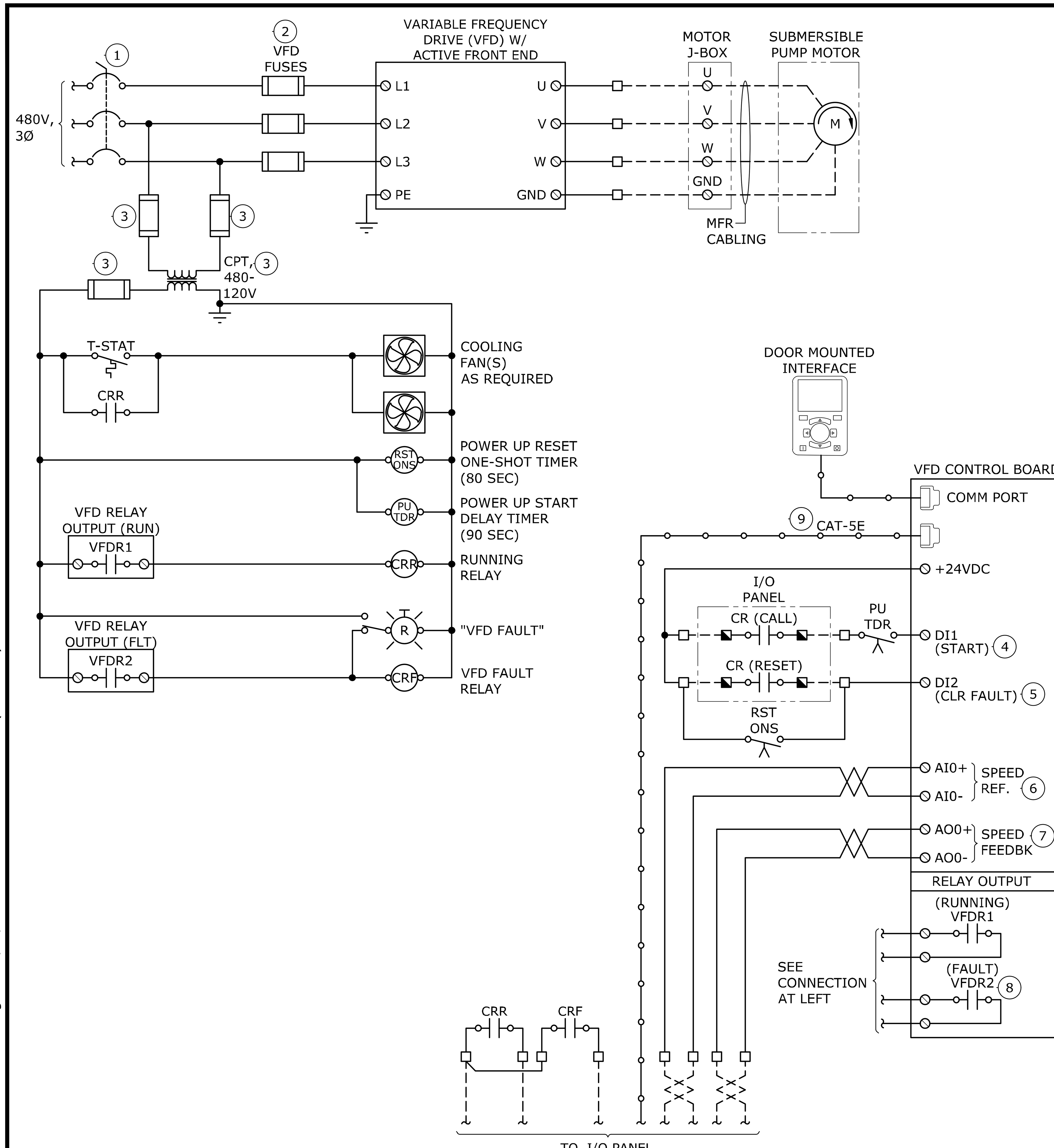
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

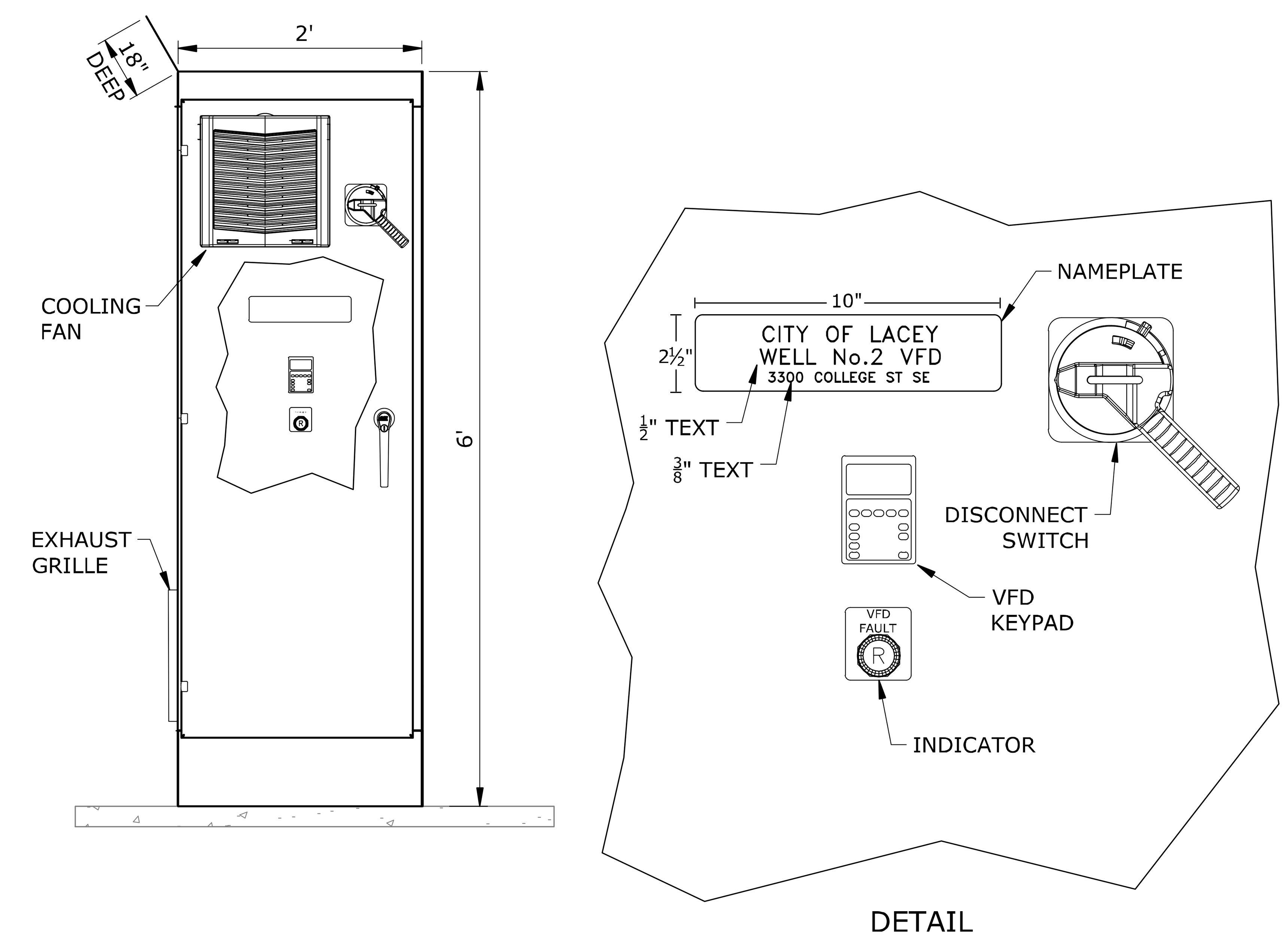
BUILDING ELECTRICAL AND LIGHTING PLAN WELL 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-20



VFD CONTROL DIAGRAM
SCALE: NONE



WELL PUMP VFD PANEL ELEVATION
SCALE: NONE

KEY NOTES

1. CIRCUIT BREAKER SIZING AS REQUIRED BY MANUFACTURER.
2. FUSING FOR SCR PROTECTION, IF REQUIRED BY MANUFACTURER.
3. FUSING AND CPT SIZED PER MANUFACTURER'S RECOMMENDATIONS.
4. CONFIGURE DIGITAL INPUT FOR 2-WIRE RUN CONTROL.
5. CONFIGURE DIGITAL INPUT FOR CLEAR FAULT.
6. CONFIGURE ANALOG INPUT FOR SPEED REFERENCE. SET FOR 4-20MA.
7. CONFIGURE ANALOG OUTPUT FOR SPEED FEEDBACK. SET FOR 4-20MA CURRENT.
8. VFD FAULT PROGRAM CONTACT TO BE NORMALLY CLOSED HELD OPEN AND CLOSES ON FAULT OR POWER LOSS.
9. ETHERNET COMMUNICATIONS USED FOR STATUS ONLY.

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SECTIONS AND DETAILS
WELL 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-21

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE ELLIPSE SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, TSP - FOR TWISTED SHIELDED PAIR, TST - TWISTED SHIELDED TRIAD AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
P201	PANEL P2-1PB	WELL PUMP VFD PANEL	(3) #2 AWG, P (1) #8 AWG, G	1.25"	
*P202	WELL PUMP VFD PANEL	SUBMERSIBLE WELL PUMP MOTOR JUNCTION BOX	(3) #4 AWG, P (3) #12 AWG, G	2"	VFD CABLE
P203	PANEL P2-2PB	CONTROL PANEL	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P204	CONTROL PANEL	RECEPTACLE FOR UPS	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1/2"	
P205	PANEL P2-2PB	EXISTING RECEPTACLE	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1/2"	
P206	PANEL P2-2PB	EXISTING LIGHTING	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1/2"	
P207	PANEL P2-2PB	EXISTING TRANSFORMER	(2) #8 AWG, P (1) #8 AWG, N (1) #8 AWG, G	3/4"	
P208	PANEL P2-2PB	EXHAUST FAN EF-3	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1/2"	ROUTE VIA LINE-VOLTAGE T-STAT
C201	BUILDING INTRUSION SWITCH	CONTROL PANEL	(4) #14 AWG, C (1) #14 AWG, G	EXIST 1/2"	EXTEND W/NEW CONDUIT AS NEEDED
C202	NOT USED				
C203	SMOKE DETECTOR	CONTROL PANEL	(3) #14 AWG, C (1) #14 AWG, G	1/2"	
C204	FLOW TO WASTE SWITCH	CONTROL PANEL	(3) #14 AWG, C (1) #14 AWG, G	1/2"	
C205	FLOW TO WASTE VALVE LIMIT SWITCH	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C206	FLOW TO WASTE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C207	NOT USED				
C208	SYSTEM VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C209	PH SAMPLE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C210	RAW WATER PH ANALYZER RECEPTACLE	CONTROL PANEL	(1) #14 AWG, P (1) #14 AWG, N (1) #14 AWG, G	1/2"	ANALYZER POWER (AC)
C211	RAW WATER PH ANALYZER	CONTROL PANEL	(1) #18 AWG, TSP (1) #14 AWG, G	1/2"	PH SIGNAL
C212	FLOWMETER	CONTROL PANEL	(4) #14 AWG, C (1) #18 AWG, TSP (1) #14 AWG, G	3/4"	FLOWMETER POWER & PULSE (DC) FLOW SIGNAL EXTEND W/NEW CONDUIT AS NEEDED
C213	FLOWMETER	FLOW ELEMENT (TUBE) IN VAULT	(2) MFR CABLES	EXIST 1"	COIL AND ELECTRODE CABLES
*C214	NOT USED				
C215	WELL PUMP VFD PANEL	CONTROL PANEL	(4) #14 AWG, C (2) #14 AWG, SP (1) #14 AWG, G	3/4"	PUMP STATUS (AC)
C216	WELL PUMP VFD PANEL	CONTROL PANEL	(4) #14 AWG, C (2) #18 AWG, TSP (1) CAT 5E (1) #14 AWG, G	1.25"	PUMP CALL & RESET (DC) PUMP ANALOG
C217	WELL LEVEL SENSOR TERMINATION ENCLOSURE	CONTROL PANEL	(1) #18 AWG, TSP (1) #14 AWG, G	1/2"	LEVEL SIGNAL

CIRCUIT SCHEDULE (1 / -)

SCALE: NONE

PANEL: P2-1PB (EXIST)	VOLTAGE: 480Y/277, 3PH, 4 WIRE	MOUNTING: SURFACE MOUNT
LOCATION: SOURCE 2 WELL BUILDING	BUS: 225A COPPER	AIC: 22,000
FEEDER: SEE POWER RISER	MAIN: MLO	

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	LOAD VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	TRANSFORMER P2-1T	2	20	1400	A	3333	3	15	UNIT HEATER HT-1	2
3	-	-	-	700	B	3333	-	-	-	4
5	SPACE				C	3333	-	-	-	6
7	SPACE				A				SPACE	8
9	SPACE				B				SPACE	10
11	SPACE				C				SPACE	12
13	WELL PUMP VFD PANEL - 50HP **(CHANGE-OUT BREAKER)**	3	100	18013	A				SPACE	14
15	-			18013	B				SPACE	16
17	-			18013	C				SPACE	18

LOAD PER PHASE

PHASE A	22.7	KVA
PHASE B	22.0	KVA
PHASE C	21.3	KVA
TOTAL LOAD	66.1	KVA
TOTAL AMPS	80	AMPS

PANEL: P2-2PB (EXIST)	VOLTAGE: 240/120, 1PH, 3WIRE	MOUNTING: SURFACE MOUNT
LOCATION: SOURCE 2 WELL BLDG	BUS: 100A COPPER	AIC: 10,000
FEEDER: SEE POWER RISER	MAIN: MLO	

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	EXHAUST FAN & LOUVER	1	20	538	A	420	1	20	CONTROL PANEL	2
3	INJECTION PUMP RECEPTACLE	1	20	180	B		1	20	UNKNOWN	4
5	PH ANALYZER RECEPTACLE **(INSTALLNEW BREAKER)**	1	20	180	A	240	1	20	LIGHTING	6
7	SPARE **(INSTALLNEW BREAKER)**	1	20		B	360	1	20	RECEPTACLE	8

LOAD PER PHASE

PHASE A	1.4	KVA
PHASE B	0.5	KVA
TOTAL LOAD	1.9	KVA
TOTAL AMPS	8	AMPS

PANEL SCHEDULES (2 / -)

SCALE: NONE

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-E-22.dwg E-22 8/15/2023 4:36 PM ROBERTC 23.1s (LMS Tech)

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AK #1018436
PROJECT#:21.47.01

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CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

SCHEDULES
WELL 2

SCHEDULE B
SHEET
E-22

PROJECT NO.: 21-3172 SCALE: AS SHOWN DATE: AUGUST 2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

NOT USED

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-23

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WELL 3 EXISTING LOAD SUMMARY				
	Voltage	480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
	MOTOR LOADS			
1	WELL PUMP	31.67	30.00	40.0
	NON MOTOR LOADS			
1	UH-1	5		6.0
*1	LIGHTING/BLDG XFMR (3KVA)	1.39		3.3
1**	EF-1	0.538		
1**	LIGHTING	0.25		
1**	RECEPTACLES	0.18		
	* - CALC LOAD-NOT XFMR FULL LOAD			
	** - LOADS INCLUDED IN XFMR LOAD			
	SUBTOTAL		**30.0**	**49.3**
	LARGEST MOTOR X 25%			10.0
	NON-MOTOR LOADS X 25%			2.3
	TOTAL		**30.0**	**61.6**
	EXISTING FEEDER SIZE 100 AMPS			

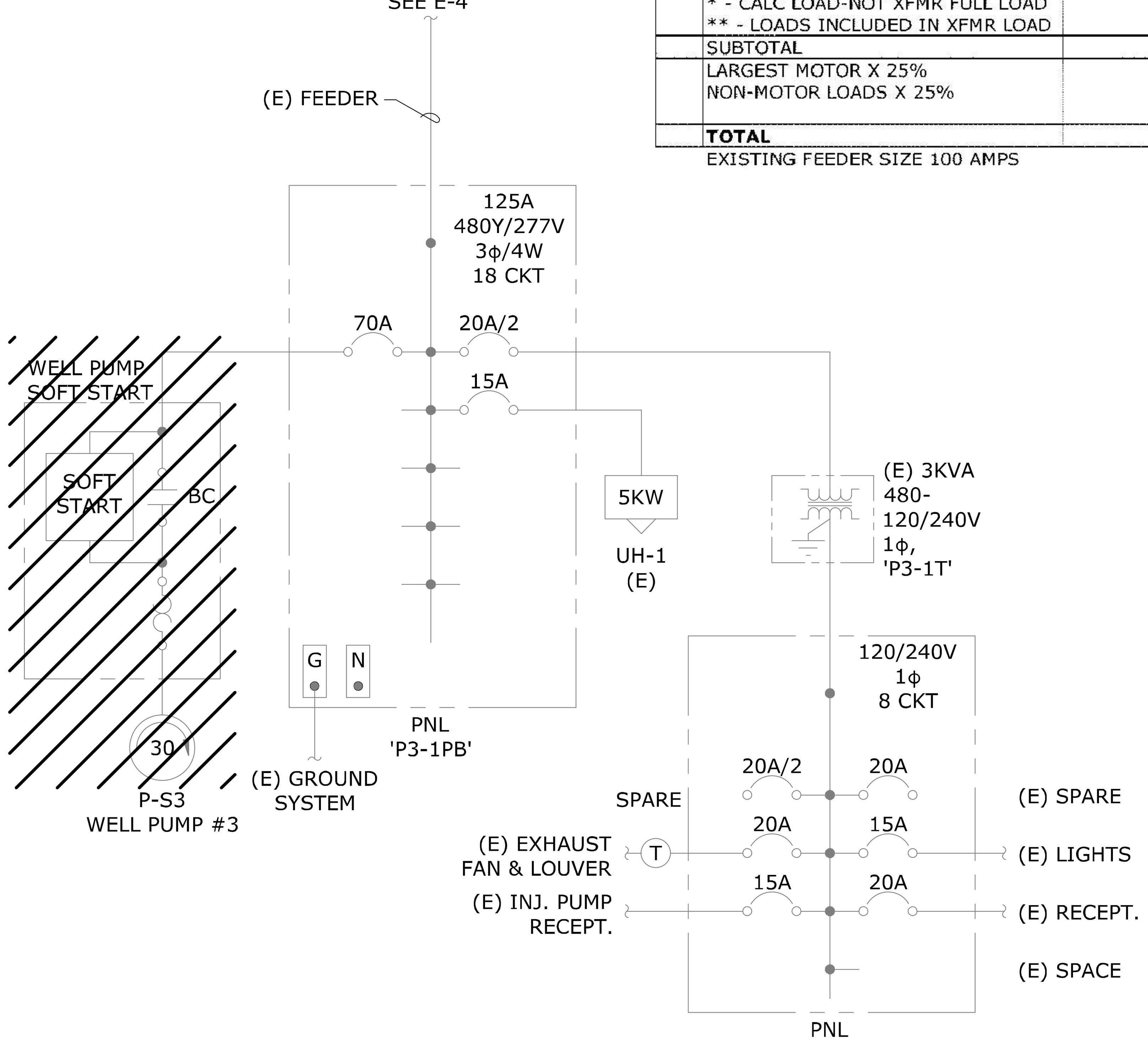
WELL 3 NEW LOAD SUMMARY				
	Voltage	480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
	MOTOR LOADS			
1	WELL PUMP	21.11	20.00	27.0
	NON MOTOR LOADS			
1	UH-1	5		6.0
*1	LIGHTING/BLDG XFMR (3KVA)	1.75		3.3
1**	EF-1	0.538		
1**	LIGHTING	0.25		
1**	RECEPTACLES	0.54		
	* - CALC LOAD-NOT XFMR FULL LOAD			
	** - LOADS INCLUDED IN XFMR LOAD			
	SUBTOTAL		**20.0**	**36.3**
	LARGEST MOTOR X 25%			6.8
	NON-MOTOR LOADS X 25%			2.3
	TOTAL		**20.0**	**45.3**
	EXISTING FEEDER SIZE 100 AMPS			

GENERAL NOTES

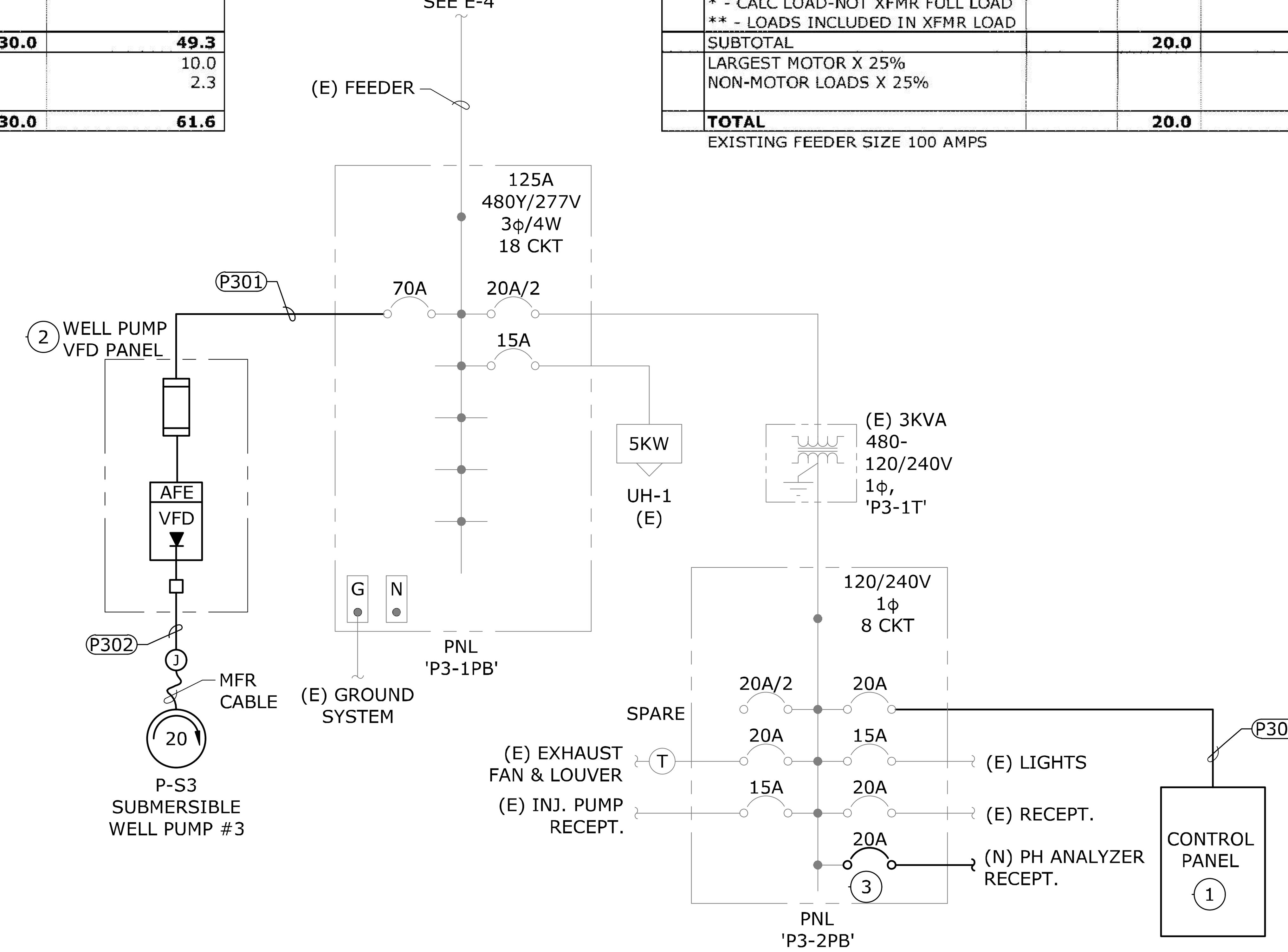
1. ALL GROUNDING TO BE PER NEC ARTICLE 250.
2. ARC FLASH STUDY AND LABELING TO BE PERFORMED. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

KEY NOTES

1. NEW CONTROL PANEL TO BE RE-CONNECTED TO EXISTING BREAKER IN PANEL. INSTALL NEW CONDUCTOR AND EXTEND CONDUIT AS REQUIRED.
2. NEW WELL PUMP VFD PANEL TO BE RE-CONNECTED TO EXISTING BRANCH BREAKER IN PANEL. INSTALL NEW CONDUCTORS IN EXISTING WIREWAY AS REQUIRED.
3. INSTALL NEW BREAKER FOR CONNECTION OF PH ANALYZER RECEPTACLE.



EXISTING ONE-LINE 1/-
SCALE: NONE



NEW ONE-LINE 2/-
SCALE: NONE

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

ONE-LINE DIAGRAMS
WELL 3

PROJECT NO.:	21-3172	SCALE:	AS SHOWN	DATE:	AUGUST 2023

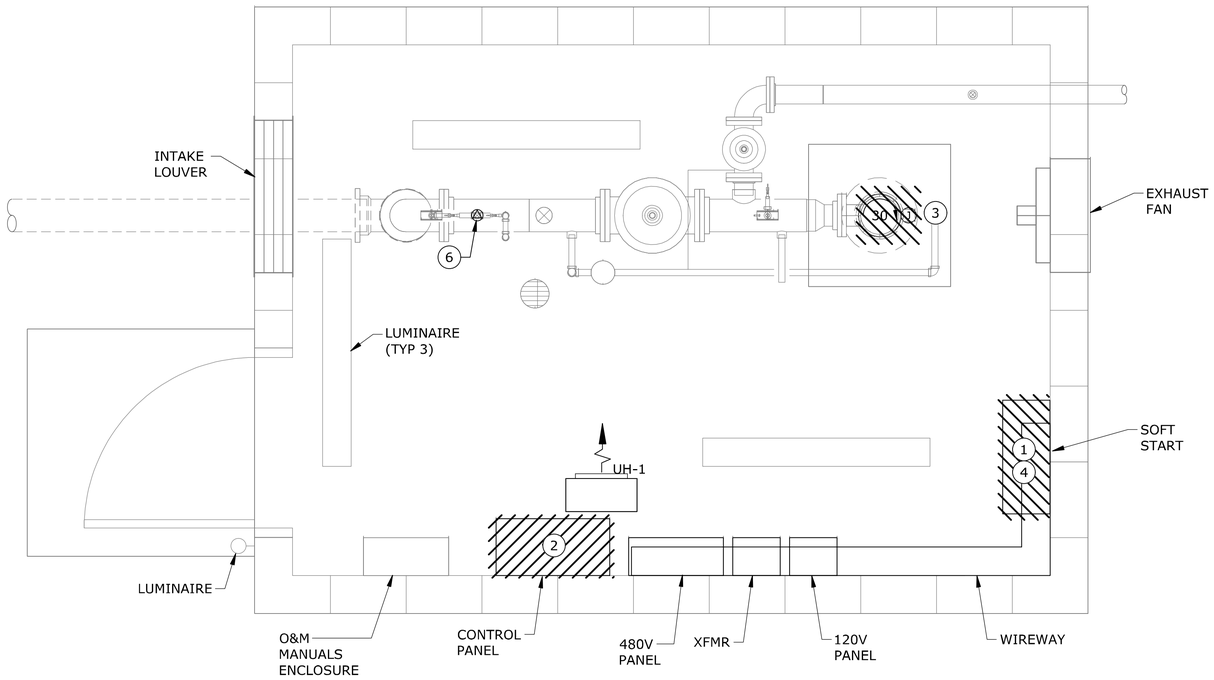
SCHEDULE B
SHEET
E-24

SOFT START ELEV. (1 / -)
SCALE: NONE

CONTROL PANEL ELEV. (2 / -)
SCALE: NONE

O&M ENCLOSURE ELEV. (3 / -)
SCALE: NONE

PRESSURE XDCR SALVAGE (4 / -)
SCALE: NONE



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

GENERAL NOTES

1. PANELS AND EQUIPMENT BEING REMOVED ARE TO BE SALVAGED TO THE CITY.
2. EXISTING POWER DISTRIBUTION EQUIPMENT, RECEPTACLES, HEATING AND VENTILATION CONTROLS AND EQUIPMENT TO REMAIN.

KEY NOTES

1. SEE DETAIL 1, THIS SHEET. SOFT START TO BE REPLACED WITH NEW VFD PANEL. SEE SHEET E-26 FOR ADDITIONAL INFORMATION.
2. SEE DETAIL 2, THIS SHEET. CONTROL PANEL TO BE REPLACED WITH NEW UNIT. SEE SHEET E-26 FOR ADDITIONAL INFORMATION.
3. EXISTING WELL PUMP AND MOTOR TO BE REPLACED. SEE MECHANICAL SHEETS FOR ADDITIONAL DETAILS.
4. EXISTING HOSE HANGER BELOW EXISTING SOFT START TO BE RELOCATED FOR INSTALLATION OF NEW WELL VFD PANEL. COORDINATE NEW LOCATION WITH THE CITY. SEE SHEET E-26.
5. SEE DETAIL 3, THIS SHEET. O&M MANUAL ENCLOSURE TO BE RELOCATED TO ACCOMMODATE NEW FLOWMETER TRANSMITTER. COORDINATE LOCATION WITH THE CITY. SEE SHEET E-26.
6. EXISTING WELLHEAD PRESSURE XDCR TO BE SALVAGED TO THE CITY. REMOVE CONDUCTORS AND CONDUIT. SEE DETAIL 4, THIS SHEET.

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BUILDING ELECTRICAL AND LIGHTING PLAN
WELL 3 - DEMO

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

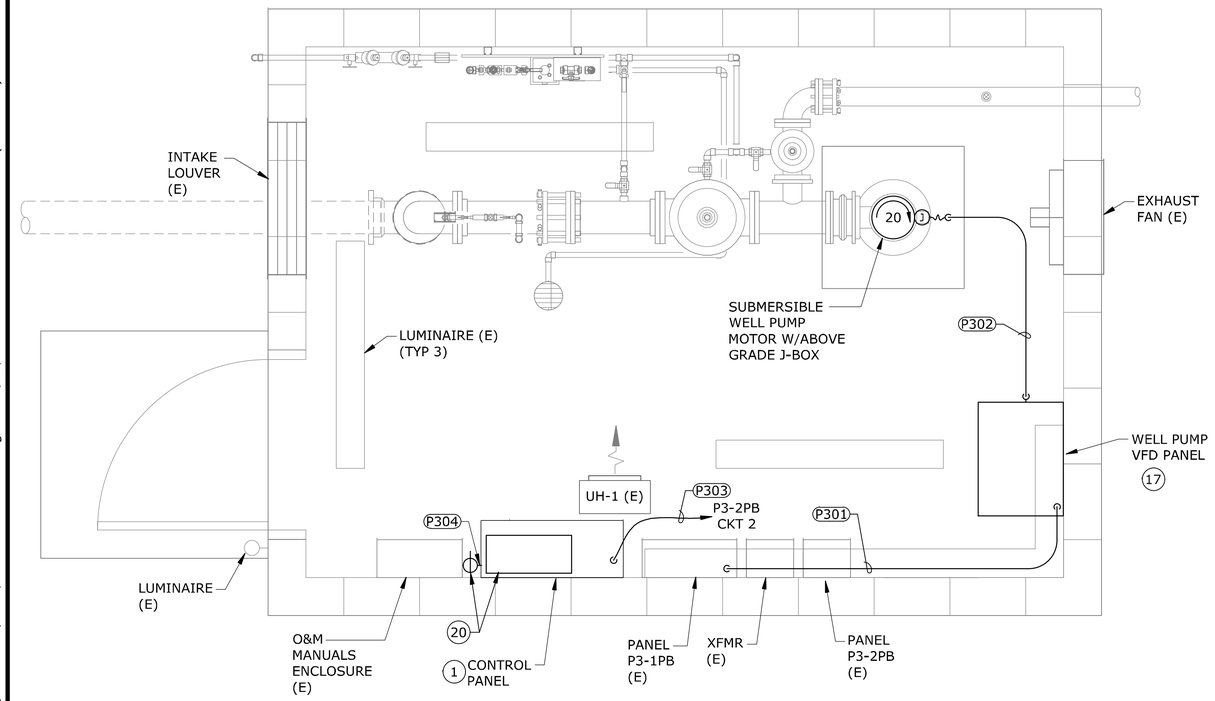
SCHEDULE B
SHEET
E-25

GENERAL NOTES

1. ALL CONNECTIONS TO EXISTING CONTROL INSTRUMENTS TO BE ROUTED TO THE NEW CONTROL PANEL USING NEW CONDUIT UNLESS EXISTING ROUTING IS UNOBSTRUCTED AND IN GOOD CONDITION.
2. CONDUCTORS TO EXISTING FIELD INSTRUMENTS ARE PROPOSED AS NEW.

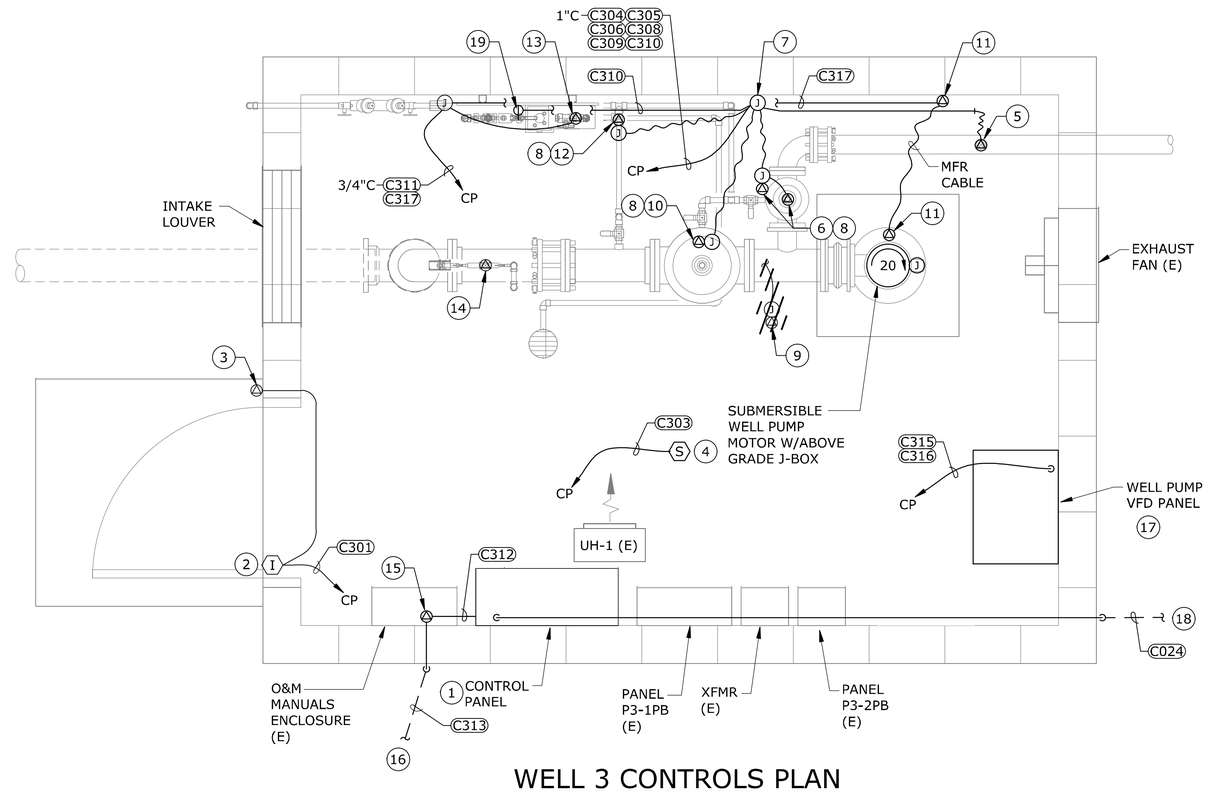
KEY NOTES

1. NEW REMOTE I/O CONTROL PANEL. SEE SHEETS I-24 THROUGH I-28 FOR ADDITIONAL INFORMATION. CONNECT TO EXISTING PANELBOARD THROUGH EXISTING CONDUIT ROUTE.
2. EXISTING DOOR INTRUSION SWITCH TO BE RE-CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-27.
3. EXISTING INTRUSION KEYED BYPASS SWITCH TO BE RECONNECTED TO NEW CONTROL PANEL. SEE SHEET I-27.
4. NEW SMOKE DETECTOR TO BE CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-27.
5. EXISTING FLOW TO WASTE SENSOR TO BE SALVAGED TO CITY AND REPLACED WITH NEW. RE-CONNECT TO NEW CONTROL PANEL VIA J-BOX. SEE SHEET I-27.
6. NEW FLOW TO WASTE SOLENOID AND LIMIT SWITCH. RE-CONNECT TO NEW CONTROL PANEL VIA J-BOX WITH INDICATOR LIGHT. SEE SHEETS I-26 AND I-27.
7. NEW POLYCARB JUNCTION BOX FOR ROUTING OF CONNECTIONS TO FLOW TO WASTE SENSOR, SOLENOIDS, AND LIMIT SWITCH.
8. SINGLE GANG BELL BOX WITH GREEN NEON INDICATOR LIGHT, WAMCO WL-1052C5 FOR CONNECTION AT SOLENOID VALVE. SEE SHEET I-26.
9. EXISTING PRE-LUBE SOLENOID TO BE REMOVED. REMOVE CONDUCTORS, CONDUIT AND CONDULET W/INDICATOR.
10. NEW SYSTEM VALVE SOLENOID. CONNECT TO NEW CONTROL PANEL VIA J-BOX. SEE SHEETS I-26 AND I-27.
11. NEW WELL LEVEL XMTR TO BE CONNECTED TO NEW CONTROL PANEL. SEE SHEET I-28. PROVIDE AND INSTALL SENSOR TERMINATION BOX AT EXISTING UNIT LOCATION. SALVAGE EXISTING TO OWNER. PROVIDE CABLE GRIP FOR SENSOR INSTALL AT WELL CASING LEVEL TUBE.
12. NEW PH SAMPLE SOLENOID VALVE. CONNECT TO NEW CONTROL PANEL VIA EXISTING INDICATOR J-BOX. ROUTE RIGID CONDUIT ALONG PIPING WITH STRUT. SEE SHEET I-26.
13. NEW RAW WATER PH ANALYZER ON ASSEMBLY SKID. SEE MECHANICAL DRAWINGS FOR DETAILS. CONNECT TO NEW CONTROL PANEL. SEE SHEET I-28.
14. NOT USED.
15. NEW FLOWMETER TRANSMITTER FIT-03. MOUNT ABOVE EXISTING WRITING SHELF. SEE SHEET E-25.
16. TO NEW FLOWMETER VAULT. SEE SHEETE E-3.
17. NEW WELL PUMP VFD PANEL. SEE SHEET E-27 FOR ADDITIONAL INFORMATION.
18. TO PH TREATMENT BUILDING. CONNECTION OF ETHERNET TO PH TREATMENT BUILDING RTU CONTROL PANEL FOR REMOTE I/O COMMUNICATIONS LINK.
19. INSTALL NEW SIMPLEX RECEPTACLE WITH WP "IN-USE COVER" AT ASSEMBLY SKID FOR ANALYZER POWER. LABEL "ANALYZER ONLY".
20. UPS AND SHELF MOUNTED NEAR TOP CORNER OF CONTROL PANEL. SHELF TO BE LARGE ENOUGH AND HEAVY ENOUGH TO SUPPORT THE FULL WEIGHT AND DIMENSIONS OF UPS PROVIDED. UPS STRAPPED TO SHELF FOR EARTHQUAKE READINESS. PROVIDE DEDICATED RECEPTACLE FED FROM CONTROL PANEL FOR UPS.



WELL 3 POWER PLAN

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



WELL 3 CONTROLS PLAN

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

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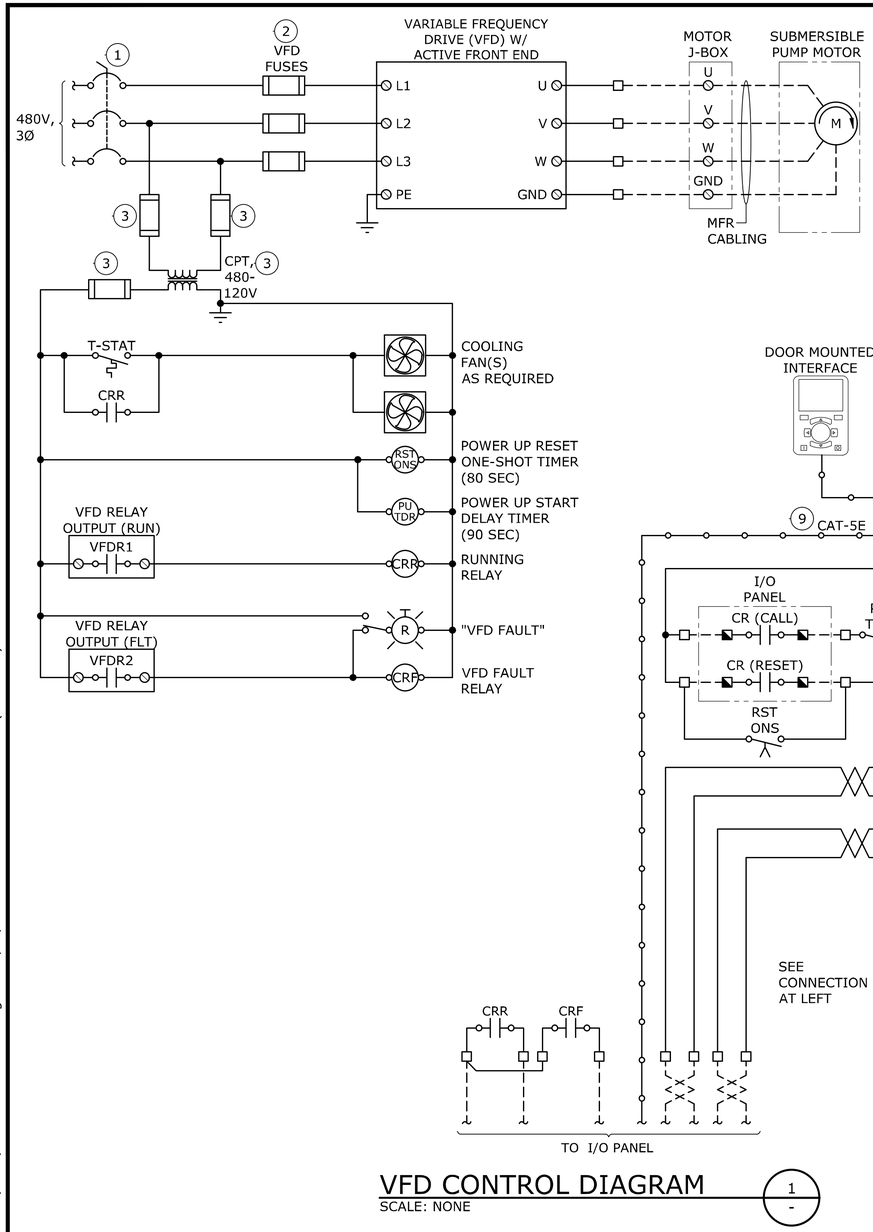
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BUILDING ELECTRICAL AND LIGHTING PLAN
WELL 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-26

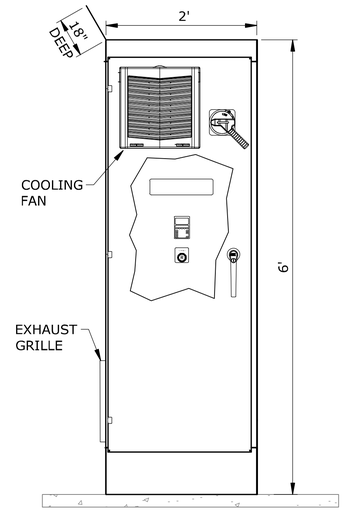


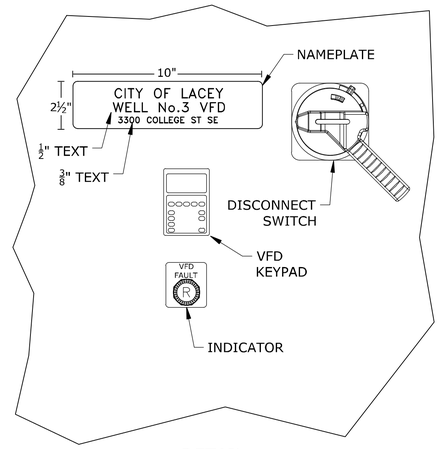
VFD CONTROL DIAGRAM

SCALE: NONE

1

-





DETAIL

WELL PUMP VFD PANEL ELEVATION

SCALE: NONE

2

-

KEY NOTES

1. CIRCUIT BREAKER SIZING AS REQUIRED BY MANUFACTURER.
2. FUSING FOR SCR PROTECTION, IF REQUIRED BY MANUFACTURER.
3. FUSING AND CPT SIZED PER MANUFACTURER'S RECOMMENDATIONS.
4. CONFIGURE DIGITAL INPUT FOR 2-WIRE RUN CONTROL.
5. CONFIGURE DIGITAL INPUT FOR CLEAR FAULT.
6. CONFIGURE ANALOG INPUT FOR SPEED REFERENCE. SET FOR 4-20MA.
7. CONFIGURE ANALOG OUTPUT FOR SPEED FEEDBACK. SET FOR 4-20MA CURRENT.
8. VFD FAULT PROGRAM CONTACT TO BE NORMALLY CLOSED HELD OPEN AND CLOSES ON FAULT OR POWER LOSS.
9. ETHERNET COMMUNICATIONS USED FOR STATUS ONLY.

