INSTRUCTIONS:

1. CONTRACTOR SHALL USE THIS DRAWING FILE TO CREATE SHOP DRAWINGS FOR JEA REVIEW.

2. PLEASE CONTACT ARISS FAJARDO AT FAJAAJ@JEA.COM FOR QUESTIONS OR ADDITIONAL INFORMATION.

3. DO NOT PRINT THIS SHEET IN SUBMITTAL SET.

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE: INSTRUCTION SHEET

PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 0 OF 17

GENERAL NOTES:

1. REFER TO "433 PUMP STATION ELECTRICAL" FOR FURTHER DETAILS THAT MUST BE ADHERED TO SUCH AS WIRE, CONTACTOR, AND CIRCUIT BREAKER SIZING.
2. THIS DRAWING IS AN EXAMPLE OF HOW OVERALL CABINET IS TO BE DESIGNED. THE DRAWING WILL NEED TO BE REVISED BASED ON THE PUMP MANUFACTURER, SIZE AND NUMBER OF PUMPS. THINGS THAT WILL CHANGE ARE ENCLOSURE SIZE, CIRCUIT BREAKER SIZE, WIRE SIZE, VFD SIZE, AND OTHER ITEMS. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
3. REFER TO "433 PUMP STATION ELECTRICAL" HEAT LOAD CALCULATIONS SECTION AND ENCLOSURE SPECIFICATIONS TO SIZE ENCLOSURE CORRECTLY.
4. VFDs SHALL BE BOLTED TO A REMOVABLE PLATE THAT WILL THEN BE CONNECTED TO THE BACK OF THE ENCLOSURE WITH A GASKET. THE BACK OF THE ENCLOSURE SHALL HAVE STUDS TO ATTACH THE PLATE TO. THIS PLATE IS TO BE ADEQUATELY DESIGNED TO SUPPORT THE VFD. ENCLOSURE CUTOUT SHALL BE SIZED A MINIMUM OF 2.75" WIDER AND 3.5" HIGHER ON EACH SIDE OF THE MANUFACTURER RECOMMENDED CUTOUT FOR 40HP VFDs. THIS WILL RESULT IN A CUTOUT THAT IS NO LESS THAN 5.5" WIDER AND 7" HIGHER THAN THE MANUFACTURER'S SPECIFICATION. ADDITIONALLY THIS DISTANCE WILL INCREASE PROPORTIONATELY WITH THE SIZE OF THE VFD. FOR EXAMPLE: 80HP VFDs REQUIRE A CUTOUT THAT IS 5.5" WIDER AND 7.0" HIGHER ON EACH SIDE (A TOTAL OF 11" WIDER AND 14" HIGHER) OF THE MANUFACTURER SPECIFIED CUTOUT. THIS REQUIREMENT IS TO ENSURE THAT A FUTURE REPLACEMENT OF A VFD WILL ALLOW FOR DIFFERENT VFD DIMENSIONS.
5. VFDs SHALL BE RATED FOR CORROSIVE ENVIRONMENTS AND DRIVE CONTROL BOARDS SHALL BE CONFORMAL COATED TO PROTECT AGAINST CORROSION. REFER TO "495 VARIABLE FREQUENCY DRIVES".
6. VFD ENCLOSURES LOCATED OUTSIDE SHALL BE NEMA 12/3R WITH THE VFD HEAT SINKS VENTED OUT THE BACK. REFER TO DRAWINGS FOR FURTHER DETAILS.
7. THE REAR SUNSHIELD SHALL HAVE A REMOVABLE COVER WITH HANDLES TO ALLOW ACCESS TO THE VFD HEAT SINKS FOR CLEANING AND MAINTENANCE. THE HEAT SHIELD WILL HAVE STUDS WITH WING NUTS FOR ATTACHING THE REMOVABLE COVER.
8. SEAL LEAK/OVERTEMP RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS.
9. REFER TO "433 RADIO AND ANTENNA POLE/TOWER SELECTION".
10. ENSURE GOOD ELECTRICAL CONTACT BETWEEN BACK PANEL AND ALL MECHANICAL GROUND CONNECTIONS.
11. REFER TO NOTES AND DETAILS ON ALL DRAWING SHEETS FOR MORE MANUFACTURING DETAILS.
12. THE SURGE PROTECTION DEVICE (SPD) IS TO BE SHIPPED LOOSE FOR MOUNTING AT THE DISCONNECT IN THE FIELD. THE CORRECT SPD MUST BE SELECTED BASED ON THE SERVICE VOLTAGE: 240V DELTA HI-LEG OR 480V WYE.
13. ALL FIELD WIRING SHALL BE #12 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
14. ALL CONTROL WIRING SHALL BE #18 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
15. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES. APPLY DIELECTRIC GREASE TO THE ENDS TO PREVENT CORROSION.
16. ALL MOUNTING SCREWS SHALL BE STAINLESS STEEL, DRILLED AND TAPPED (NO SELF-TAPPING SCREWS ARE ALLOWED).
17. PANEL MUST MEET UL508A CONTROL PANEL WITH UL 508A LABEL
18. PANEL MUST MEET UL698A INTRINSICALLY SAFE PANEL WITH UL698A LABEL
19. THIS DRAWING IS FOR 240VAC SERVICE. THE TAPS ON THE TRANSFORMER MUST BE CONNECTED FOR 240VAC.
20. ALL TERMINALS, RELAYS, SURGE SUPPRESSORS, BREAKERS, AND OTHER DEVICES MUST BE LABELED.
21. INSTALL PLUGGABLE JUMPERS ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
22. USE 6MM FERRULES FOR WIRES TERMINATING AT PLC.
23. ALL WIRES TERMINATING AT PLC RACK MUST BE ROUTED THROUGH WIREWAY FROM BELOW.
24. ALL ANALOG SIGNAL WIRING SHALL BE SHIELDED CABLE WITH THE SHIELD GROUNDED ONLY AT ONE POINT.
25. THIS DRAWING IS FOR A DUPLEX PUMP STATION. TRIPLEX PUMP STATIONS REQUIRE MORE PUMP CONTROLS.