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SECTIONS AND DETAILS WELL 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-27

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE ELLIPSE SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, TSP - FOR TWISTED SHIELDED PAIR, TST - TWISTED SHIELDED TRIAD AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
P301	PANEL P3-1PB	WELL PUMP VFD PANEL	(3) #4 AWG, P (1) #8 AWG, G	EXIST WIREWAY	
*P302	WELL PUMP VFD PANEL	SUBMERSIBLE WELL PUMP MOTOR JUNCTION BOX	(3) #10 AWG, P (3) #14 AWG, G	1"	VFD CABLE
P303	PANEL P3-2PB	CONTROL PANEL	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	3/4"	
P304	CONTROL PANEL	RECEPTACLE FOR UPS	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1/2"	
C301	BUILDING INTRUSION SWITCH	CONTROL PANEL	(4) #14 AWG, C (1) #14 AWG, G	EXIST 1/2"	EXTEND W/NEW CONDUIT AS NEEDED
C302	NOT USED				
C303	SMOKE DETECTOR	CONTROL PANEL	(3) #14 AWG, C (1) #14 AWG, G	1/2"	
C304	FLOW TO WASTE SWITCH	CONTROL PANEL	(3) #14 AWG, C (1) #14 AWG, G	1/2"	
C305	FLOW TO WASTE VALVE LIMIT SWITCH	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C306	FLOW TO WASTE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
*C307	NOT USED				
C308	SYSTEM VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C309	PH SAMPLE VALVE SOLENOID	CONTROL PANEL	(2) #14 AWG, C (1) #14 AWG, G	1/2"	
C310	RAW WATER PH ANALYZER RECEPTACLE	CONTROL PANEL	(1) #14 AWG, P (1) #14 AWG, N (1) #14 AWG, G	1/2"	ANALYZER POWER (AC)
C311	RAW WATER PH ANALYZER	CONTROL PANEL	(1) #18 AWG, TSP (1) #14 AWG, G	1/2"	PH SIGNAL
C312	FLOWMETER	CONTROL PANEL	(4) #14 AWG, C (1) #18 AWG, TSP (1) #14 AWG, G	3/4"	FLOWMETER POWER & PULSE (DC) FLOW SIGNAL EXTEND W/NEW CONDUIT AS NEEDED
C313	FLOWMETER	FLOW ELEMENT (TUBE) IN VAULT	(2) MFR CABLES	1	COIL AND ELECTRODE CABLES
*C314					
C315	WELL PUMP VFD PANEL	CONTROL PANEL	(4) #14 AWG, C (2) #14 AWG, SP (1) #14 AWG, G	3/4"	PUMP STATUS (AC)
C316	WELL PUMP VFD PANEL	CONTROL PANEL	(4) #14 AWG, C (2) #18 AWG, TSP (1) CAT 5E (1) #14 AWG, G	1.25"	PUMP CALL & RESET (DC) PUMP ANALOG
C317	WELL LEVEL SENSOR TERMINATION ENCLOSURE	CONTROL PANEL	(1) #18 AWG, TSP (1) #14 AWG, G	1/2"	LEVEL SIGNAL

CIRCUIT SCHEDULE (1)
SCALE: NONE

PANEL: P3-1PB (EXIST) | VOLTAGE: 480Y/277, 3PH, 4 WIRE | MOUNTING: SURFACE MOUNT

LOCATION: SOURCE 3 WELL BUILDING | BUS: 225A COPPER | AIC: 22,000

FEEDER: SEE POWER RISER | MAIN: MLO

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	LOAD VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	WELL PUMP VFD PANEL - 20HP	3	100	7482	A	1100	2	20	TRANSFORMER P1-1T	2
3	-	-	-	7482	B	600	-	-	-	4
5	-	-	-	7482	C	1667	3	15	UNIT HEATER HT-1	6
7	SPACE				A	1667	-	-	-	8
9	SPACE				B	1667	-	-	-	10
11	SPACE				C				SPACE	12
13	SPACE				A				SPACE	14
15	SPACE				B				SPACE	16
17	SPACE				C				SPACE	18

LOAD PER PHASE

PHASE A	10.2	KVA
PHASE B	9.7	KVA
PHASE C	9.1	KVA
TOTAL LOAD	29.1	KVA
TOTAL AMPS	35	AMPS

PANEL: P3-2PB (EXIST) | VOLTAGE: 240/120, 1PH, 3WIRE | MOUNTING: SURFACE MOUNT

LOCATION: SOURCE 3 WELL BLDG | BUS: 100A COPPER | AIC: 10,000

FEEDER: SEE POWER RISER | MAIN: MLO

CKT NO	CIRCUIT DESCRIPTION	BREAKER POLES	BREAKER AMPS	VA	PHASE	LOAD VA	BREAKER POLES	BREAKER AMPS	CIRCUIT DESCRIPTION	CKT NO
1	SPARE	2	20		A	420	1	20	CONTROL PANEL	2
3	-	-	-		B	250	1	15	LIGHTING	4
5	EXHAUST FAN & LOUVER	1	20	538	A	180	1	20	RECEPTACLE	6
7	INJECTION PUMP RECEPTACLE	1	15	180	B	180	1	20	PH ANALYZER RECEPTACLE **(INSTALLNEW BREAKER)**	8

LOAD PER PHASE

PHASE A	1.1	KVA
PHASE B	0.6	KVA
TOTAL LOAD	1.7	KVA
TOTAL AMPS	7	AMPS

PANEL SCHEDULES (2)
SCALE: NONE

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NO.	DATE	BY	REVISION

NOTICE
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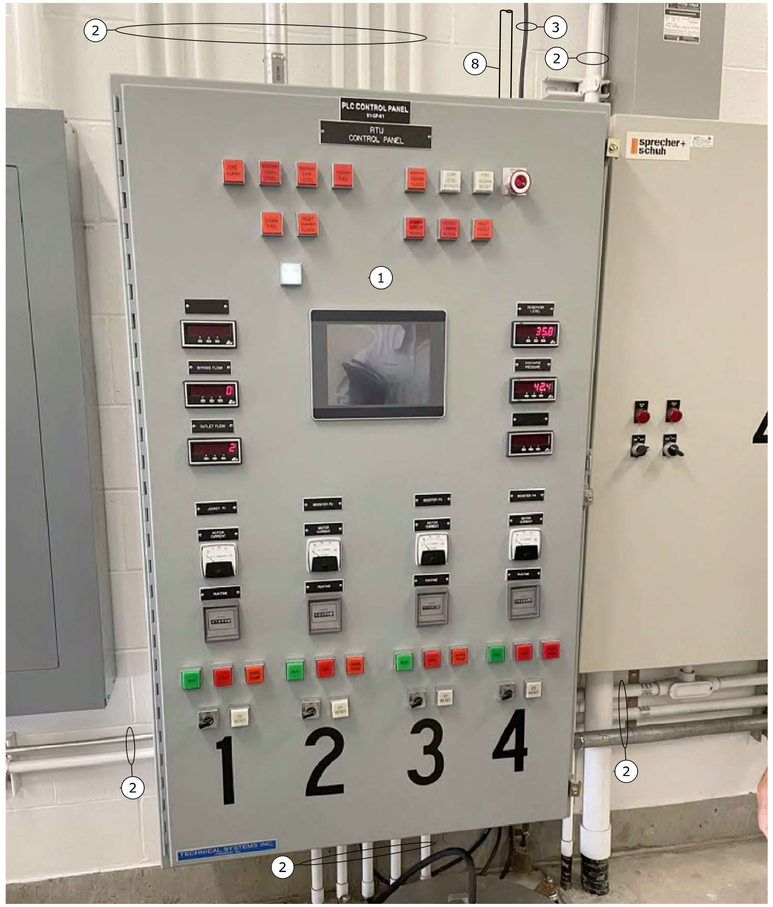
SCHEDULES
WELL 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-28



1 BOOSTER PUMP STATION ELEV.
SCALE: NONE

1
-

CL2 TELEMETRY BOX ELEV.
SCALE: NONE

2
-

KEY NOTES

1. EXISTING BOOSTER PUMP STATION CONTROL PANEL TO BE MODIFIED. EXISTING DOOR AND INNER PANEL TO BE REMOVED AND REPLACED WITH NEW, SEE SHEETS I-36 THRU 44. CONTRACTOR TO RE-TERMINATE ALL FIELD CONNECTIONS AND POWER TO PANEL.
2. EXISTING ENCLOSURE AND CONDUITS WITH CONDUCTORS TO REMAIN FOR RE-TERMINATION OF CIRCUITS.
3. EXISTING RADIO COAX TO BE REMOVED.
4. EXISTING CHLORINE BUILDING TELEMETRY INTERFACE BOX TO BE REPLACED WITH RIO CONTROL PANEL. SEE SHEETS I-29 THRU 33. ADJUST LOCATION FOR FITMENT ON WALL. SEE KEY NOTE 5 BELOW.
5. CONTRACTOR TO MODIFY AND SLIDE OVER OR REPLACE EXISTING HOSE REEL PLATING AND CONNECTION TO MAKE ROOM FOR NEW RTU PANEL. EXISTING PANEL IS 8" WIDER THAN EXISTING JUNCTION BOX.
6. CONTRACTOR TO ADJUST CONDUITS AS NECESSARY FOR INSTALLATION OF NEW RTU PANEL.
7. STUB AND CAP EXISTING 1.25" (ANALOG) AND 1" (DISCRETE) CONDUITS FROM WELL NO 1 AFTER REMOVAL OF CONDUCTORS.
8. NEW CONDUIT FOR ROUTING OF COMMUNICATION CABLE AND GENERATOR START SIGNAL TO TREATMENT BUILDING. SEE SHEET E-2.

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DocuSigned by: 233E384[illegible]46C
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CHLORINE BUILDING AND BOOSTER PUMP STATION PANEL REPLACEMENT ELEVATIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
E-29

NOT USED

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NOT USED

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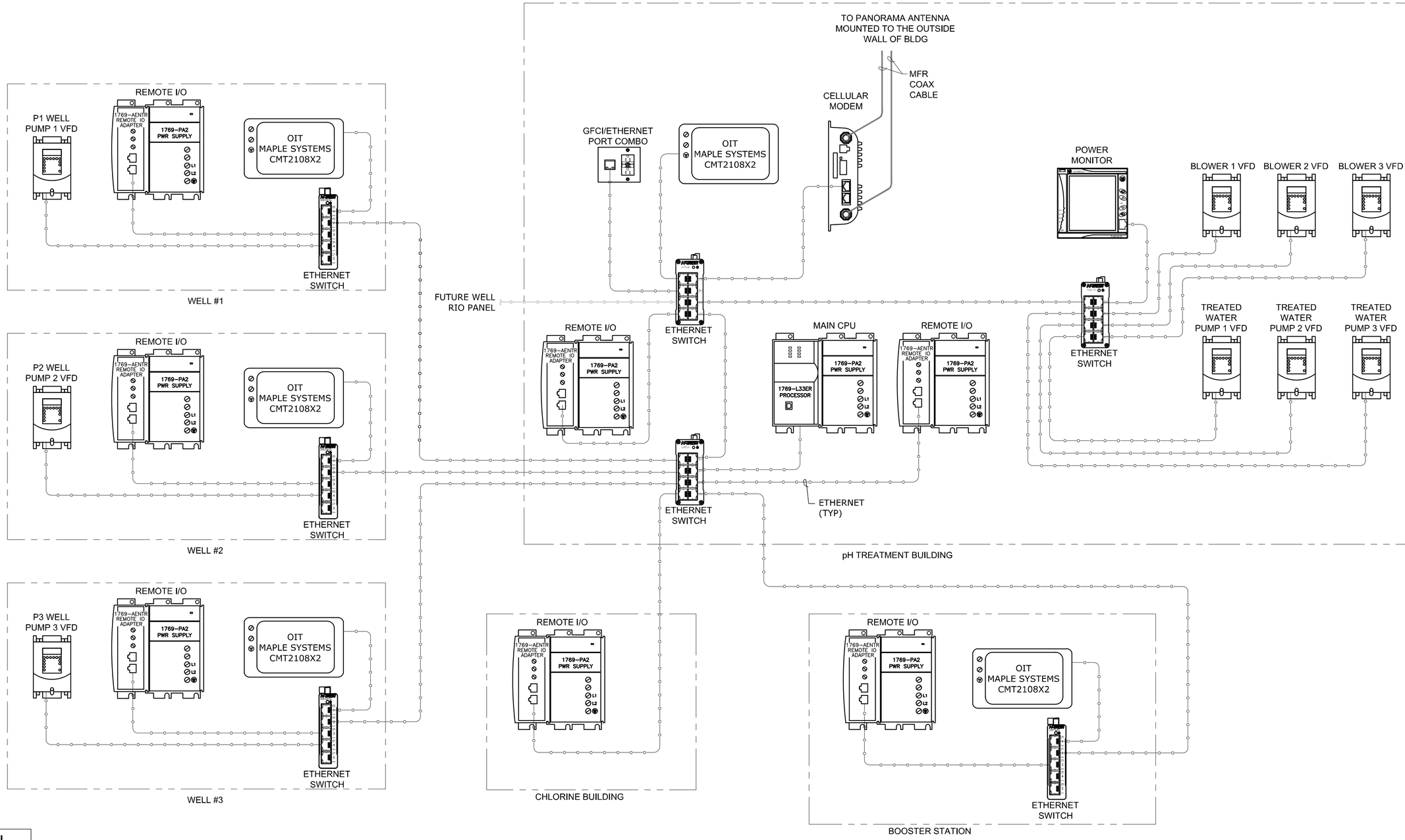
SCHEDULE B
SHEET
E-30



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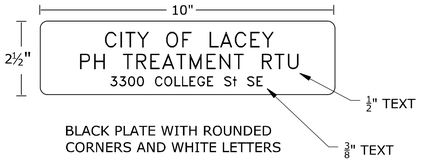
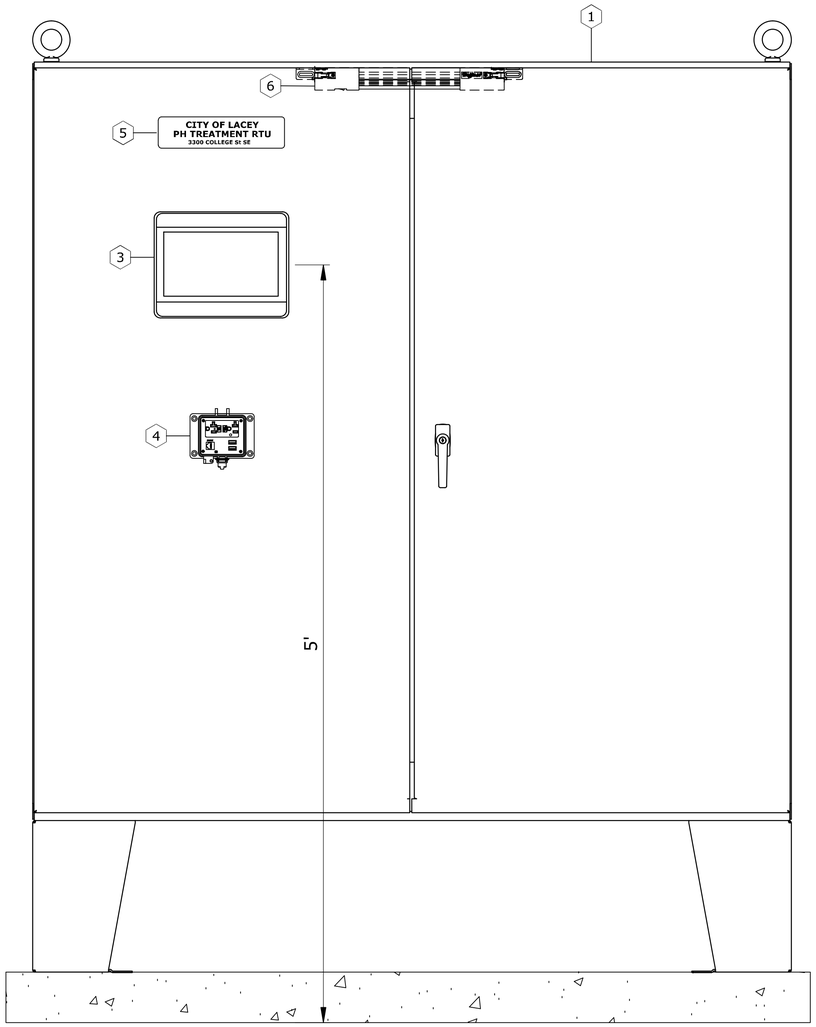
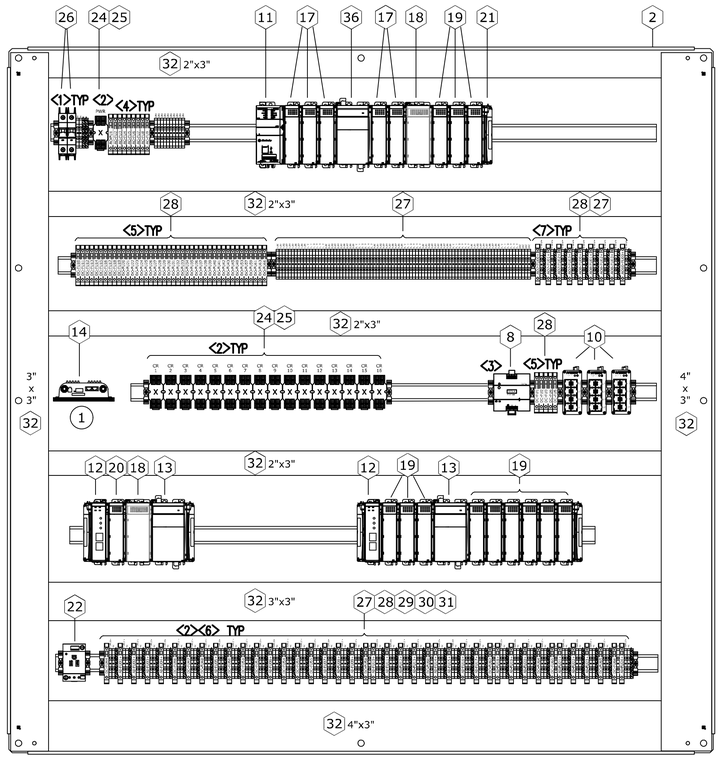
CONTROL SYSTEM BLOCK DIAGRAM

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-1







GENERAL NOTES

1. PROVIDE AND INSTALL VINYL LABELS ON BACK PANEL FOR ALL FUSING, RELAYS, CIRCUIT BREAKERS AND POWER SUPPLIES AS SHOWN IN THE TABLE BELOW.

KEY NOTES

(1) CELL MODEM TO BE PLACED MOUNTED ON 90° BRACKET WITH LIGHTS FACING OUTWARD.

#	ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
	1	1	NEMA 4 ENCLOSURE, 60"x60"x12"	HOFFMAN	A606012LPG	YES
	2	1	BACK PANEL	HOFFMAN	A60P60	YES
	3	1	OPERATOR INTERFACE TERMINAL W/TOUCHSCREEN, 10.1", 24VDC	WEINTEK	CMT2108X2	NO
	4	1	DATAPORT WITH ETHERNET AND GFCI	HUBBELL	PR20SE	YES
	5	1	PHENOLIC NAMEPLATE (SEE NAMEPLATE SCHEDULE)	PANEL FABRICATOR CHOICE		YES
	6	1	CONTROL PANEL LIGHT FIXTURE	PANEL FABRICATOR CHOICE		YES
	7	-	UNUSED			
	8	1	24VDC POWER SUPPLY, 4AMP	SOLA	SDP4-24-100LT	NO
	9	-	UNUSED			
	10	3	ETHERNET SWITCH, UNMANAGED (8-PORT)	N-TRON	308-TX	NO
	11	1	PLC CPU W/ 2 ETHERNET/IP	ALLEN BRADLEY	1769-L33ER	NO
	12	2	REMOTE I/O ADAPTER	ALLEN BRADLEY	1769-AENTR	NO
	13	1	PLC POWER SUPPLY, 2AMP	ALLEN BRADLEY	1769-PA2	NO
	14	1	CELLULAR MODEM - **OWNER PROVIDED**	CRADLEPOINT	MA5-09006005-NNA	NO
	15	-	UNUSED			
	16	-	UNUSED			
	17	5	16PT DC DIGITAL INPUT MODULE	ALLEN BRADLEY	1769-IQ16	NO
	18	2	16PT DC DIGITAL ISOLATED OUTPUT MODULE	ALLEN BRADLEY	1769-OW16	NO
	19	3	ANALOG OUTPUT MODULE	ALLEN BRADLEY	1769-OF4	NO
	20	10	ANALOG INPUT MODULE	ALLEN BRADLEY	1769-IF4	NO
	21	3	PLC END CAP	ALLEN BRADLEY	1769-ECR	NO
	22	1	SIMPLEX RECEPTACLE - DIN-RAIL MOUNT	PHOENIX CONTACT	0804155	NO
	23	23	24VDC CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-DC24V	NO
	24	1	120V CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
	25	24	2PDT CONTROL RELAY BASE	IDEC	SJ2S-05B	NO
	26	AR	1 POLE CIRCUIT BREAKER (SIZE ACCORDING TO DRAWINGS)	EATON	FAZ-C**/1-NA	NO
	27	AR	TERMINAL BLOCK (NON FUSED)	SPRECHER SCHUH	V7-W4 SERIES	NO
	28	AR	TERMINAL BLOCK VDC (FUSED)/w BLOWN FUSE INDICATION	SPRECHER SCHUH	V7-H5	NO
	29	AR	TERMINAL BLOCK END STOP	SPRECHER SCHUH	V7-W4 SERIES	NO
	30	AR	TERMINAL BLOCK END PLATE	SPRECHER SCHUH	V7-W4 SERIES	NO
	31	AR	TERMINAL BLOCK (GROUND)	SPRECHER SCHUH	V7-W4 SERIES	NO
	32	AR	WIREWAY (SIZE AS NOTED ON DRAWING)	PANEL FABRICATOR CHOICE		YES
	33	AR	STEEL DIN-RAIL	ENTRELEC	SHOP SUPPLY	YES
	34	AR	FUSES (FUSE SIZE ACCORDING TO DRAWINGS)	BUSSMAN	ABC AND GDL TYPE	YES
	35	1	GROUND BUS	EATON		YES
	36	2	PLC POWER SUPPLY, 4AMP	ALLEN BRADLEY	1769-PA4	NO

Vinyl Labels

White background with 18 point black font, text to include: (X replace with count identifier as shown) {Mount on back panel}

<1>	CB-X	<2>	CR-X	<3>	PS-1	<4>	AC-FUX TYPE SIZE	<5>	DC-FUX TYPE SIZE	<6>	AIX-FUX TYPE SIZE	<7>	AOX-FUX TYPE SIZE	<8>	NOT USED

RTU PANEL LAYOUT
SCALE: 1:6
1 / I-2

RTU PANEL BOM
NTS
2 / I-2

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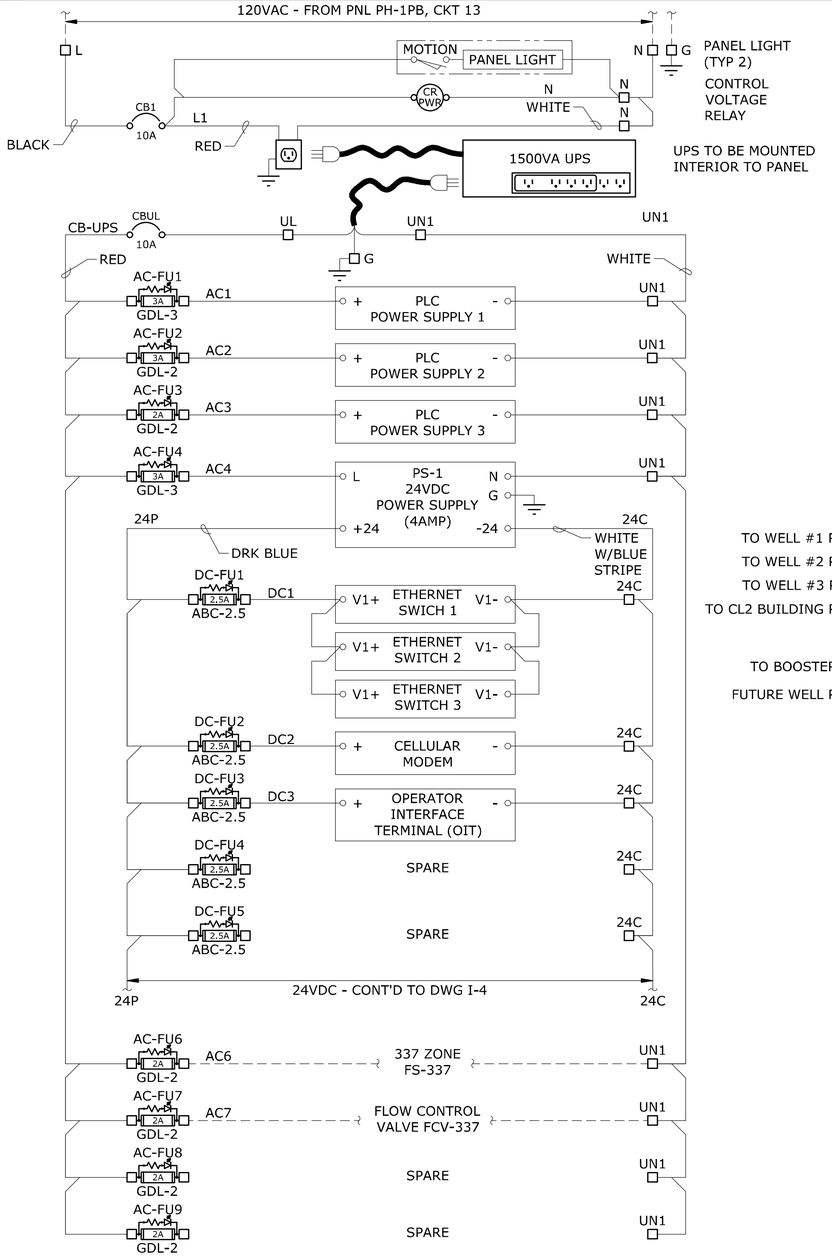
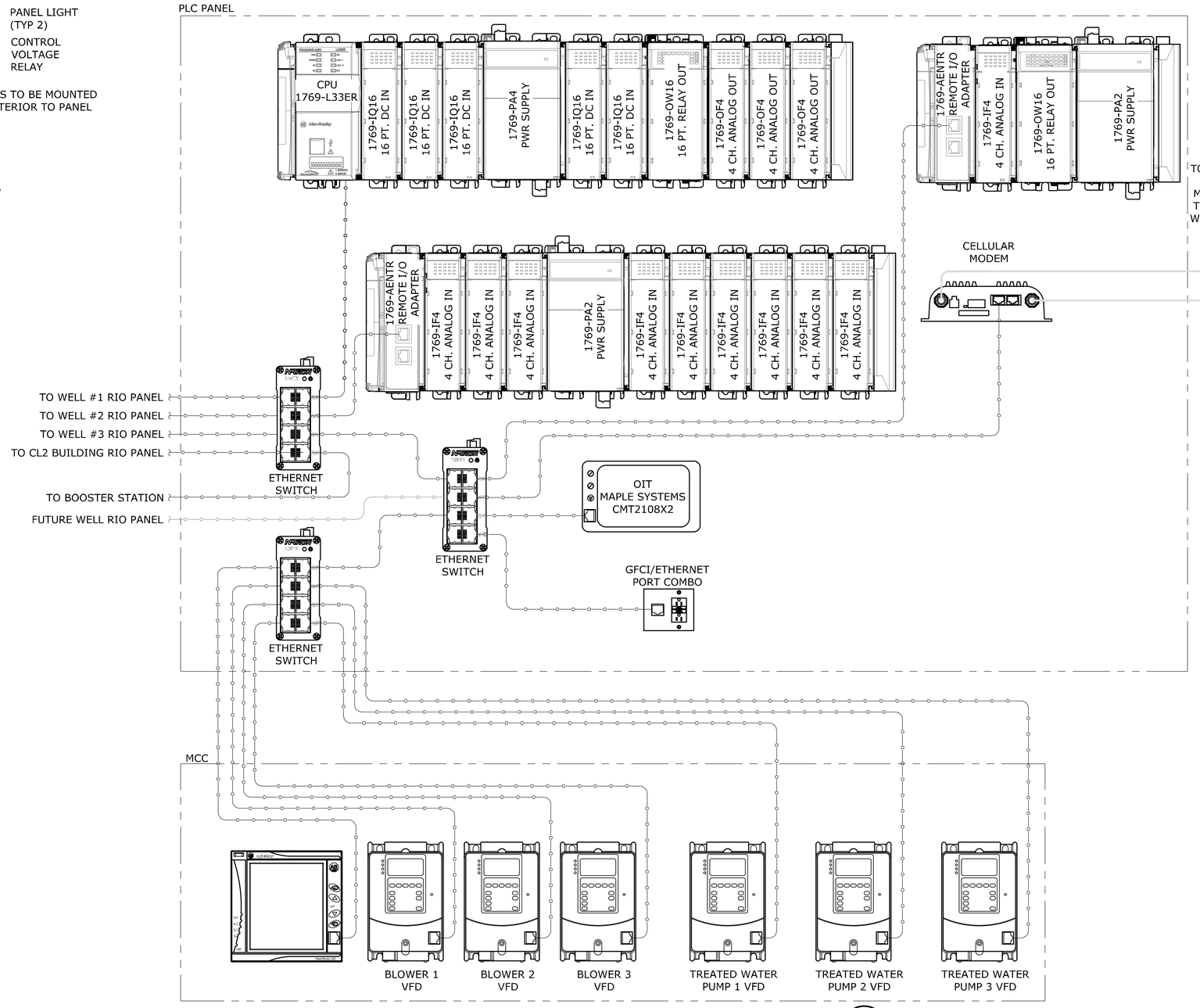
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
GENERAL ARRANGEMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-2





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RTU PANEL POWER DIAGRAM — 1 / I-3
SCALE: NONE

COMMUNICATION BLOCK DIAGRAM — 2 / I-3
SCALE: NONE

NO.	DATE	BY	REVISION

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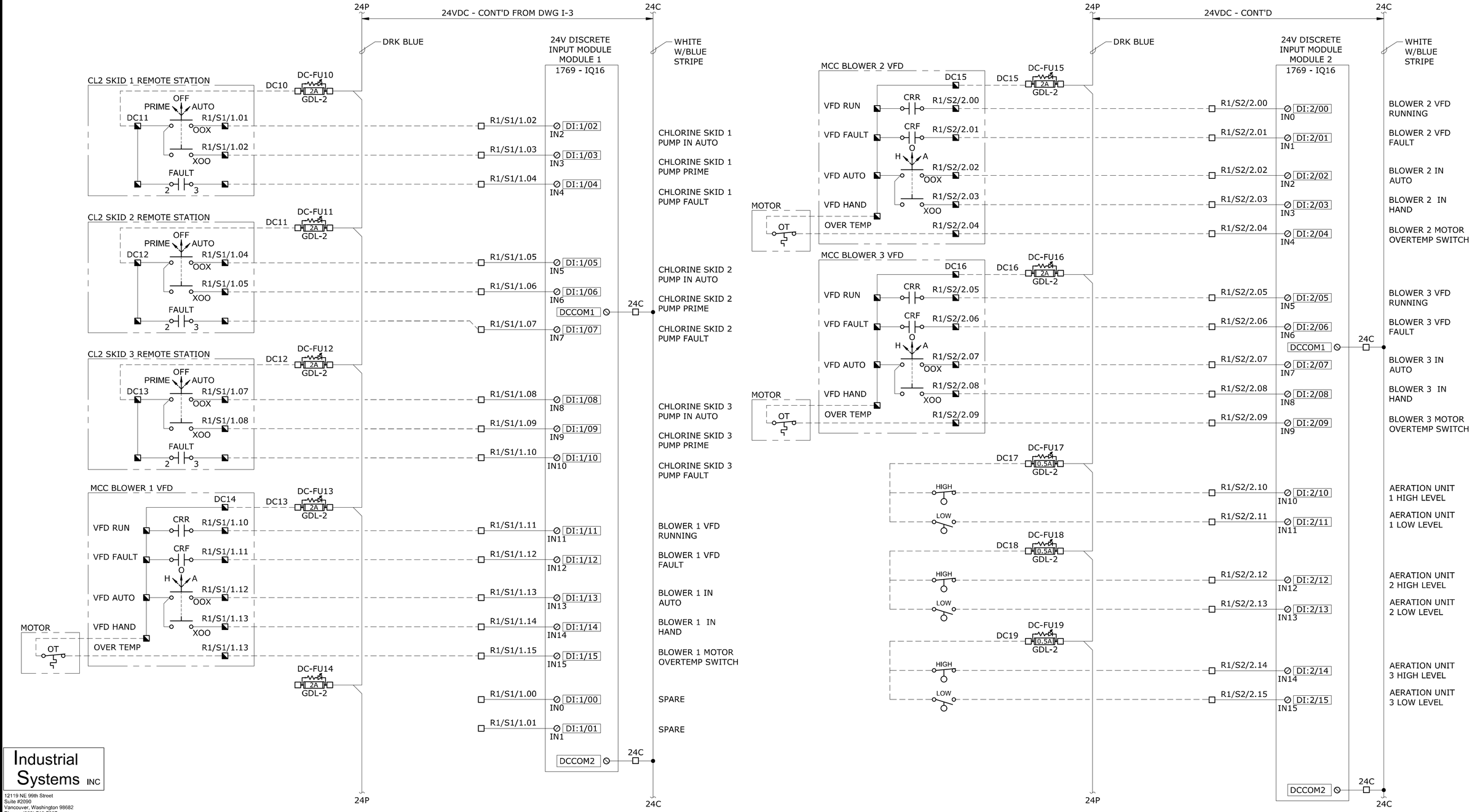
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
POWER, FUSING
AND ETHERNET CONNECTIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-3



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LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-4

24P — 24VDC - CONT'D FROM DWG I-4 — 24C

DRK BLUE

WHITE W/BLUE STRIPE

24V DISCRETE INPUT MODULE MODULE 3 1769 - IQ16

MCC TREATED WATER PUMP 1 VFD

DC20 — DC-FU20 — 2A — GDL-2

VFD RUN — CRR — R1/S3/3.1 — R1/S3/3.00 — DI:3/00 IN0 — TREATED WATER PUMP P-T1 VFD RUNNING

VFD FAULT — CRF — R1/S3/3.2 — R1/S3/3.01 — DI:3/01 IN1 — TREATED WATER PUMP P-T1 VFD FAULT

VFD AUTO — H O A — OOX — R1/S3/3.3 — R1/S3/3.02 — DI:3/02 IN2 — TREATED WATER PUMP P-T1 IN AUTO

VFD HAND — XOO — R1/S3/3.4 — R1/S3/3.03 — DI:3/03 IN3 — TREATED WATER PUMP P-T1 IN HAND

MOTOR — OT — OVER TEMP — R1/S3/3.5 — R1/S3/3.04 — DI:3/04 IN4 — TREATED WATER PUMP P-T1 MOTOR OVERTEMP SWITCH

MCC TREATED WATER PUMP 2 VFD

DC21 — DC-FU21 — 2A — GDL-2

VFD RUN — CRR — R1/S3/3.6 — R1/S3/3.05 — DI:3/05 IN5 — TREATED WATER PUMP P-T2 VFD RUNNING

VFD FAULT — CRF — R1/S3/3.7 — R1/S3/3.06 — DI:3/06 IN6 — TREATED WATER PUMP P-T2 VFD FAULT

VFD AUTO — H O A — OOX — R1/S3/3.8 — R1/S3/3.07 — DI:3/07 IN7 — TREATED WATER PUMP P-T2 IN AUTO

VFD HAND — XOO — R1/S3/3.9 — R1/S3/3.08 — DI:3/08 IN8 — TREATED WATER PUMP P-T2 IN HAND

MOTOR — OT — OVER TEMP — R1/S3/3.10 — R1/S3/3.09 — DI:3/09 IN9 — TREATED WATER PUMP P-T2 MOTOR OVERTEMP SWITCH

DCCOM1 — 24C

MCC TREATED WATER PUMP 3 VFD

DC22 — DC-FU22 — 2A — GDL-2

VFD RUN — CRR — R1/S3/3.11 — R1/S3/3.10 — DI:3/10 IN10 — TREATED WATER PUMP P-T3 VFD RUNNING

VFD FAULT — CRF — R1/S3/3.12 — R1/S3/3.11 — DI:3/11 IN11 — TREATED WATER PUMP P-T3 VFD FAULT

VFD AUTO — H O A — OOX — R1/S3/3.13 — R1/S3/3.12 — DI:3/12 IN12 — TREATED WATER PUMP P-T3 IN AUTO

VFD HAND — XOO — R1/S3/3.14 — R1/S3/3.13 — DI:3/13 IN13 — TREATED WATER PUMP P-T3 IN HAND

MOTOR — OT — OVER TEMP — R1/S3/3.15 — R1/S3/3.14 — DI:3/14 IN14 — TREATED WATER PUMP P-T3 MOTOR OVERTEMP SWITCH

CR PWR — R1/S3/3.15 — DI:3/15 IN15 — CONTROL POWER FAULT

DCCOM2

24P — 24C

24P — 24VDC - CONT'D — 24C

DRK BLUE

WHITE W/BLUE STRIPE

24V DISCRETE INPUT MODULE MODULE 4 1769 - IQ16

AIT-1 — XR3 — DC23 — DC-FU23 — 0.5A — GDL-2 — R1/S4/4.00 — DI:4/00 IN0 — ANALYZER 1 FAULT

AIT-2 — XR3 — DC24 — DC-FU24 — 0.5A — GDL-2 — R1/S4/4.01 — DI:4/01 IN1 — ANALYZER 2 FAULT

AIT-3 — XR3 — DC25 — DC-FU25 — 0.5A — GDL-2 — R1/S4/4.02 — DI:4/02 IN2 — ANALYZER 3 FAULT

AIT-4 — XR3 — DC26 — DC-FU26 — 0.5A — GDL-2 — R1/S4/4.03 — DI:4/03 IN3 — ANALYZER 4 FAULT

FIT-337A — PULSE — DC27 — DC-FU27 — 0.5A — GDL-2 — R1/S4/4.04 — DI:4/04 IN4 — TREATED WATER PUMPS OUTLET TOTALIZED FLOW

DC28 — DC-FU28 — 0.5A — GDL-2

UPS — UPS-OK — R1/S4/4.05 — DI:4/05 IN5 — UPS OK

AUTOMATIC TRANSFER SWITCH (ATS)

DC29 — DC-FU29 — 0.5A — GDL-2

EMERG. POS. — R1/S4/4.06 — DI:4/06 IN6 — ATS IN EMERGENCY POSIITION

UTILITY POS. — R1/S4/4.07 — DI:4/07 IN7 — ATS IN UTILITY POSITION

UTILITY AVAIL. — R1/S4/4.08 — DI:4/08 IN8 — ATS UTILITY POWER AVAILABLE

FAULT — R1/S4/4.09 — DI:4/09 IN9 — ATS FAULT

DCCOM1 — 24C

MANUAL TRANSFER (MTS)

EMERG. POS. — R1/S4/4.10 — DI:4/10 IN10 — MTS IN EMERGENCY POSITION

R1/S4/4.11 — DI:4/11 IN11 — BLOWER INTAKE DAMPER OPEN

VENTILATION CONTROL PANEL

DC30 — DC-FU30 — 0.5A — GDL-2

DAMPER OPEN — R1/S4/4.12 — DI:4/12 IN12 — BLOWER INTAKE DAMPER FAULT

DAMPER FAULT — R1/S4/4.13 — DI:4/13 IN13 — PH TREATMENT BUILDING INTRUSION

INTRUSION BYPASS SWITCH — ENABLE — DISABLE — ox

DC31 — DC-FU31 — 2A — GDL-2

FRONT DOOR — SIDE DOOR — ROLL-UP DOOR — ROLL-UP DOOR

R1/S4/4.14 — DI:4/14 IN14 — INTRUSION BYPASS

R1/S4/4.15 — DI:4/15 IN15 — SPARE

DCCOM2

24P — 24C

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Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE
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JSC DRAWN
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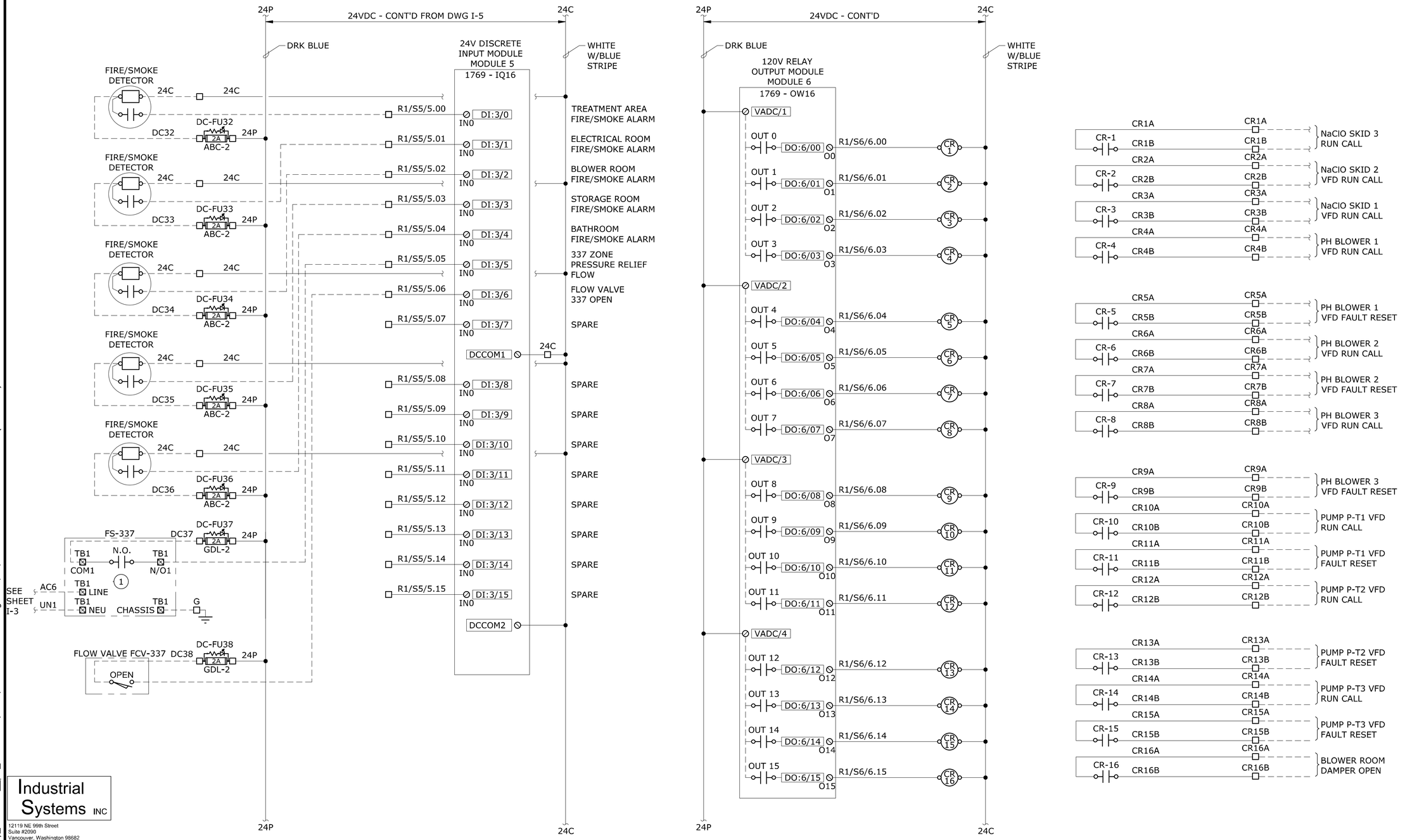
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-5



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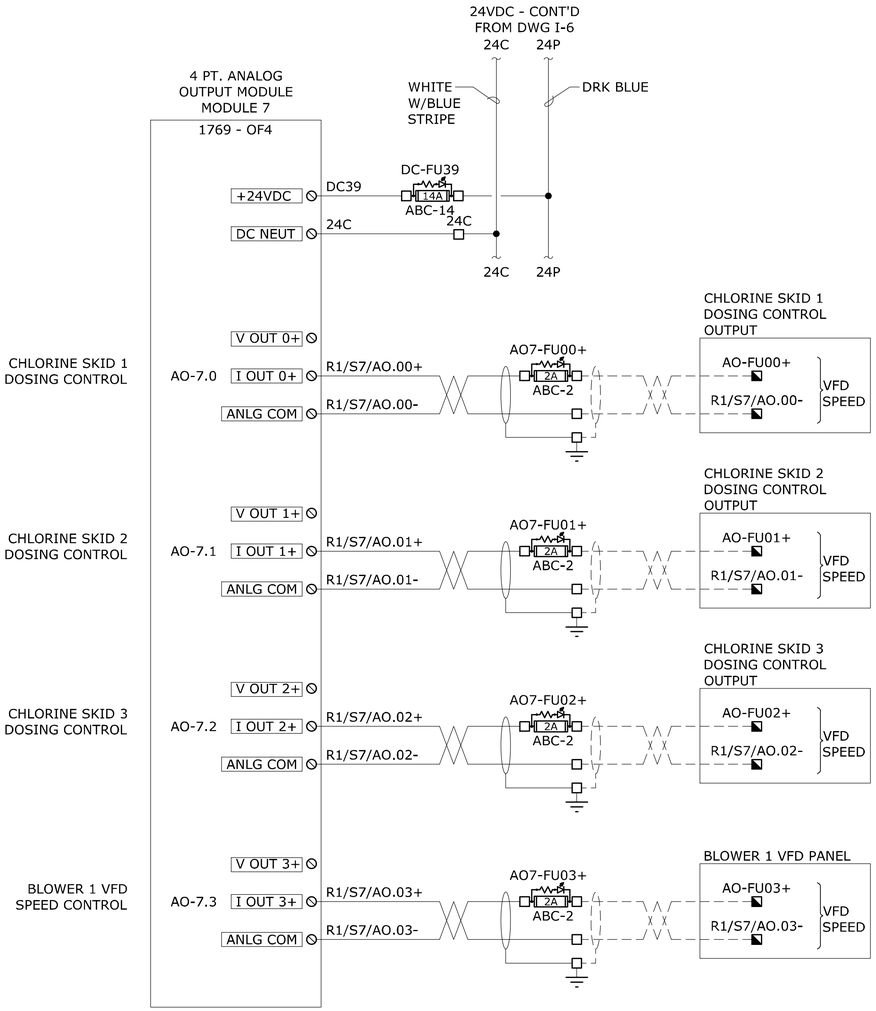
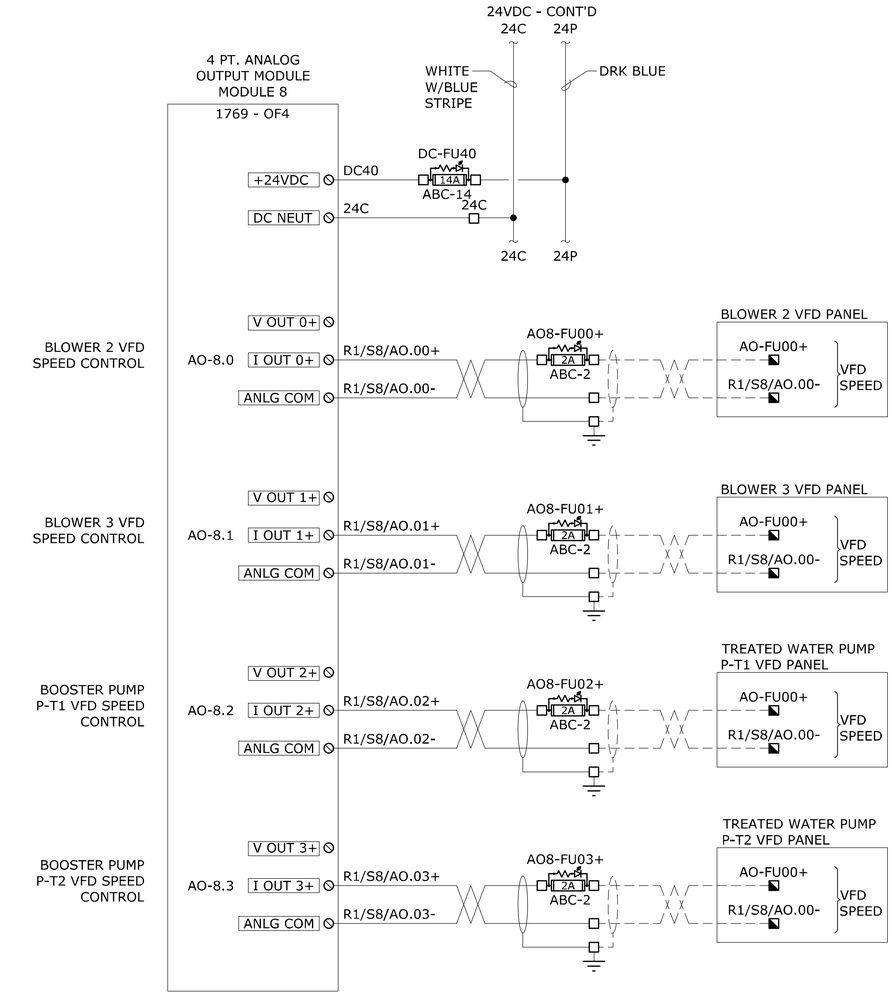
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-6





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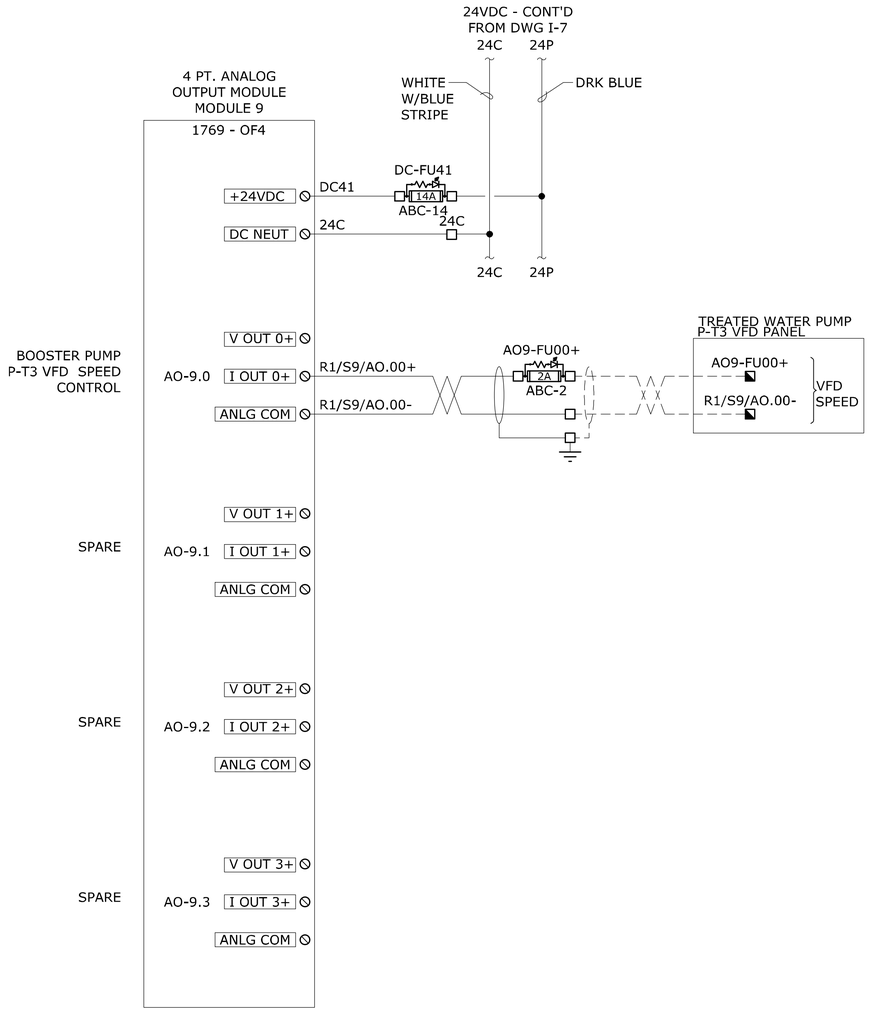
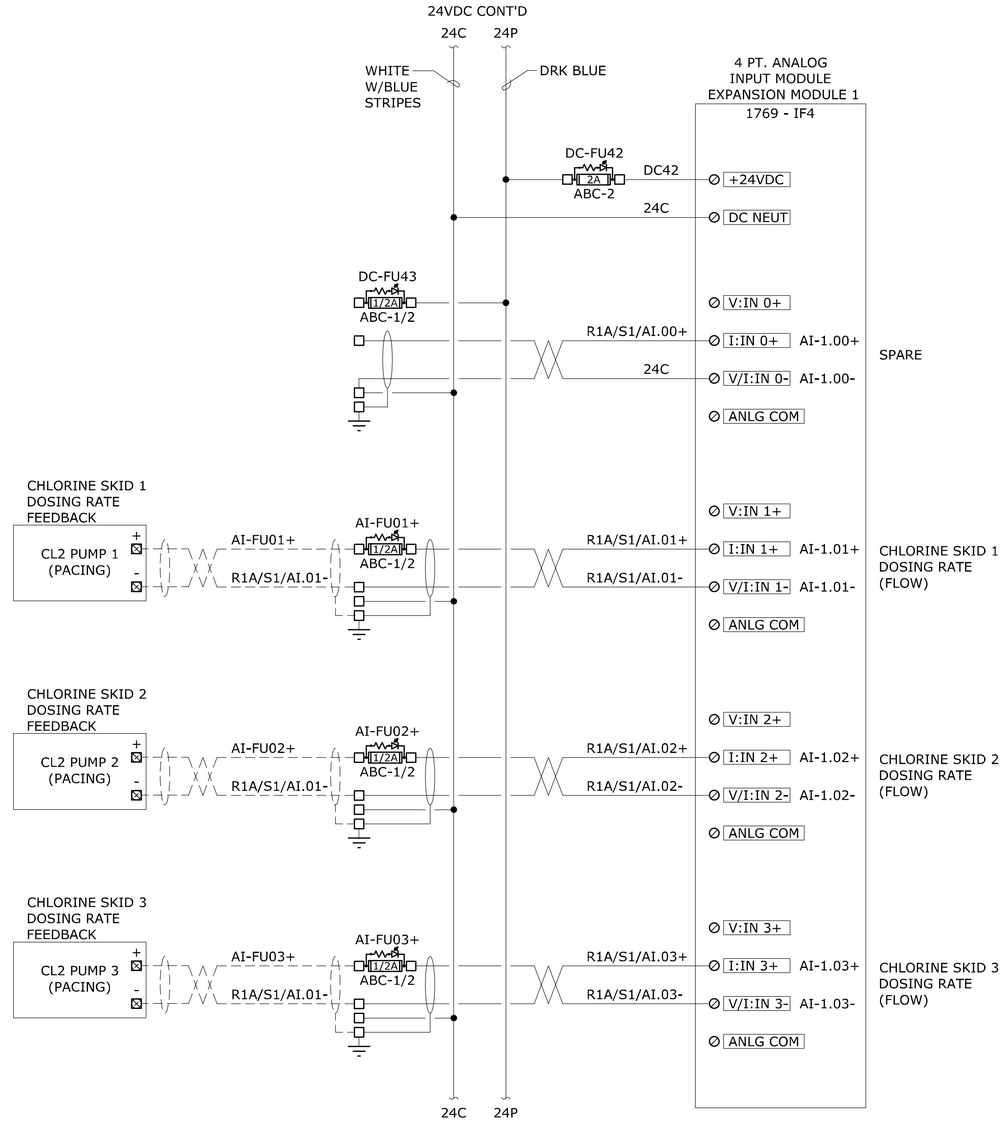
pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 4

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-7

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-7.dwg I-7 8/16/2023 5:26 PM ROBERTC 23.1s (LMS Tech)





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P:\Projects\21.47.01_MSA_Lacey_Westside___pH_Treatment\DWG\21-3172-WA-I-8.dwg I-8 8/16/2023 5:27 PM ROBERTC 23.1s (LMS Tech)

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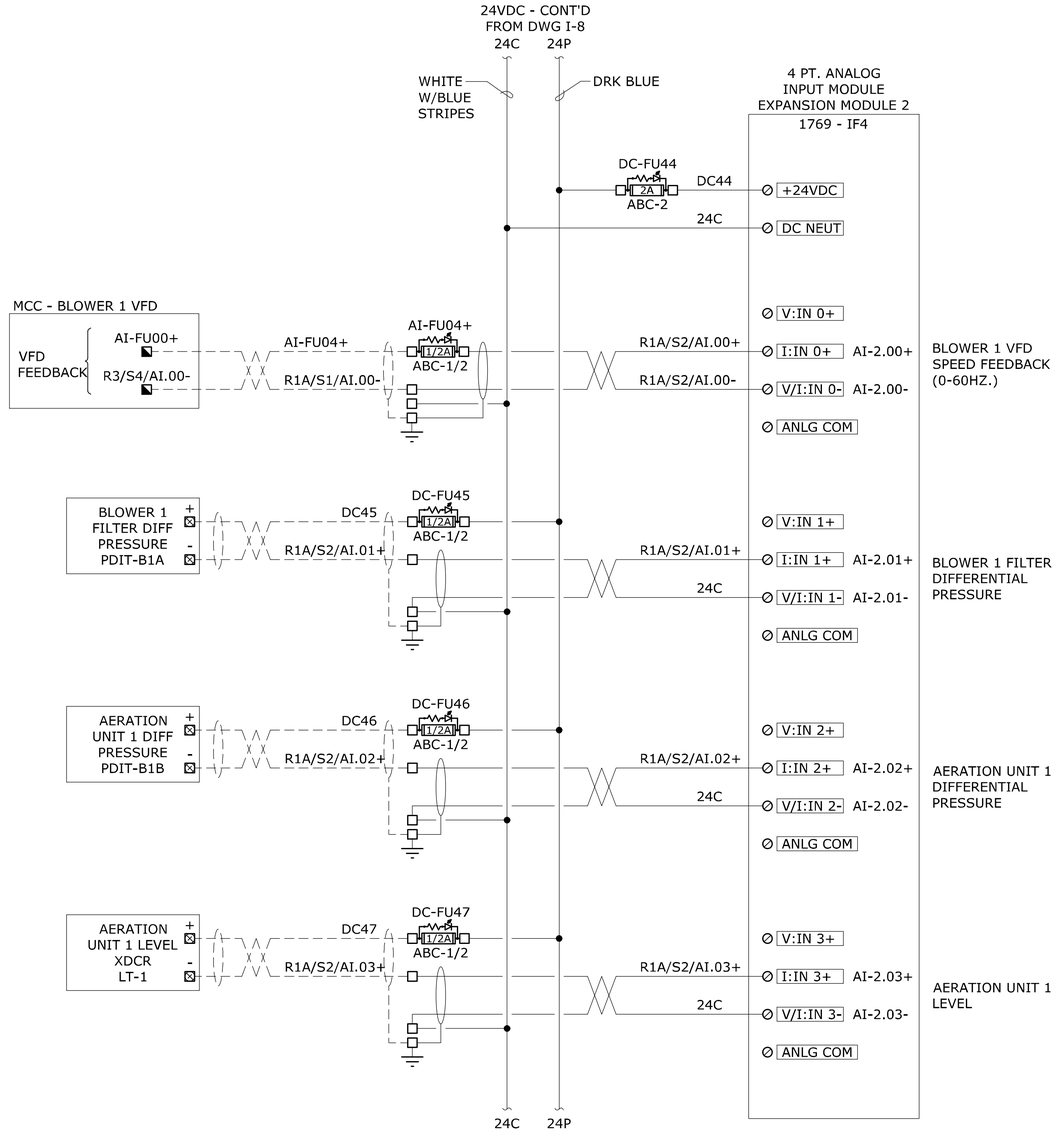
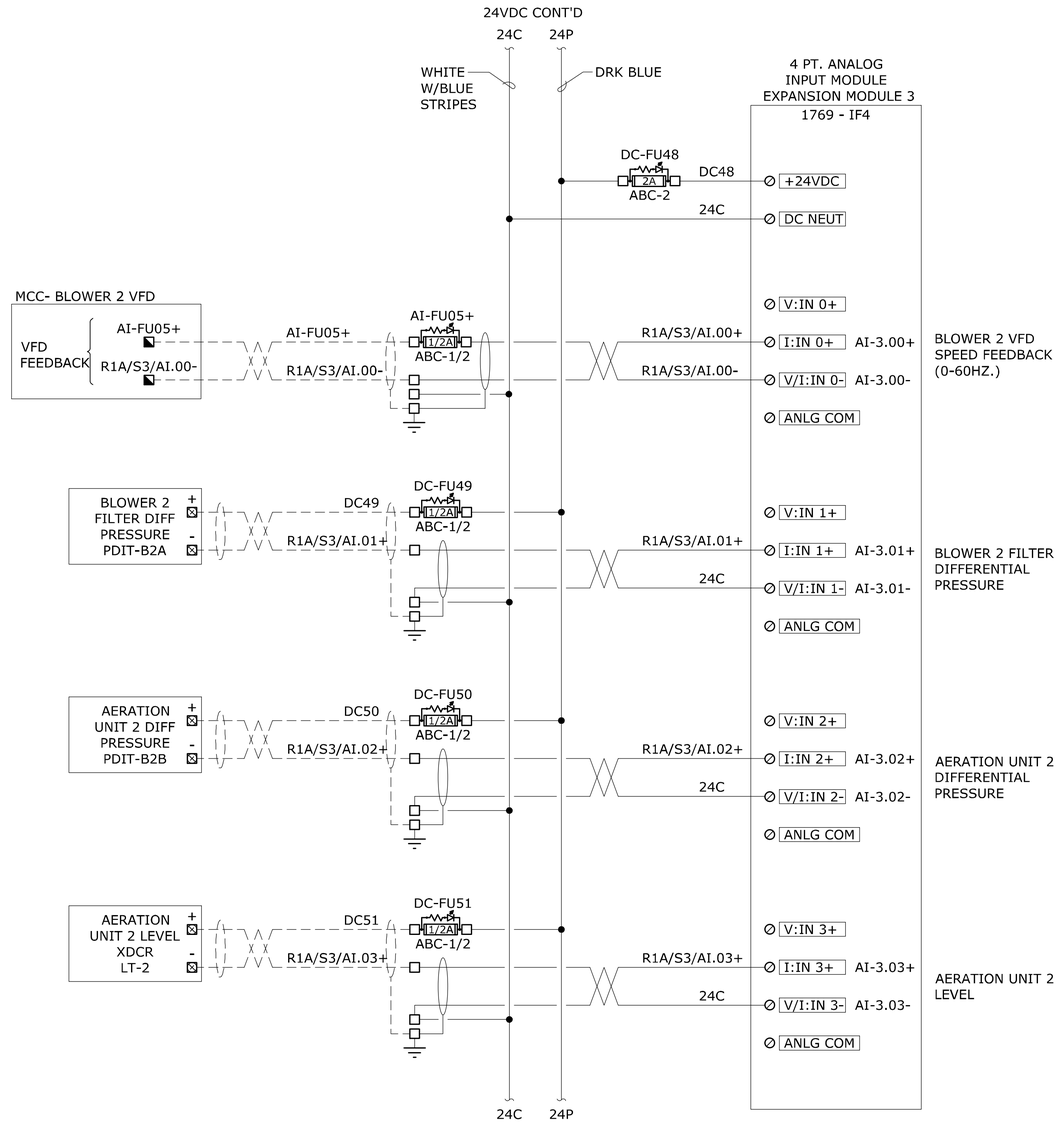
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 5

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-8





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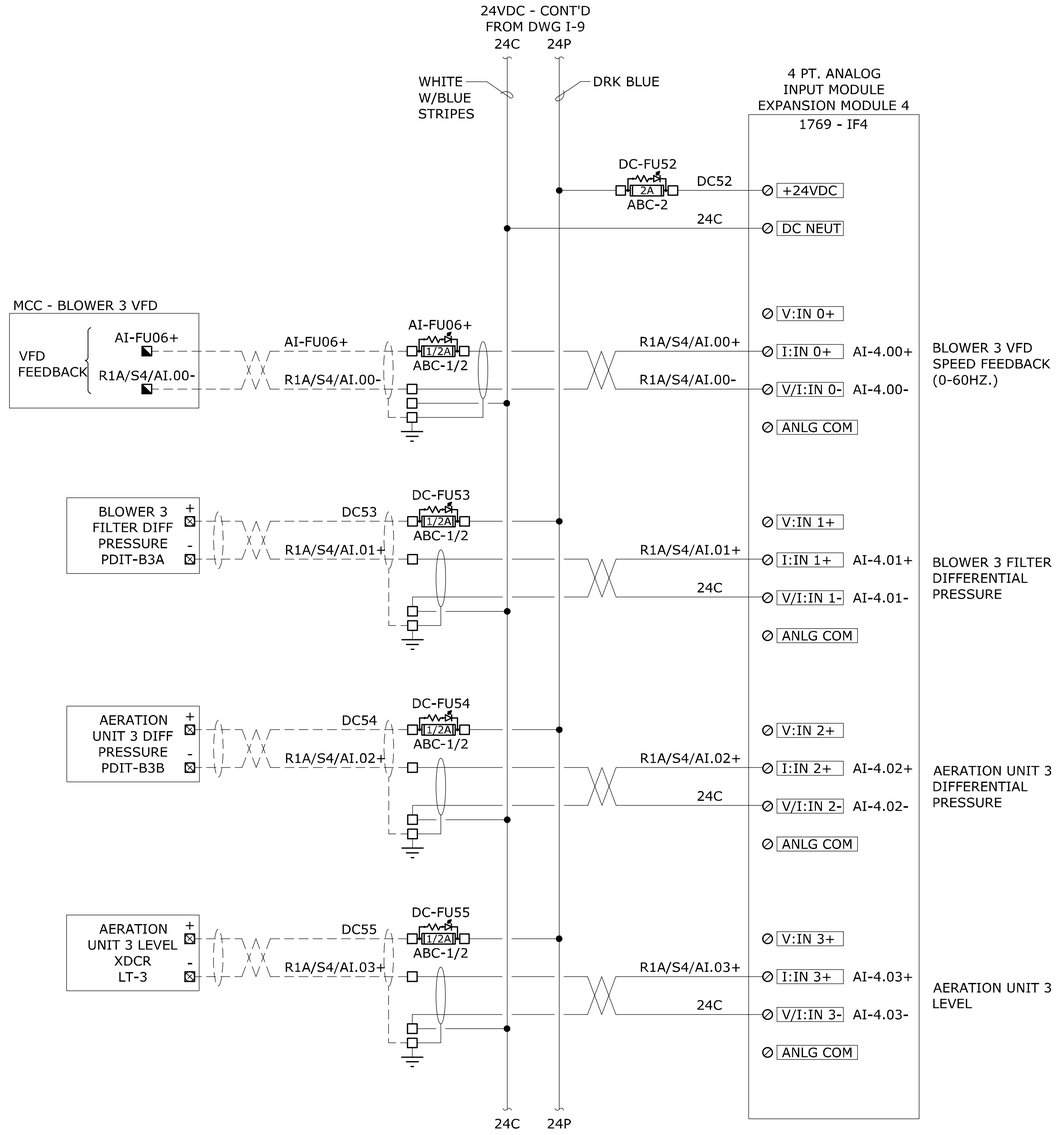
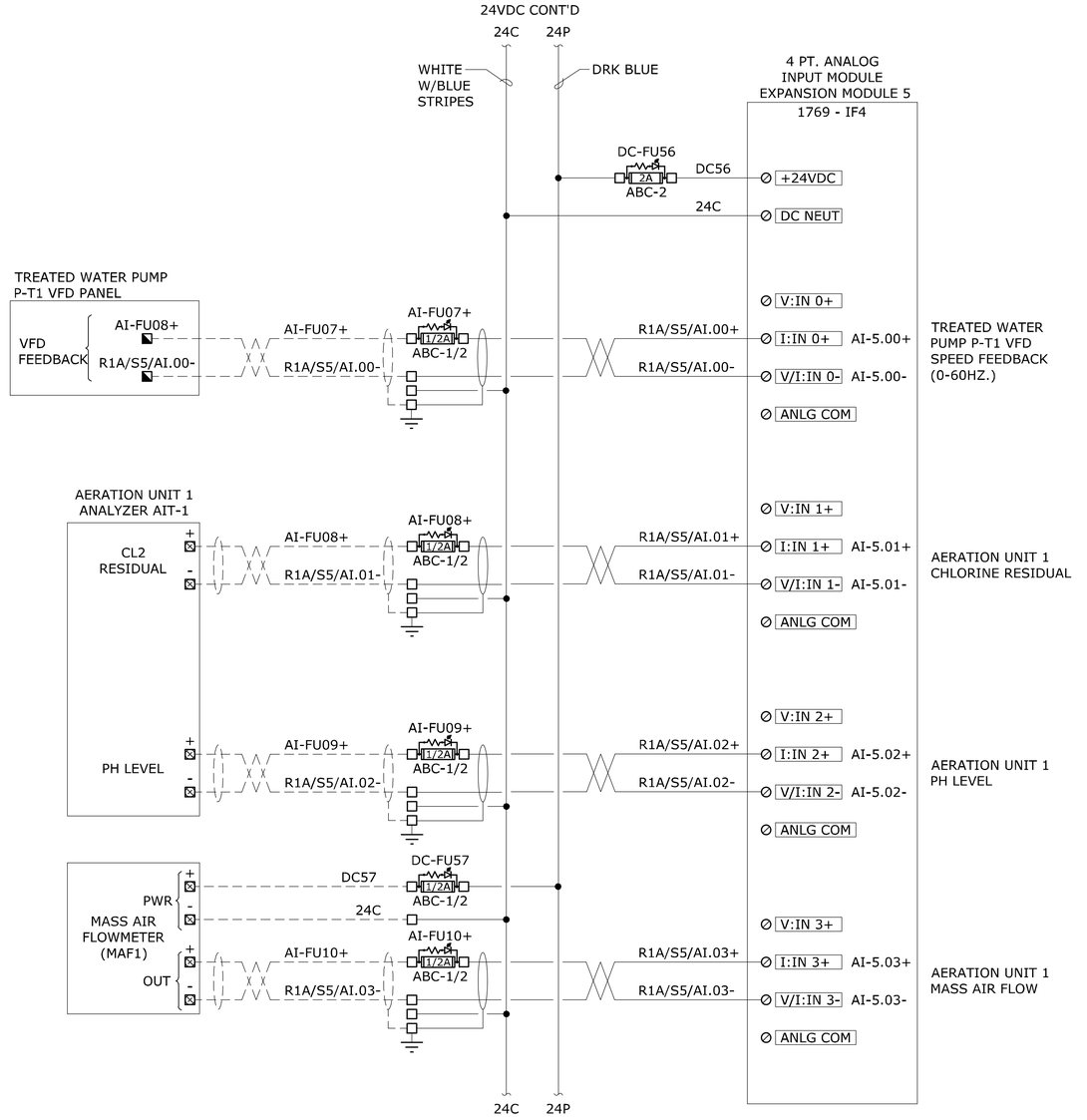
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 6

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-9





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LACEY CONTRACT #PW 2022-37

PH TREATMENT BUILDING
RTU PANEL
I/O SHEET 7

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-10

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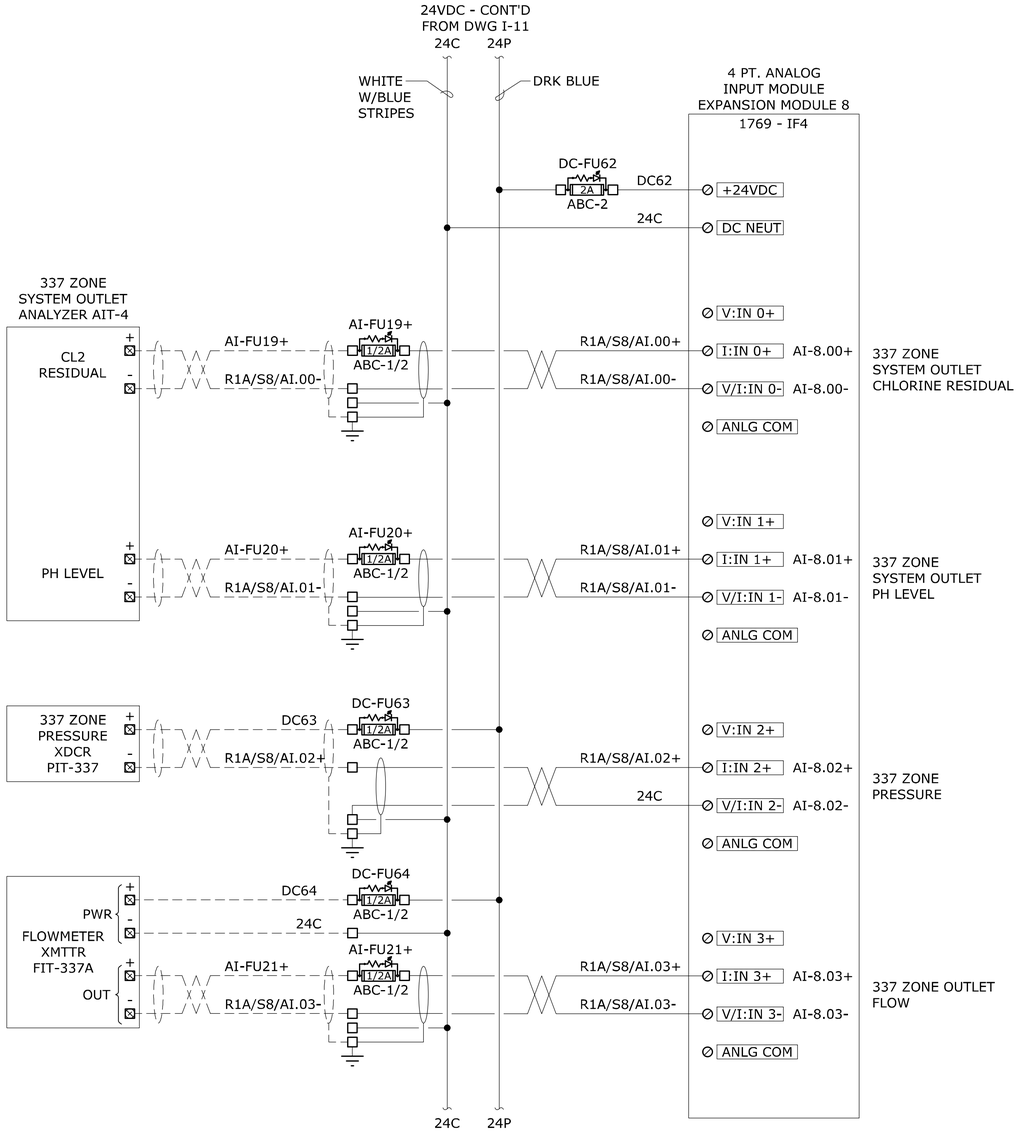
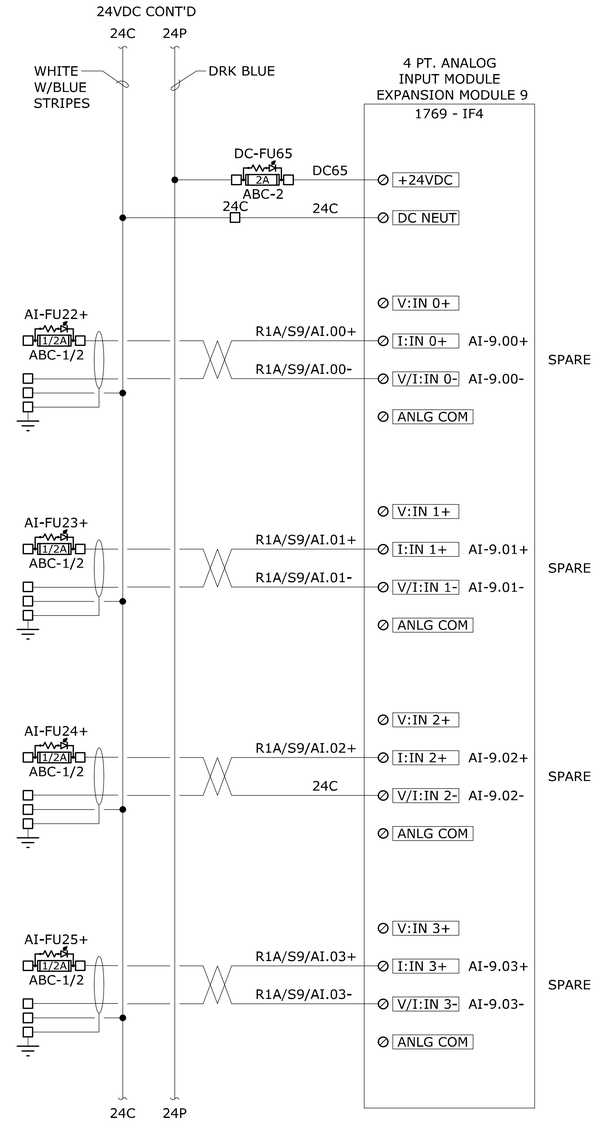
LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 8

PROJECT NO.: 21-3172 SCALE: AS SHOWN DATE: AUGUST 2023

SCHEDULE B
SHEET
I-11





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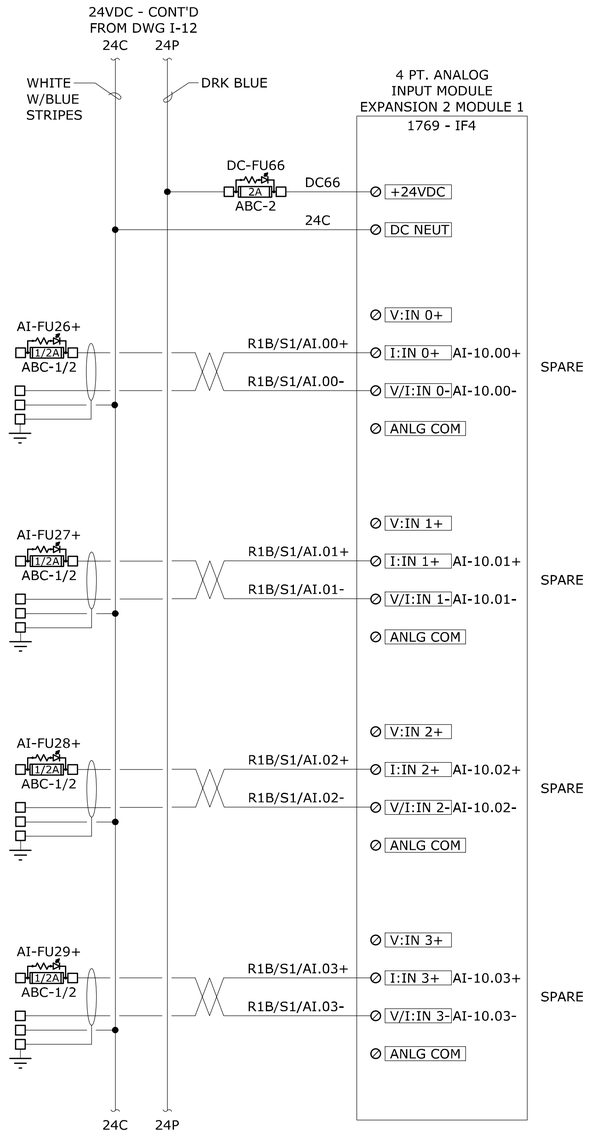
LACEY CONTRACT #PW 2022-37

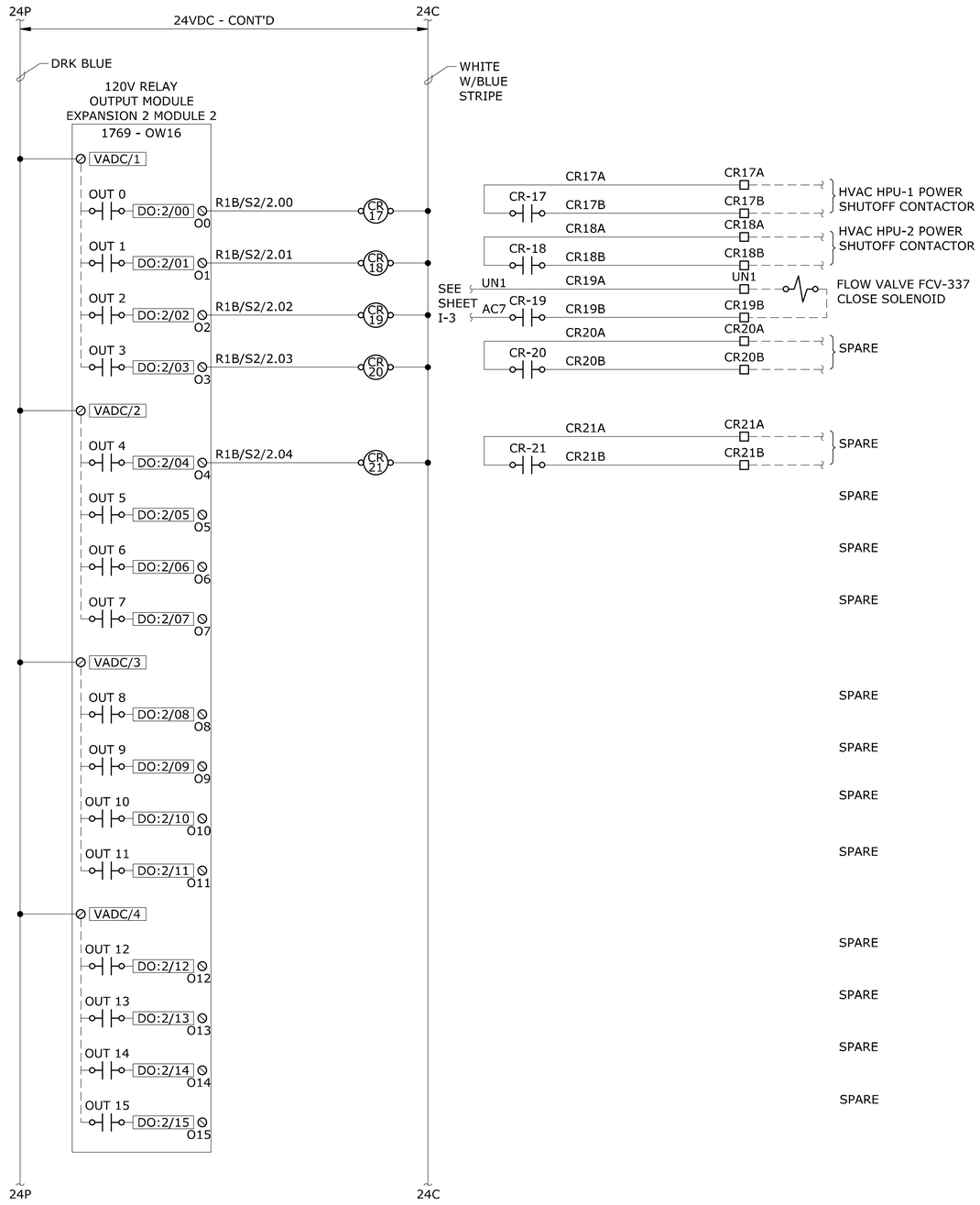
pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 9

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-12

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-12.dwG I-12 8/17/2023 8:29 AM ROBERTC 23.1s (LMS Tech)





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LACEY CONTRACT #PW 2022-37

pH TREATMENT BUILDING
RTU PANEL
I/O SHEET 10

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

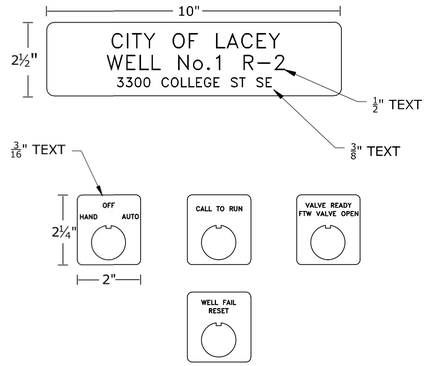
SCHEDULE B
SHEET
I-13

#	ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
	1	1	NEMA 4 ENCLOSURE, 30"x30"x12"	HOFFMAN	CSD303012	YES
	2	1	BACK PANEL	HOFFMAN	CP-3030	YES
	3	1	OPERATOR INTERFACE TERMINAL W/TOUCHSCREEN, 10.1", 24VDC	MAPLE SYSTEMS	CMT2108X2	NO
	4	1	3 POS. SELECTOR SWITCH, 30MM, HEAVY DUTY, W/ALTERNATE OPERATOR & 2 NO CONTACTS	EATON	E34VHBK1-2 W/E34A1 OPERATOR	NO
	5	1	BLUE LED PUSH/TEST IND., 30MM, 120V W/XFMR	EATON	E34TPB120LLP06	NO
	6	1	AMBER LED PUSH/TEST IND., 30MM, 120V W/XFMR	EATON	E34TPB120LAP06	NO
	7	1	RED LED PUSH/TEST IND., 30MM, 120V W/XFMR & 1NO&1NC CONTACTS	EATON	E34TPB120LRP06-1	NO
	8	1	REMOTE I/O ADAPTER MODULE	ALLEN-BRADLEY	1769-AENTR	NO
	9	1	PLC POWER SUPPLY, 2AMP	ALLEN-BRADLEY	1769-PA2	NO
	10	1	8 PT RELAY OUTPUT MODULE	ALLEN-BRADLEY	1769-OW8	NO
	11	1	16 PT 120V INPUT MODULE	ALLEN-BRADLEY	1769-IA16	NO
	12	1	16 PT DC INPUT MODULE	ALLEN-BRADLEY	1769-IQ16	NO
	13	1	4 CH. ANALOG INPUT MODULE	ALLEN-BRADLEY	1769-IF4	NO
	14	1	2 CH. ANALOG OUTPUT MODULE	ALLEN-BRADLEY	1769-OF2	NO
	15	1	END CAP TERMINATOR, LEFT	ALLEN-BRADLEY	1769-ECL	NO
	16	1	END CAP TERMINATOR, RIGHT	ALLEN-BRADLEY	1769-ECR	NO
	17	1	24VDC POWER SUPPLY, 4AMP	SOLA	SDP4-24-100LT	NO
	18	1	5 PORT INDUSTRIAL UNMANAGED ETHERNET SWITCH	N-TRON	105TX-SL	NO
	19	2	10A, 1-POLE MINIATURE CIRCUIT BREAKER, CLASS C TRIP	EATON	FAZ-C10/1-NA	NO
	20	7	120V CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
	21	7	CONTROL RELAY BASE	IDEC	SH2B-05	NO
	22	13	AC FUSE HOLDER TERMINAL W/NEON BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H4	NO
	23	13	AC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	GDL TYPE	NO
	24	18	DC FUSE HOLDER TERMINAL W/LED BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H5	NO
	25	18	DC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	ABC TYPE	NO
	26	AR	FEED-THRU & GROUNDING TERMINAL BLOCK, END PLATES & END STOPS	SPRECHER SCHUH	V7-W4 SERIES	NO
	27	AR	STEEL DIN-RAIL	ENTRELEC	PR30	YES

Vinyl Labels

White background with 18 point black font, text to include: (X replace with count identifier as shown) {Mount on back panel}

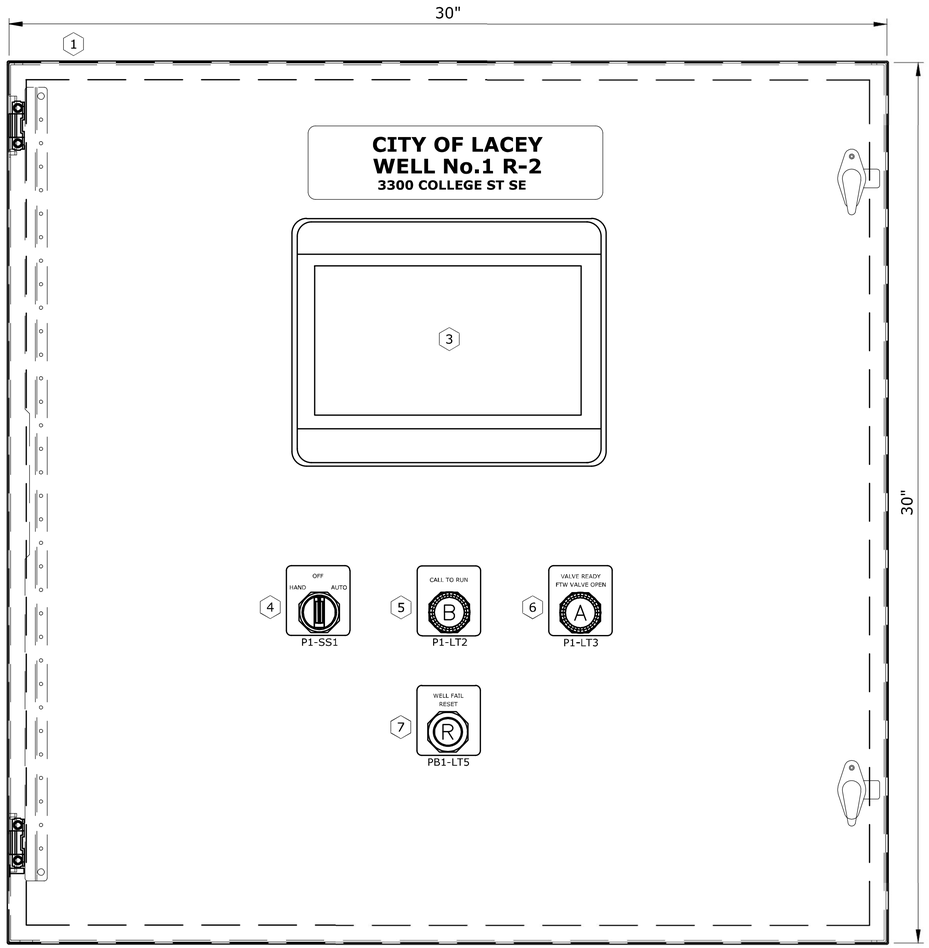
<1> CB-X	<2> CR-X	<3> PS-1	<4> AC-FUX TYPE SIZE	<5> DC-FUX TYPE SIZE	<6> AIX-FUX TYPE SIZE	<7> AOX-FUX TYPE SIZE	<8> NOT USED

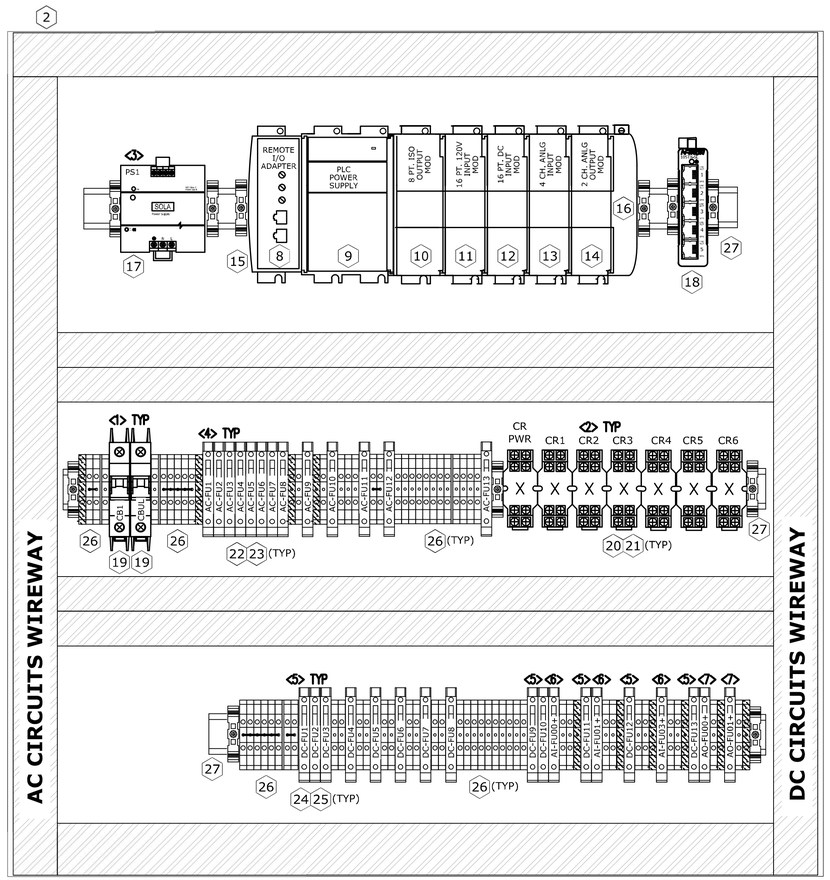


BLACK PLATES WITH ROUNDED CORNERS AND WHITE LETTERS

GENERAL NOTES

1. PROVIDE AND INSTALL VINYL LABELS ON BACK PANEL FOR ALL FUSING, RELAYS, CIRCUIT BREAKERS AND POWER SUPPLIES AS SHOWN IN THE TABLE BELOW.





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Docusigned by: James Mitchell
8/17/2023

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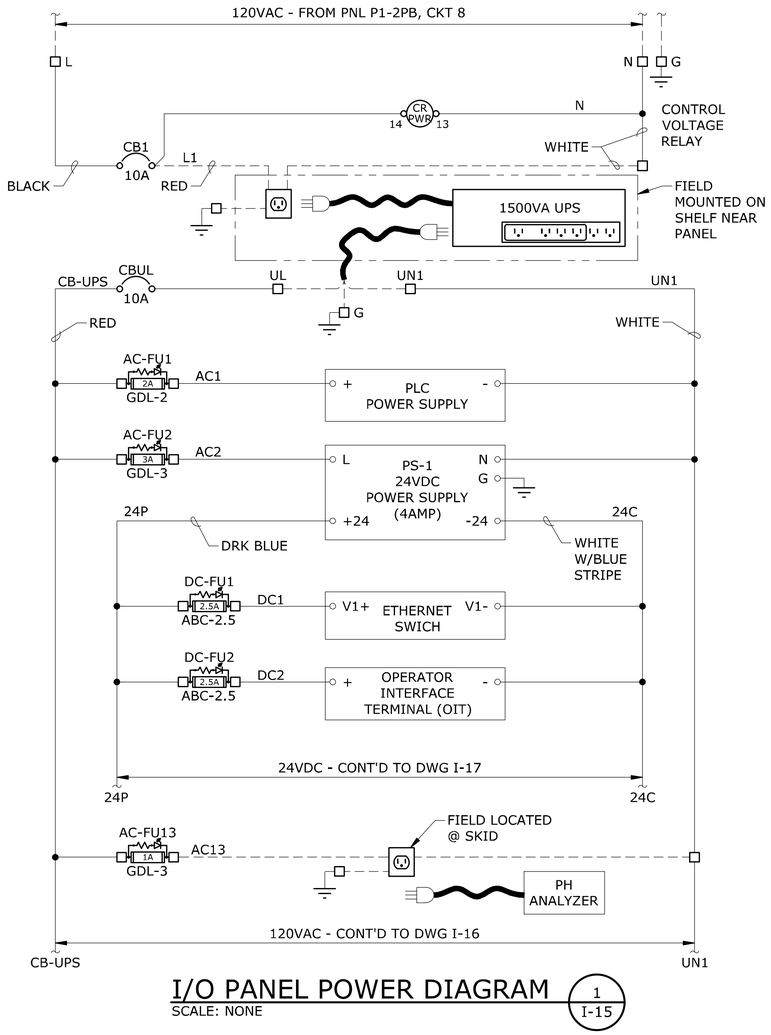
CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

WELL #1
I/O PANEL
GENERAL ARANGEMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

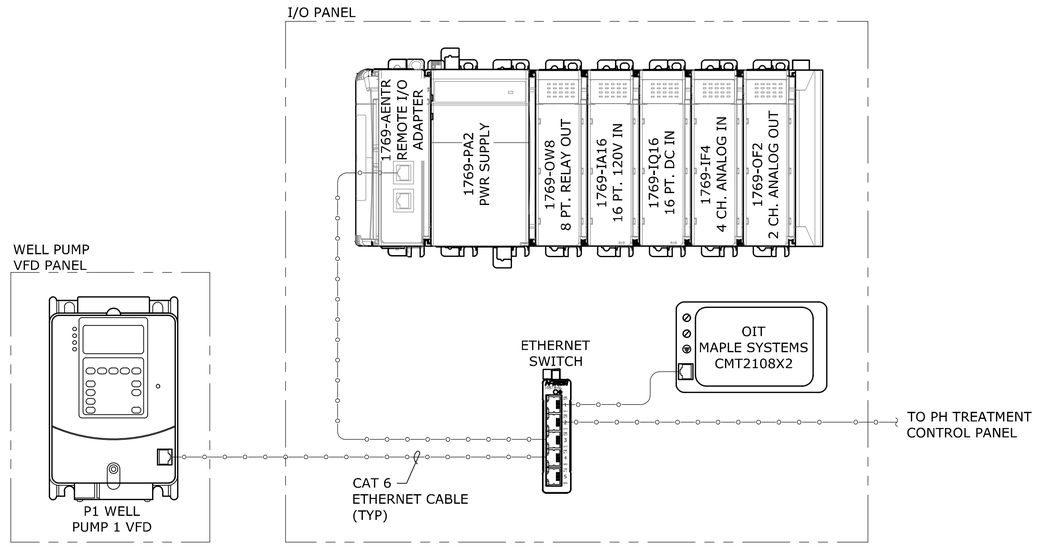
SCHEDULE B
SHEET
I-14



I/O PANEL POWER DIAGRAM

SCALE: NONE

1 / I-15



COMMUNICATION BLOCK DIAGRAM

SCALE: NONE

2 / I-15

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-15.dwg I-15 8/17/2023 11:26 AM ROBERTC 23.1s (LMS Tech)

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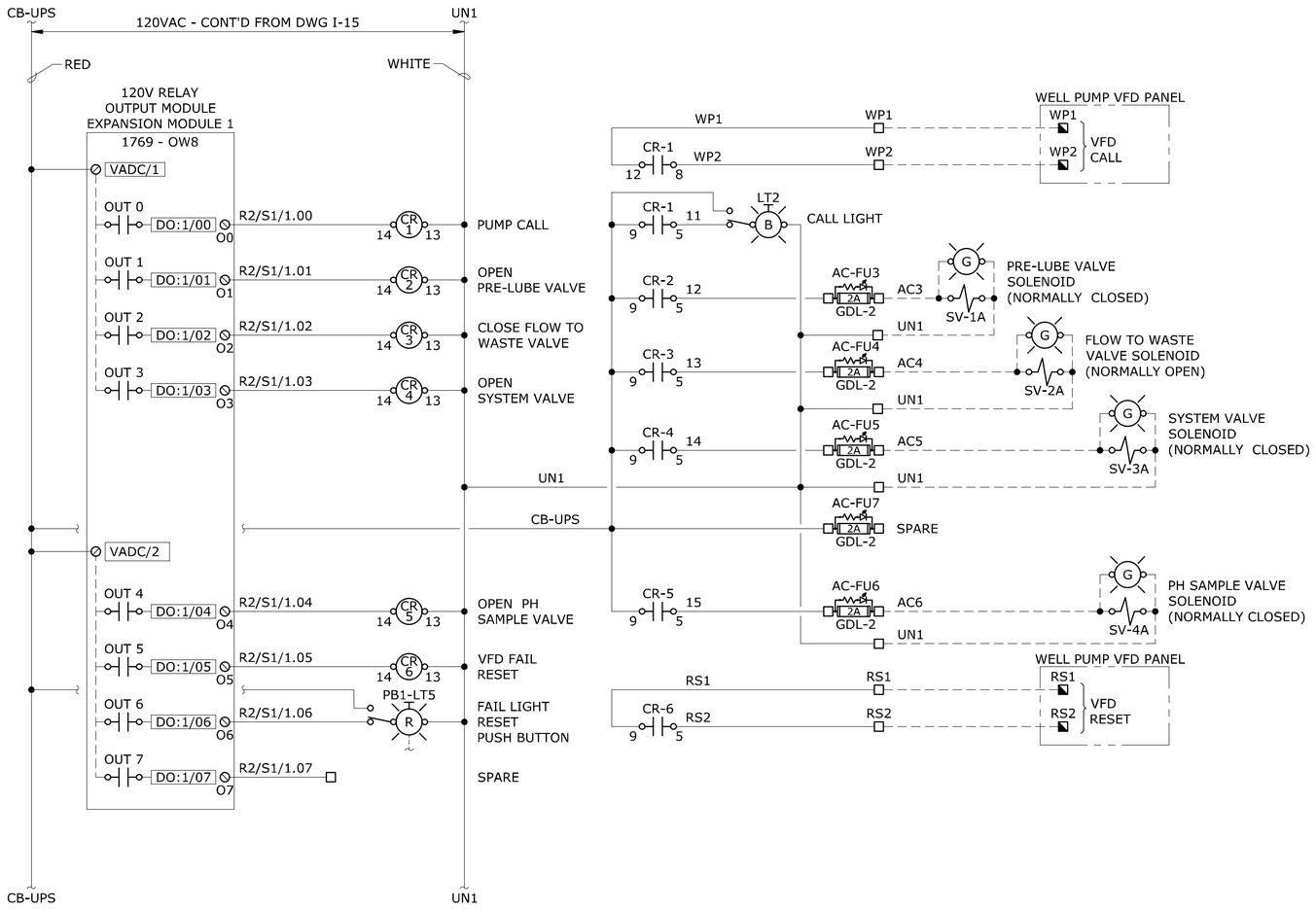
LACEY CONTRACT #PW 2022-37

WELL #1
I/O PANEL
POWER, FUSING, AND ETHERNET CONNECTIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-15



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CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

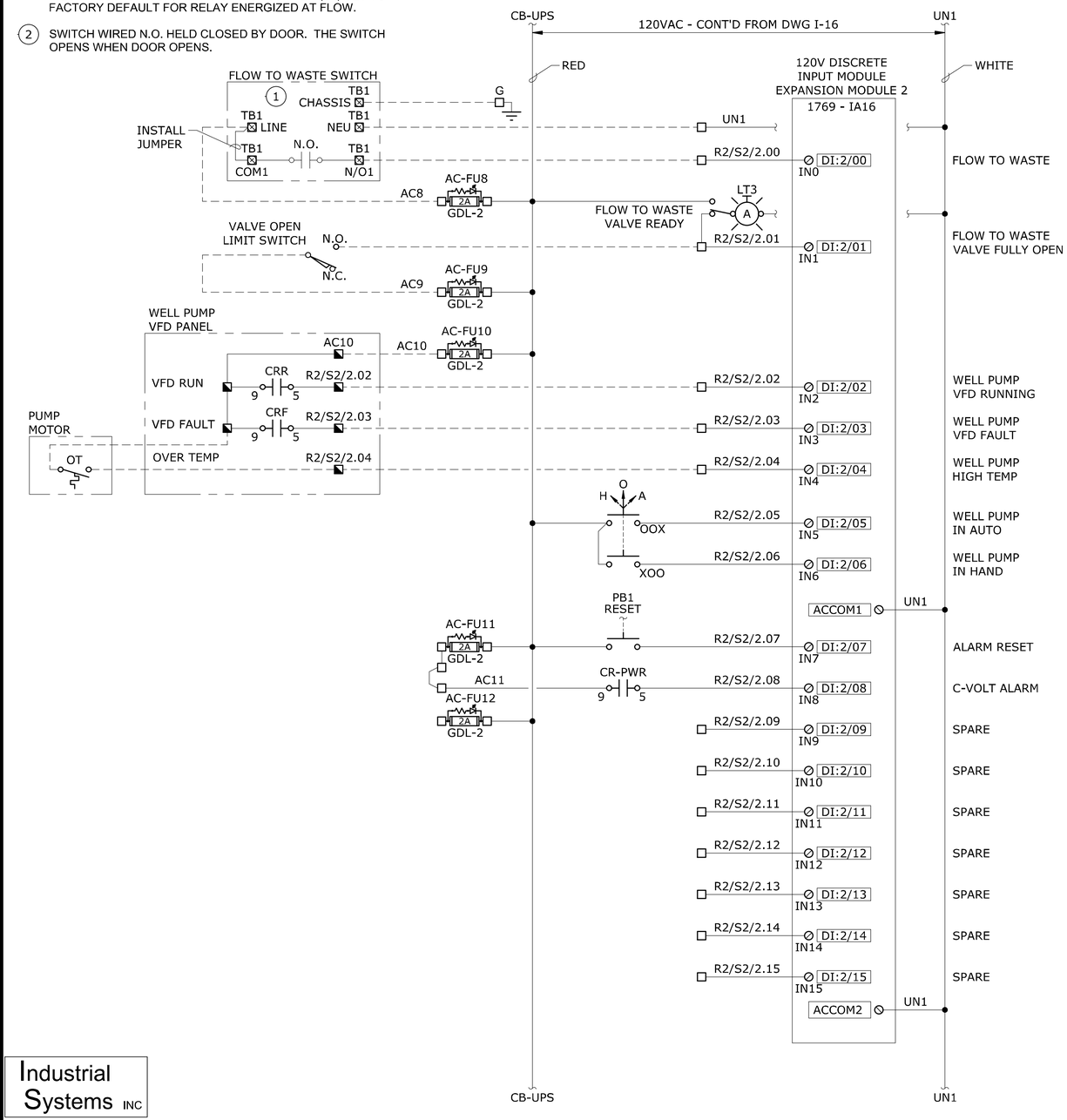
WELL #1
I/O PANEL
I/O SHEET 1

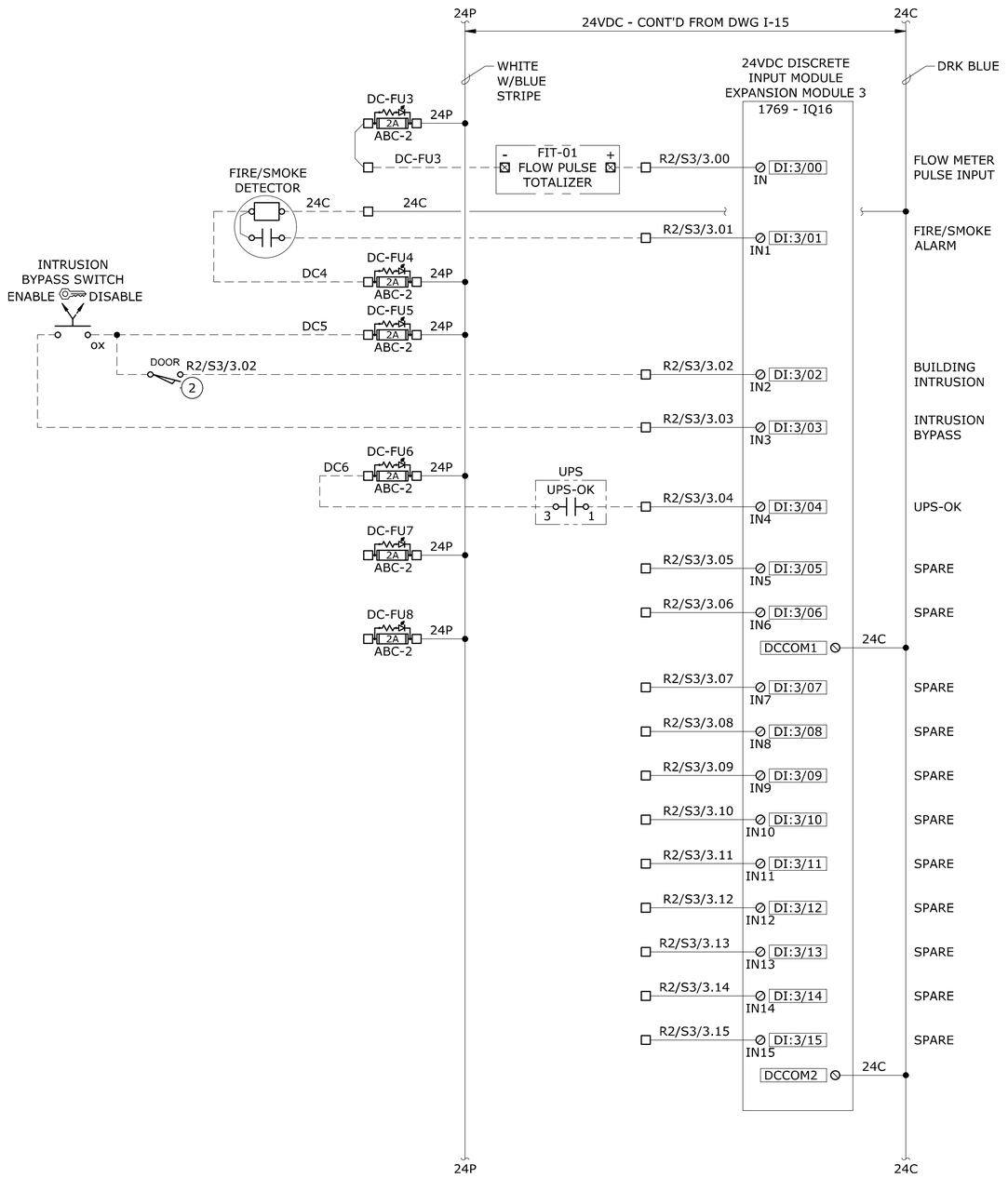
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-16

KEY NOTES

1. APPLICATION SWITCH (SW1) SET TO FACTORY DEFAULT FOR LIQUID FLOW SWITCH, RELAY SWITCH JUMPER (S1) SET TO FACTORY DEFAULT FOR RELAY ENERGIZED AT FLOW.
2. SWITCH WIRED N.O. HELD CLOSED BY DOOR. THE SWITCH OPENS WHEN DOOR OPENS.





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Fax: (360) 952-8958
e-mail: iis@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE
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CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

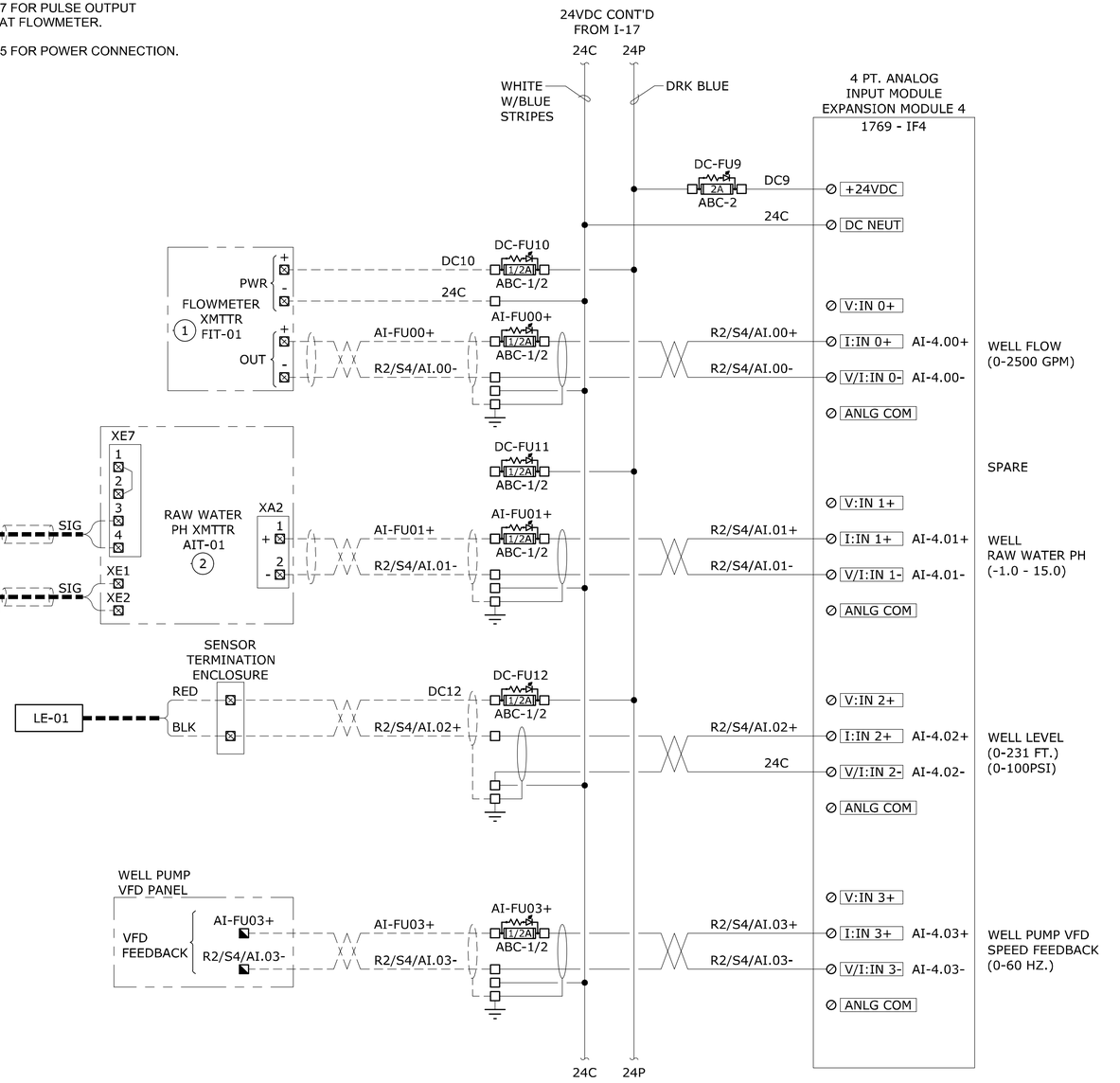
WELL #1
I/O PANEL
I/O SHEET 2

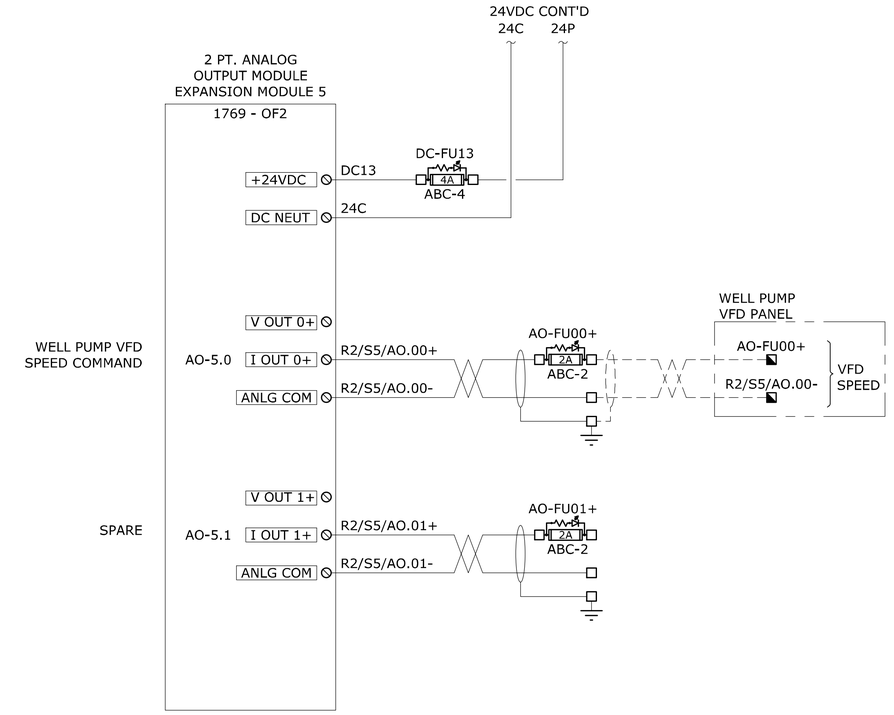
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-17

KEY NOTES

1. SEE SHEET I-17 FOR PULSE OUTPUT CONNECTION AT FLOWMETER.
2. SEE SHEET I-15 FOR POWER CONNECTION.





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233E384[illegible]46C
8/17/2023

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CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

WELL #1
I/O PANEL
I/O SHEET 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

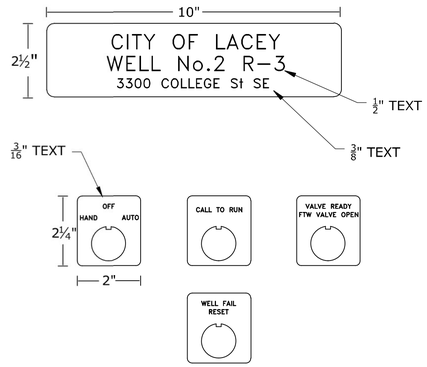
SCHEDULE B
SHEET
I-18

#	ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
	1	1	NEMA 4 ENCLOSURE, 30"x30"x12"	HOFFMAN	CSD303012	YES
	2	1	BACK PANEL	HOFFMAN	CP-3030	YES
	3	1	OPERATOR INTERFACE TERMINAL W/TOUCHSCREEN, 10.1", 24VDC	MAPLE SYSTEMS	CMT2108X2	NO
	4	1	3 POS. SELECTOR SWITCH, 30MM, HEAVY DUTY, W/INGRESS OPERATOR & 2 NO CONTACTS	EATON	E34VHBA1-2 W/E34A1 OPERATOR	NO
	5	1	BLUE LED PUSH/TEST IND., 30MM, 120V W/XFMR	EATON	E34TPB120LLP06	NO
	6	1	AMBER LED PUSH/TEST IND., 30MM, 120V W/XFMR	EATON	E34TPB120LAP06	NO
	7	1	RED LED PUSH/TEST IND., 30MM, 120V W/XFMR & 1NO&1NC CONTACTS	EATON	E34TPB120LRP06-1	NO
	8	1	REMOTE I/O ADAPTER MODULE	ALLEN-BRADLEY	1769-AENTR	NO
	9	1	PLC POWER SUPPLY, 2AMP	ALLEN-BRADLEY	1769-PA2	NO
	10	1	8 PT RELAY OUTPUT MODULE	ALLEN-BRADLEY	1769-OW8	NO
	11	1	16 PT 120V INPUT MODULE	ALLEN-BRADLEY	1769-IA16	NO
	12	1	16 PT DC INPUT MODULE	ALLEN-BRADLEY	1769-IQ16	NO
	13	1	4 CH. ANALOG INPUT MODULE	ALLEN-BRADLEY	1769-IF4	NO
	14	1	2 CH. ANALOG OUTPUT MODULE	ALLEN-BRADLEY	1769-OF2	NO
	15	1	END CAP TERMINATOR, LEFT	ALLEN-BRADLEY	1769-ECL	NO
	16	1	END CAP TERMINATOR, RIGHT	ALLEN-BRADLEY	1769-ECR	NO
	17	1	24VDC POWER SUPPLY, 4AMP	SOLA	SDP4-24-100LT	NO
	18	1	5 PORT INDUSTRIAL UNMANAGED ETHERNET SWITCH	N-TRON	105TX-SL	NO
	19	2	10A, 1-POLE MINIATURE CIRCUIT BREAKER, CLASS C TRIP	EATON	FAZ-C10/1-NA	NO
	20	7	120V CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
	21	7	CONTROL RELAY BASE	IDEC	SH2B-05	NO
	22	13	AC FUSE HOLDER TERMINAL W/NEON BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H4	NO
	23	13	AC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	GDL TYPE	NO
	24	18	DC FUSE HOLDER TERMINAL W/LED BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H5	NO
	25	18	DC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	ABC TYPE	NO
	26	AR	FEED-THRU & GROUNDING TERMINAL BLOCK, END PLATES & END STOPS	SPRECHER SCHUH	V7-W4 SERIES	NO
	27	AR	STEEL DIN-RAIL	ENTRELEC	PR30	YES

Vinyl Labels

White background with 18 point black font, text to include: (X replace with count identifier as shown) {Mount on back panel}

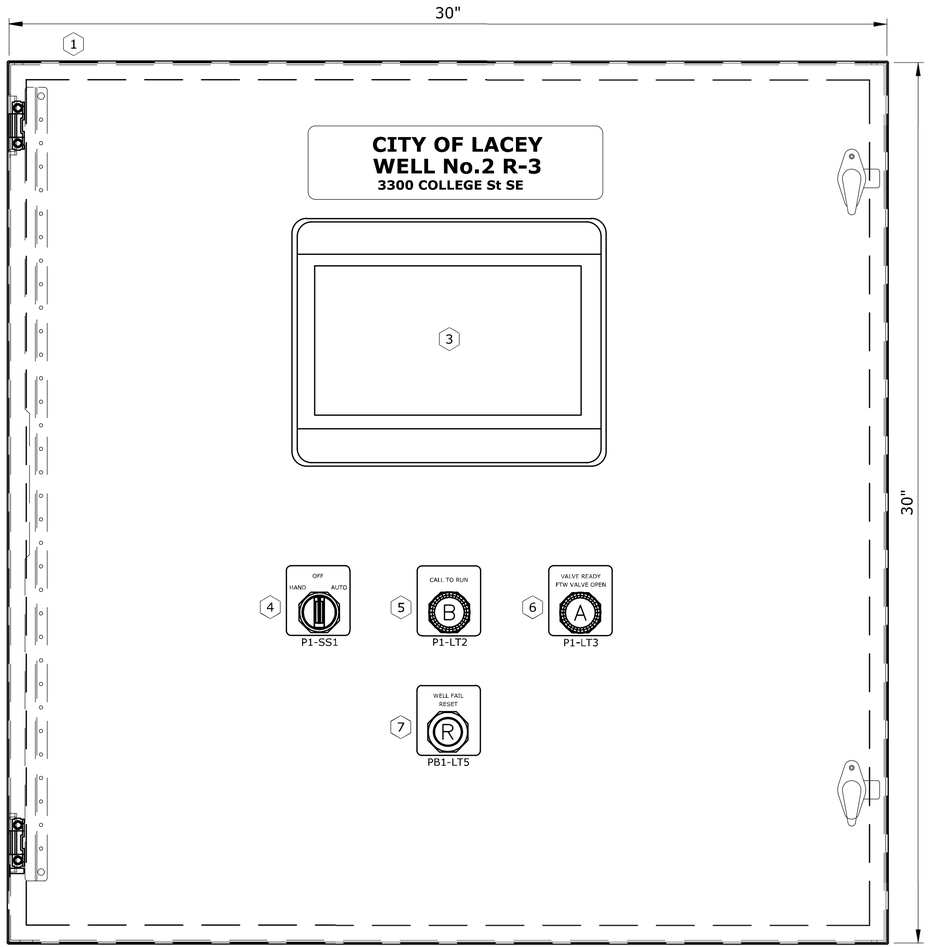
<1> CB-X	<2> CR-X	<3> PS-1	<4> AC-FUX TYPE SIZE	<5> DC-FUX TYPE SIZE	<6> AIX-FUX TYPE SIZE	<7> AOX-FUX TYPE SIZE	<8> NOT USED

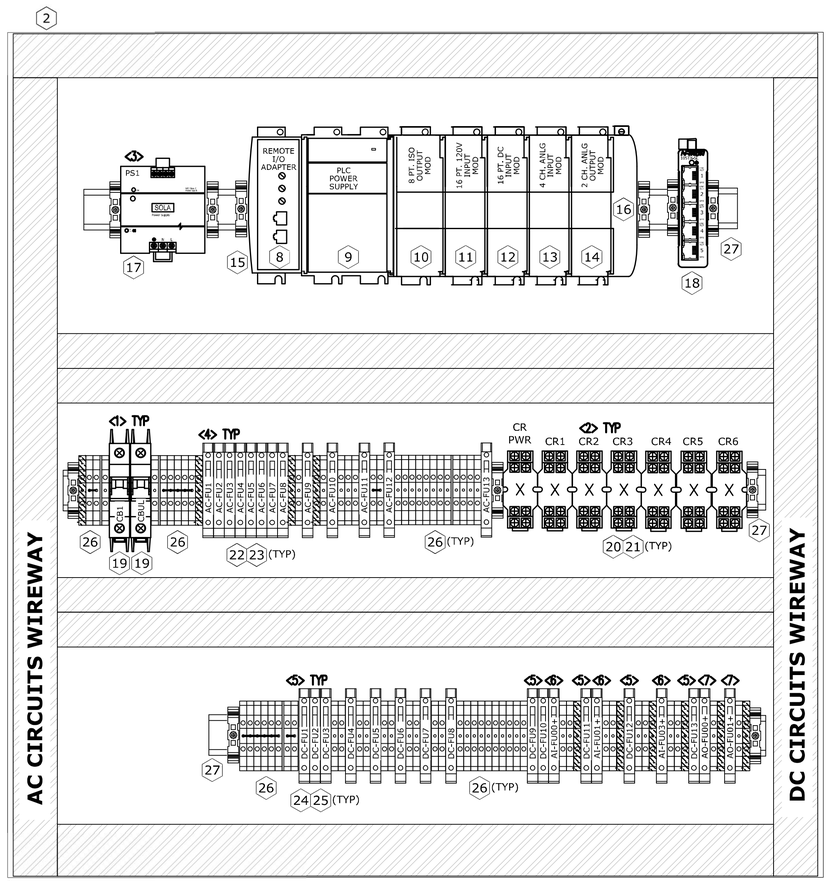


BLACK PLATES WITH ROUNDED CORNERS AND WHITE LETTERS

GENERAL NOTES

1. PROVIDE AND INSTALL VINYL LABELS ON BACK PANEL FOR ALL FUSING, RELAYS, CIRCUIT BREAKERS AND POWER SUPPLIES AS SHOWN IN THE TABLE BELOW.





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AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

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8/17/2023

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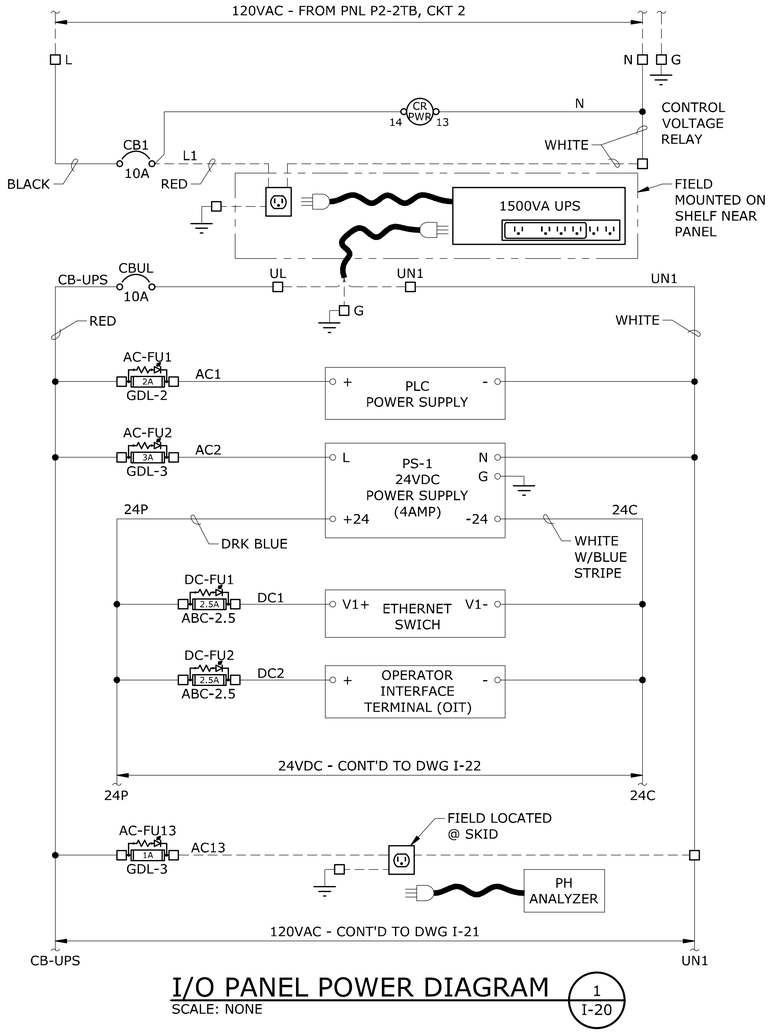
CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

WELL #2
I/O PANEL
GENERAL ARRANGEMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

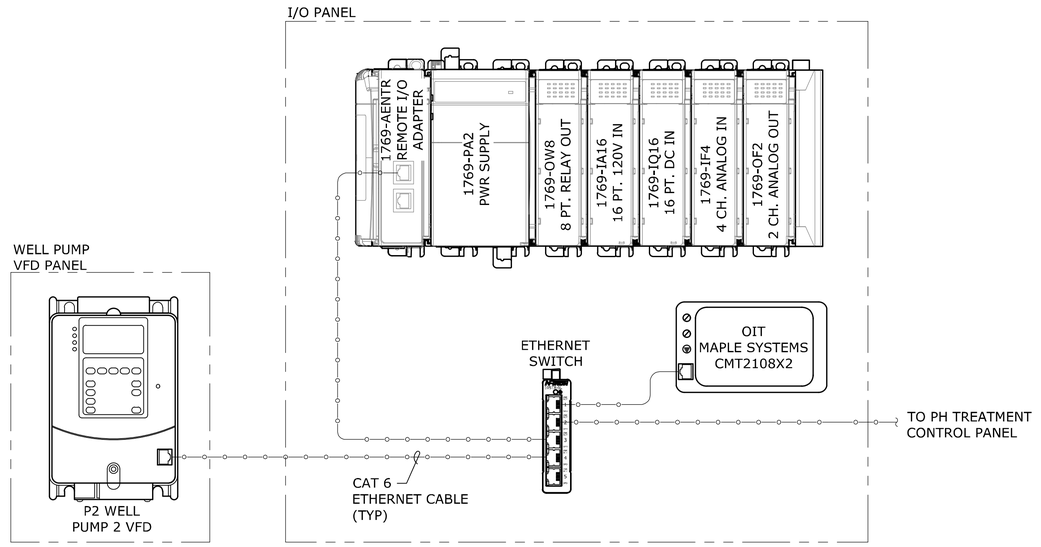
SCHEDULE B
SHEET
I-19



I/O PANEL POWER DIAGRAM

SCALE: NONE

1 / I-20



COMMUNICATION BLOCK DIAGRAM

SCALE: NONE

2 / I-20

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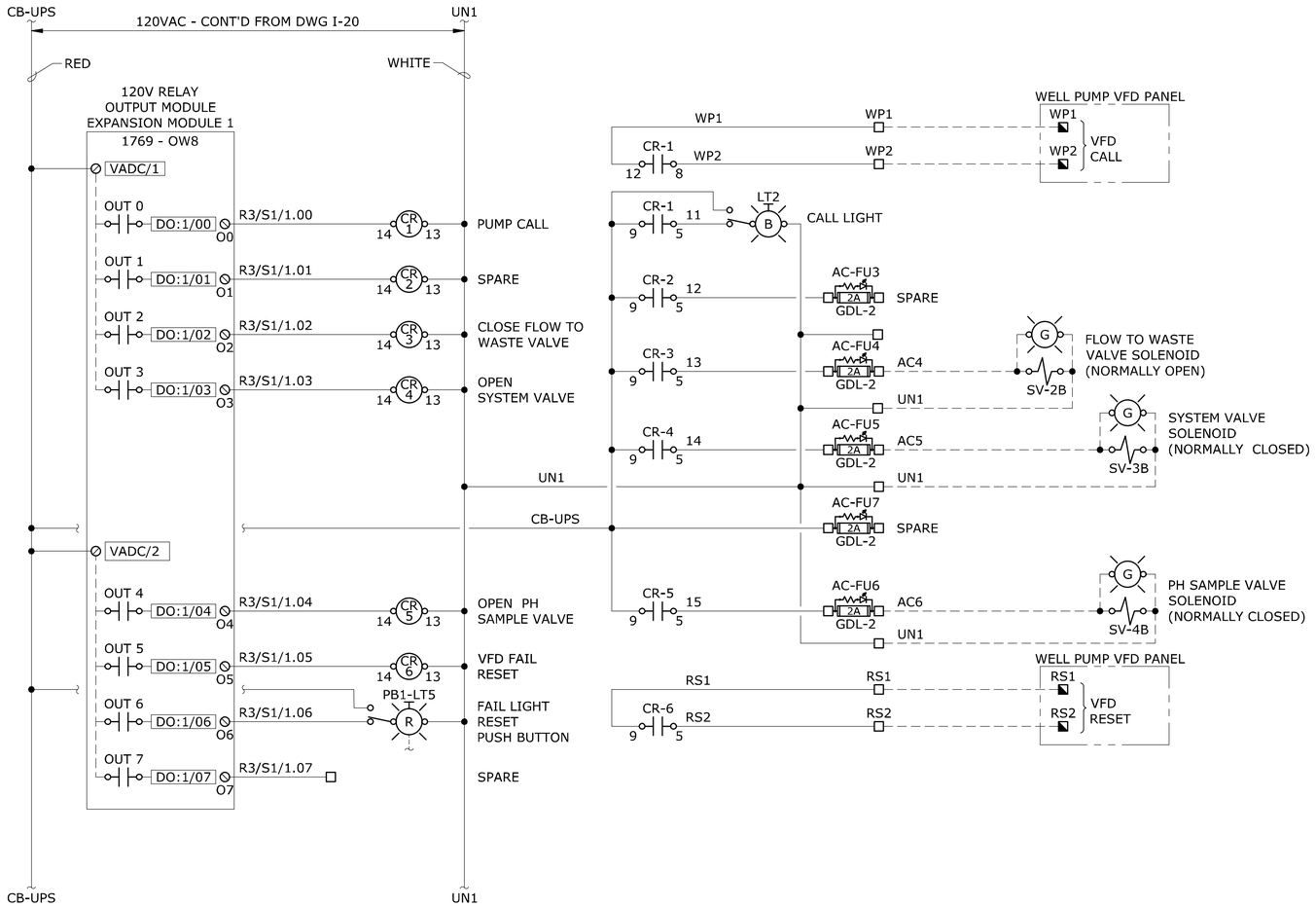
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

WELL #2
I/O PANEL
POWER, FUSING AND ETHERNET CONNECTIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-20



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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

WELL #2
I/O PANEL
I/O SHEET 1

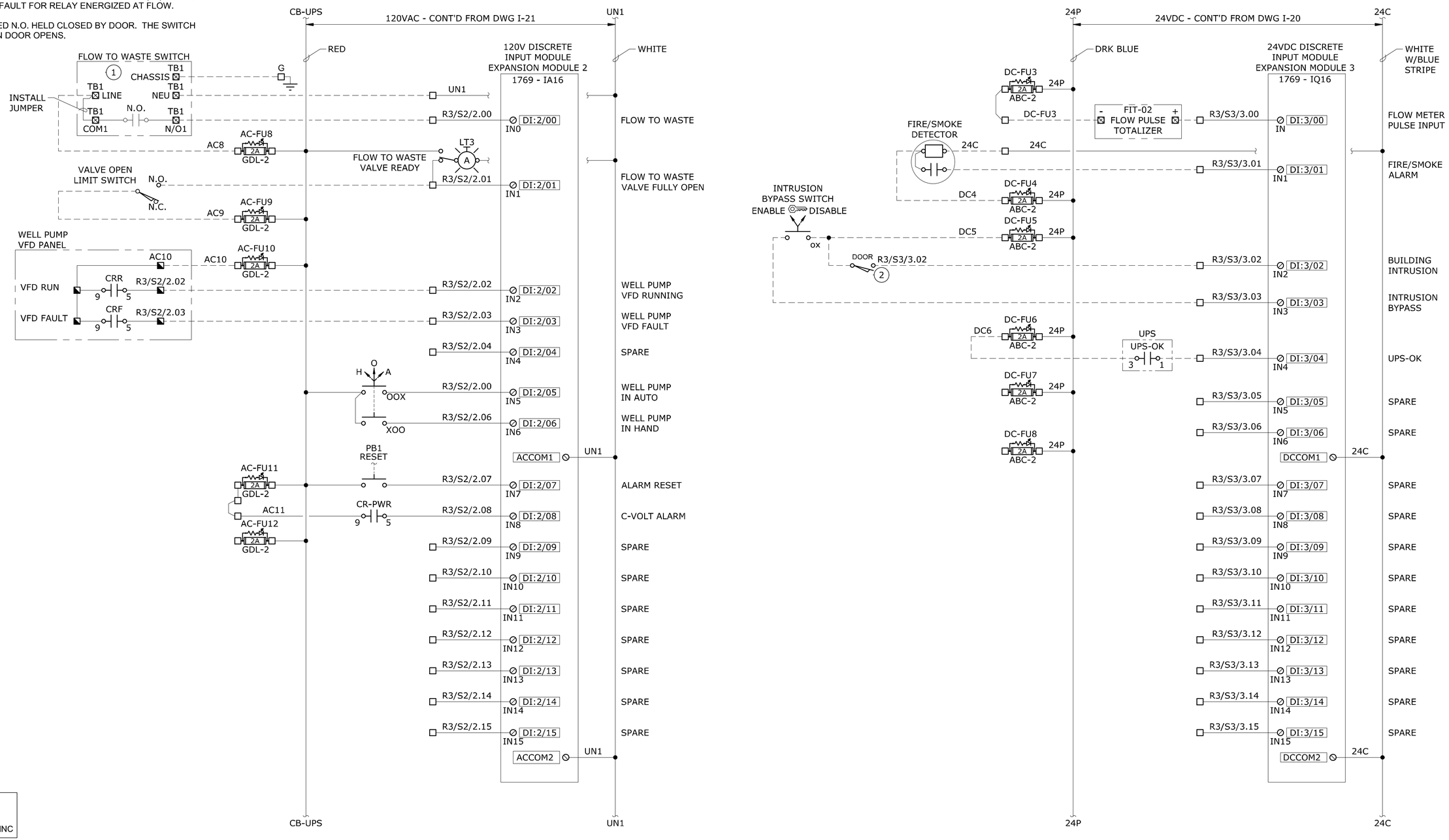
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-21

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-21.dwg I-21 8/17/2023 10:00 AM ROBERTC 23.1s (LMS Tech)

KEY NOTES

1. APPLICATION SWITCH (SW1) SET TO FACTORY DEFAULT FOR LIQUID FLOW SWITCH, RELAY SWITCH JUMPER (S1) SET TO FACTORY DEFAULT FOR RELAY ENERGIZED AT FLOW.
2. SWITCH WIRED N.O. HELD CLOSED BY DOOR. THE SWITCH OPENS WHEN DOOR OPENS.



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8/17/2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

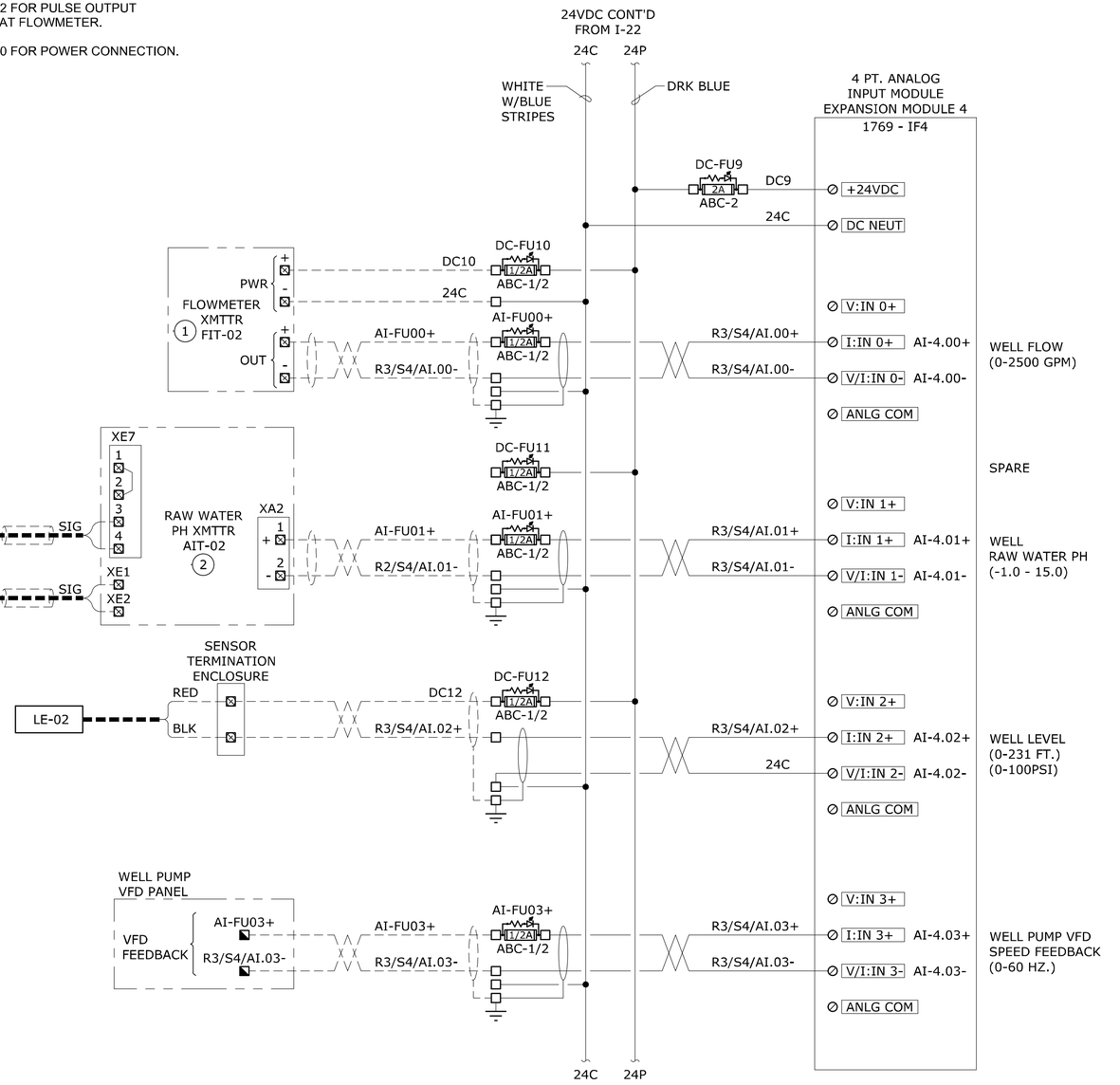
WELL #2
I/O PANEL
I/O SHEET 2

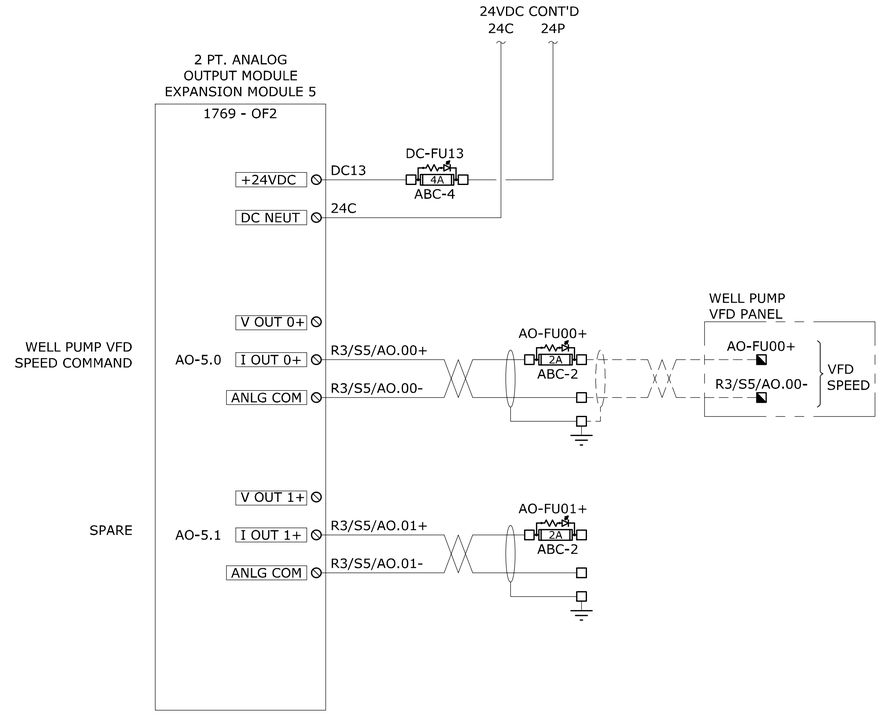
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-22

KEY NOTES

1. SEE SHEET I-22 FOR PULSE OUTPUT CONNECTION AT FLOWMETER.
2. SEE SHEET I-20 FOR POWER CONNECTION.





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8/17/2023

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WELL #2
I/O PANEL
I/O SHEET 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

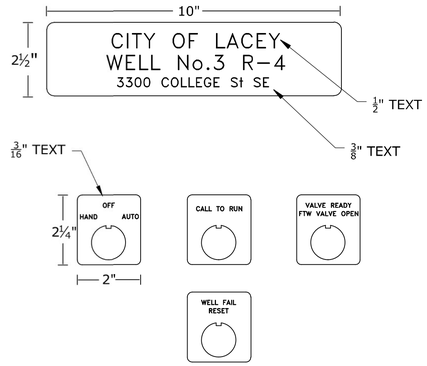
SCHEDULE B
SHEET
I-23

#	ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
	1	1	NEMA 4 ENCLOSURE, 30"x30"x12"	HOFFMAN	CSD303012	YES
	2	1	BACK PANEL	HOFFMAN	CP-3030	YES
	3	1	OPERATOR INTERFACE TERMINAL W/TOUCHSCREEN, 10.1", 24VDC	MAPLE SYSTEMS	CMT2108X2	NO
	4	1	3 POS. SELECTOR SWITCH, 30MM, HEAVY DUTY, W/INGRESS OPERATOR & 2 NO CONTACTS	EATON	E34VHBA1-2 W/E34A1 OPERATOR	NO
	5	1	BLUE LED PUSH/TEST IND., 30MM, 120V W/XFMR	EATON	E34TPB120LLP06	NO
	6	1	AMBER LED PUSH/TEST IND., 30MM, 120V W/XFMR	EATON	E34TPB120LAP06	NO
	7	1	RED LED PUSH/TEST IND., 30MM, 120V W/XFMR & 1NO&1NC CONTACTS	EATON	E34TPB120LRP06-1	NO
	8	1	REMOTE I/O ADAPTER MODULE	ALLEN-BRADLEY	1769-AENTR	NO
	9	1	PLC POWER SUPPLY, 2AMP	ALLEN-BRADLEY	1769-PA2	NO
	10	1	8 PT RELAY OUTPUT MODULE	ALLEN-BRADLEY	1769-OW8	NO
	11	1	16 PT 120V INPUT MODULE	ALLEN-BRADLEY	1769-IA16	NO
	12	1	16 PT DC INPUT MODULE	ALLEN-BRADLEY	1769-IQ16	NO
	13	1	4 CH. ANALOG INPUT MODULE	ALLEN-BRADLEY	1769-IF4	NO
	14	1	2 CH. ANALOG OUTPUT MODULE	ALLEN-BRADLEY	1769-OF2	NO
	15	1	END CAP TERMINATOR, LEFT	ALLEN-BRADLEY	1769-ECL	NO
	16	1	END CAP TERMINATOR, RIGHT	ALLEN-BRADLEY	1769-ECR	NO
	17	1	24VDC POWER SUPPLY, 4AMP	SOLA	SDP4-24-100LT	NO
	18	1	5 PORT INDUSTRIAL UNMANAGED ETHERNET SWITCH	N-TRON	105TX-SL	NO
	19	2	10A, 1-POLE MINIATURE CIRCUIT BREAKER, CLASS C TRIP	EATON	FAZ-C10/1-NA	NO
	20	7	120V CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
	21	7	CONTROL RELAY BASE	IDEC	SH2B-05	NO
	22	13	AC FUSE HOLDER TERMINAL W/NEON BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H4	NO
	23	13	AC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	GDL TYPE	NO
	24	18	DC FUSE HOLDER TERMINAL W/LED BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H5	NO
	25	18	DC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	ABC TYPE	NO
	26	AR	FEED-THRU & GROUNDING TERMINAL BLOCK, END PLATES & END STOPS	SPRECHER SCHUH	V7-W4 SERIES	NO
	27	AR	STEEL DIN-RAIL	ENTRELEC	PR30	YES

Vinyl Labels

White background with 18 point black font, text to include: (X replace with count identifier as shown) {Mount on back panel}

<1> CB-X	<2> CR-X	<3> PS-1	<4> AC-FUX TYPE SIZE	<5> DC-FUX TYPE SIZE	<6> AIX-FUX TYPE SIZE	<7> AOX-FUX TYPE SIZE	<8> NOT USED



BLACK PLATES WITH ROUNDED CORNERS AND WHITE LETTERS

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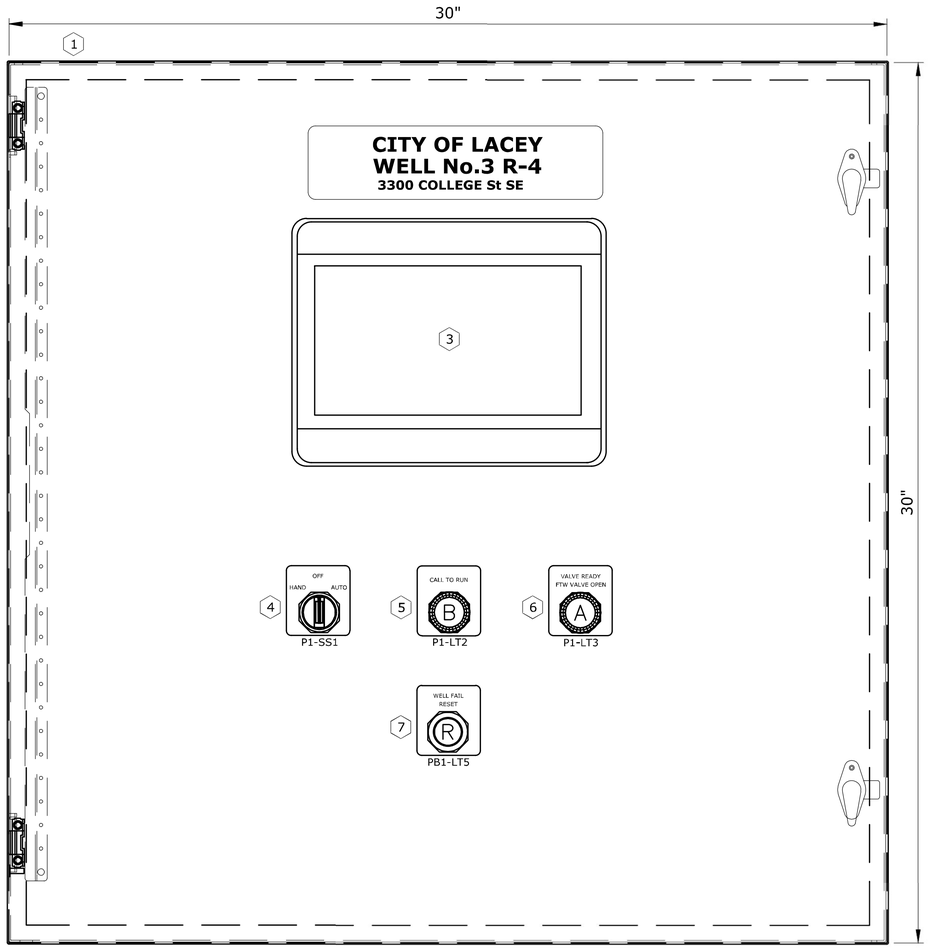

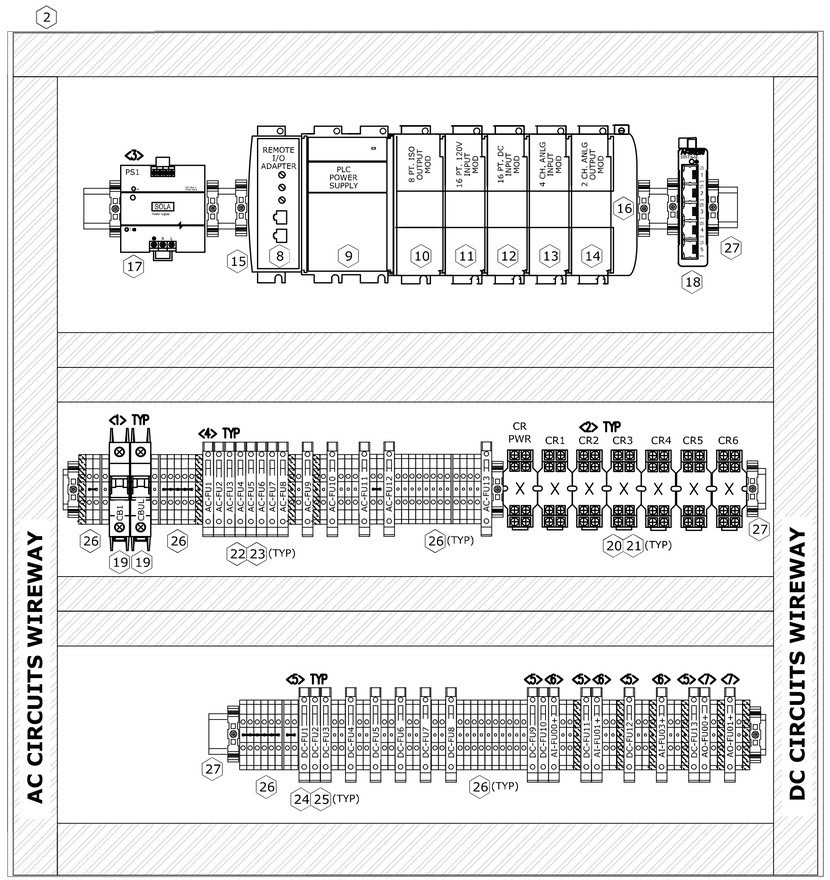

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PROJECT#:21.47.01

NO.	DATE	BY	REVISION

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TBC CHECKED

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Digitally signed by James Mitchell
8/28/2023

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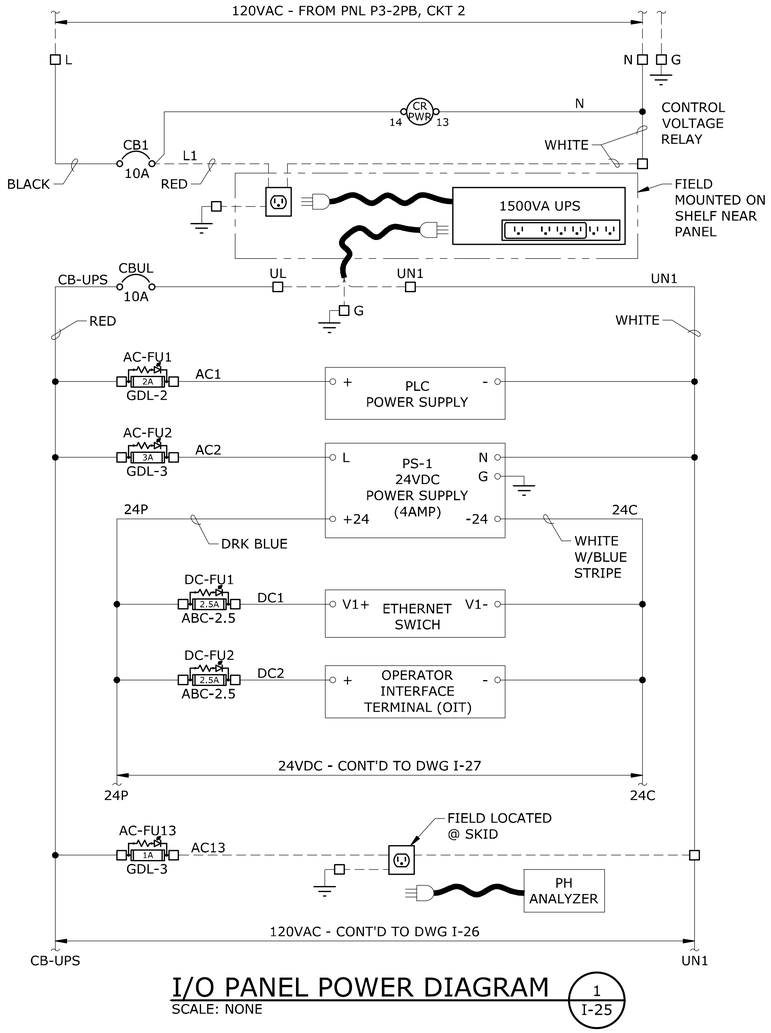
CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

WELL #3
I/O PANEL
GENERAL ARRANGEMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-24

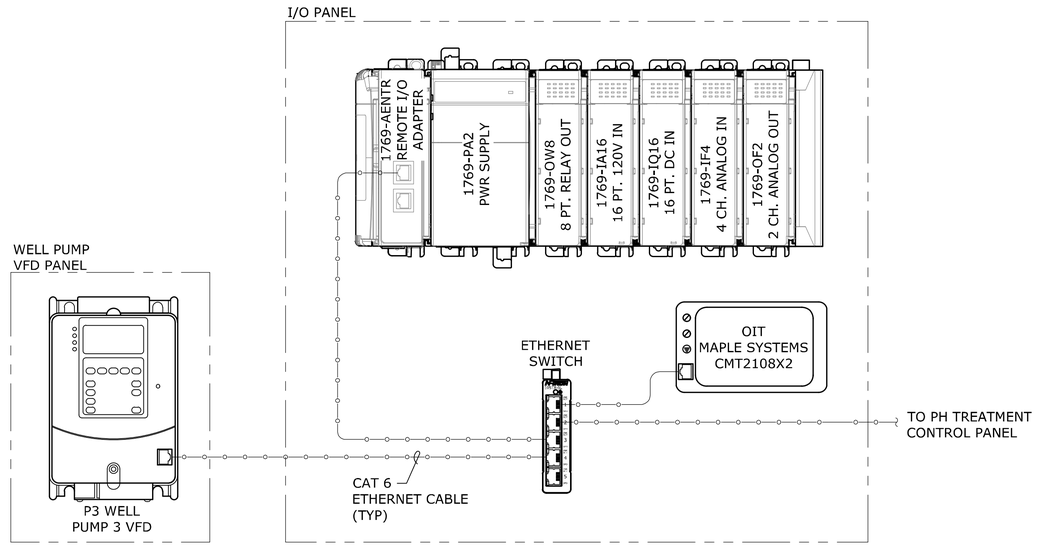
P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-24.dwg I-24 8/17/2023 11:27 AM ROBERTC 23.1s (LMS Tech)



I/O PANEL POWER DIAGRAM

SCALE: NONE

1 / I-25



COMMUNICATION BLOCK DIAGRAM

SCALE: NONE

2 / I-25

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Designed by: James Mitchell
783E381[illegible]46C
8/18/2023

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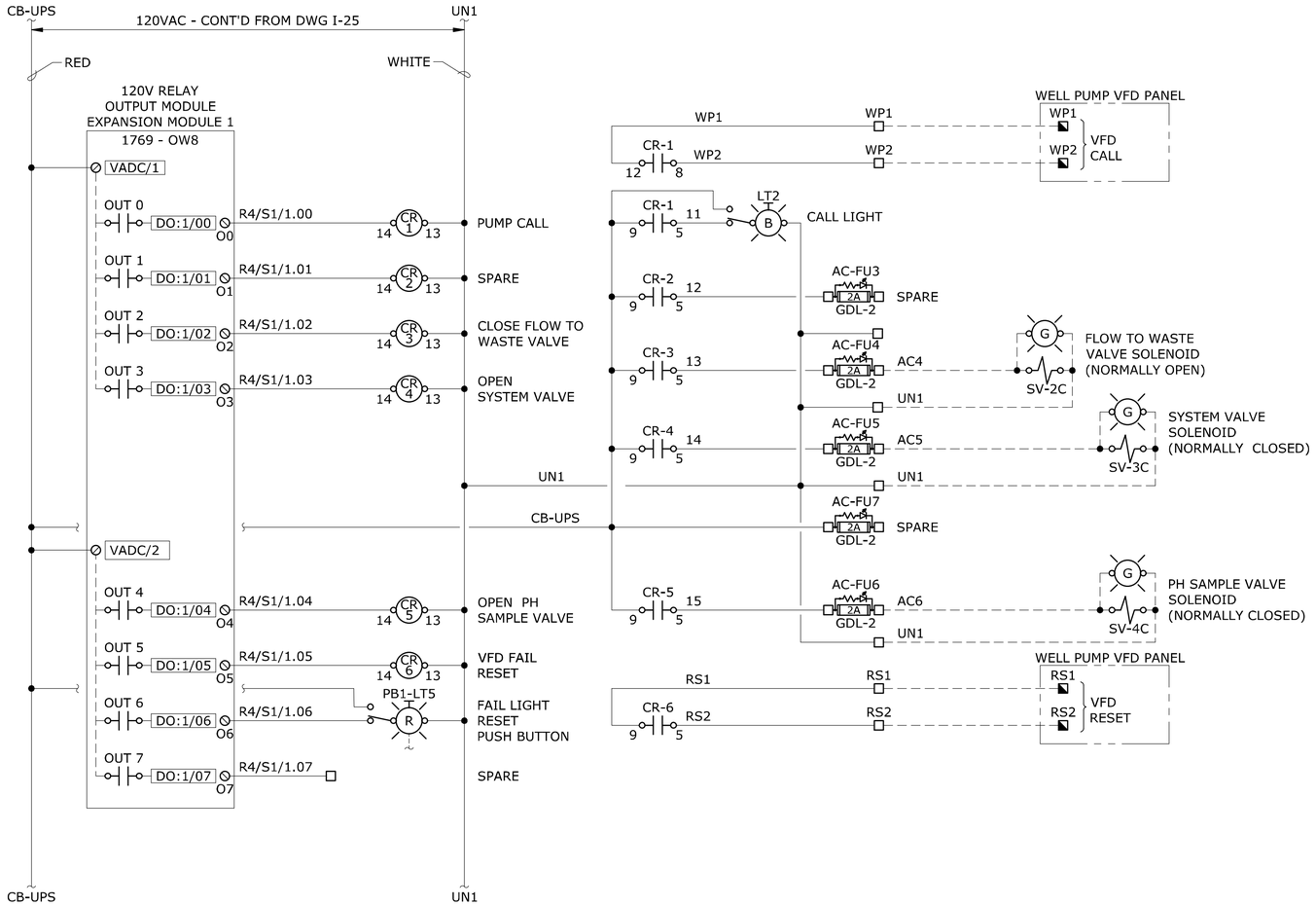
LACEY CONTRACT #PW 2022-37

WELL #3
I/O PANEL
POWER, FUSING AND ETHERNET CONNECTIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-25



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OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

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Signed by: James Mitchell
8/17/2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

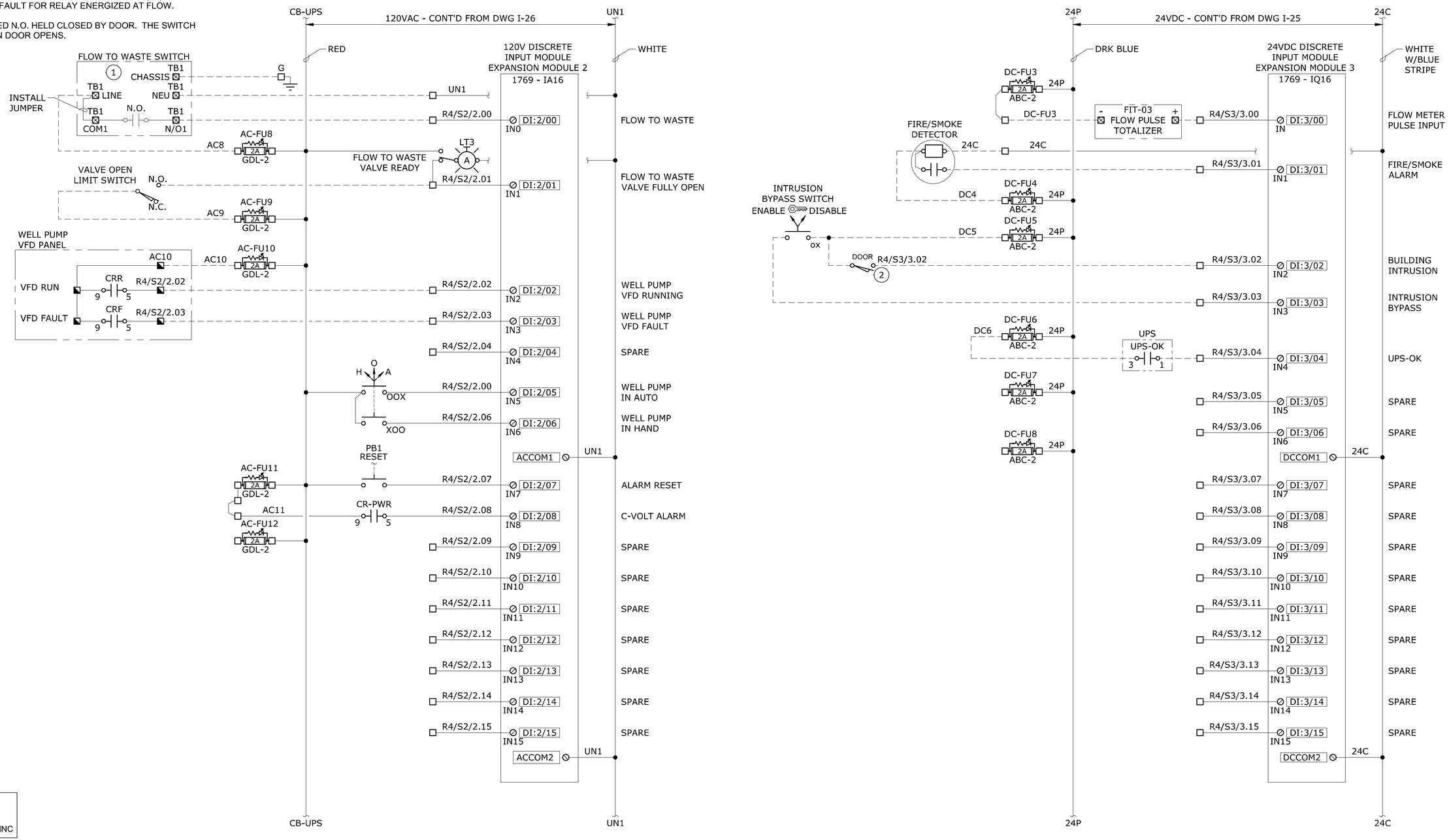
WELL #3
I/O PANEL
I/O SHEET 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-26

KEY NOTES

1. APPLICATION SWITCH (SW1) SET TO FACTORY DEFAULT FOR LIQUID FLOW SWITCH, RELAY SWITCH JUMPER (S1) SET TO FACTORY DEFAULT FOR RELAY ENERGIZED AT FLOW.
2. SWITCH WIRED N.O. HELD CLOSED BY DOOR. THE SWITCH OPENS WHEN DOOR OPENS.



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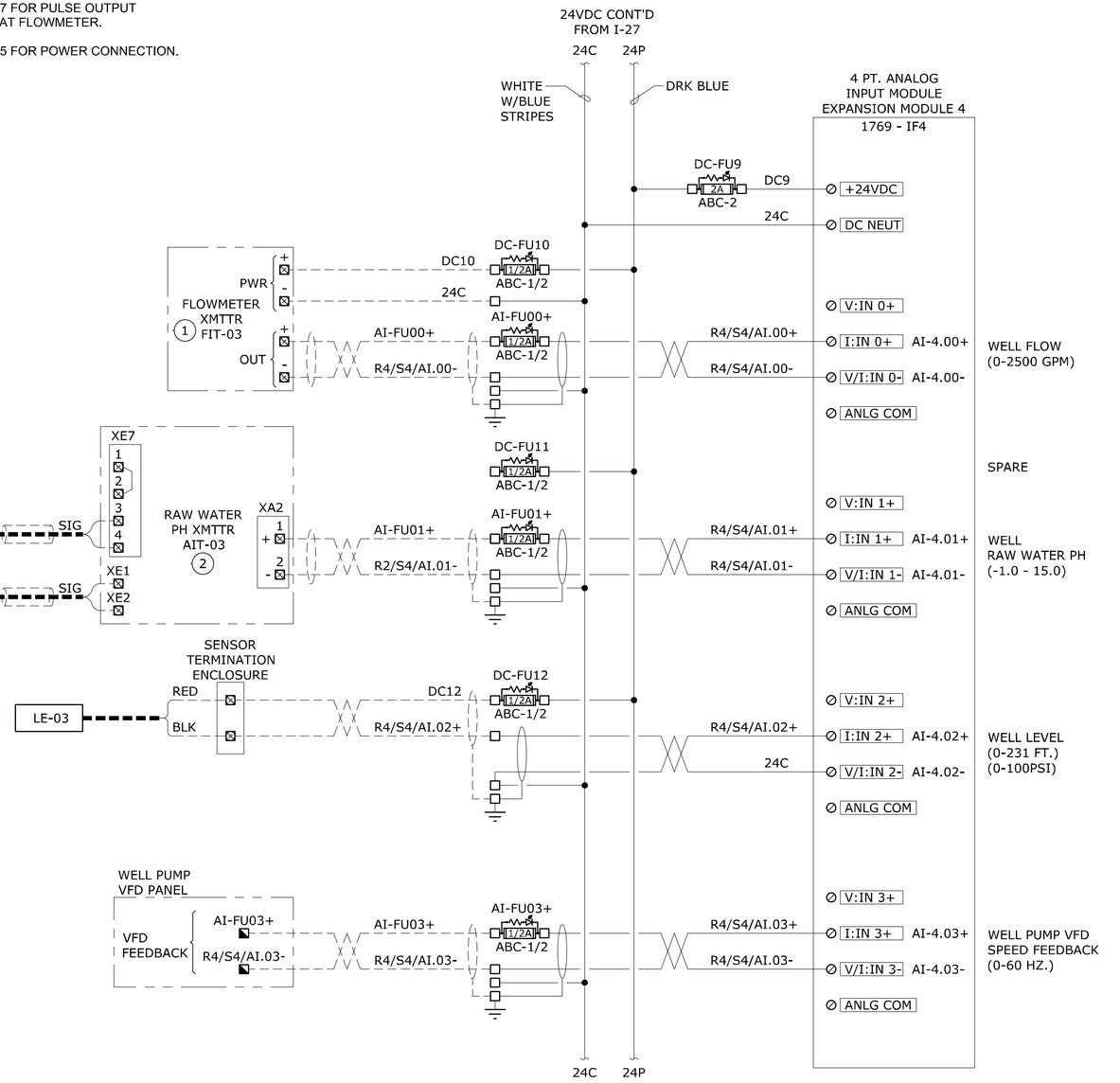
WELL #3
I/O PANEL
I/O SHEET 2

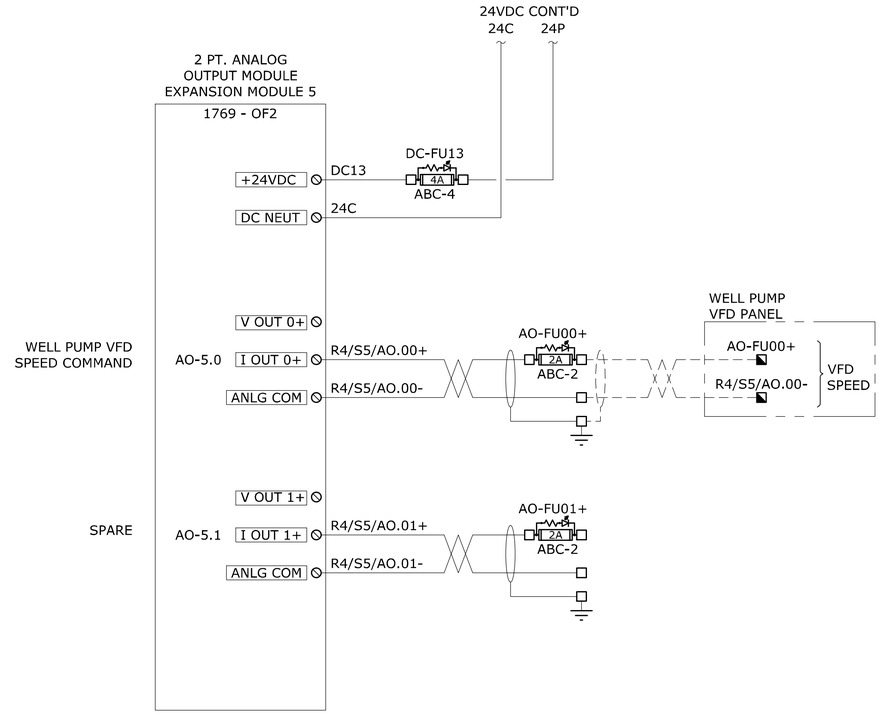
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-27

KEY NOTES

1. SEE SHEET I-27 FOR PULSE OUTPUT CONNECTION AT FLOWMETER.
2. SEE SHEET I-25 FOR POWER CONNECTION.





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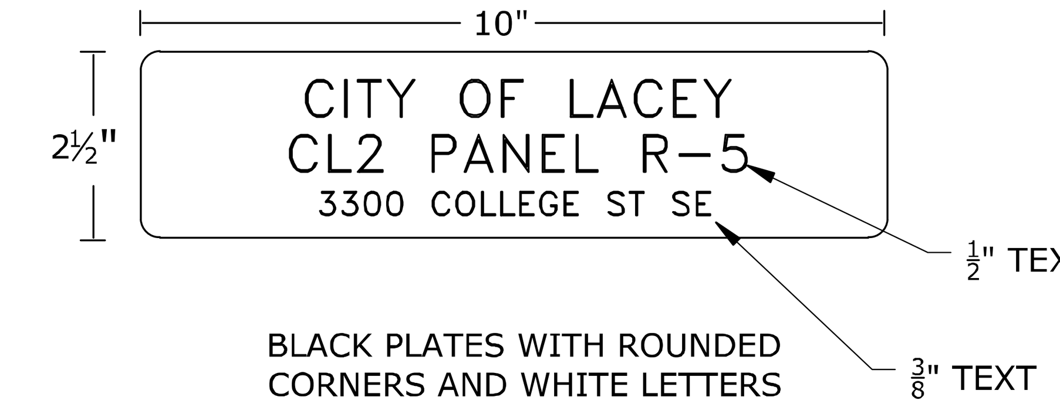
WELL #3
I/O PANEL
I/O SHEET 3

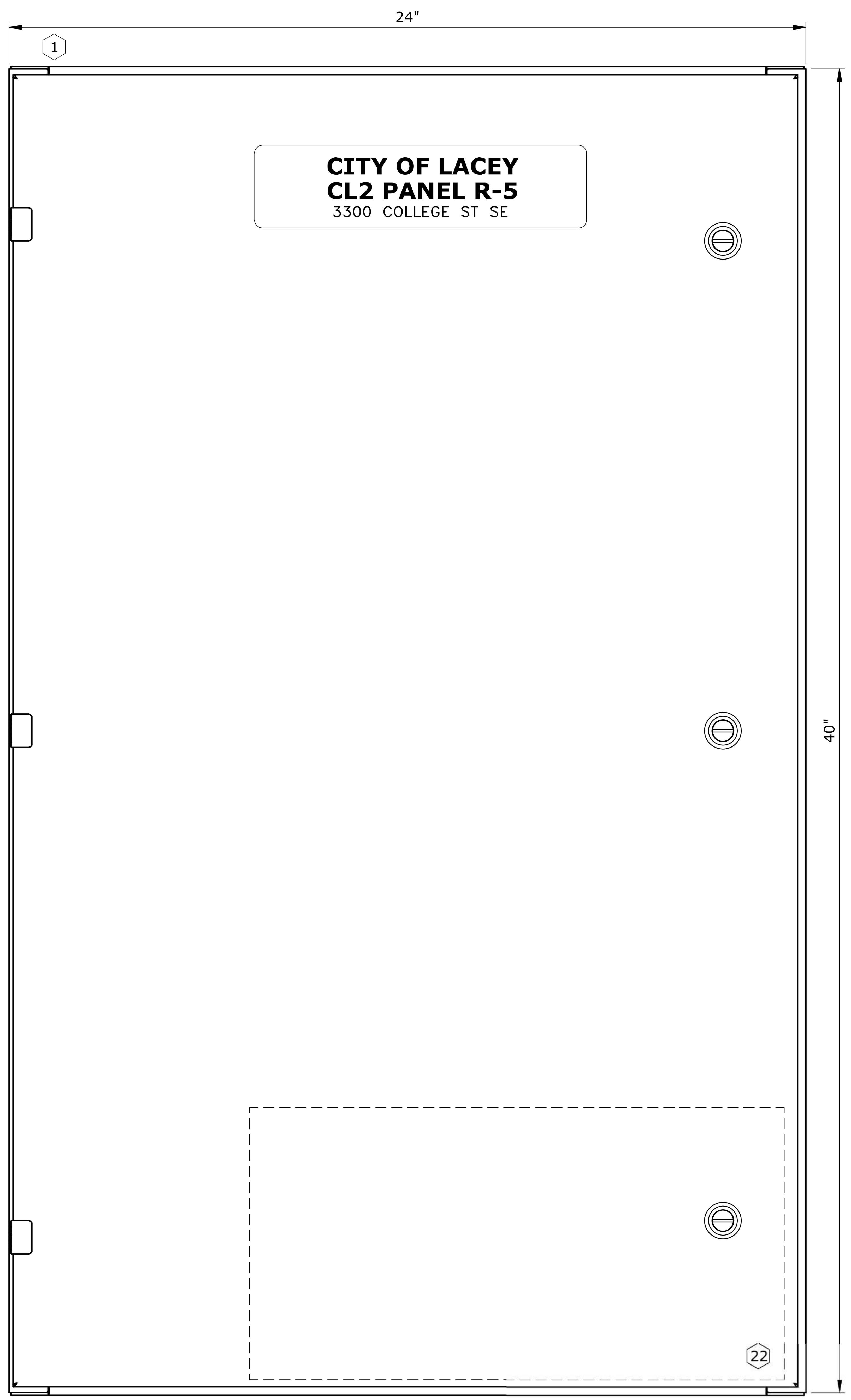
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

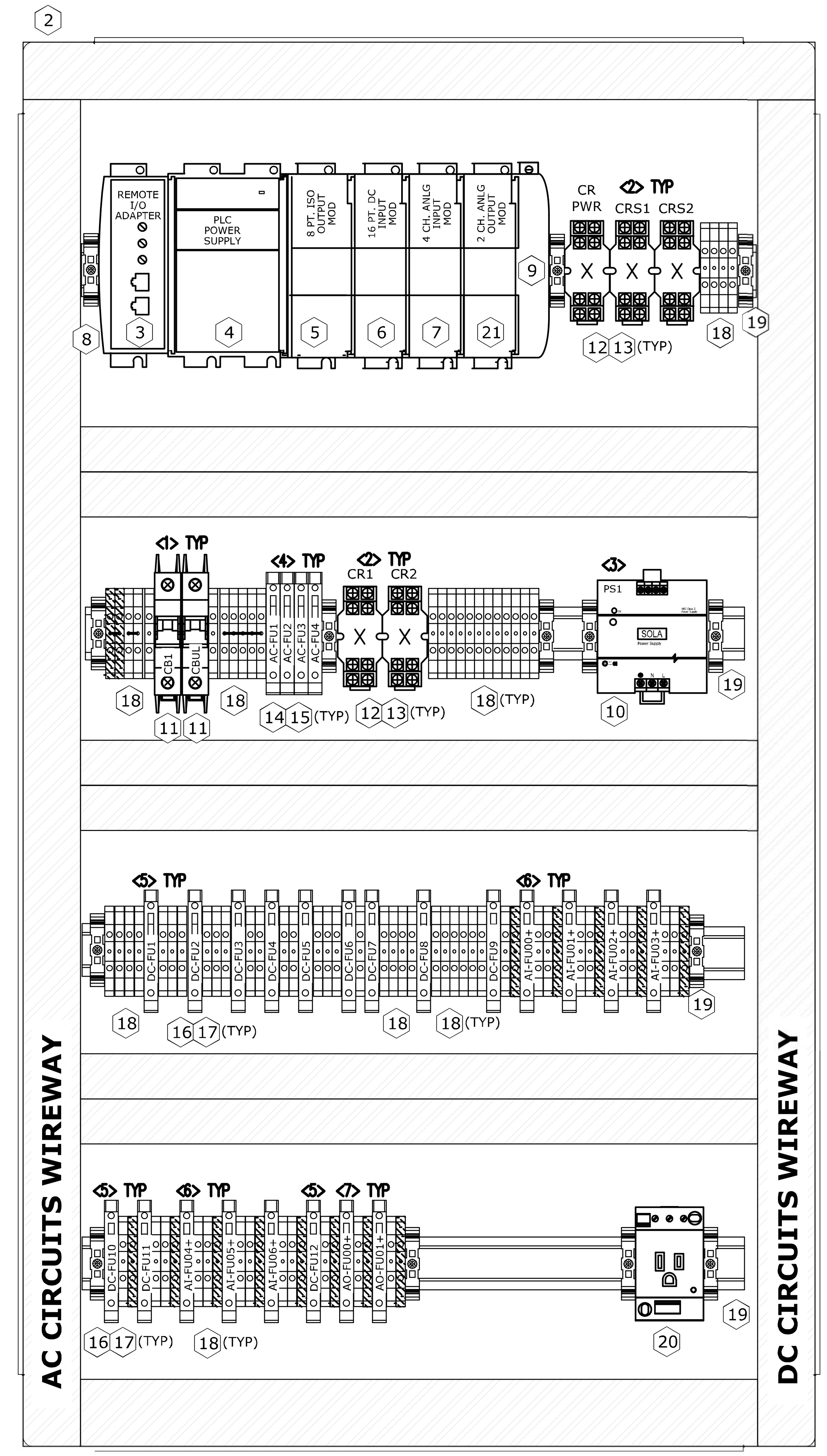
SCHEDULE B
SHEET
I-28



GENERAL NOTES

1. PROVIDE AND INSTALL VINYL LABELS ON BACK PANEL FOR ALL FUSING, RELAYS, CIRCUIT BREAKERS AND POWER SUPPLIES AS SHOWN IN THE TABLE BELOW.





# ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
1	1	NEMA 4 ENCLOSURE,40"x24"x12"	SAGINAW	SCE-40EL2412LP	YES
2	1	BACK PANEL	SAGINAW	SCE-40P24	YES
3	1	REMOTE I/O ADAPTER MODULE	ALLEN-BRADLEY	1769-AENTR	NO
4	1	PLC POWER SUPPLY, 2AMP	ALLEN-BRADLEY	1769-PA2	NO
5	1	8 PT RELAY OUTPUT MODULE	ALLEN-BRADLEY	1769-OW8	NO
6	1	16 PT DC INPUT MODULE	ALLEN-BRADLEY	1769-IQ16	NO
7	1	4 CH. ANALOG INPUT MODULE	ALLEN-BRADLEY	1769-IF4	NO
8	1	END CAP TERMINATOR, LEFT	ALLEN-BRADLEY	1769-ECL	NO
9	1	END CAP TERMINATOR, RIGHT	ALLEN-BRADLEY	1769-ECR	NO
10	1	24VDC POWER SUPPLY, 4AMP	SOLA	SDP4-24-100LT	NO
11	2	10A, 1-POLE MINIATURE CIRCUIT BREAKER, CLASS C TRIP	EATON	FAZ-C10/1-NA	NO
12	5	120V CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
13	5	CONTROL RELAY BASE	IDEC	SH2B-05	NO
14	4	AC FUSE HOLDER TERMINAL W/NEON BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H4	NO
15	4	AC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	GDL TYPE	NO
16	21	DC FUSE HOLDER TERMINAL W/LED BLOWN FUSE INDICATOR	SPRECHER SCHUH	V7-H5	NO
17	21	DC FUSES, SIZES AND TYPE AS SHOWN	BUSSMAN	ABC TYPE	NO
18	AR	FEED-THRU & GROUNDING TERMINAL BLOCK, END PLATES & END STOPS	SPRECHER SCHUH	V7-W4 SERIES	NO
19	AR	STEEL DIN-RAIL	ENTRELEC	PR30	YES
20	1	SIMPLEX RECEPTACLE - DIN-RAIL MOUNT	PHOENIX CONTACT	0804155	NO
21	1	2 CH. ANALOG OUTPUT MODULE	ALLEN-BRADLEY	1769-OF2	NO
22	1	1500VA UPS	EATON OR APC	5SC1500 / SMT1500	NO

Vinyl Labels

White background with 18 point black font, text to include: (X replace with count identifier as shown) {Mount on back panel}

<1>	<2>	<3>	<4>	<5>	<6>	<7>	<8>
CB-X	CR-X	PS-1	AC-FUX TYPE SIZE	DC-FUX TYPE SIZE	AI-FUX TYPE SIZE	AO-FUX TYPE SIZE	NOT USED

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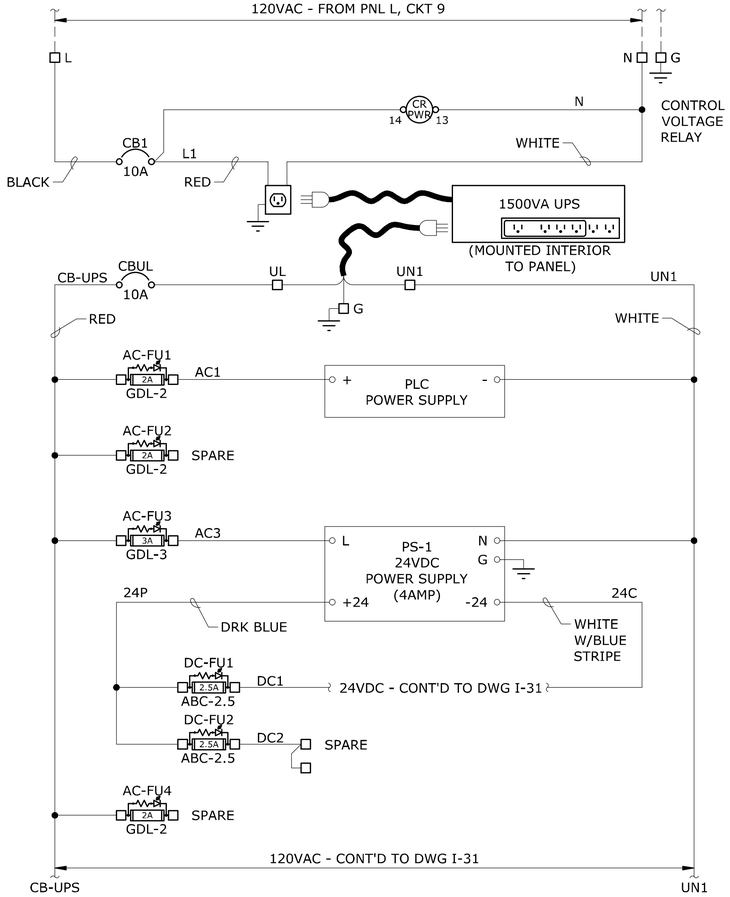
LACEY CONTRACT #PW 2022-37

CHLORINE I/O PANEL GENERAL ARRANGEMENT

SCHEDULE B
SHEET I-29

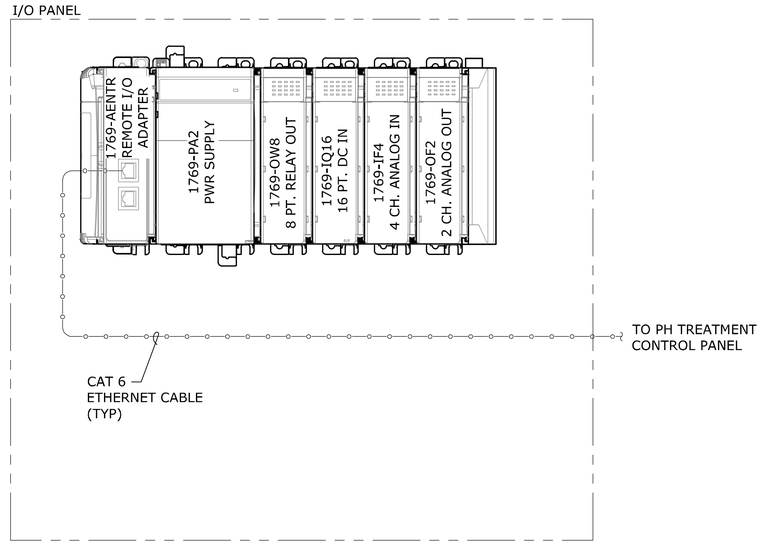
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023



I/O PANEL POWER DIAGRAM

SCALE: NONE

1 / I-30



COMMUNICATION BLOCK DIAGRAM

SCALE: NONE

2 / I-30

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LACEY CONTRACT #PW 2022-37

CHLORINE I/O PANEL POWER, FUSING AND ETHERNET CONNECTIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

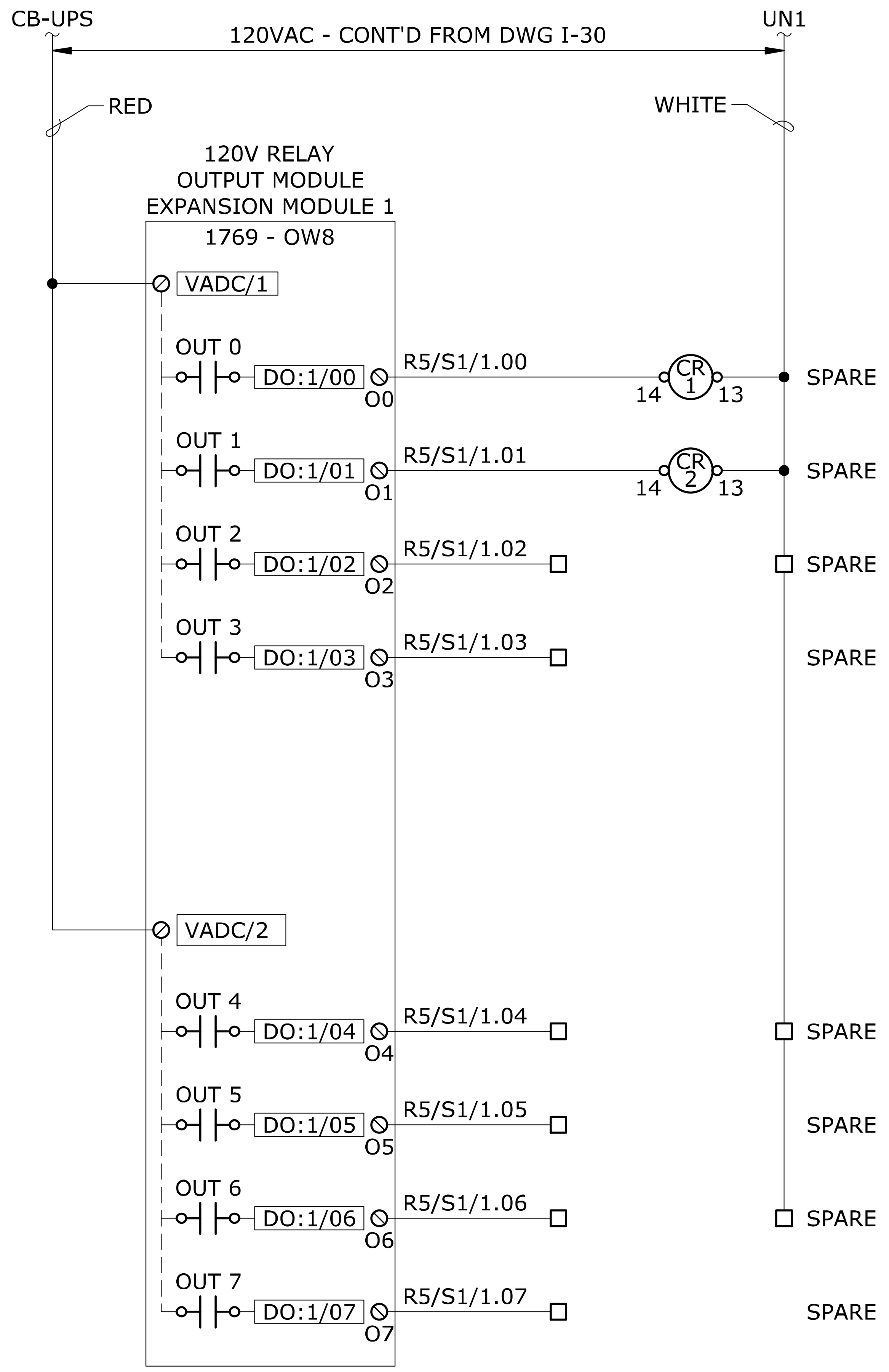
SCHEDULE B
SHEET
I-30

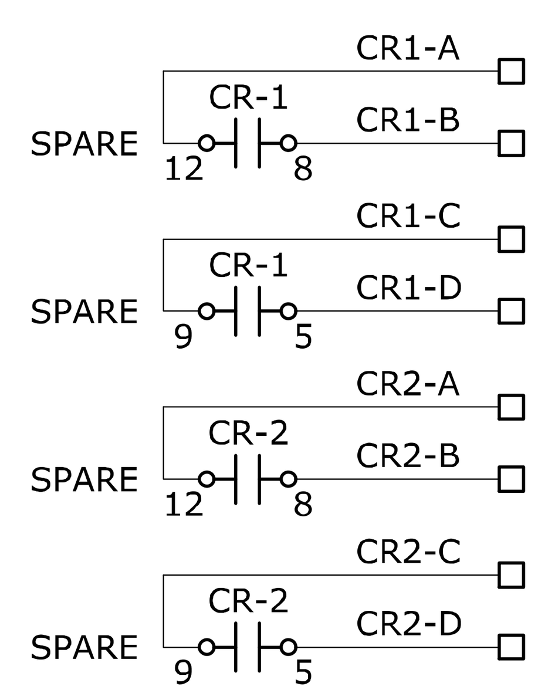
GENERAL NOTES

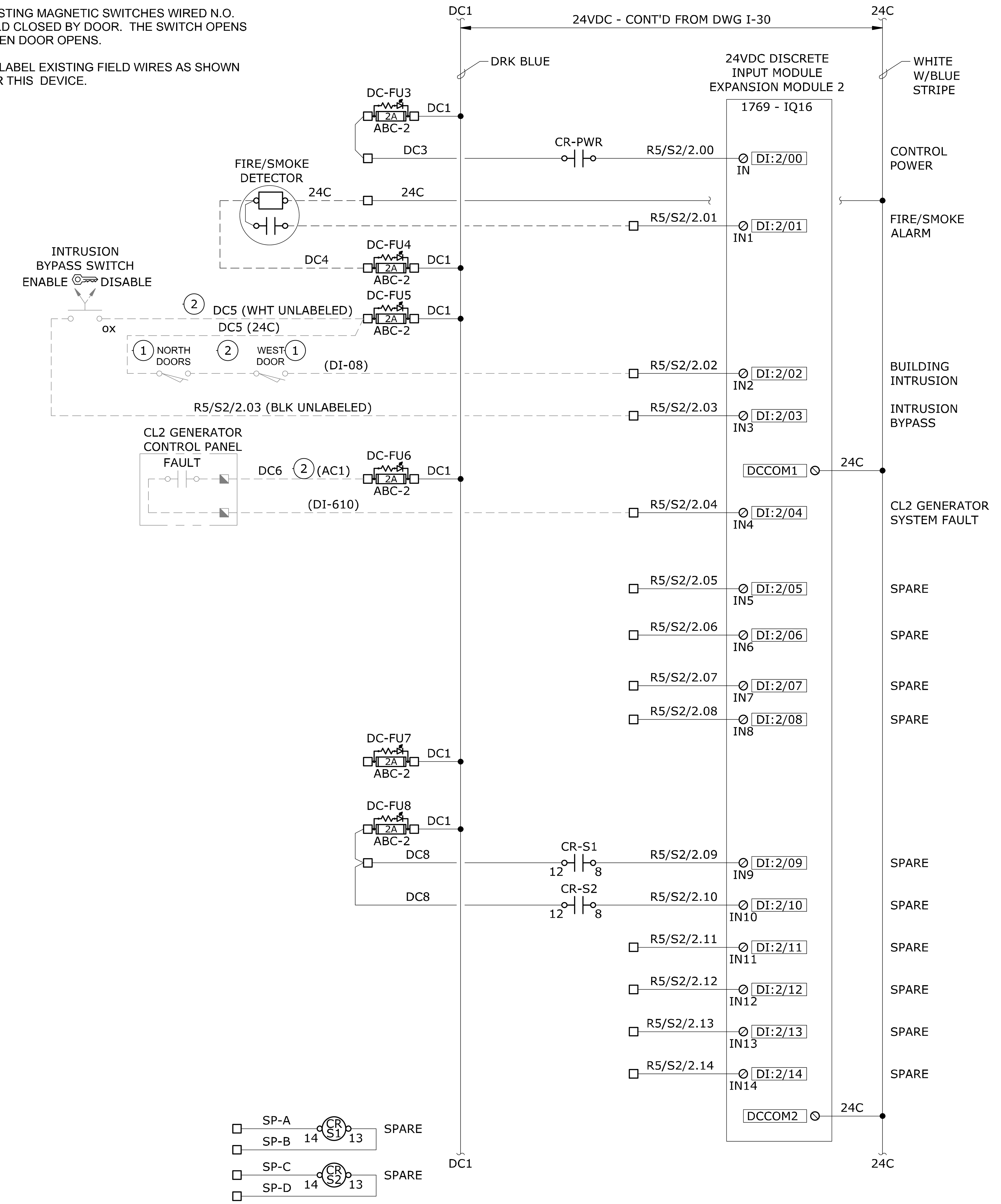
1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES, UNLESS OTHERWISE NOTED.

KEY NOTES

1. EXISTING MAGNETIC SWITCHES WIRED N.O. HELD CLOSED BY DOOR. THE SWITCH OPENS WHEN DOOR OPENS.
2. RE-LABEL EXISTING FIELD WIRES AS SHOWN FOR THIS DEVICE.







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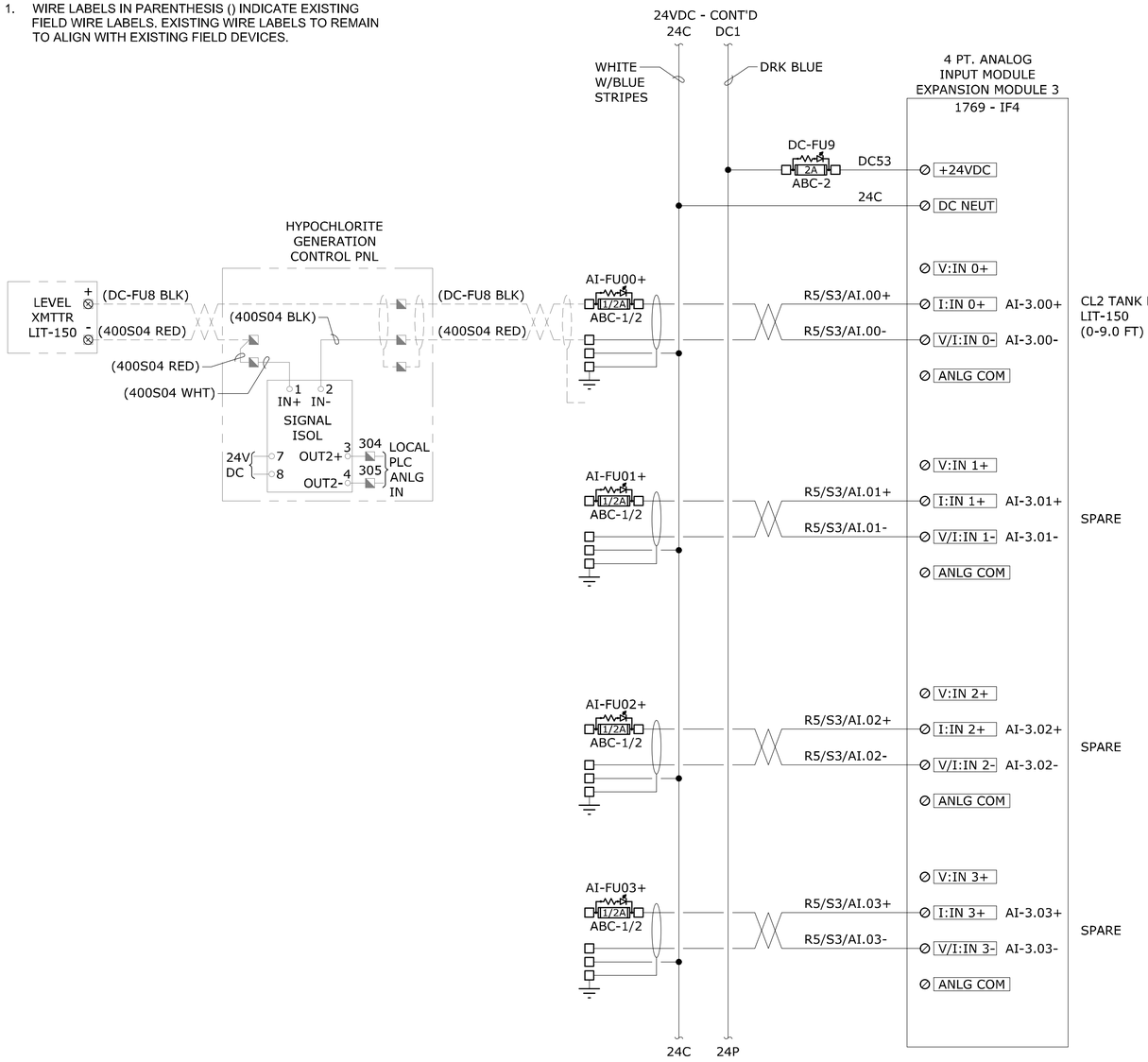
CHLORINE
I/O PANEL
I/O SHEET 1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-31

GENERAL NOTES

1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES.



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LACEY CONTRACT #PW 2022-37

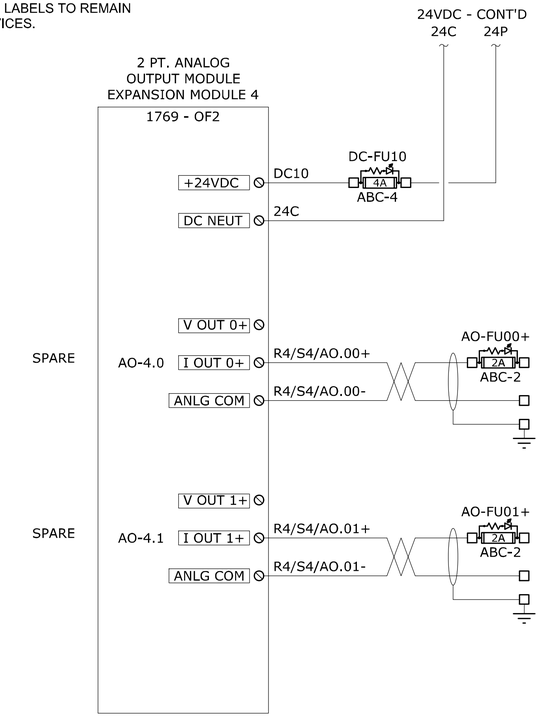
CHLORINE I/O PANEL I/O SHEET 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-32

GENERAL NOTES

1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES.



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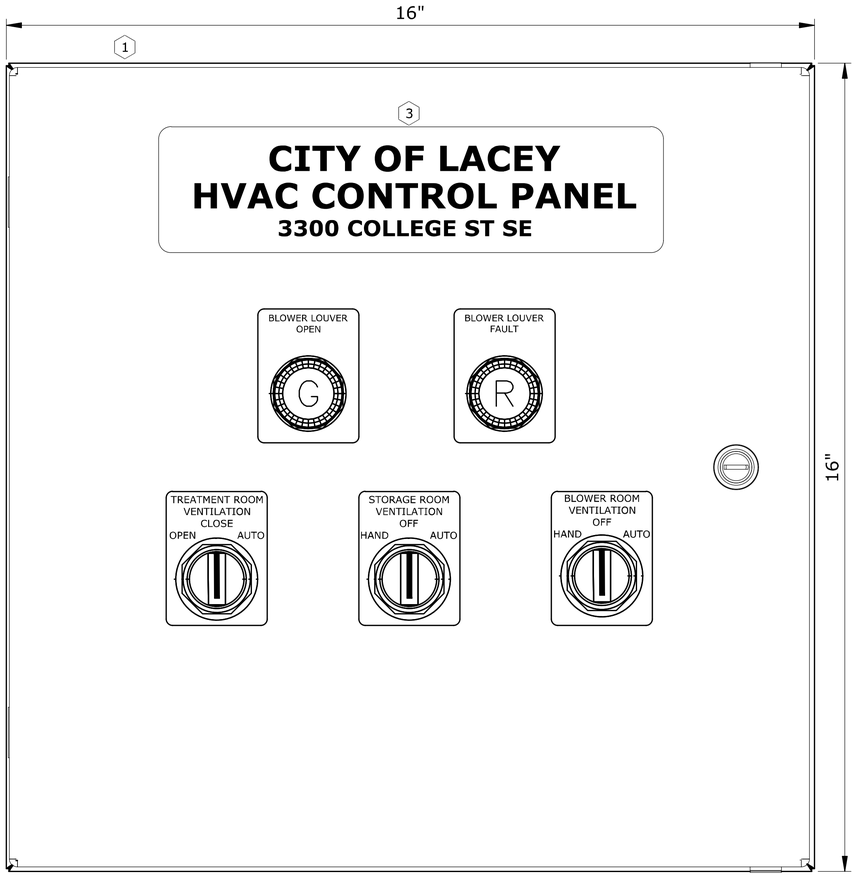
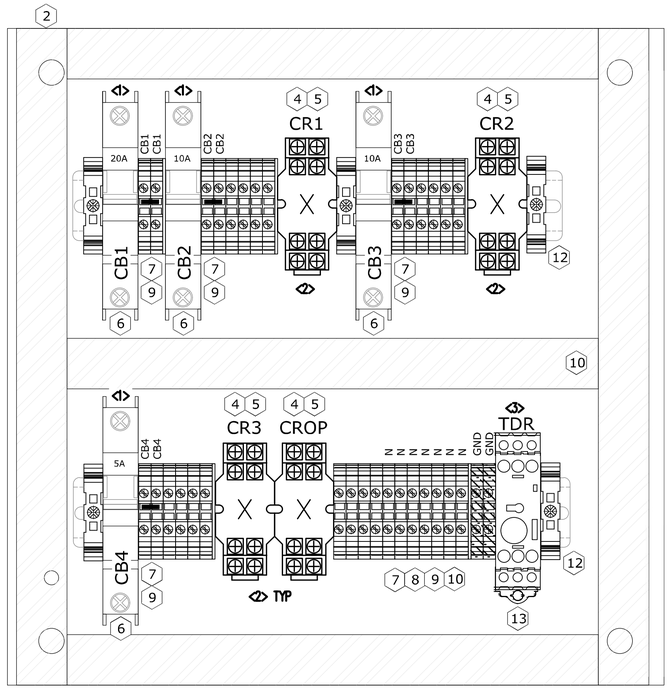
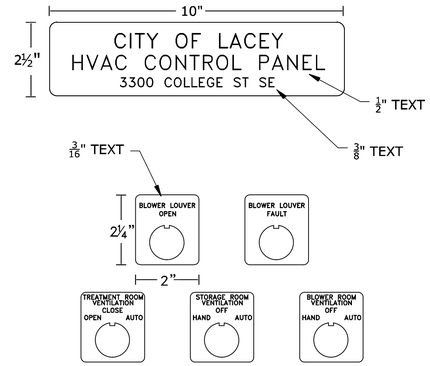
CHLORINE I/O PANEL I/O SHEET 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-33







BLACK PLATES WITH ROUNDED CORNERS AND WHITE LETTERS

GENERAL NOTES

1. PROVIDE AND INSTALL VINYL LABELS ON BACK PANEL FOR ALL RELAYS AND CIRCUIT BREAKERS AS SHOWN IN THE TABLE BELOW.

#	ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
1	1	1	NEMA 4 ENCLOSURE, 16"x16"x8"	HOFFMAN	A16168LPG	YES
2	1	1	BACK PANEL	HOFFMAN	A16P16	YES
3	1	1	PHENOLIC NAMEPLATE (SEE NAMEPLATE SCHEDULE)	PANEL FABRICATOR CHOICE		YES
4	4	4	120V CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
5	4	4	2PDT CONTROL RELAY BASE	IDEC	SJ2S-05B	NO
6	AR	AR	1 POLE CIRCUIT BREAKER (SIZE ACCORDING TO DRAWINGS)	EATON	FAZ-C**/1-NA	NO
7	AR	AR	TERMINAL BLOCK (NON FUSED)	SPRECHER SCHUH	V7-W4 SERIES	NO
8	AR	AR	TERMINAL BLOCK END STOP	SPRECHER SCHUH	V7-W4 SERIES	NO
9	AR	AR	TERMINAL BLOCK END PLATE	SPRECHER SCHUH	V7-W4 SERIES	NO
10	AR	AR	TERMINAL BLOCK (GROUND)	SPRECHER SCHUH	V7-W4 SERIES	NO
11	AR	AR	WIREWAY (SIZE AS NOTED ON DRAWING)	PANEL FABRICATOR CHOICE		YES
12	AR	AR	STEEL DIN-RAIL	ENTRELEC	PR30	YES
13	1	1	TIME DELAY RELAY, MULTI-FUNCTION, 120VAC, (2) DPDT RELAYS	ALLEN-BRADLEY	700-FSA4UU23	YES

Vinyl Labels

White background with 18 point black font, text to include: (X replace with count identifier as shown) {Mount on back panel}

<1> CB-X	<2> CR-X	<3> TDR	<4> NOT USED	<5> NOT USED	<6> NOT USED	<7> NOT USED	<8> NOT USED

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LACEY CONTRACT #PW 2022-37

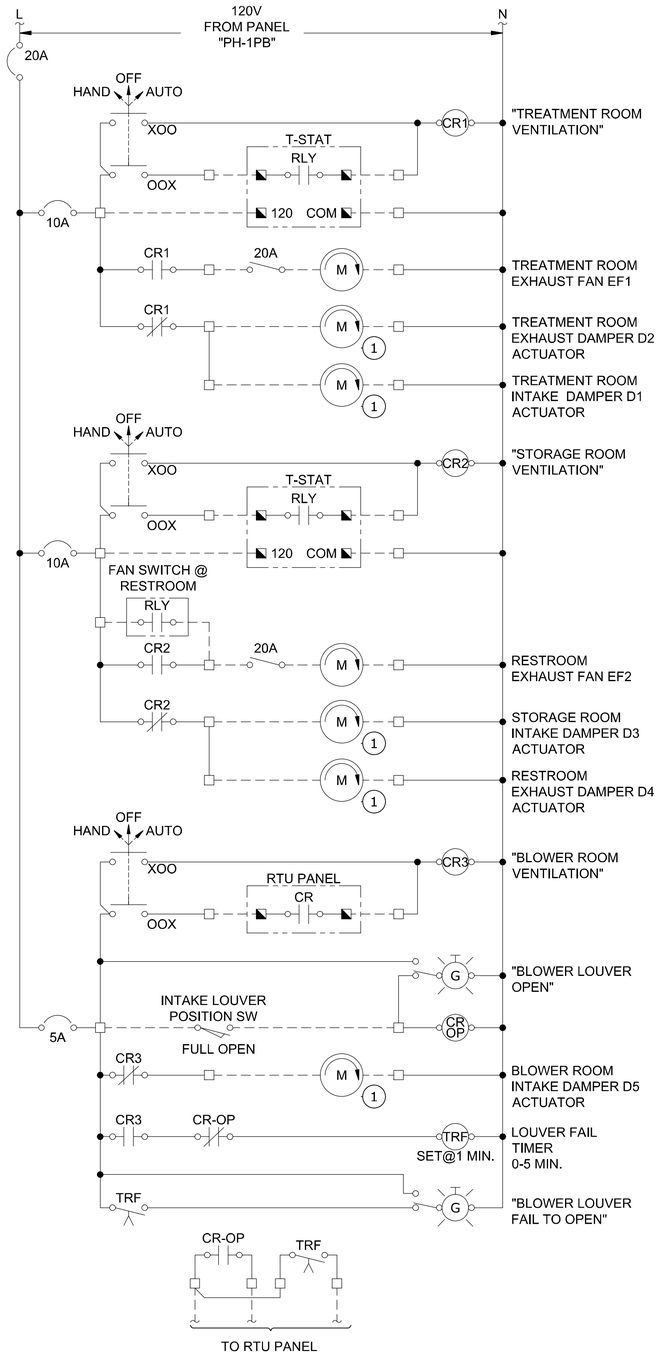
VENTILATION CONTROL PANEL GENERAL ARRANGEMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-34

KEY NOTES

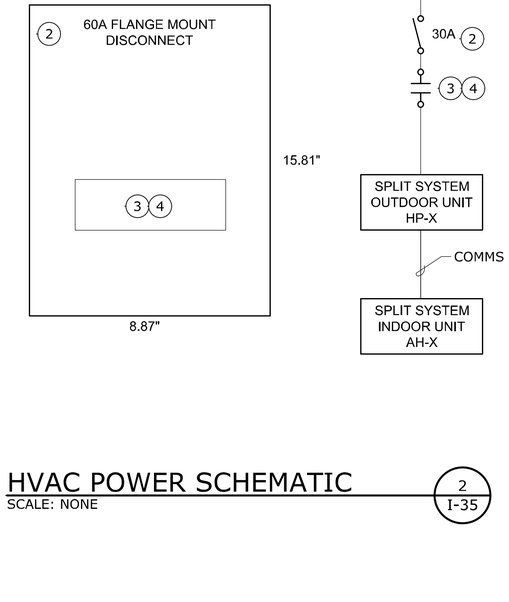
1. LOUVERS ARE POWERED CLOSED AND SPRING RETURN TO OPEN OR UPON POWER LOSS.
2. EATON DH262URK OR APPROVED EQUAL.
3. FIELD INSTALLED CONTACTOR 2 N.O. / 2 N.C. SCHNEIDER LC1D258F7 OR APPROVED EQUAL.
4. SEE SHEET I-13 FOR PLC CONTROL INTERFACE.



VENTILATION CONTROL SCHEMATIC

SCALE: NONE

1 / I-35



HVAC POWER SCHEMATIC

SCALE: NONE

2 / I-35

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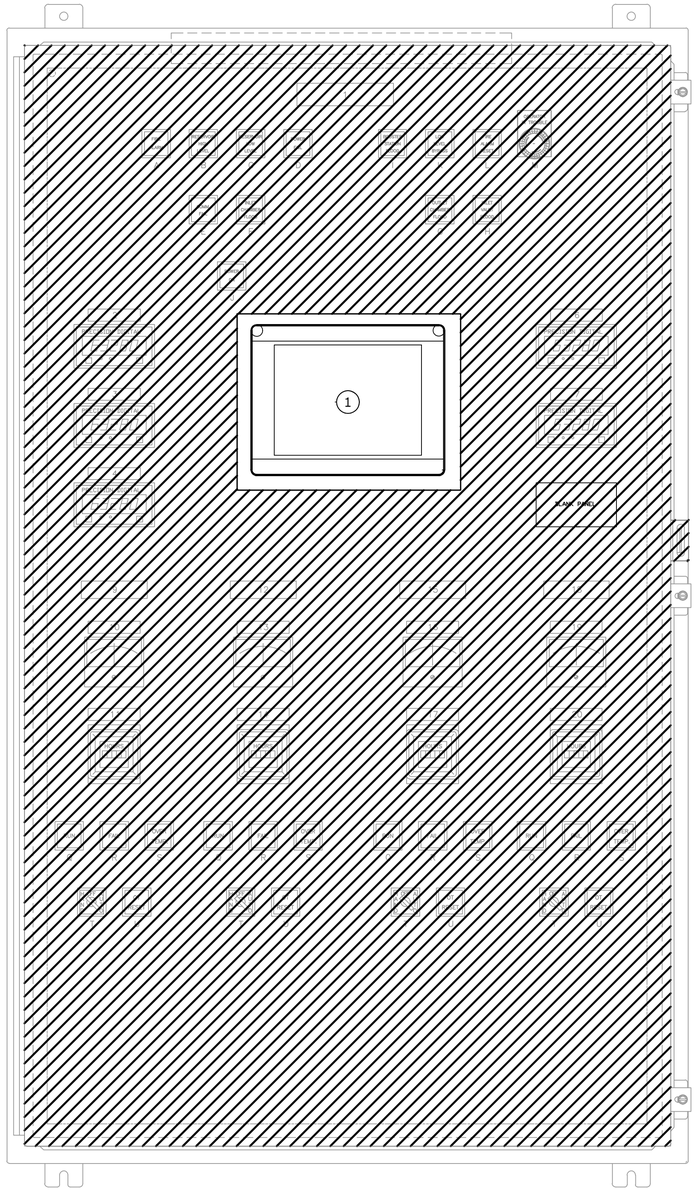
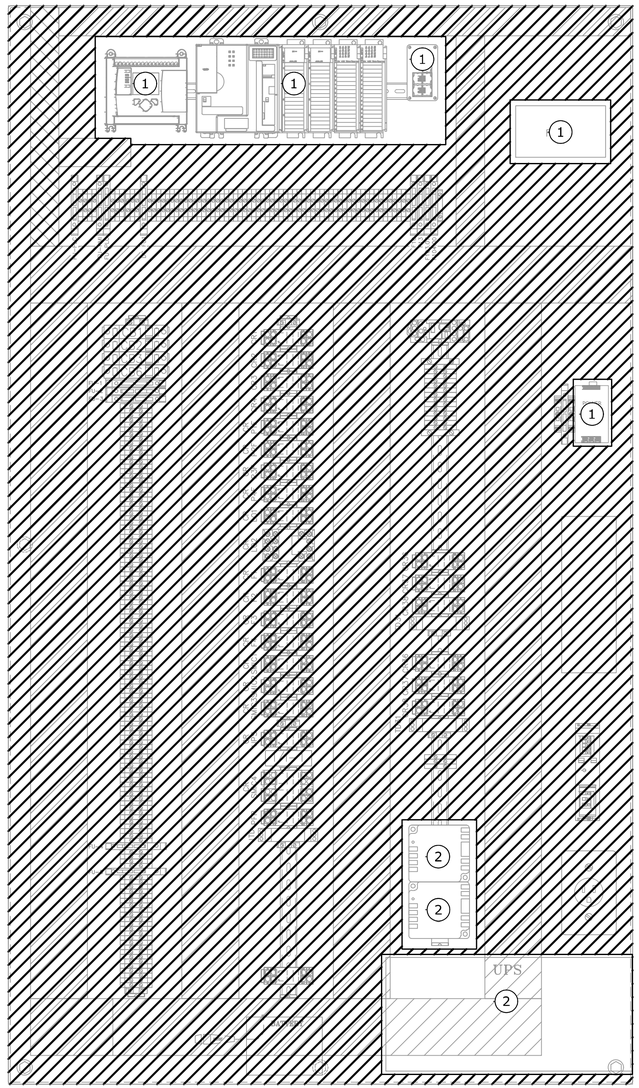
VENTILATION CONTROL PANEL SCHEMATIC

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-35





GENERAL NOTES

1. ENCLOSURE DOOR TO BE REMOVED AND REPLACE WITH REPLACEMENT DOOR.
2. EXISTING BACK PANEL TO BE REMOVED AND REPLACED WITH NEW RTU BACK PANEL.

KEY NOTES

(1) SALVAGE EXISTING OPERATOR INTERFACE TERMINAL, PLCS, ETHERNET SWITCH, RADIO AND RADIO POWER SUPPLY, AND RETURN TO OWNER.

(2) SALVAGE EXISTING THERMISTOR RELAYS AND UPS AND GIVE TO PANEL FABRICATOR FOR RE-USE IN NEW PANEL.

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e-mail: iis@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE
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8/8/2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

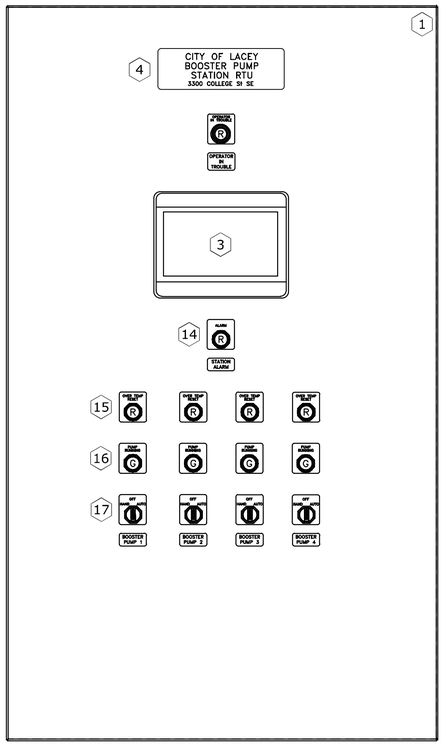
BOOSTER PUMP STATION BUILDING
RTU PANEL
DEMO

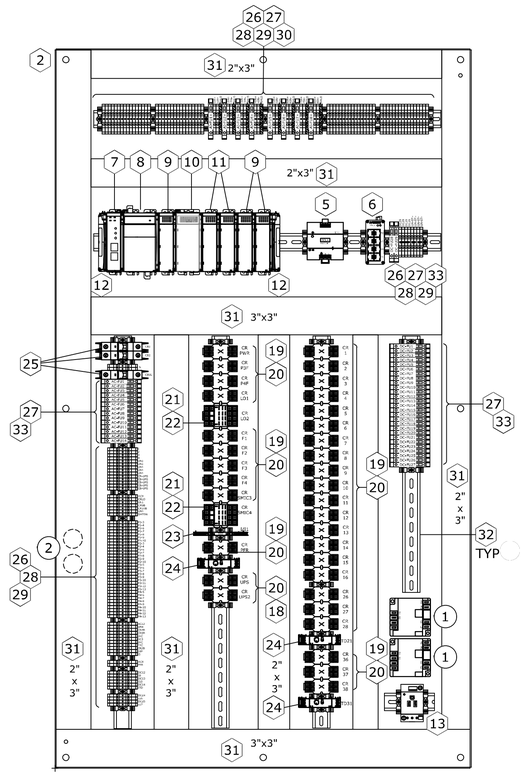
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-36

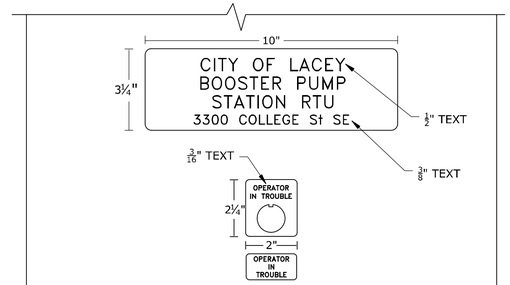
KEY NOTES

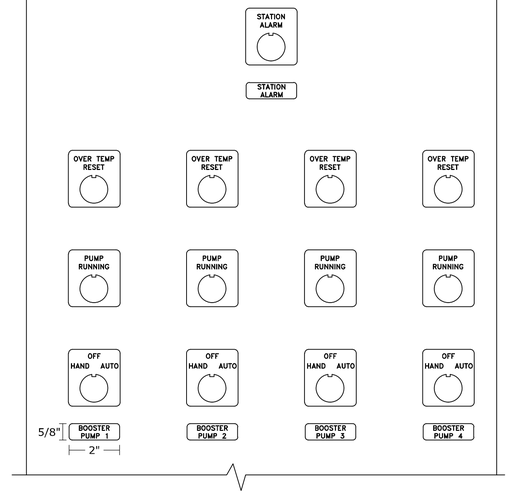
1. THERMISTOR RELAYS TO BE SALVAGED FROM EXISTING PANEL AND INSTALLED IN THIS PANEL.
2. FIELD VERIFY LOCATIONS OF CONDUITS ENTERING THE BACK OF THE ENCLOSURE AND ALIGN WIRE DUCT TO ACCOMMODATE.





#	ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
1	1	1	NEMA 4 ENCLOSURE REPLACEMENT DOOR, 60"x36"	HOFFMAN	Z60362	NO
2	1	1	BACK PANEL	HOFFMAN	A60P36	NO
3	1	1	OPERATOR INTERFACE TERMINAL W/TOUCHSCREEN, 10.1", 24VDC	MAPLE SYSTEMS	CMT2108X2	NO
4	1	1	PHENOLIC NAMEPLATE	PANEL FABRICATOR CHOICE		YES
5	1	1	24VDC POWER SUPPLY, 4AMP	SOLA	SDP4-24-100LT	NO
6	1	1	ETHERNET SWITCH, UNMANAGED (8-PORT)	N-TRON	308-TX	NO
7	1	1	REMOTE I/O ADAPTER	ALLEN BRADLEY	1769-AENTR	NO
8	1	1	I/O CARD POWER SUPPLY	ALLEN BRADLEY	1769-PA2	NO
9	3	3	16PT DC DIGITAL INPUT MODULE	ALLEN BRADLEY	1769-IQ16	NO
10	1	1	16PT AC/DC DIGITAL ISOLATED OUTPUT MODULE	ALLEN BRADLEY	1769-OW16	NO
11	2	2	ANALOG INPUT MODULE	ALLEN BRADLEY	1769-IF4	NO
12	2	2	PLC END CAPS	ALLEN BRADLEY	1769-ECR, 1769-ECL	NO
13	1	1	SIMPLEX RECEPTACLE - DIN-RAIL MOUNT	PHOENIX CONTACT	804155	NO
14	1	1	PUSHBUTTON, MAINTAINED, MUSHROOM HEAD	EATON	E34GDB63LRD06-1	NO
15	4	4	PUSHBUTTON, ILLUMINATED,LED RED	EATON	E34XB120LRD06-1	NO
16	4	4	PILOT LIGHT, PUSH TO TEST, LED, GREEN	EATON	E34TPB120LGP06	NO
17	4	4	3 POS. SELECTOR SWITCH, 30MM, HEAVY DUTY, W/INGRESS OPERATOR & 2 NO CONTACTS	EATON	E34VHBA1-2 W/E34A1 OPERATOR	NO
18	2	2	24VDC CONTROL RELAY, DPDT WITH INDICATOR	IDEC	RH2B-UL-DC24V	NO
19	32	32	120V CONTROL RELAY, 2 POLE, DPDT WITH INDICATOR	IDEC	RH2B-UL-AC120	NO
20	34	34	2PDT CONTROL RELAY BASE	IDEC	SH2B-05	NO
21	2	2	120V CONTROL RELAY, 4 POLE, DPDT WITH INDICATOR	IDEC	RH4B-UL-DC24V	NO
22	2	2	4PDT CONTROL RELAY BASE	IDEC	SH4B-05	NO
23	1	1	ANALOG SIGNAL DUPLICATOR	PHOENIX CONTACT	2905025	NO
24	3	3	TIMING RELAY	ALLEN BRADLEY	700-FEM6TZ12	YES
25	A/R	1	1 POLE CIRCUIT BREAKER (SIZE ACCORDING TO DRAWINGS)	EATON	FAZ-C**/1-NA	NO
26	A/R		TERMINAL BLOCK (NON FUSED)	SPRECHER SCHUH	V7-W4 SERIES	NO
27	A/R		TERMINAL BLOCK AC/DC (FUSED)/w BLOWN FUSE INDICATION	SPRECHER SCHUH	V7-H5	NO
28	A/R		TERMINAL BLOCK END STOP	SPRECHER SCHUH	V7-W4 SERIES	NO
29	A/R		TERMINAL BLOCK END PLATE	SPRECHER SCHUH	V7-W4 SERIES	NO
30	A/R		TERMINAL BLOCK (GROUND)	SPRECHER SCHUH	V7-W4 SERIES	NO
31	A/R		WIREWAY (SIZE AS NOTED ON DRAWING)	PANEL FABRICATOR CHOICE		YES
32	A/R		STEEL DIN-RAIL	ENTRELEC	PR30	YES
33	A/R		FUSES (FUSE SIZE ACCORDING TO DRAWINGS)	BUSSMAN	ABC AND GDL TYPE	YES





RTU PANEL LAYOUT

SCALE: 1:6

1 / I-37

RTU PANEL BOM

NTS

2 / I-37

NAMEPLATE LEGEND

SCALE: 1:3

3 / I-37

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NOTICE

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LACEY CONTRACT #PW 2022-37

BOOSTER PUMP STATION BUILDING
RTU PANEL
GENERAL ARRANGEMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

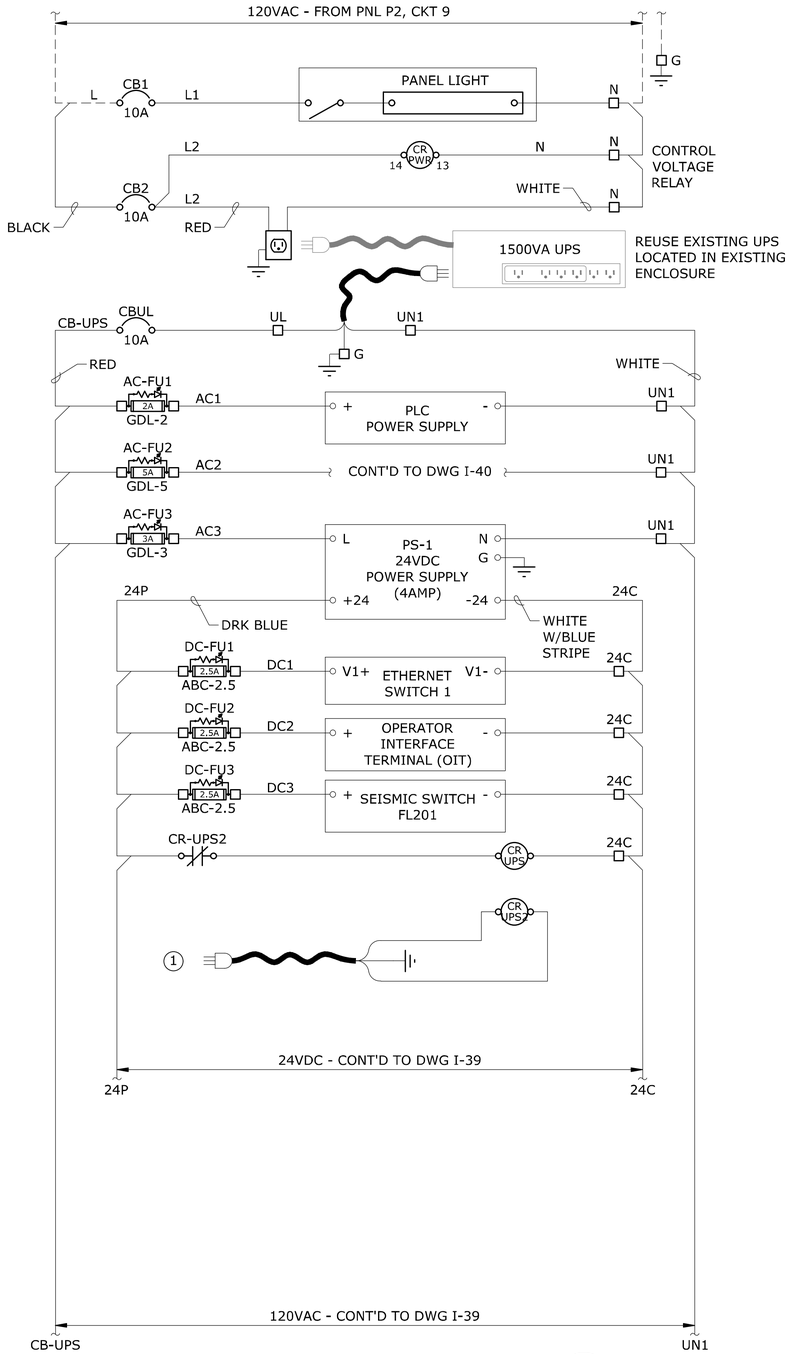
SCHEDULE B
SHEET
I-37

GENERAL NOTES

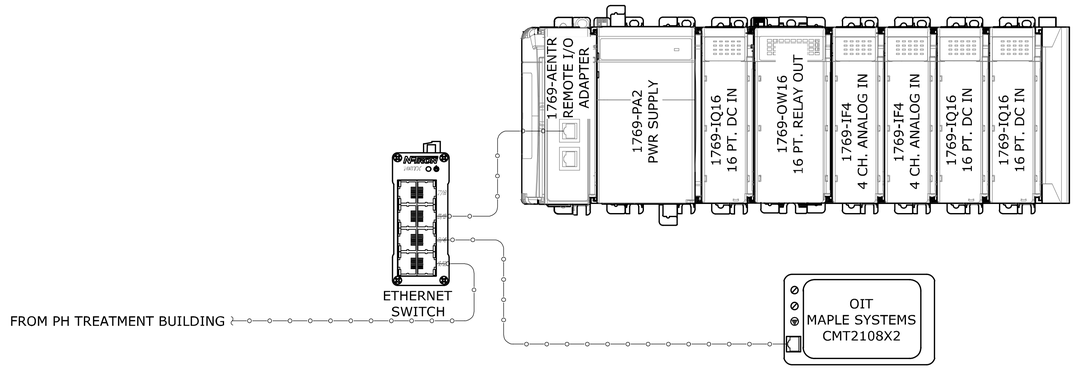
1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES.

KEY NOTES

(1) PLUG CORD INTO SURGE ONLY RECEPTACLE WITHOUT BATTERY BACK UP ON UPS



RTU PANEL POWER DIAGRAM (1 / I-38)
SCALE: NONE



COMMUNICATION BLOCK DIAGRAM (2 / I-38)
SCALE: NONE

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Signed by: James Mitchell
233E384[illegible]46C
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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BOOSTER PUMP STATION BUILDING
RTU PANEL
POWER, FUSING AND
ETHERNET CONNECTIONS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-38

GENERAL NOTES

1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES.

CB-UPS — CONT'D FROM DWG I-38 — UN1

RED — WHITE

BOOSTER STATION FLOOD SWITCH
FLOOD FLOAT — LS016 — (CB3L) XXX — AC-FU4 2A GDL-2 — (1) ORG — 1 — CR F1

OUTLET CHAMBER VAULT FLOOD SWITCH
FLOOD FLOAT — LS007 — (CB3L) XXX — AC-FU5 2A GDL-2 — (2) YEL — 2 — CR F2

INLET CHAMBER VAULT FLOOD SWITCH
FLOOD FLOAT — LS003 — (CB3L) XXX — AC-FU6 2A GDL-2 — (3) BLUE — 3 — CR F3

INLET FLOWMETER VAULT FLOOD SWITCH
FLOOD FLOAT — LS001 — (CB3L) XXX — AC-FU7 2A GDL-2 — (4) ORG — 4 — CR F4

PHASE FAIL RELAY
(CB3L) XXX — AC8 — AC-FU8 2A GDL-2 — PFR — (PFR) YEL — PFR — PFR

RESERVOIR LOW LEVEL
(CB3L) XXX — AC-FU9 2A GDL-2 — LS005 — (CRLO) PUR — CR-LO — CR L01 — CR L02

SEISMIC SWITCH FL201
FLTB 4 — (CB3L) RED — AC-FU10 2A GDL-2
SWITCH 1 — 5 — (SM4) YEL — SM4 — CR SMIC3 — CR SMIC4
SEISMIC TRIP

CB-UPS — UN1

24P — 24VDC - CONT'D FROM DWG I-39 — 24C

DRK BLUE — WHITE W/BLUE STRIPE

SEISMIC ARM SOLENOID	1	(SM1) BRN	CR4B	CR-4	CR4A	DC4 — DC-FU4 2A GDL-2 — DC3
SEISMIC TRIP SOLENOID	2	(SM2) PNK	CR5B	CR-5	CR5A	
COMMON	3	(SM3) PUR	24C			
POWER (+)	7	(FU-2) BLU	DC3			
POWER (-)	10	(24N) BLK	24C			

24P — 24VDC - CONT'D — 24C

DRK BLUE — WHITE W/BLUE STRIPE

24V DISCRETE INPUT MODULE MODULE 1
1769 - IQ16

DC5	DC-FU5 2A GDL-2	CR-P3F	R6/S1/1.00	R6/S1/1.00 — DI:1/00 IN0	PUMP 3 FAIL
DC6	DC-FU6 2A GDL-2	CR-P4F	R6/S1/1.01	R6/S1/1.01 — DI:1/01 IN1	PUMP 4 FAIL
DC7	DC-FU7 2A GDL-2	(SMK) RED	CR2B — CR2		
		(24N) BLK	24C	24C	
DC8	DC-FU8 2A GDL-2	(24P) XXX	DC8		
		(I5) YEL	I5	R6/S1/1.02 — DI:1/02 IN2	FIRE ALARM
DC9	DC-FU9 2A GDL-2	PFR		R6/S1/1.03 — DI:1/03 IN3	POWER FAIL
DC10	DC-FU10 2A GDL-2	CRF1, CRF2, CRF3, CRF4		R6/S1/1.04 — DI:1/04 IN4	FLOOD ALARM
DC11	DC-FU11 2A GDL-2	CR-L01		R6/S1/1.05 — DI:1/05 IN5	RESERVOIR LOW LEVEL
	DC-FU12 2A GDL-2	(24P) XXX			
		LS006 (I8) YEL	I8	R6/S1/1.06 — DI:1/06 IN6	RESERVOIR HIGH LEVEL @ 40'-6"
	DC-FU13 2A GDL-2	(24P) XXX			
DC14	DC-FU14 2A GDL-2	ZS015 (I10) RED	I10	R6/S1/1.07 — DI:1/07 IN7	ALTITUDE VALVE FULLY CLOSED
				DCCOM1 — 24C	
		(ITD) PNK	ITD — (ITD)	R6/S1/1.08 — DI:1/08 IN8	INTRUSION ALARM
DC15	DC-FU15 2A GDL-2	CR-SMIC3		R6/S1/1.09 — DI:1/09 IN9	SEISMIC SWITCH TRIPPED ALARM
	DC-FU16 2A GDL-2				
				R6/S1/1.10 — DI:1/10 IN10	ATS 01 UTILITY POWER
				R6/S1/1.11 — DI:1/11 IN11	ATS 01 EMERGENCY POWER
				R6/S1/1.12 — DI:1/12 IN12	ATS 01 FAULT
	DC-FU17 2A GDL-2				
				R6/S1/1.13 — DI:1/13 IN13	ATS 02 UTILITY POWER
				R6/S1/1.14 — DI:1/14 IN14	ATS 02 EMERGENCY POWER
				R6/S1/1.15 — DI:1/15 IN15	ATS 02 FAULT
				DCCOM2 — 24C	

FIRE/HEAT DETECTORS

INTRUSION BYPASS SWITCH ENABLE ⟹ DISABLE — ox

AUTOMATIC TRANSFER SWITCH 01

	4			(DF.100.10) BLK
UTILITY	TBF	6		(DI.100.10) BRN
EMERGENCY	TBF	5		(DI.100.11) ORG
FAULT	C	K1	NO	(DI.100.12) YEL

AUTOMATIC TRANSFER SWITCH 02

	4			(DF.100.13) BLK
UTILITY	TBF	6		(DI.100.13) BRN
EMERGENCY	TBF	5		(DI.100.14) ORG
FAULT	C	K1	NO	(DI.100.15) YEL

24P — 24C

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BOOSTER PUMP STATION BUILDING
RTU PANEL
I/O SHEET 1

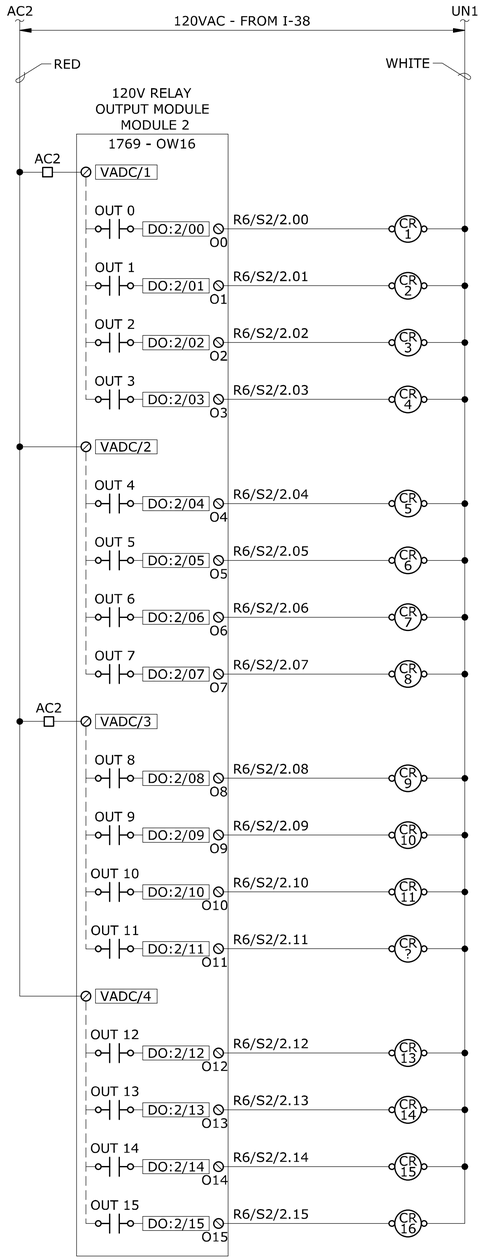
PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

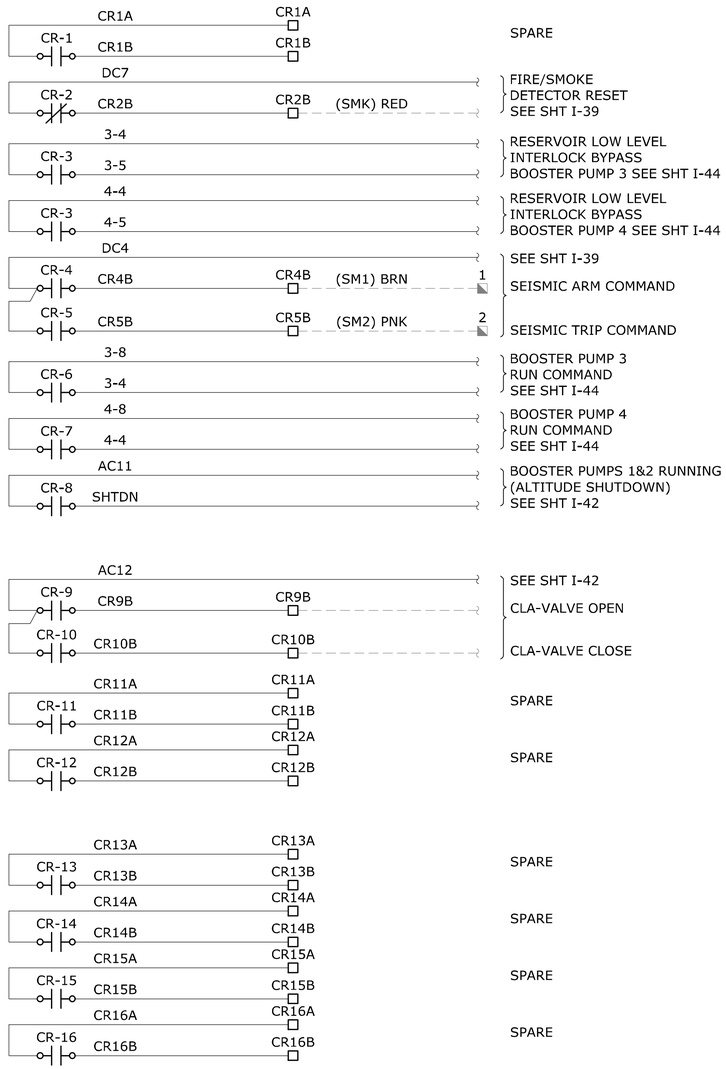
SCHEDULE B
SHEET
I-39

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-39.dwg I-39 8/17/2023 3:01 PM ROBERTC 23.1s (LMS Tech)

GENERAL NOTES

1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES.





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9/28/2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

BOOSTER PUMP STATION BUILDING
RTU PANEL
I/O SHEET 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-40

P:\Projects\21.47.01_MSA_Lacey_Westside_pH_Treatment\DWG\21-3172-WA-I-40.dwg I-40 8/17/2023 3:01 PM ROBERTC 23.1s (LMS Tech)

GENERAL NOTES

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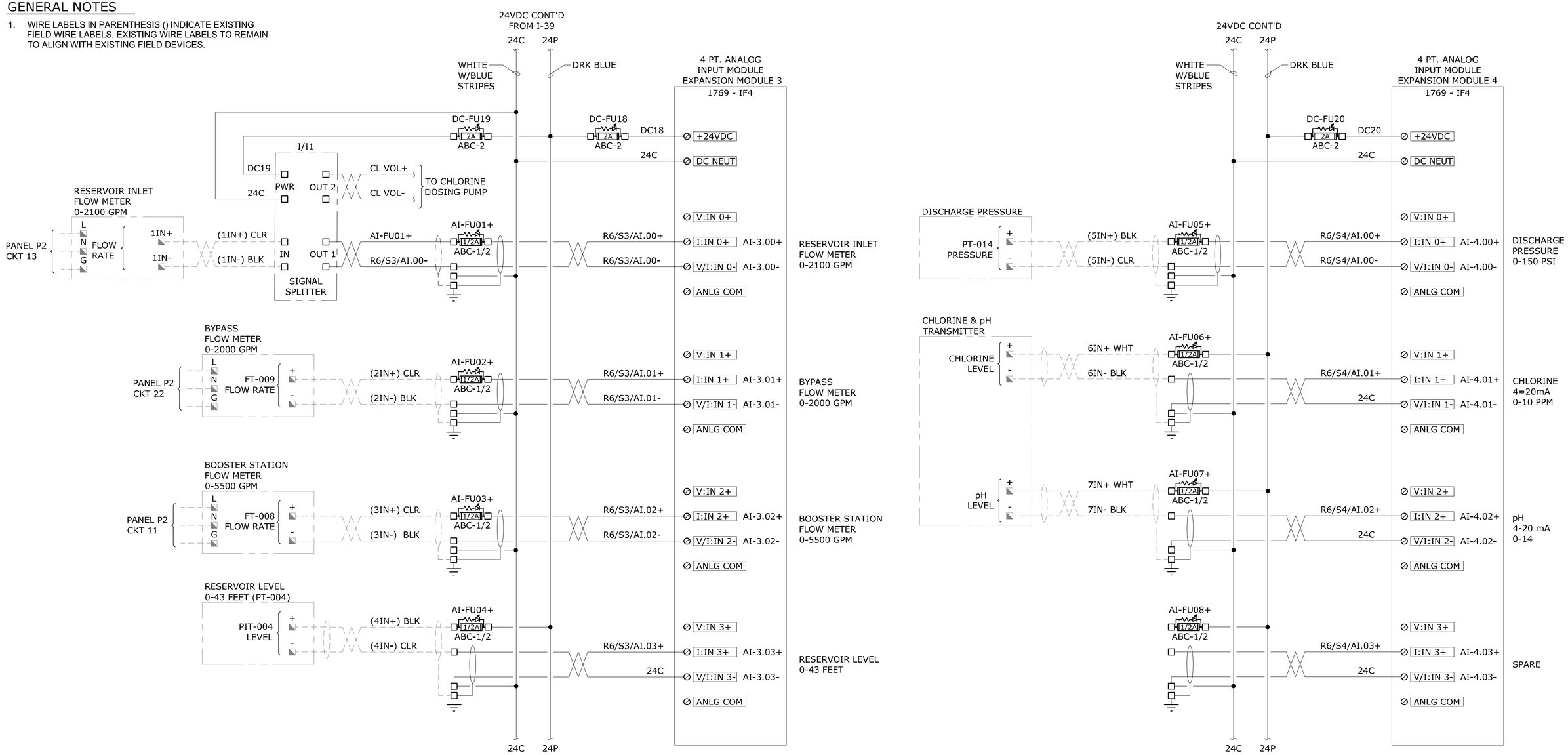

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Signed by: James Mitchell
033E3814[illegible]6C
8/17/2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

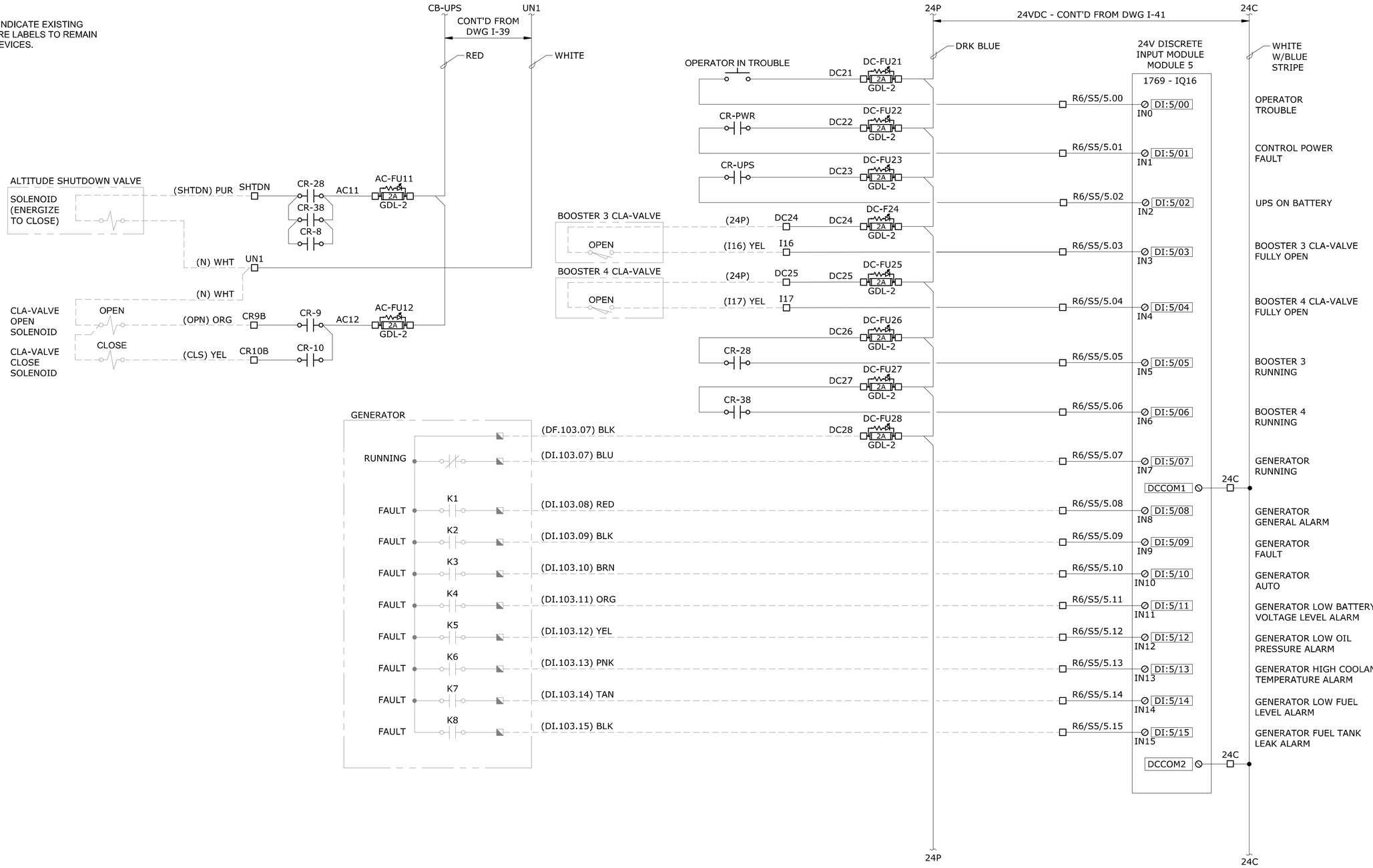
BOOSTER PUMP STATION BUILDING
RTU PANEL
I/O SHEET 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-41

GENERAL NOTES

1. WIRE LABELS IN PARENTHESIS () INDICATE EXISTING FIELD WIRE LABELS. EXISTING WIRE LABELS TO REMAIN TO ALIGN WITH EXISTING FIELD DEVICES.



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BOOSTER PUMP STATION BUILDING
RTU PANEL
I/O SHEET 4

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-42

GENERAL NOTES

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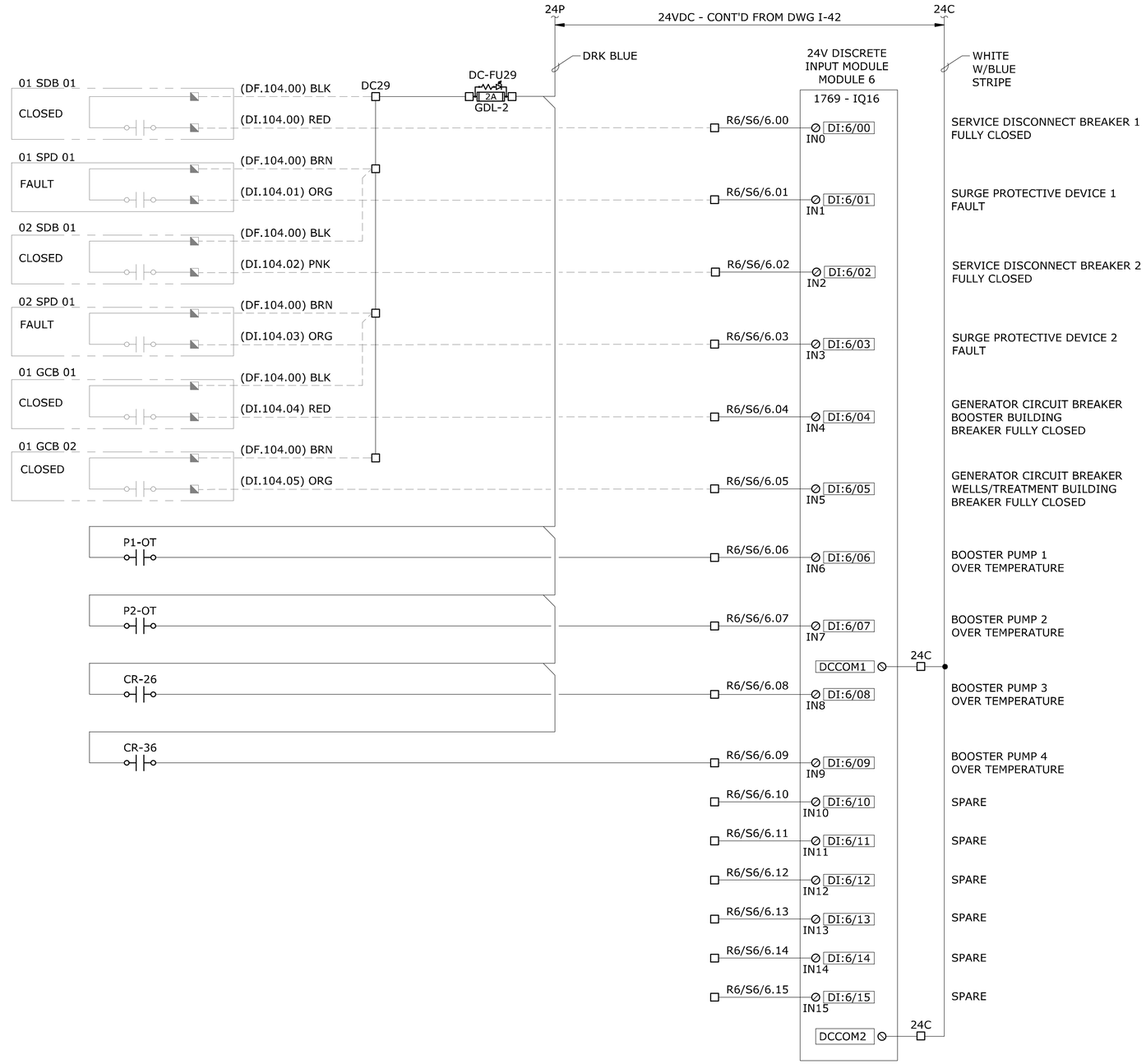

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BOOSTER PUMP STATION BUILDING
RTU PANEL
I/O SHEET 5

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-43

GENERAL NOTES

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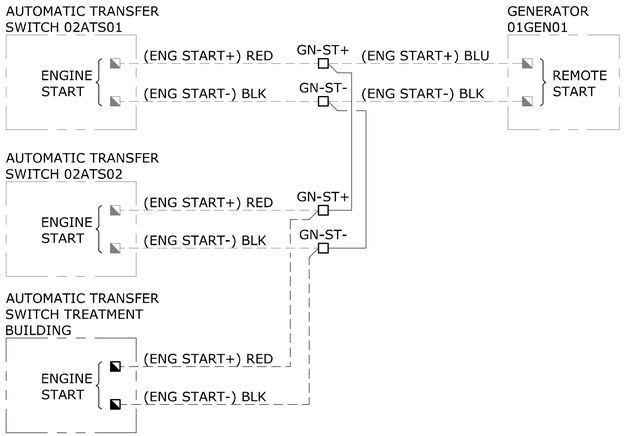
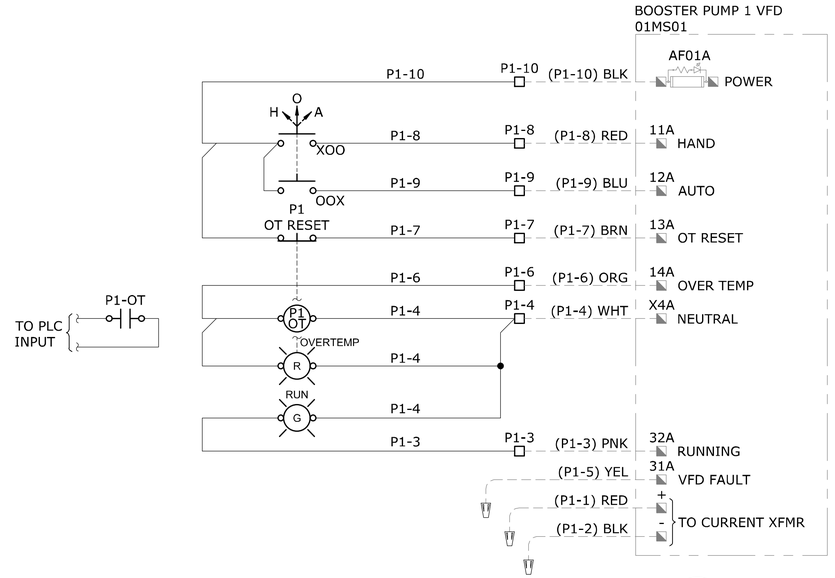


GEN START CONNECTIONS

1 / I-44

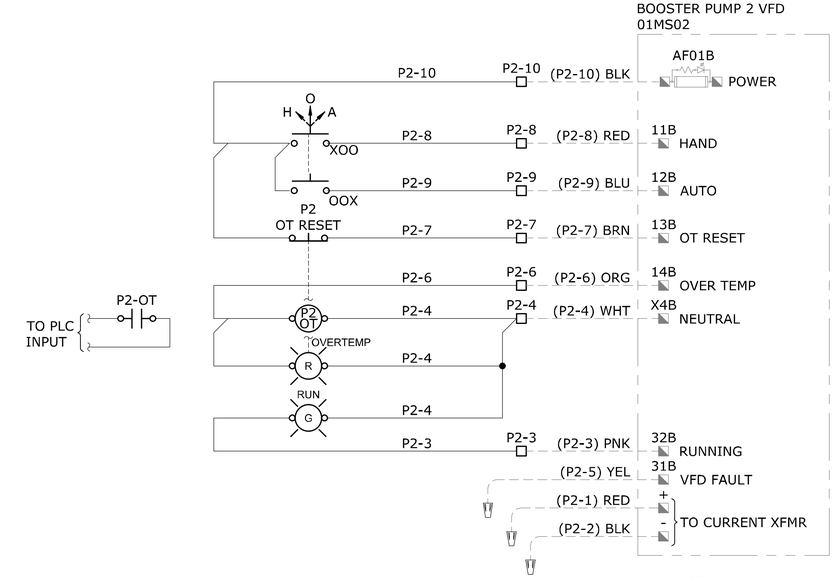
SCALE: NONE



BOOSTER PUMP 1 CONNECTIONS

2 / I-44

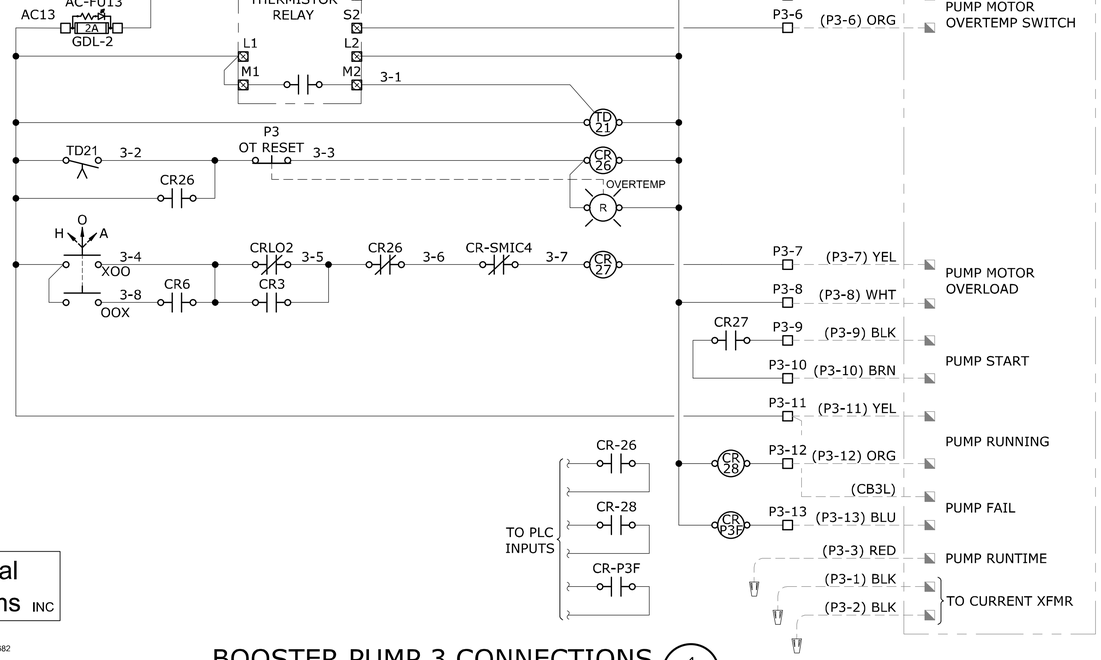
SCALE: NONE



BOOSTER PUMP 2 CONNECTIONS

3 / I-44

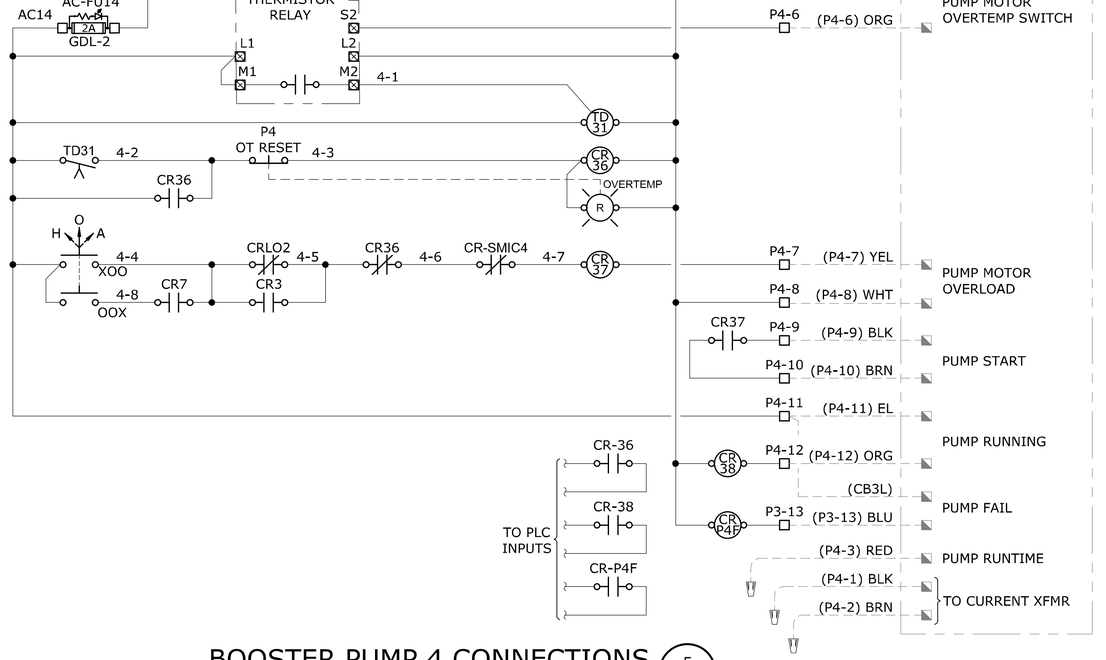
SCALE: NONE



BOOSTER PUMP 3 CONNECTIONS

4 / I-44

SCALE: NONE



BOOSTER PUMP 4 CONNECTIONS

5 / I-44

SCALE: NONE

Industrial Systems INC
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e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE

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JSC DRAWN

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JAMES E. MITCHELL — STATE OF WASHINGTON — 25485 — REGISTERED PROFESSIONAL ENGINEER — Docusigned by: James Mitchell — 8/17/2023

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CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

BOOSTER PUMP STATION BUILDING
RTU PANEL
I/O SHEET 6

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
I-44

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-I-44.dwg I-44 8/17/2023 3:12 PM ROBERTC 23.1s (LMS Tech)

GENERAL INSTRUMENT SYMBOLS

LOCATION/ACCESSIBILITY	DISCRETE INSTRUMENTS	SHARED DISPLAY AND CONTROL (DCS)	PLC	DISCRETE HARDWARE INTERLOCK
FIELD MOUNTED 1. FIELD OR LOCALLY MOUNTED. 2. ACCESSIBLE TO AN OPERATOR AT DEVICE.	○	▢	◇	◇
PRIMARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. FRONT OF MAIN PANEL OR CONSOLE MOUNTED. 3. VISIBLE ON VIDEO DISPLAY. 4. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊟	◈	
PRIMARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. REAR OF PANEL OR CABINET MOUNTED. 3. NOT VISIBLE ON VIDEO DISPLAY. 4. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊟	◈	
AUXILIARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. SECONDARY OR LOCAL CONTROL ROOM. 2. FIELD OR LOCAL CONTROL PANEL. 3. FRONT OF SECONDARY OR LOCAL PANEL MOUNTED. 4. VISIBLE ON VIDEO DISPLAY. 5. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊜	⊟	◈	
AUXILIARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. SECONDARY OR LOCAL CONTROL ROOM. 2. FIELD OR LOCAL CONTROL PANEL. 3. REAR OF SECONDARY OR LOCAL PANEL OR CABINET MOUNTED. 4. NOT VISIBLE ON VIDEO DISPLAY. 5. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊜	⊟	◈	

ABBREVIATIONS

AG	ABOVE GROUND	LO	LOCKED OPEN
ATM	ATMOSPHERE	LP	LOW PRESSURE
BYP	BYPASS	LPT	LOW POINT
CC	CHEMICAL CLEANOUT	MTL	MATERIAL
CL	CENTERLINE	MAF	MASS AIR FLOW
CO	CLEANOUT	MAX	MAXIMUM
CONN	CONNECTION	MCC	MOTOR CONTROL CENTER
CTR	CENTER	MCP	MAIN CONTROL PANEL
CVLS	CHECK VALVE LIMIT SWITCH	MIN	MINIMUM
DCS	DISTRIBUTED CONTROL SYSTEM	MOV	MOTOR OPERATED VALVE
DES	DESIGN	NC	NORMALLY CLOSED
DIA	DIAMETER	NNF	NORMALLY NO FLOW
DP	DESIGN PRESSURE	NO	NORMALLY OPEN
D/P	DIFFERENTIAL PRESSURE	NOZ	NOZZLE
DRN	DRAIN	O/C	OPEN/CLOSE
DT	DESIGN TEMPERATURE	O/O	ON/OFF
DWG	DRAWING	OIT	OPERATOR INTERFACE TERMINAL
(E)	EXISTING	OP	OUTPUT
EL	ELEVATION	OVHD	OVERHEAD
ESD	EMERGENCY SHUTDOWN	PLC	PROGRAMMABLE LOGIC CONTROLLER
FOF	FACE OF FLANGE	PRESS	PRESSURE
(F)	FURNISHED	PV	PROCESS VARIABLE
FC	FAIL CLOSED	(R)	RELOCATED
FI	FAIL INDETERMINATE	REQD	REQUIRED
FL	FAIL LOCKED (LAST POSITION)	RIO	REMOTE I/O PANEL
FLG	FLANGE	RTD	RESISTANCE TEMPERATURE DETECTOR
FO	FAIL OPEN	SC	SAMPLE CONNECTION
FP	FULL PORT	SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
FV	FULL VACUUM		
GO	GEAR OPERATED	SCH	SCHEDULE
GR	GRADE	SD	SHUTDOWN
HC	HOSE CONNECTION	SG	SPECIFIC GRAVITY
HDR	HEADER	SIS	SAFETY INSTRUMENTED SYSTEM
HH	HAND HOLE	SO	STEAM OUT
HOA	HAND/OFF/AUTOMATIC	SP	SET POINT
HP	HIGH PRESSURE	SS	STAINLESS STEEL S/S or START/STOP
HPT	HIGH POINT	STD	STANDARD
IAS	INSTRUMENT AIR SUPPLY	T/C	THERMOCOUPLE
LC	LOCKED CLOSED	TDH	TOTAL DIFFERENTIAL HEAD
LCP	LOCAL CONTROL PANEL	TEMP	TEMPERATURE
		THRD	THREADED
		TSO	TIGHT SHUT-OFF
		TYP	TYPICAL
		UG	UNDERGROUND
		VNT	VENT
		VAC	VACUUM
		VB	VORTEX BREAKER
		VFD	VARIABLE FREQUENCY DRIVE
		W/	WITH
		W/O	WITHOUT

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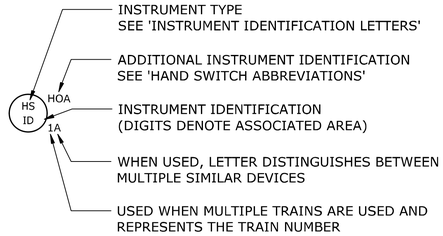
AK #1018436
PROJECT#:21.47.01

INSTRUMENT IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, FLAME, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE (TYPICALLY CONDUCTIVITY - ELECTRICAL)			CONTROL, COMMAND	CLOSED
D	USER'S CHOICE (TYPICALLY DENSITY OR SPECIFIC GRAVITY)	DIFFERENTIAL			DIVERT
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE OR GAUGING (DIMENSIONAL)		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE (TYPICALLY MOISTURE OR HUMIDITY)	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	THROUGH
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE, TORQUE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TYPICAL INSTRUMENT TAG NUMBERS & DESIGNATION



HAND SWITCH ABBREVIATIONS

AO = AUTO/OFF	LOS = LOCKOUT/STOP
AM = AUTO/MANUAL	LA = LOCAL/AUTO
CM = COMPUTER/MANUAL	LR = LOCAL/REMOTE
CL = COMPUTER LOCAL	OC = OPEN/CLOSE
ES = EMERGENCY STOP	OCA = OPEN/CLOSE/AUTO
FR = FORWARD/REVERSE	OO = ON/OFF
FOR = FORWARD/OFF/REVERSE	OOA = ON/OFF/AUTO
FS = FAST/SLOW	OSC = OPEN/STOP/CLOSE
FOS = FAST/OFF/SLOW	POA = PRIME/OFF/AUTO
HA = HAND/AUTO	RES = RESET
HIM = HUMAN INTERFACE MODULE	RF = RUN/FAULT
HOA = HAND/OFF/AUTOMATIC	RSL = RAISE/STOP/LOWER
LLS = LEAD/LAG/STANDBY	SS = START/STOP
LOC = LOCAL/OFF/COMPUTER	SOR = START/OFF/RESET
LOR = LOCAL/OFF/REMOTE	V/B = VFD/BYPASS

PIPING LINE SYMBOLS

PRIMARY (AG & UG)

SECONDARY / UTILITY (AG & UG)

FUTURE OR EXISTING ON NEW P&IDs

JACKETED OR DOUBLE CONTAINMENT

INSTRUMENT LINE SYMBOLS

INSTRUMENT SUPPLY OR CONNECTION TO PROCESS

PNEUMATIC SIGNAL

ELECTRIC SIGNAL (ANALOG)

ELECTRIC SIGNAL (DISCRETE)

HYDRAULIC SIGNAL

CAPILLARY TUBE

ELECTROMAGNETIC, SONIC, OPTICAL, OR NUCLEAR SIGNAL

SOFTWARE OR DATA LINK

MECHANICAL LINK

FLOW STREAM IDENTIFIERS

BW = BACKWASH
CA = CAUSTIC SODA
CL2 = CHLORINE
COA = COAGULANT
DR = DRAIN
FTB = FILTER TO BACKWASH
FL = FLUORIDE
FTW = FILTER TO WASTE
FW = FINISHED WATER
IA = INSTRUMENT AIR
NAOCL = SODIUM HYPOCHLORITE
NACO = SODA ASH
PA = PROCESS AIR
POL = POLYMER
RW = RAW WATER
SW = SUPPLY WATER
WST = WASTE

OFF-PAGE CONNECTORS AND TIE-IN SYMBOL

A. OFF-PLOT CONNECTOR

CONNECTOR NUMBER — SERVICE DESCRIPTION / XX | P&ID No / ORIGIN/DESTINATION

B. PRIMARY/SECONDARY LINES AND INSTRUMENT SIGNAL CONNECTOR

CONNECTOR NUMBER — SERVICE DESCRIPTION / XX | P&ID No / ORIGIN /DESTINATION

C. UTILITY CONNECTOR

CONNECTOR NUMBER — XX / P&ID No

D. TIE-IN SYMBOL

TIE-IN NUMBER — T / XXX

INPUT / OUTPUT SIGNALS

DRAIN CONNECTORS

CLOSED DRAIN

CONNECTOR NUMBER — XXXX
DESTINATION LINE — YYY
SERVICE CODE — P&ID#

OPEN DRAIN

CONNECTOR NUMBER — XXXX
DESTINATION LINE — YYY
SERVICE CODE — P&ID#

CLOSED DRAIN (NO P&ID)

DESTINATION LINE — YYY
SERVICE CODE

OPEN DRAIN (NO P&ID)

DESTINATION LINE — YYY
SERVICE CODE

NO.	DATE	BY	REVISION

NOTICE
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RSC DRAWN
TBC CHECKED

JAMES E. MITCHELL — STATE OF WASHINGTON — Digitally signed by James Mitchell — 3233E384[illegible]46C — #25495 — REGISTERED PROFESSIONAL ENGINEER — 8/8/2023

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CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

P&ID
LEGEND 1 OF 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
PID-1

PRIMARY ELEMENT SYMBOLS

- XX — GENERAL SYMBOL IN-LINE ELEMENT XX = FS, FG, FE, FT
- FIT XXXX — IN-LINE FLOW ELEMENT WITH INTEGRAL INDICATING TRANSMITTER XXXX = MASS, CORIOLIS, THERMAL, INT. ORIFICE ...
- FIT / FE XXXX — IN-LINE FLOW ELEMENT WITH SEPARATE INDICATING TRANSMITTER XXXX = MASS, CORIOLIS, THERMAL...
- ORIFICE
- T — THERMAL
- M — MAGNETIC
- TURBINE OR PROPELLER
- ULTRASONIC
- VORTEX
- PITOT TUBE
- AVERAGING PITOT TUBE
- FLOW NOZZLE
- VENTURI
- WEDGE METER
- LE — RADAR (NON-CONTACT)
- LE — ULTRASONIC LEVEL SENSOR
- LE — SUBMSERIBLE PRESSURE LEVEL SENSOR
- LS* — FLOAT SWITCH FLOAT SWITCH * = L/LL/H/HH
- FS* — FLOW SWITCH * = H/L
- FG — FLOW GLASS
- FLOW CONDITIONING DEVICES (e.g., STRAIGHTENING VANES)
- FO — RESTRICTION ORIFICE
- AE X — ANALYZER ELEMENT X INDICATES TYPE
  - pH = HYDROGEN POTENTIAL
  - CL2 = CHLORINE
  - DO = DISSOLVED OXYGEN
  - H2S = HYDROGEN SULFIDE
  - LEL = LOWER EXPLOSIVE LIMIT
  - O2 = OXYGEN
  - ORP = OXYGEN REDUCTION POTENTIAL
  - TUR = TURBIDITY
- ROTAMETER
- FI — ROTAMETER WITH INTEGRAL VALVE (SHOWN WITH OPTIONAL INTEGRAL VALVE)
- FLUME
- WEIR
- POSITIVE DISPLACEMENT
- ORIFICE IN QUICK CHANGE FITTING
- TARGET

PROCESS EQUIPMENT

- HORIZONTAL CENTRIFUGAL PUMP
- VERTICAL INLINE PUMP
- SUBMERSIBLE PUMP
- PROPELLER PUMP
- METERING PUMP
- CENTRIFUGAL PUMP
- POSITIVE DISPLACEMENT PUMP
- LIQUID RING VACUUM PUMP
- VERTICAL CAN PUMP
- SCREW PUMP
- MIXER
- POSITIVE DISPLACEMENT BLOWER
- CENTRIFUGAL BLOWER
- VERTICAL WELL PUMP
- SUBMERSIBLE WELL PUMP
- AERATION DIFFUSER
- TANK

VALVE SYMBOLS (N.C. WHEN SHADED)

- GATE VALVE
- CHECK VALVE
- STOP CHECK VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- NEEDLE VALVE
- BALL VALVE
- BALANCING VALVE
- PLUG VALVE
- DIAPHRAGM VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- PINCH VALVE
- ANGLE VALVE
- KNIFE VALVE
- AIR RELEASE VALVE

PIPING FITTINGS

- FLANGE
- WELDED CONNECTION
- CAP
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- HOSE CONNECTION
- SPACER
- BLANK
- OPEN FIGURE 8 BLIND
- CLOSED FIGURE 8 BLIND
- PLUG
- BLIND FLANGE

PIPING SPECIALTY ITEMS

- Y-TYPE STRAINER
- CONE STRAINER
- T-TYPE STRAINER
- DUPLEX STRAINER
- BASKET STRAINER
- TEMPORARY STRAINER
- FILTER
- D — DETONATION ARRESTOR
- F — FLAME ARRESTOR
- T — STEAM TRAP
- EXHAUST HEAD
- S — IN-LINE SILENCER
- S — VENT SILENCER
- MECHANICAL COUPLING
- EJECTOR
- RS — REMOVABLE SPOOL
- DS — DESUPERHEATER
- FLEXIBLE HOSE
- EXPANSION JOINT
- DAMPER
- BREATHER
- VENT COVER
- IN-LINE MIXER
- DIVERTER VALVE
- ROTARY VALVE
- EXCESS FLOW VALVE
- SITE TUBE
- INJECTION SPOOL

CONTROL VALVE ACTUATOR SYMBOLS

- MANUAL OPERATOR
- DIAPHRAGM
- PRESSURE BALANCED DIAPHRAGM
- HANDWHEEL WITH ACTUATOR
- CYLINDER - PISTON
- H — HYDRAULIC
- M — MOTOR OPERATED - CONSTANT SPEED
- E/P — ELECTRO-PNEUMATIC
- S — SINGLE SOLENOID
- S S — DOUBLE SOLENOID
- S R — SINGLE SOLENOID - MANUAL RESET
- S R — SINGLE SOLENOID - REMOTE RESET

MISCELLANEOUS INSTRUMENT SYMBOLS

- CHEMICAL SEAL- DIAPHRAGM
- ANNULAR SEAL
- X — PILOT LIGHT OR GAUGE GLASS ILLUMINATOR X INDICATES COLOR R = RED B = BLUE G = GREEN A = AMBER W = WHITE
- DUAL FUNCTION OR INSTRUMENTS SHARING COMMON HOUSING
- I — UNDEFINED INTERLOCK LOGIC

SELF-ACTUATED DEVICES

- RUPTURE DISC - PRESSURE RELIEF SAFETY HEAD FOR PRESSURE RELIEF (EXPLOSION PANEL)
- RUPTURE DISC - VACUUM RELIEF SAFETY HEAD FOR VACUUM RELIEF (EXPLOSION PANEL)
- PRESSURE RELIEF - SAFETY VALVE
- VACUUM RELIEF VALVE
- PRESSURE AND VACUUM RELIEF VALVE CONSERVATION VENT
- P — PILOT OPERATED RELIEF VALVE WITH REMOTE SENSOR (USE APPROPRIATE RELIEF VALVE SYMBOL)
- PRESSURE REDUCING REGULATOR (SELF-CONTAINED)
- BACK PRESSURE REGULATOR (SELF-CONTAINED)
- BACK PRESSURE REGULATOR W/ EXTERNAL TAP
- PRESSURE REDUCING REGULATOR W/ EXTERNAL TAP
- DIFFERENTIAL PRESSURE REDUCING REGULATOR
- TEMPERATURE REGULATOR FILLED SYSTEM TYPE

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AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE
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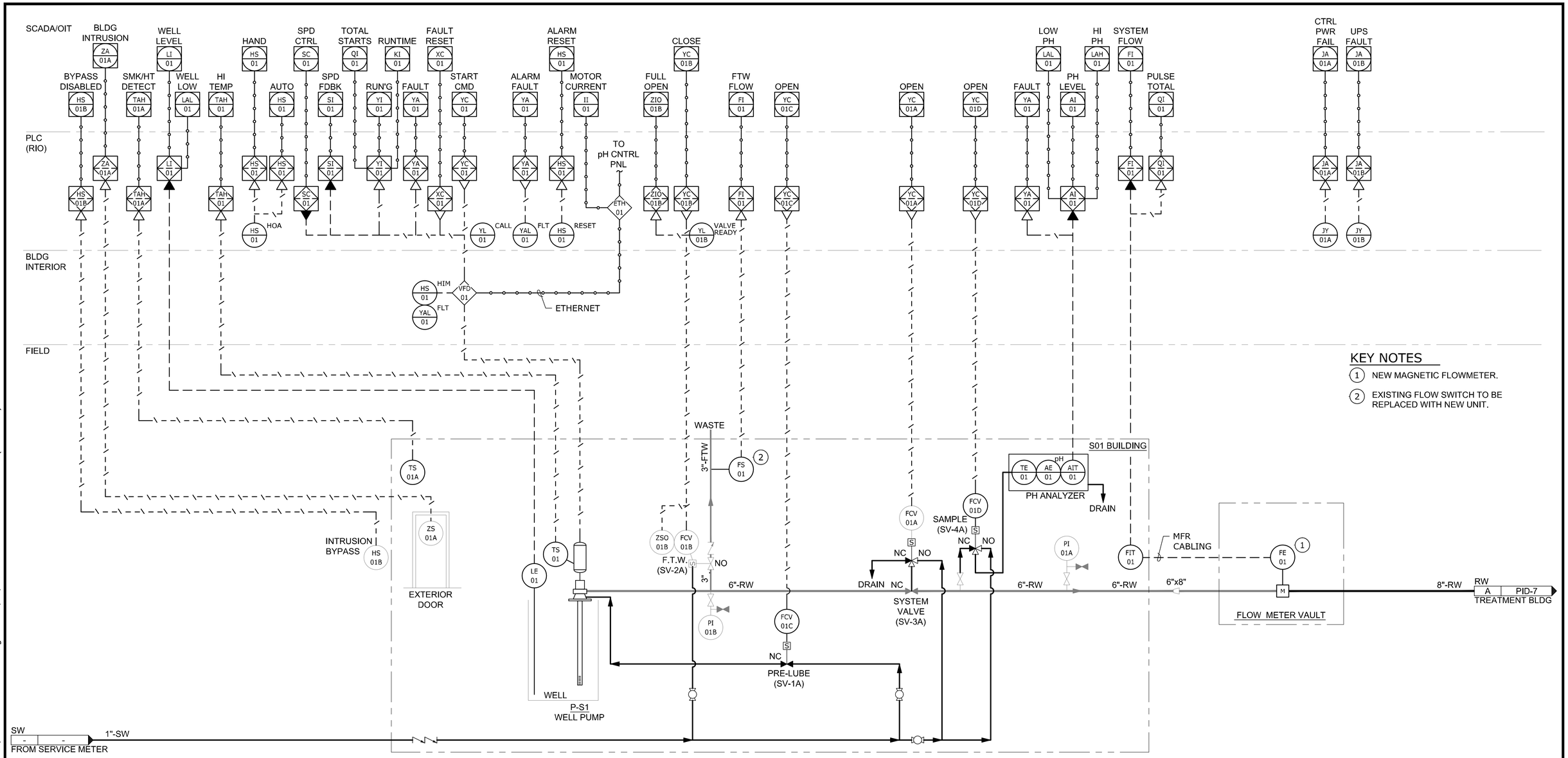
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

P&ID
LEGEND 2 OF 2

SCHEDULE B SHEET PID-2

PROJECT NO.: 21-3172 SCALE: AS SHOWN DATE: AUGUST 2023



KEY NOTES

1. NEW MAGNETIC FLOWMETER.
2. EXISTING FLOW SWITCH TO BE REPLACED WITH NEW UNIT.

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

P&ID
WELL 1

SCHEDULE B
SHEET
PID-3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCADA/OIT
PLC (RIO)
BLDG INTERIOR
FIELD

BLDG INTRUSION ZA 02A
BYPASS DISABLED HS 02B
SMK/HT DETECT TAH 02A
WELL LEVEL LI 02
WELL LOW LAL 02
HAND HS 02
AUTO HS 02
HOA
SPD CTRL SC 02
SPD FDBK SI 02
TOTAL STARTS QI 02
RUNTIME KI 02
RUN'G YI 02
FAULT YA 02
FAULT RESET XC 02
START CMD YC 02
ALARM FAULT YA 02
ALARM RESET HS 02
MOTOR CURRENT II 02
TO pH CNTRL PNL
ETH 02
CALL YL 02
FLT YAL 02
RESET HS 02
FULL OPEN ZIO 02B
CLOSE YC 02B
VALVE READY YL 02B
FTW FLOW FI 02
HIM HS 02
VFD 02
FLT YAL 02
ETHERNET
OPEN YC 02A
OPEN YC 02D
LOW PH LAL 02
FAULT YA 02
HI PH LAH 02
PH LEVEL AI 02
SYSTEM FLOW FI 02
PULSE TOTAL QI 02
CTRL PWR FAIL JA 02A
UPS FAULT JA 02B
JY 02A
JY 02B

WASTE
3"-FTW
FS 02 (2)
TS 02A
ZS 02A
INTRUSION BYPASS HS 02B
EXTERIOR DOOR
ZSO 02B
FCV 02B
F.T.W. (SV-2B)
NO
3"
LE 02
WELL
P-S2 WELL PUMP
6"-RW
DRAIN NC
SYSTEM VALVE (SV-3B)
FCV 02A
FCV 02D
SAMPLE (SV-4B)
NC NO
6"x8"
8"-RW
S02 BUILDING
pH
TE 02
AE 02
AIT 02
PH ANALYZER
DRAIN
PI 02A
FIT 02
MFR CABLING
FE 02 (1)
FLOW METER VAULT
8"x6"
6"x8"
RW
B PID-7
TREATMENT BLDG
SW
1"-SW
FROM SERVICE METER

KEY NOTES

1. NEW MAGNETIC FLOWMETER.
2. EXISTING FLOW SWITCH TO BE REPLACED WITH NEW UNIT.

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JAMES E. MITCHELL — STATE OF WASHINGTON — #25485 — REGISTERED PROFESSIONAL ENGINEER
Signed by: James Mitchell
[illegible]
8/14/2023

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WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

P&ID
WELL 2

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
PID-4

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-PID-4.dwg PID-4 8/14/2023 3:43 PM ROBERTC 23.1s (LMS Tech)

KEY NOTES

1. NEW MAGNETIC FLOWMETER.
2. EXISTING FLOW SWITCH TO BE REPLACED WITH NEW UNIT.
3. EXISTING PRESSURE TRANSDUCER TO BE REMOVED AND SALVAGED TO THE CITY.

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DocuSigned by: 33E381...46C
.../2023

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P&ID WELL 3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
PID-5

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-PID-5.dwg PID-5 8/14/2023 3:45 PM ROBERTC 23.1s (LMS Tech)

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AK #1018436
PROJECT#:21.47.01

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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DRAWN
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JAMES E. MITCHELL
STATE OF WASHINGTON
#25495
REGISTERED PROFESSIONAL ENGINEER
DocuSigned by:
3E38...46C
8/2023

consor

CITY OF LACEY
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CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

P&ID
CL2 TRANSFER

PROJECT NO.: 21-3172
SCALE: AS SHOWN
DATE: AUGUST 2023

SCHEDULE B
SHEET
PID-6

P:\Projects\21.47.01_MSA_Lacey_Westside__pH_Treatment\DWG\21-3172-WA-PID-6.dwg PID-6 8/14/2023 3:50 PM ROBERTC 23.1s (LMS Tech)

SCADA/OIT

PLC

MCC

FIELD

TYPICAL OF 3: FLOW (FI CL03), FAULT (YA CL03), PRIME (HS CL03), AUTO (HS CL03), DAMPER FAULT (YA DMP5), DAMPER OPEN (ZI DMP5), OPEN CMD (YC DMP5), SPD FDBK (SI B1), SPD CTRL (SC B1), HI TEMP (TAH B1), TOTAL STARTS (QI B1), RUN'G (YI B1), RUNTIME (KI B1), FAULT (YA B1), HAND (HS B1), AUTO (HS B1), FAULT RESET (XC B1), START CMD (YC B1), MOTOR CURRENT (II B1)

TYPICAL OF 3: LOW PSI (PAL B1A), FILTER PSI (PI B1A)

TYPICAL OF 3: HI PSI (PAH B1B), AERATOR PSI (PI B1B), LOW PSI (PAL B1B)

TYPICAL OF 3: MASS AIR FLOW (FI MAF1)

TYPICAL OF 3: LOW LEVEL (LAL 1)

TYPICAL OF 3: HI LEVEL (LAH 1), TANK LEVEL (LI 1), LOW LEVEL (LAL 1), HI LEVEL (LAH 1)

TO BOOSTER STATION RIO PNL

TO PUMP VFD'S (TYP 3)

TO WELL & CL2 BLDG RIO PNLS (TYP 4)

ETH PH, ETH B1, ETH B2, ETH B3

YAL B1 FLT, YL B1 CALL, HS B1 HIM, VFD B1, HS B1 HOA, HS B1 RESET, VFD B2, VFD B3

ETHERNET (TYP)

KEYED NOTES

1. FACILITIES INTEGRATOR PROVIDED REMOTE STATION, LOCATED AT ANALYZER/PUMP SKID. SEE E11 FOR WIRING DETAILS.
2. ANALOG CONTROL SIGNAL FROM ANALYZER, SEE PID-8.

RW - FUTURE 8"-RW SOURCE 01S

RW A PID-3 8"-RW SOURCE 01

RW B PID-4 8"-RW SOURCE 02

RW C PID-5 8"-RW SOURCE 03

CL2 D PID-6 1"-NAOCL CHLORINE BLDG

1/2"-NAOCL

NC

ZS DMP5, HS DMP5 OCA, VENTILATION PANEL

ATM, PDIT B1A, INTAKE FILTER, B-1 BLOWER 1, TS B1, PDIT B1B, FIT MAF1, 8"-PA, 8"-RW, 8"-FW

LSL 1, LSH 1, LT 1, AERATION UNIT 1 AU-1

FW A1 PID-8 BOOSTER PUMP 5

FLUSHING CONNECTION

ATM, PDIT B2A, INTAKE FILTER, B-2 BLOWER 2, TS B2, PDIT B2B, FIT MAF2

LSL 2, LSH 2, LT 2, AERATION UNIT 2 AU-2

FW A2 PID-8 BOOSTER PUMP 6

ATM, PDIT B3A, INTAKE FILTER, B-3 BLOWER 3, TS B3, PDIT B3B, FIT MAF3

LSL 3, LSH 3, LT 3, AERATION UNIT 3 AU-3

FW A3 PID-8 BOOSTER PUMP 7

HS CL01 POA 1, P-CL01 SODIUM HYPOCHLORITE SKID 1

HS CL02 POA 1, P-CL02 SODIUM HYPOCHLORITE SKID 2

HS CL03 POA 1, P-CL03 SODIUM HYPOCHLORITE SKID 3

TREATMENT BUILDING

** VENDOR PROVIDED EQUIPMENT

Industrial Systems INC
12119 NE 99th Street
Suite #2090
Vancouver, Washington 98682
Phone: (360) 718-7267
Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

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Docusigned by: James Mitchell 233E3841...
8/16/2023

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CITY OF LACEY

CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

P&ID pH TREATMENT

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
PID-7

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SCADA/OIT

PLC

MCC

FIELD

TYPICAL OF 5

TYPICAL OF 3

TYPICAL OF 4 (2)

BLDG INTRUSION ZA D1

SMK/HT DETECT TAH AREA

BYPASS DISABLED HS D1

SPD CTRL SC PT1

TOTAL STARTS QI PT1

RUNTIME KI PT1

HAND HS PT1

FAULT RESET XC PT1

MOTOR CURRENT II PT1

SPD FDBK SI PT1

HI TEMP TAH PT1

RUN'G YI PT1

FAULT YA PT1

AUTO HS PT1

START CMD YC PT1

TO ENET SW.

LOW CL2 LAL 1

HI CL2 LAH 1

LOW PH LAL 1A

HI PH LAH 1A

WELL FLOW SC 1

CL2 LEVEL AI 1B

PH LEVEL AI 1A

FAULT YA 1

PUMP START YC 1

FLOW FI 337

SYSTEM PSI PI 337

SYSTEM FLOW FI 337A

PULSE TOTAL QI 337A

CTRL PWR FAIL JA PWR

UPS FAULT JA UPS

UTLITY POS ZI 1

FAULT YA 1

EMERG POS ZI 1

UTILITY AVAIL ZI 1

EMERG POS ZI 1

YAL PT1 FLT

YL PT1 CALL

HS PT1 HIM

HS PT1 HOA

HS PT1 RESET

VFD PT1

VFD PT2

VFD PT3

ETHERNET (TYP)

ATS 1

MTS 1

JY PWR

JY UPS

KEYED NOTES

1. ANALOG CONTROL SIGNAL TO PUMP SKID, SEE PID-7.
2. ANALYZER 4 DOES NOT HAVE SIGNALS OR CONNECTION FOR DOSING PUMP.

TREATMENT BUILDING

TS TRTMT

TS ELECT

TS STOR

TS BATH

TS BLR

INTRUSION BYPASS HS D1

ZS D1A

ZS D1B

ZS D1C

EXTERIOR DOORS

DRAIN

FS 337

PIT 337

PI 337

FIT 337A

MFR CABLING

FE 337A

M

FLOW METER VAULT

FW A1 PID-7 AERATION UNIT 1

FW A2 PID-7 AERATION UNIT 2

FW A3 PID-7 AERATION UNIT 3

8"-FW

12"-FW

6"-FW

4"-FW

FW B1 PID-8 ZONE 337 SYSTEM

PI

TS PT1

TS PT2

TS PT3

P-T1 TREATED WATER PUMP

P-T2 TREATED WATER PUMP

P-T3 TREATED WATER PUMP

FS 1

AIT 1

TE 1

AE 1A

AE 1B

CL2

pH

SYSTEM CL2/ PH ANALYZER 1

A-1

FS 2

AIT 2

TE 2

AE 2A

AE 2B

SYSTEM CL2/ PH ANALYZER 2

A-2

FS 3

AIT 3

TE 3

AE 3A

AE 3B

SYSTEM CL2/ PH ANALYZER 3

A-3

FS 4

AIT 4

TE 4

AE 4A

AE 4B

TE 4A

SYSTEM CL2/ PH ANALYZER 4

A-4

1

Industrial Systems INC
12119 NE 99th Street
Suite #2090
Vancouver, Washington 98682
Phone: (360) 718-7267
Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.47.01

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RSC DRAWN

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JAMES E. MITCHELL STATE OF WASHINGTON #25495 REGISTERED PROFESSIONAL ENGINEER

Signed by: James Mitchell 3233E384[illegible]46C

8/16/2023

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CITY OF LACEY

CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

P&ID BOOSTER PUMPS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B

SHEET

PID-8

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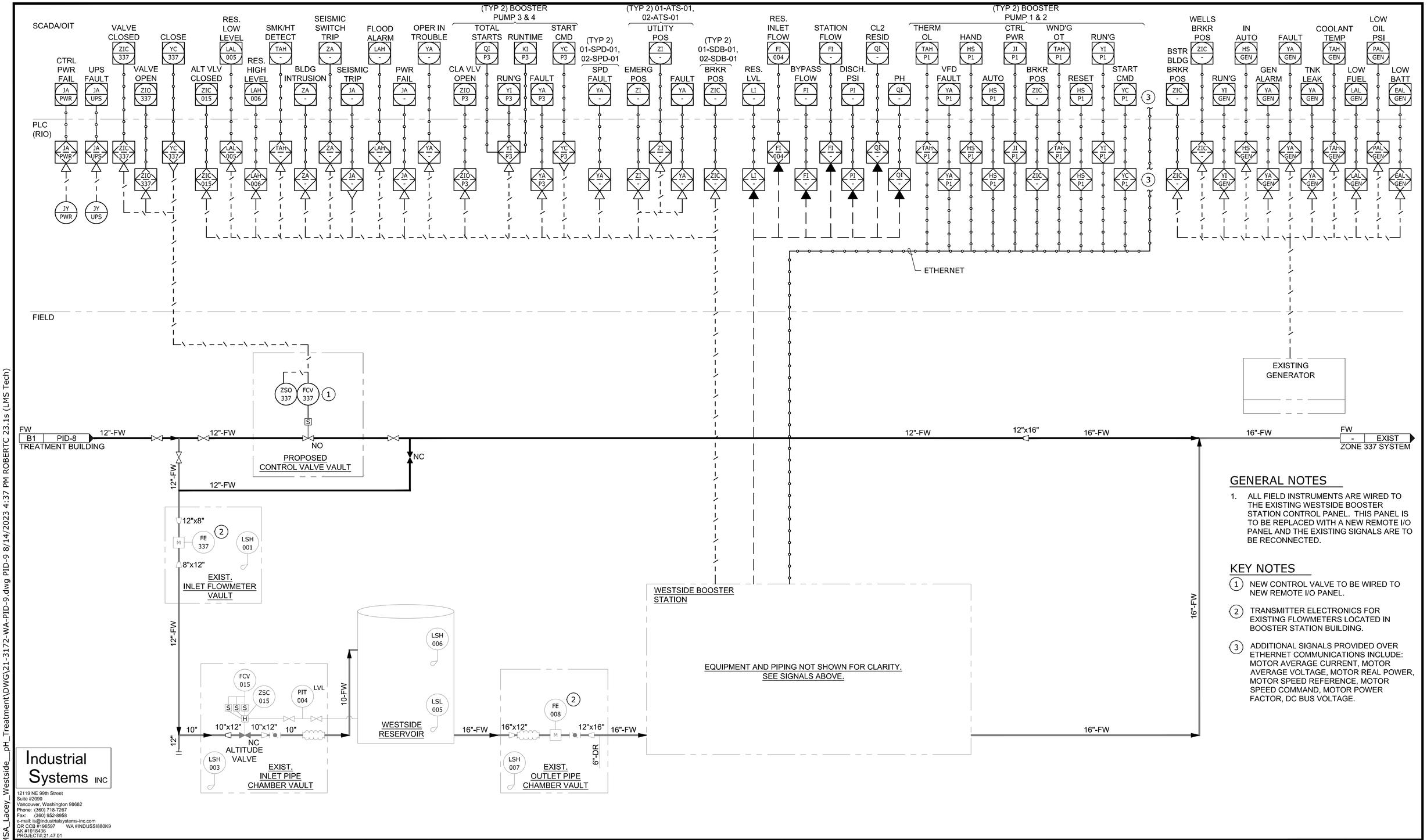

GENERAL NOTES

1. ALL FIELD INSTRUMENTS ARE WIRED TO THE EXISTING WESTSIDE BOOSTER STATION CONTROL PANEL. THIS PANEL IS TO BE REPLACED WITH A NEW REMOTE I/O PANEL AND THE EXISTING SIGNALS ARE TO BE RECONNECTED.

KEY NOTES

1. NEW CONTROL VALVE TO BE WIRED TO NEW REMOTE I/O PANEL.
2. TRANSMITTER ELECTRONICS FOR EXISTING FLOWMETERS LOCATED IN BOOSTER STATION BUILDING.
3. ADDITIONAL SIGNALS PROVIDED OVER ETHERNET COMMUNICATIONS INCLUDE: MOTOR AVERAGE CURRENT, MOTOR AVERAGE VOLTAGE, MOTOR REAL POWER, MOTOR SPEED REFERENCE, MOTOR SPEED COMMAND, MOTOR POWER FACTOR, DC BUS VOLTAGE.

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JAMES E. MITCHELL — STATE OF WASHINGTON — #25495 — REGISTERED PROFESSIONAL ENGINEER
Approved by: [redacted] 8/14/2023

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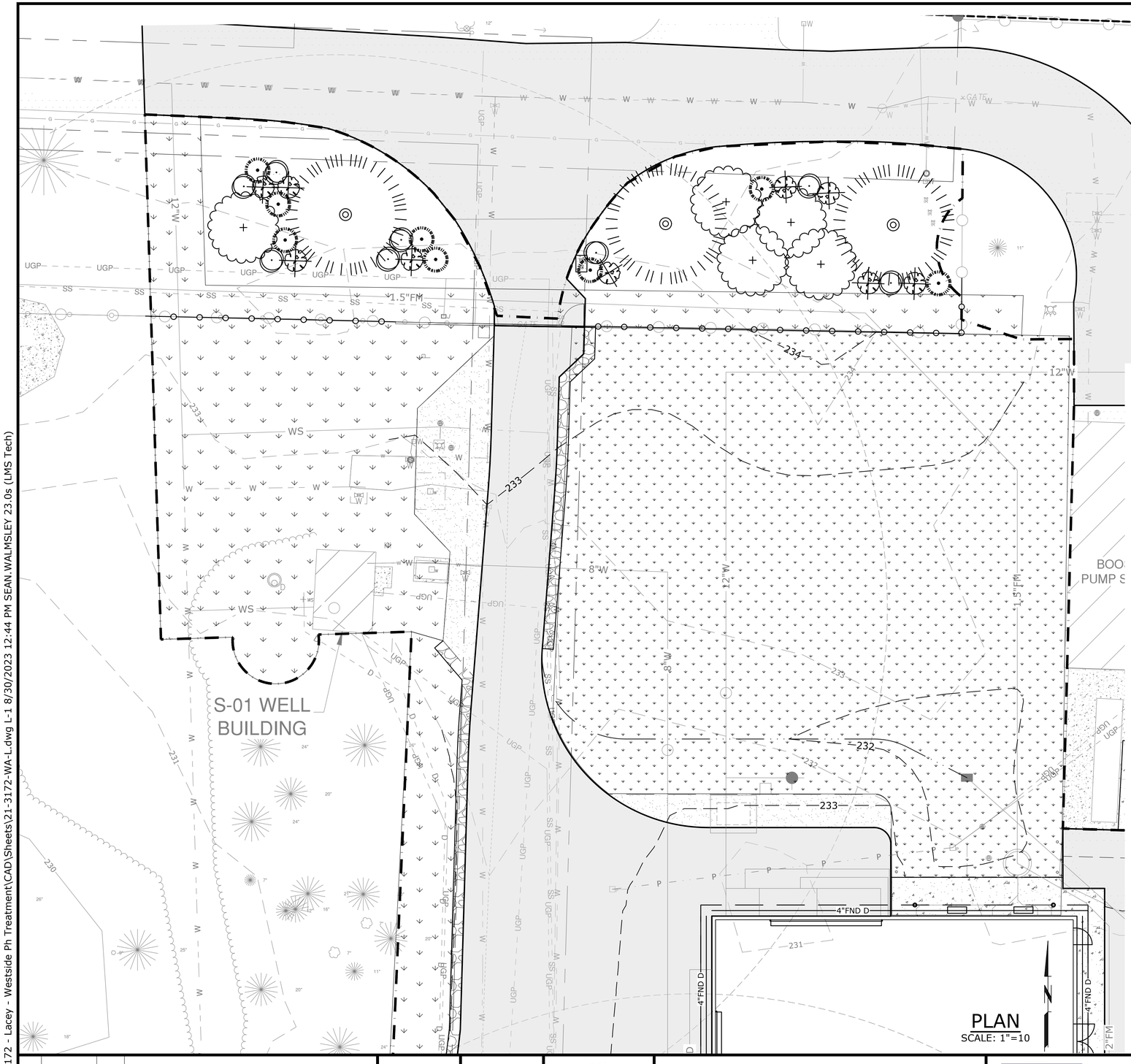
CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

P&ID
RESERVOIR & BOOSTER STATION

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
PID-9



PLAN
SCALE: 1"=10

LEGEND

SYMBOL	QUANTITY	PLANTING SIZE	COMMON NAME BOTANICAL NAME
	3	7 FT	WESTERN HEMLOCK TSUGA HETEROPHYLLE
	5	5 GALLON	VINE MAPLE ACER CIRCINATUM
	8	3 GALLON	OCEANSPRAY HOLODISCUS DISCOLOR
	7	3 GALLON	INDIAN PLUM OEMLARIA CERASIFORMIS
	9	3 GALLON	SALMONBERRY RUBUS SPECTABILIS
	80 LB		LAWN SEEDSMIX - 8,060 SF 10 LB PER 1,000 SF RATE . (SEE DETAILS, SHEET L-3)
	120 LB		EROSION CONTROL SEEDSMIX 1 LB PER 1,000 SF RATE (SEE DETAILS, SHEET L-3) (NOT ALL SEEDED AREAS ARE SHOWING ON THIS SHEET)
			EXISTING TREES TO REMAIN

NOTE:

1. IRRIGATION SYSTEM TO BE INSTALLED TO MAINTAIN ALL PROPOSED TREES, SHRUBS AND LAWN AREA.

2. SEE SHEET L-3 FOR PLANTING DETAILS.

3. ALL DISTURBED UNPAVED AREAS NOT SHOWN ON THIS SHEET SHALL BE RESTORED WITH EXTRA EROSION CONTROL SEEDMIX

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JONATHAN C. ROSATI — STATE OF WASHINGTON — 55144 — REGISTERED PROFESSIONAL ENGINEER
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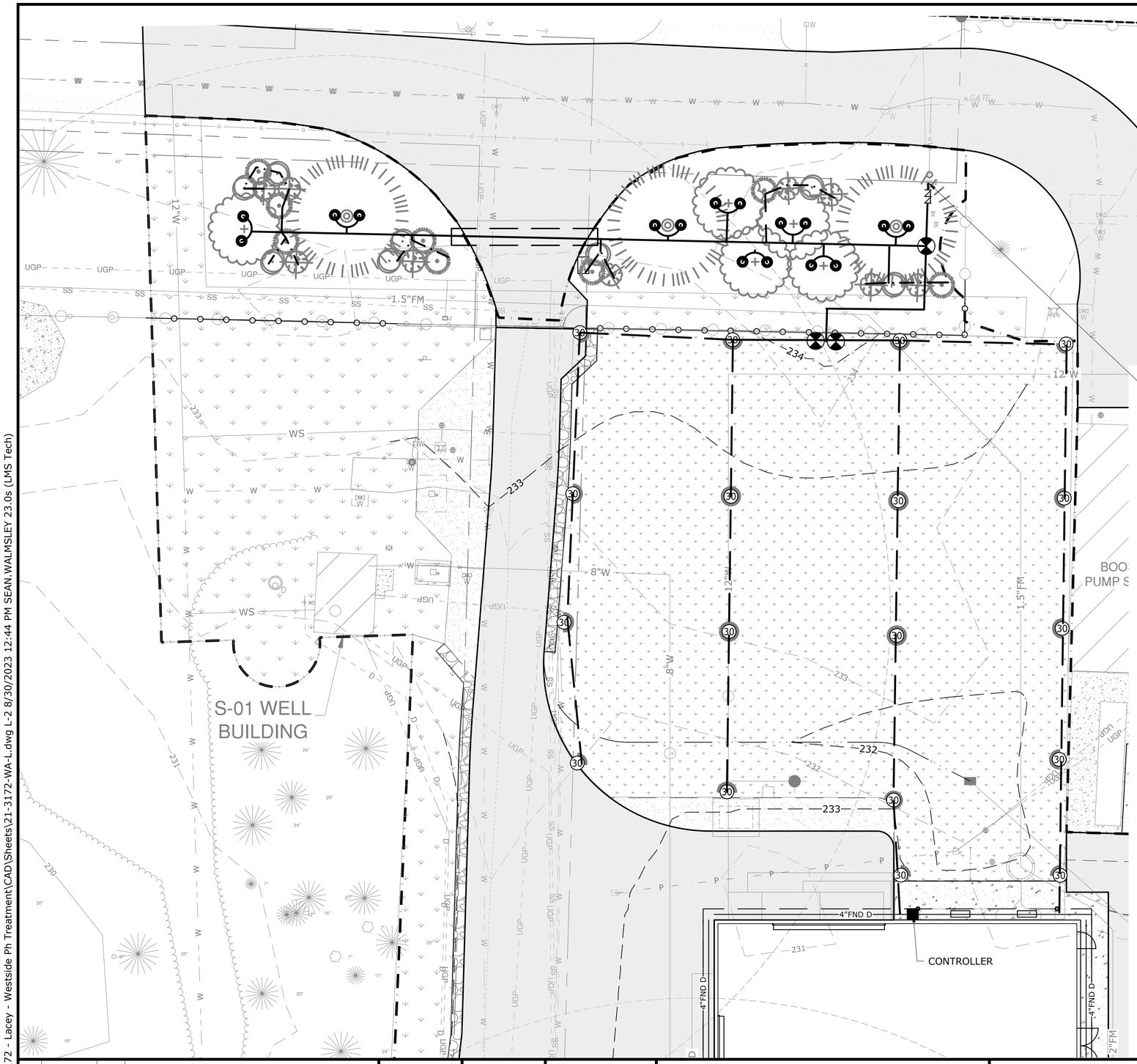
CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

PLANTING PLAN

SCHEDULE B
SHEET
L-1

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

K:\tac_projects\21\3172 - Lacey - Westside Ph Treatment\CAD\Sheets\21-3172-WA-L.dwg L-1 8/30/2023 12:44 PM SEAN.WALMSLEY 23.0s (LMS Tech)



IRRIGATION MATERIALS AND LEGEND

- BACKFLOW PREVENTER & PRESSURE REGULATER, (SEE POINT OF CONNECTION DETAILS, SHEET L-4)
- AUTOMATIC CONTROLLER
  TORO SENTINEL PER CITY OF LACY SPECS
- AUTOMATIC CONTROL VALVE
  WEATHERMATIC (MAX-DW-10)
- HUNTER PGP I-20 ULTRA ROTOR
  MPR-30 LT GREEN NOZZLE
  25-65 PSI, SEE SHEET L-4 FOR DETAILS.
- 0-30 GPH ADJUSTABLE BUBBLER ON SPIKE 360 DEGREE PRESSURE RATE 15-30 PSI, SEE SHEET L-4 FOR DETAILS.
- MANUAL DRAIN VALVE - 0.5" RAIN BIRD BVAL50-1S
- ISOLATION BALL VALVE - 2" (ERA SCH 80 PVC 2 INCH)
- 2" IRRIGATION MAINLINE PVC CLASS 200
- 1" IRRIGATION LATERAL LINE PVC CLASS 200
- ½" INLINE DRIP EMITTER
  1 GPH EMITTERS PRE INSTALLED EVERY 12"
  PRESSURE RATE 10-50 PSI
- LAND PAVEMENT SLEEVE. 4" DIAMETER OR 2x TOTAL DIAMETER OF ALL PIPES TO BE SLEEVED. TO BE INSTALLED AT DEPTH OF LOCAL CODE.

NOTES:

1. SEE SHEET L-4 FOR IRRIGATION DETAILS.
2. VALVE AND MAIN LINE LAYOUT IS DIAGRAMMATIC. ALL VALVES AND MAINLINE SHALL BE INSTALLED WITHIN LANDSCAPE AREAS WHERE FEASIBLE.

PLAN
SCALE: 1"=10

NO.	DATE	BY	REVISION

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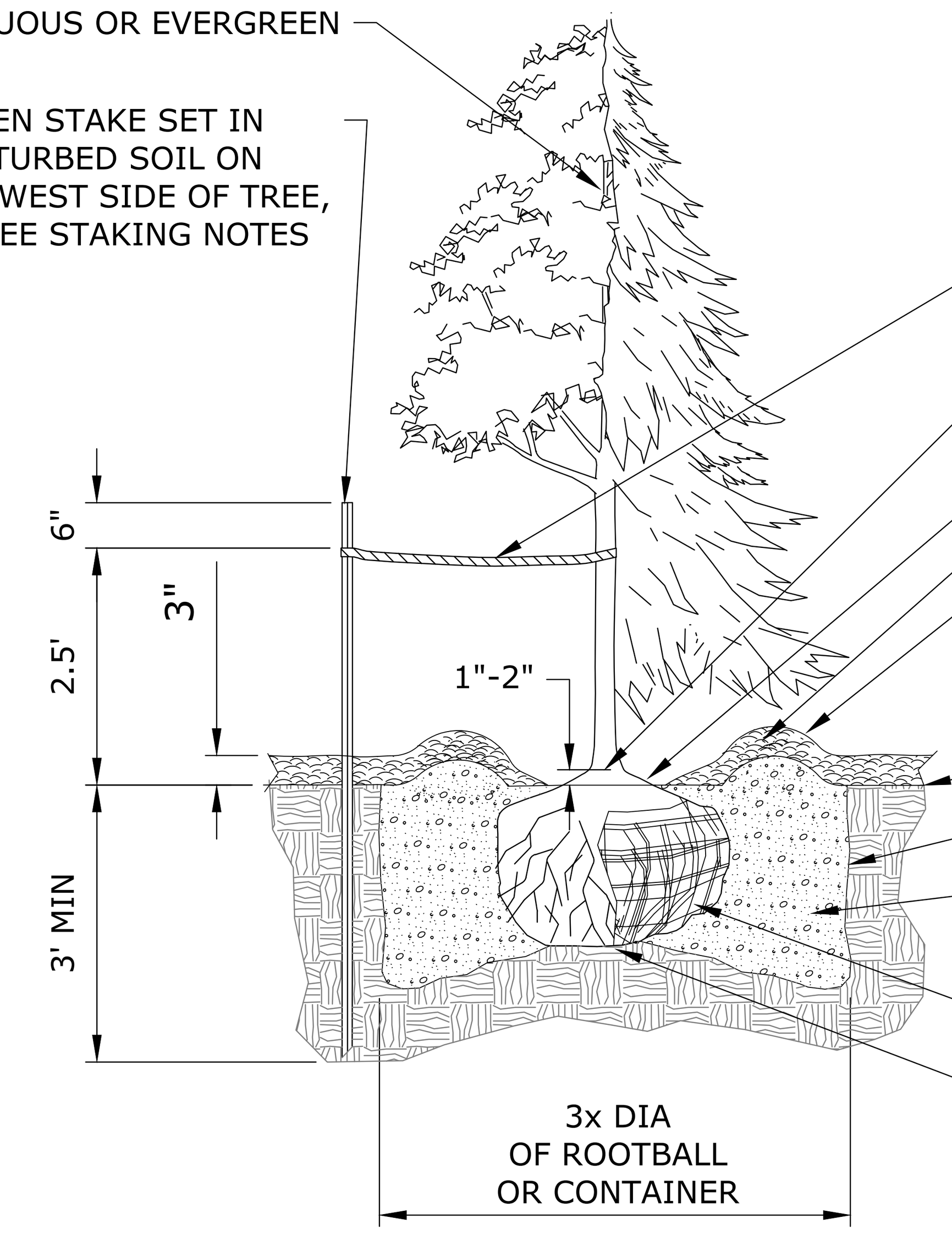
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

IRRIGATION PLAN

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B
SHEET
L-2



NOTES:

1. TREE TIES TO BE EITHER:

   RIGID GUY SYSTEM WITH GALVANIZED WIRE TO BE APPROXIMATELY 1/8" THICKNESS AND 24" LENGTH. THERE IS A PLASTIC SLEEVE OVER PORTION THAT GOES AROUND TREE. THE WIRE TIE IS TO GO THRU THE WOOD STAKE AND BE SECURELY FASTENED.

   PLASTIC CHAIN TYPE, APPROXIMATELY 1" WIDTH BY 1/8" DEPTH WHERE TWO STAKES ARE REQUIRED. CROSS TIES BETWEEN STAKES AND WRAP TIE AROUND TREE. FASTEN SECURELY TO STAKE.

2. EXCAVATE ALL PLANT WELLS PER DETAIL AT 3X DIAMETER OF ROOTBALL OR CONTAINER AND BACKFILL WITH SITE SELECT TOPSOIL FREE OF NOXIOUS WEEDS PLANT MATERIAL INCLUDING ROOTS AND SPRIGS.

3. FURNISH TREE STAKES ON ALL TREE PLANTINGS. STAKES TO BE CONSTRUCTION GRADE, ROUGH SAWN OR FINISHED DOUGLAS FIR OR PINE. STAIN WITH APPROVED GREEN PENETRATING OIL. STAKE SIZE IS TO BE 1 1/2"x1-1/2" BY FOLLOWING LENGTHS:

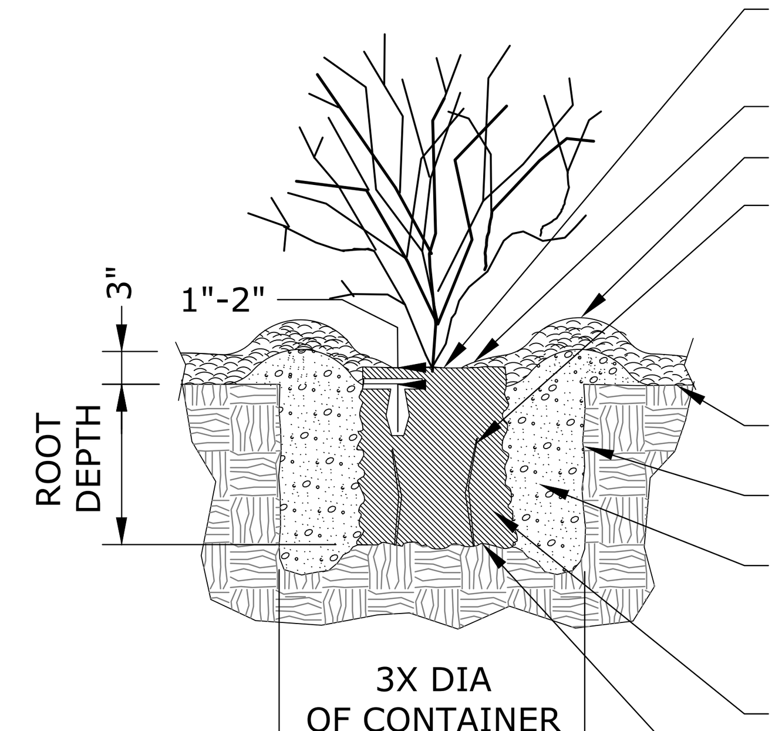
   TREES 36" AND SHORTER - USE ONE - 6' (APPROXIMATELY) STAKE

   TREES TALLER THAN 36" - USE ONE - 8' (APPROXIMATELY) STAKE

   DRIVE STAKES VERTICALLY AND AT LEAST 24" INTO UNDISTURBED SOIL. DO NOT DRIVE STAKES THRU ROOT BALL. LOCATE STAKES TO BEST RESIST PREVAILING WINDS.

TREE PLANTING DETAIL (1 / -)

SCALE: NTS



SHRUB PLANTING DETAIL (2 / -)

SCALE: NTS

PLANTING METHODS:

1. SOIL PREPARATION: TILL THE SUB-GRADE IN THESE AREAS TO A DEPTH OF AT LEAST FOUR INCHES AND ADD AT LEAST 12 INCHES OF CLEAN COMPOST-AMENDED TOPSOIL. THE COMPOST-AMENDED TOPSOIL SHALL HAVE A GOOD GROWING MEDIUM WITH TEXTURE MATERIAL THAT PASSES THROUGH ONE-INCH AND 35% ORGANIC MATTER FERTILITY.

2. PLANTING TIME: CONTAINERIZED STOCK SHALL BE INSTALLED ONLY FROM FEBRUARY 1 THROUGH MAY 1 AND OCTOBER 1 THROUGH NOVEMBER 15. PLANTINGS OUTSIDE THESE TIMES MAY REQUIRE ADDITIONAL MEASURES TO ENSURE SURVIVAL WHICH SHALL BE SPECIFIED ON THE PLANS.

3. INSTALLED PLANTS SHALL TAGGED FOR DORMANT SEASON IDENTIFICATION AND SHALL REMAIN ON PLANT MATERIALS AFTER PLANTING FOR MONITORING PURPOSES.

4. EROSION CONTROL: GRADING, SOIL PREPARATION, AND SEEDING SHALL BE PERFORMED DURING OPTIMAL WEATHER CONDITIONS AND AT LOW FLOW LEVELS TO MINIMIZE SEDIMENT IMPACTS.

5. MULCHING: TREES, SHRUBS, AND GROUNDCOVER AREAS SHALL BE MULCHED A MINIMUM OF THREE INCHES IN DEPTH AND 18 INCHES IN DIAMETER, TO RETAIN MOISTURE AND DISCOURAGE WEED GROWTH AROUND NEWLY INSTALLED PLANT MATERIAL. APPROPRIATE MULCHES ARE MADE FROM COMPOSTED BARK OR LEAVES THAT HAVE NOT BEEN CHEMICALLY TREATED.

6. WEED CONTROL: THE REMOVAL OF NON-NATIVE, INVASIVE WEEDS SHALL BE NECESSARY THROUGHOUT THE MAINTENANCE PERIOD, OR UNTIL A HEALTHY STAND OF DESIRABLE VEGETATION IS ESTABLISHED.

8. PLANT REPLACEMENT AND PRESERVATION: INSTALLED PLANTS THAT ARE UNHEALTHY OR DAMAGED SHALL BE REPLACED DURING THE MAINTENANCE PERIOD. PRIOR TO REPLACEMENT, THE CAUSE OF LOSS (WILDLIFE DAMAGE, POOR PLANT STOCK, ETC.) SHALL BE DOCUMENTED WITH A DESCRIPTION OF THE CORRECTIVE ACTIONS TAKEN.

9. IF PLANTING OCCURRED OUT OF PLANTING PERIODS INDICATED AT NOTE 2 ABOVE, THE FOLLOWING MEASURES SHOULD BE APPLIED:

   A. HAVE PLANTS INSPECTED FOR EARLY SYMPTOMS OF POOR HEALTH. TREES AFFECTED BY EARLY STAGES OF STRESS COULD DISPLAY PREMATURE FALL COLOR IN LATE SUMMER, PARTIAL DEFOLIATION AND SYMPTOMS OF MOISTURE STRESS.
   B. PROVIDE SUPPLEMENTAL IRRIGATION EACH WEEK OR MORE OFTEN ON NEWLY PLANTED TREES, SHRUBS AND OLDER PLANTS STRESSED WITH INSECT OR DISEASE PROBLEMS WHEN RAINFALL IS LACKING IN SUMMER.
   C. PRUNE FLOWERING TREES AND SHRUBS ONCE FLOWER BUDS BEGIN TO FORM IN LATE SUMMER, JUDICIOUS PRUNING REDUCES THE BLOOM SOMEWHAT BUT SHOULD NOT IMPACT THE DISPLAY SIGNIFICANTLY.
   D. INSPECT FOR PESTS THAT COMMONLY ARRIVE DURING HOT, DRY WEATHER AND APPLY TREATMENTS AS NEEDED.
   E. ASSESS CANOPIES FOR DEAD BRANCHES AND STRUCTURAL WEAKNESSES THAT CAN BE PRUNED LATER IN WINTER.

PLANTS MAINTENANCE NOTES:

1. PERMANENT WATER-EFFICIENT IRRIGATION SYSTEM (DRIP) SHOULD BE INSTALLED, PLANTS WATERING IS PARTICULARLY NEEDED DURING THE DRY SUMMER MONTHS.

2. CONTRACTOR SHALL PROVIDE 1 YEARS PLANT ESTABLISHMENT PERIOD TO MAINTAIN PLANTS IN A VIGOROUS GROWING CONDITION THROUGH PERIODIC INSPECTIONS. DURING PLANT ESTABLISHMENT PERIOD, THE CONTRACTOR SHALL ENSURE PLANTING AREAS ARE FREE OF INVASIVE WEEDS AND PLANTS SHALL BE FREE OF INSECTS AND DISEASES WHILE SHOWING SIGNS OF CONTINUING HEALTH. THE CONTRACTOR SHALL REPLACE ALL PLANTS THAT SHOW UNHEALTHY SIGNS OR ARE DEAD.

3. THE MAINTENANCE PERIOD BEGINS IMMEDIATELY AFTER THE COMPLETION OF ALL PLANTING OPERATION AND WRITTEN NOTIFICATION TO THE ENGINEER.

4. OTHER MAINTENANCE OPERATIONS DURING THE ONE-YEAR GUARANTEE PERIOD:

   - RESET PLANTS TO FINISH GRADE AND RESTORATION OF PLANT SAUCERS, AS NECESSARY
   - REPAIR DAMAGED OR WASHED OUT EROSION CONTROL SEEDING.
   - PRUNING, INCLUDING REMOVAL OF DEAD OR BROKEN BRANCHES.
   - DISEASE CONTROL.
   - MAINTAINING WRAPPING, GUYS, [TURNBUCKLES,] AND STAKES. [ADJUST TURNBUCKLES TO KEEP GUY WIRES TIGHT.] REPAIR OR REPLACE ACCESSORIES WHEN REQUIRED.
   - REPORT ANY PROBLEMS THAT MAY BE A HINDRANCE TO COMPLETING AND FULFILLING THE CONDITIONS OF THE PLANT GUARANTEE WITHIN 7 DAYS TO THE OWNER.

5. THE EXISTING IRRIGATION SYSTEM TO BE MODIFIED TO PROVIDE DRIP IRRIGATION ACCORDING TO PLANTS REQUIREMENTS. THE IRRIGATION SYSTEM SHALL DESIGNED AND CONSTRUCTED BY CERTIFIED IRRIGATION CONTRACTOR.

LAWN SEED MIX

STA-GREEN SUN & SHADE SEED MIX:

COMMON NAME	**% PLS PER WEIGHT**
SEEDS	
ACCENT PERENNIAL RYEGRASS	15.45
ACTION KENTUCKY BLUEGRASS	12.70
J5 CHEWINGS FESCUE	8.76
NEXUS XD PERENNIAL RYEGRASS	7.66
ARUBA CREEPINH RED FESCUE	3.77
OTHER INGREDIENTS	
NITRO-FUZE COATING	50.00
INERT MATTER	1.11
OTHER SEEDS	1.00

SEEDING RATE: 10LB PER 1,000 SF

EROSION CONTROL SEED MIX

SEED MIX:

BOTANICAL NAME	**COMMON NAME**	**PLS LBS. PER ACRE**
ELYMUS GLAUCUS	BLUE WILDRYE	21.74
FESTUCA RUBRA RUBRA	NATIVE WILD FESCUE	6.52
HORDEUM BRACHYANTHERUM	MEADOW BARLEY	4.35
GLYCERIA OCCIDENTALLIS	WESTERN MANNAGRASS	4.35
BECKMANI SYZIGACHNE	AMERICAN SLOUGHGRASS	4.35
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS	2.17
	TOTAL	43.38

SEEDING RATE 1 LB PER 1,000 SF

NO.	DATE	BY	REVISION

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DRAWN
NCR — CHECKED

NATHAN C. ROSTAD — STATE OF WASHINGTON — 55144 — REGISTERED PROFESSIONAL ENGINEER — 8-31-2023

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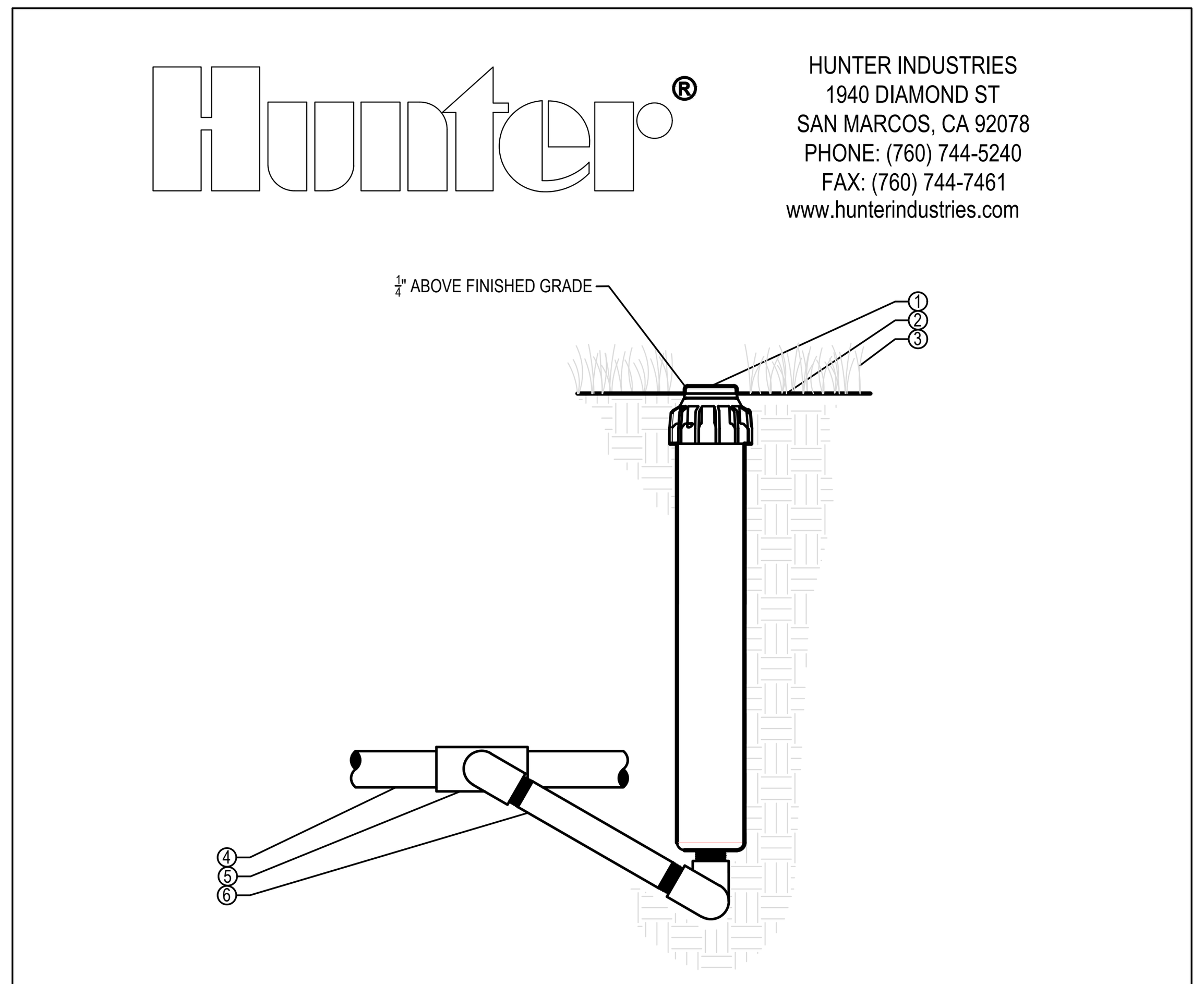
CITY OF LACEY, WASHINGTON
WESTSIDE pH TREATMENT PROJECT
LACEY CONTRACT #PW 2022-37

PLANTING DETAILS

SCHEDULE B
SHEET L-3

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

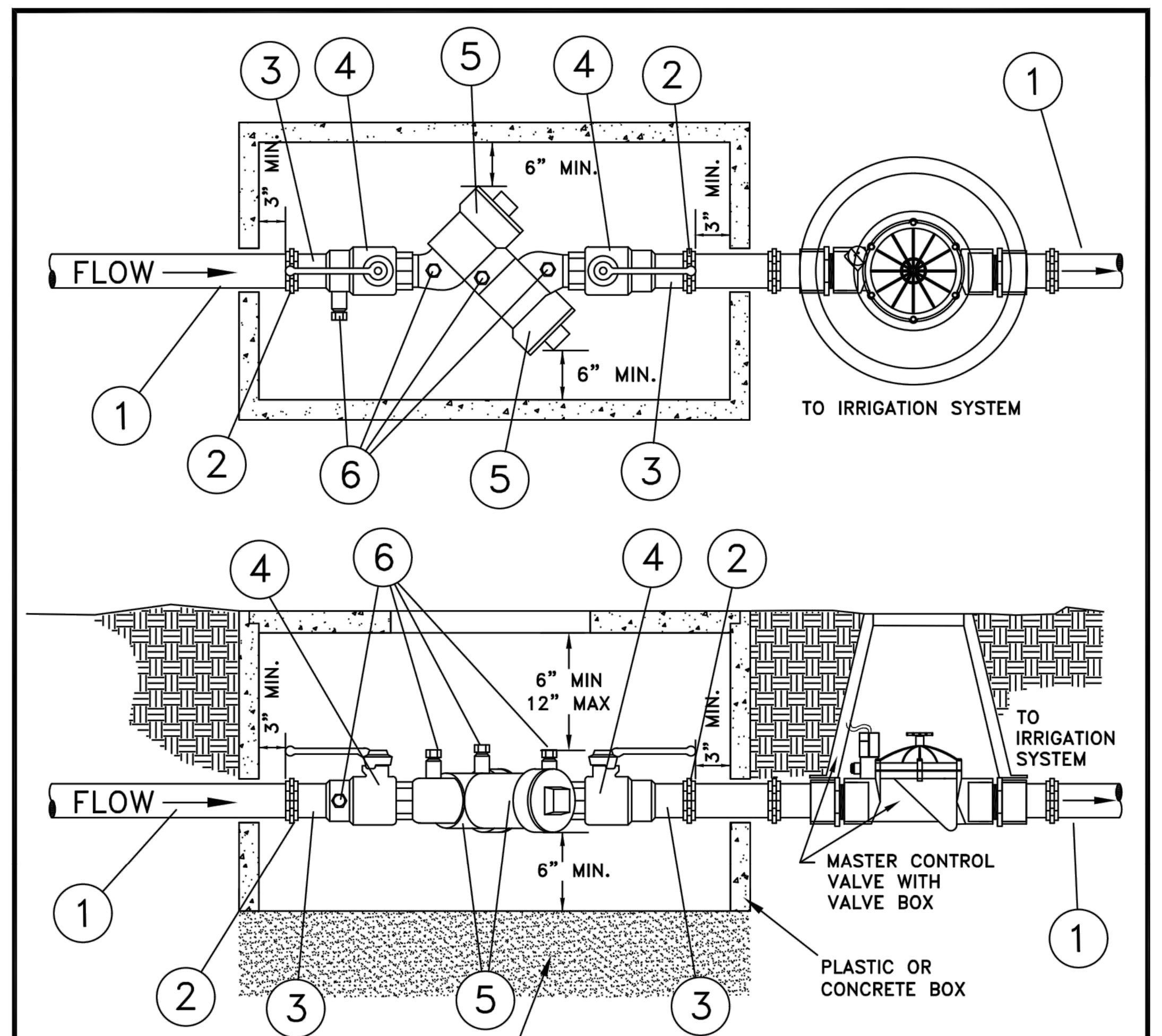


LEGEND:
1. HUNTER ROTOR (I-20-12), NOZZLE AND CAP PER PLAN
2. FINISHED GRADE
3. ADJACENT LANDSCAPE
4. LATERAL PIPE PER PLAN
5. LATERAL FITTING PER PLAN
6. FIELD-BUILT SWING ARM

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 21-3172-WA-L.

901- 931 REVISION DATE 18/01/2019

I-20 ULTRA ROTOR (1/L2)
SCALE: NTS



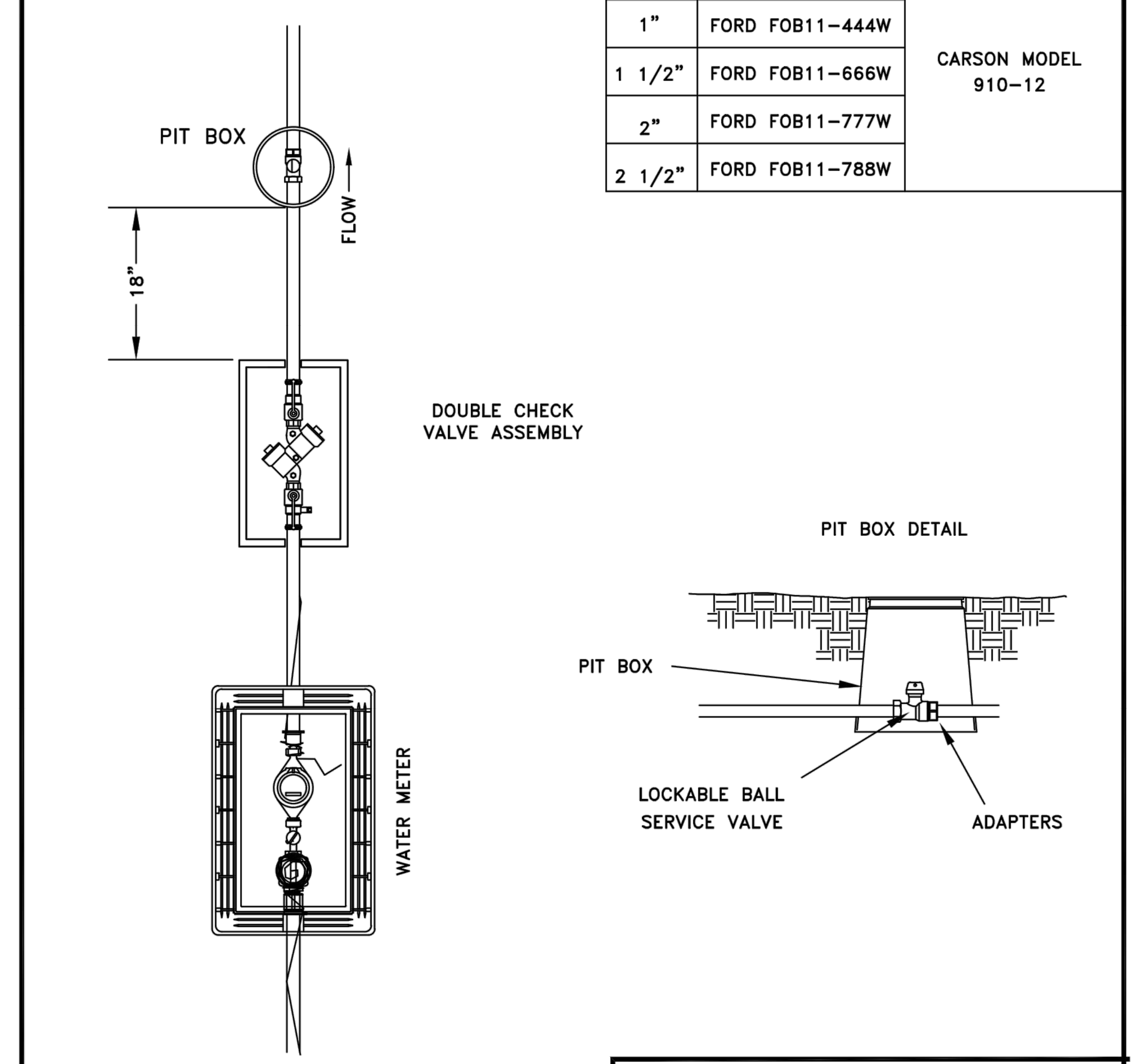
MATERIAL LIST:
1. SERVICE LINE
2. UNION
3. NIPPLE
4. SHUT-OFF VALVE
5. CHECK VALVE (D.S.H.S. APPROVED)
6. TEST COCKS

GENERAL NOTES:
1. REFER TO THE CITY OF LACEY DEVELOPMENT GUIDELINES AND PUBLIC WORKS STANDARDS, SECTION 6.110, BACK-FLOW PREVENTION, FOR SELECTION AND INSTALLATION DETAILS.
2. THE BPA INSTALLATION SHALL BE INSPECTED AND APPROVED BY A CITY OF LACEY CROSS-CONNECTION CONTROL SPECIALIST (CCS), PRIOR TO TESTING.
3. WHEN THE INSTALLATION HAS BEEN APPROVED BY THE LACEY CCS, THE DCVA MUST PASS A FUNCTIONALITY TEST BY A WASHINGTON STATE CERTIFIED BAT AS PER DOH STANDARDS
4. SEE DETAIL FOR TYPICAL LAYOUT.
5. A MASTER CONTROL VALVE WITH UNIONS ON BOTH SIDES SHALL BE INSTALLED WITHIN 5' OF THE DCVA ON PUBLIC WORKS PROJECTS.

DG6-4.1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS
DOUBLE CHECK VALVE ASSEMBLY FOR 2" OR SMALLER IRRIGATION
APPROVED — CITY ENGINEER | DWG. NO. 6-4.1
DES. CM | DWN. WHO | CKD. RAS | DATE 08/24/2017

LINE SIZE	BALL VALVE	VALVE BOX
3/4"	FORD FOB11-333W	CARSON MODEL 910-12
1"	FORD FOB11-444W	
1 1/2"	FORD FOB11-666W	
2"	FORD FOB11-777W	
2 1/2"	FORD FOB11-788W	

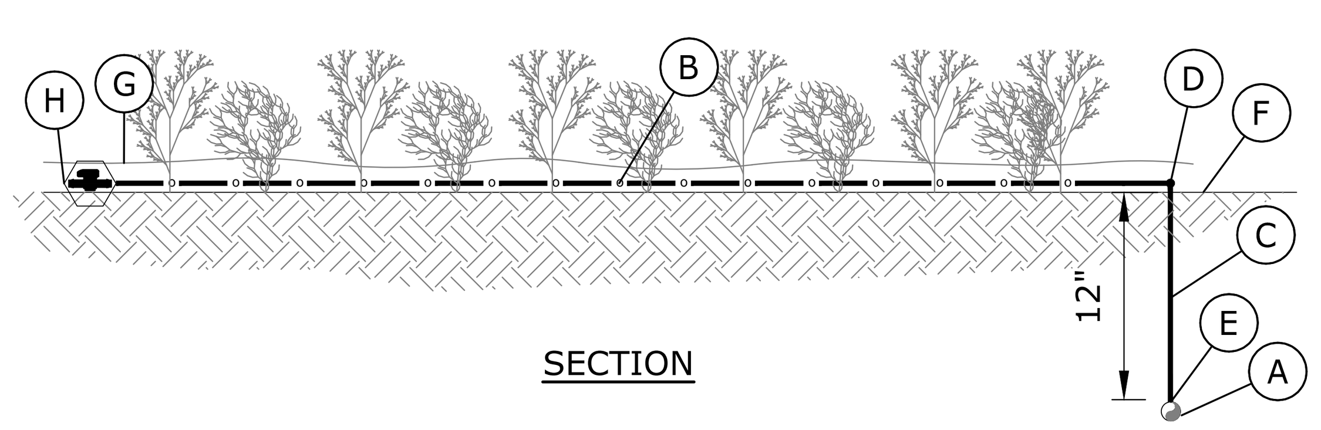


GENERAL NOTES:
1. THIS CONFIGURATION IS REQUIRED FOR AN IRRIGATION SYSTEM THAT HAS IT'S OWN WATER METER SUCH AS COMMERCIAL SITES.
2. DO NOT INSTALL IN AREAS SUBJECT TO FLOODING.
3. ALL PIPING SHALL BE BLUE POLY PIPE.

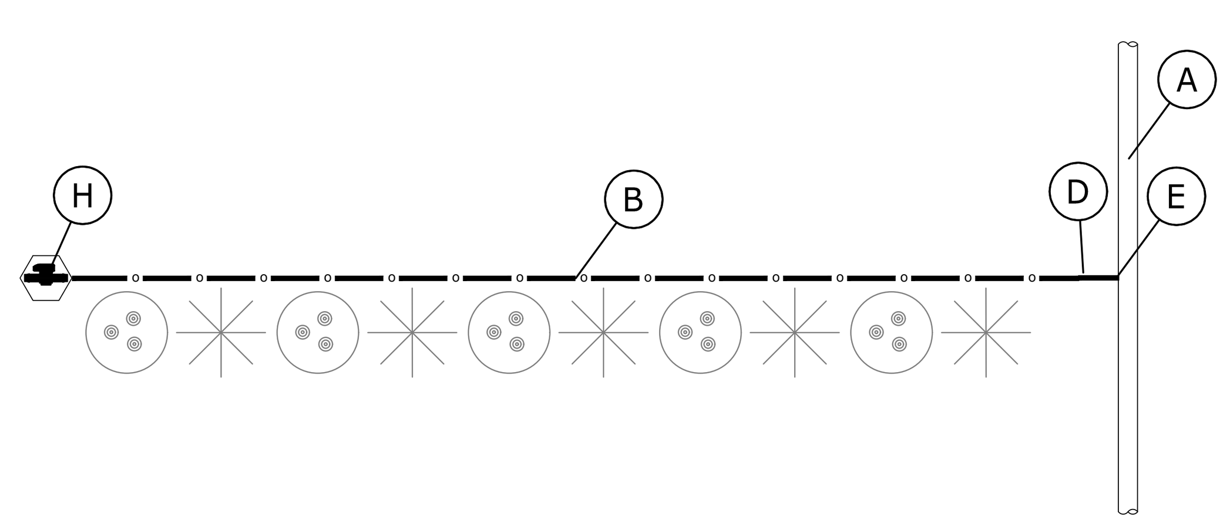
DG6-4.7.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS
IRRIGATION SERVICE FOR COMMERCIAL SITES TYPE II
APPROVED — CITY ENGINEER | DWG. NO. 6-4.7
DES. WHO | DWN. WHO | CKD. RAS | DATE 08/24/2017

POINT OF CONNECTION (3/L2)
SCALE: NTS



SECTION



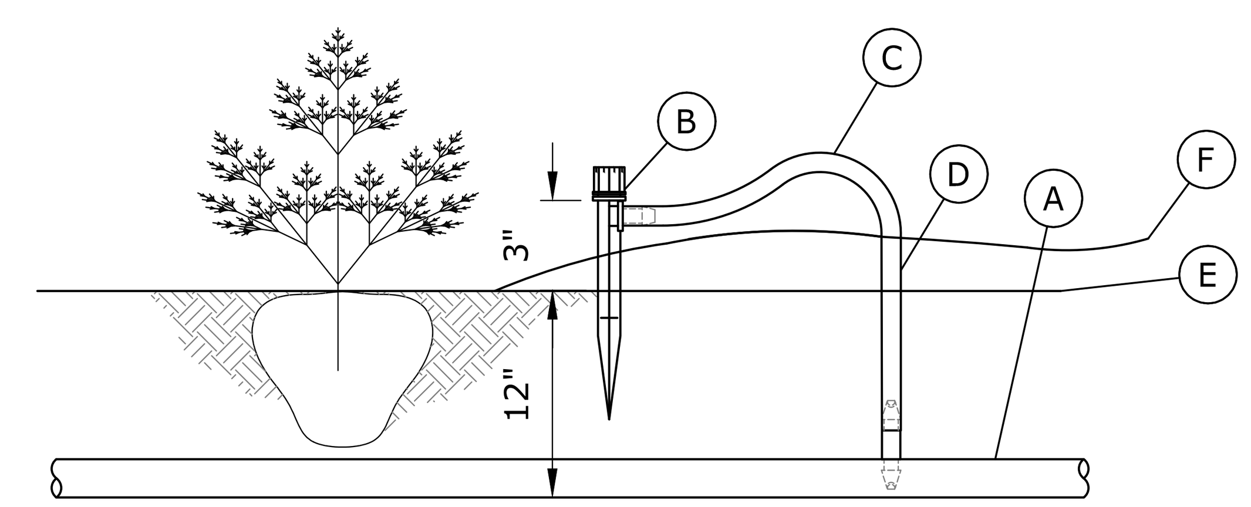
PLAN

KEY NOTES
- (A) 1" IRRIGATION LATERAL LINE PVC CLASS 200
- (B) 1/2" INLINE DRIPLINE
- (C) LP SERIES 1/2" PE TUBING
- (D) 1/2" BARB TEE (12001498)
- (E) 1/2" BARB COUPLING (12001497)
- (F) FINISH GRADE
- (G) MULCH
- (H) FLUSH POINT

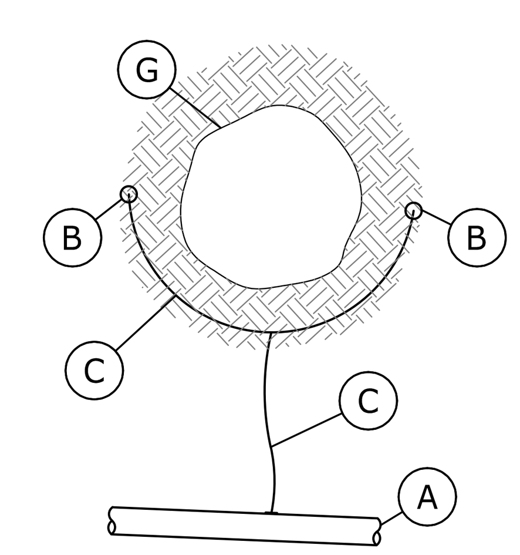
NOTES:

1. INSTALL LANDSCAPE STAKE PLACED EVERY 3' ALONG INLINE DRIPLINE TUBING ROUTE .

1/2" INLINE DRIPLINE (2/L2)
SCALE: NTS



SECTION



PLAN

KEY NOTES
- (A) 1" IRRIGATION LATERAL LINE PVC CLASS 200
- (B) RAINBIRD SHRUBBLER 12001684 - 360°
- (C) LP SERIES 1/4" PE TUBING
- (D) 1/4" BARBED COUPLING (12001497)
- (E) FINISH GRADE
- (F) MULCH
- (G) ROOT BALL

SHRUBS AND TREES BUBBLER (4/L2)
SCALE: NTS

IRRIGATION NOTES

1. ALL IRRIGATION EQUIPMENT BE INSTALLED WITHIN LANDSCAPE AREAS AND WITHIN THE PROJECT LIMITS.

1. ALL VALVE BOXES AND LIDS SHALL BE PLASTIC WITH SELF LOCKING COVERS. LID COLOR TO BE GREEN. DO NOT INSTALL IN PAVED AREAS.

2. ALL VALVE BOXES SHALL BE INSTALLED A MINIMUM OF 1'-0" FROM THE EDGE OF PAVED SURFACES AND 3'-0" FROM THE CENTERLINE OF DRAINAGE SWALES OR RETENTION BASINS.THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES TO BE FLUSH FINISH GRADE.

3. GROUNDING FOR THE IRRIGATION CONTROLLER IS TO BE INSTALLED PER CITY OF LACY SPECIFICATIONS, THE MANUFACTURER'S SPECIFICATIONS AND PER THE AMERICAN SOCIETY OF IRRIGATION CONSULTANTS GUIDELINE 100-2002 FOR EARTH GROUNDING ELECTRONIC EQUIPMENT IN IRRIGATION SYSTEMS FOUND AT www.asic.org/Design_Guides.aspx. FOR TECHNICAL SUPPORT REGARDING THE IRRIGATION CONTROLLER OR GROUNDING PLEASE CONTACT SIGNATURE CONTROL SYSTEMS (949) 580-3640.

4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VERTICAL SEPARATION BETWEEN ALL IRRIGATION DISTRIBUTION LINES AND ALL UTILITIES (EXISTING OR PROPOSED), CONDUIT, STORM WATER COMPONENTS, DRAINS, ETC.

5. PLANT MATERIAL LOCATIONS TAKE PRECEDENCE OVER IRRIGATION LINES. COORDINATE INSTALLATION OF IRRIGATION EQUIPMENT SO THAT IT DOES NOT INTERFERE WITH THE PLANTING OF TREES OR OTHER LANDSCAPE MATERIAL.

6. CONTRACTOR SHALL FLUSH SYSTEM THOROUGHLY AND EACH ZONE SHALL BE TESTED TO ENSURE PROPER OPERATING PRESSURE AT ALL HEADS IN ZONE.

7. CONTRACTOR SHALL WARRANTY THE IRRIGATION EQUIPMENT AS REQUIRED BY CITY OF LACY STANDARDS AND SPECIFICATIONS.

IRRIGATION POINT OF CONNECTION

1. POINT OF CONNECTIONS: THE IRRIGATION POINT OF CONNECTION SHALL BE INSTALLED PER THE CITY OF LACY STANDARDS:

2. TAP DOWNSTREAM OF DEDICATED IRRIGATION WATER METER TO BACKFLOW PREVENTER. CONTRACTOR TO VERIFY AVAILABLE PSI AT POINT OF CONNECTION.

3. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXISTING WATER PRESSURE IN THE FIELD BEFORE CONSTRUCTION BEGINS. NOTIFY THE CITY REPRESENTATIVE OF ANY DISCREPANCY BETWEEN THE DESIGN PRESSURE OF THE IRRIGATION SYSTEM AND THE MEASURED PRESSURE IN THE FIELD.

4. EQUIPMENT LOCATION: IRRIGATION CONTROLLER AND ELECTRIC METER, BACKFLOW PREVENTER, MASTER VALVE, AND FLOW SENSOR ARE TO BE LOCATED TOGETHER IN A MULCHED PLANTER BED. FINAL LOCATION OF EQUIPMENT SHALL BE APPROVED BY THE CITY REPRESENTATIVE PRIOR TO INSTALLATION.

SLEEVING COORDINATION NOTES

1. INSTALLATION OF IRRIGATION SLEEVING IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR . SLEEVES SHALL BE INSTALLED PRIOR TO THE START OF PAVING OPERATIONS. THE GENERAL CONTRACTOR SHALL COORDINATE WITH THE IRRIGATION CONTRACTOR FOR LOCATION AND SIZING OF SLEEVES PRIOR TO THE START OF CONSTRUCTION.

2. THE CONTRACTOR SHALL SLEEVE ALL IRRIGATION DISTRIBUTION LINES, VALVE CONTROL WIRES AND COMMUNICATION WIRES UNDER ALL PAVED SURFACES, WALL FOOTERS, DRAINAGE CHANNELS, INLETS, CATCH BASINS, ETC.

3. ALL SLEEVES SHALL EXTEND A MINIMUM OF 6" BEYOND EDGE OF ALL OBSTRUCTIONS. NO TEES, ELLS OR OTHER TURNS IN PIPING SHALL BE LOCATED UNDER ANY OBSTRUCTIONS.

4. MARK ALL SLEEVE LOCATIONS WITH A CHISELED 'X' IN THE PAVING DIRECTLY ABOVE SLEEVE LOCATION.

5. ALL MAINLINE, VALVE CONTROL AND COMMUNICATION WIRES, LATERALS UNDER PAVED SURFACES ARE TO BE INSTALLED IN SEPARATE SLEEVING.

NO.	DATE	BY	REVISION

NOTICE: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

FE DESIGNED | NCR DRAWN | CHECKED

consor

CITY OF LACEY — Shaping our community together

CITY OF LACEY, WASHINGTON WESTSIDE pH TREATMENT PROJECT LACEY CONTRACT #PW 2022-37

IRRIGATION DETAILS

PROJECT NO.: 21-3172 | SCALE: AS SHOWN | DATE: AUGUST 2023

SCHEDULE B SHEET L-4