TABLE OF CONTENTS:

DRAWING LAYER COLOR LEGEND:

GREY	-	NOTES
BLACK	-	ELECTRICAL SCHEMATIC WIRING DIAGRAMS AND DEVICES
BLUE	-	PART IDENTIFICATION
PURPLE	-	WIRE NUMBERS
GREEN	-	FIELD DEVICES AND WIRING OUTSIDE ENCLOSURE (DASHED)
RED	-	FUTURE DEVICES AND WIRING
TEAL	-	DIMENSIONS

CONTROL WIRE UL508A COLOR:

RED	-	120 VAC
WHITE	-	NEUTRAL
BLUE	-	+24 VDC
WHITE / BLUE STRIPE	-	0 VDC

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

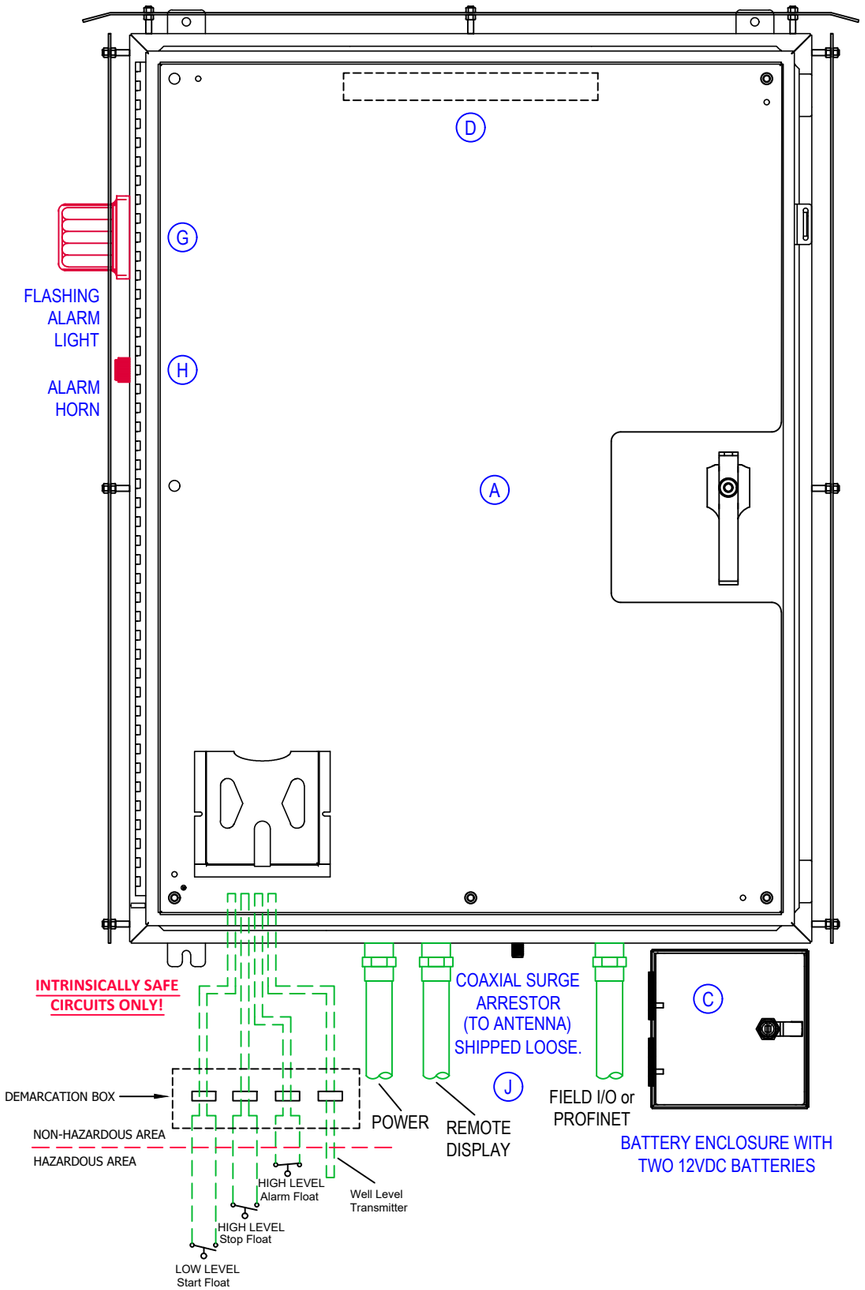
SHEET TITLE: GENERAL NOTES

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 1 OF 17

FRONT VIEW



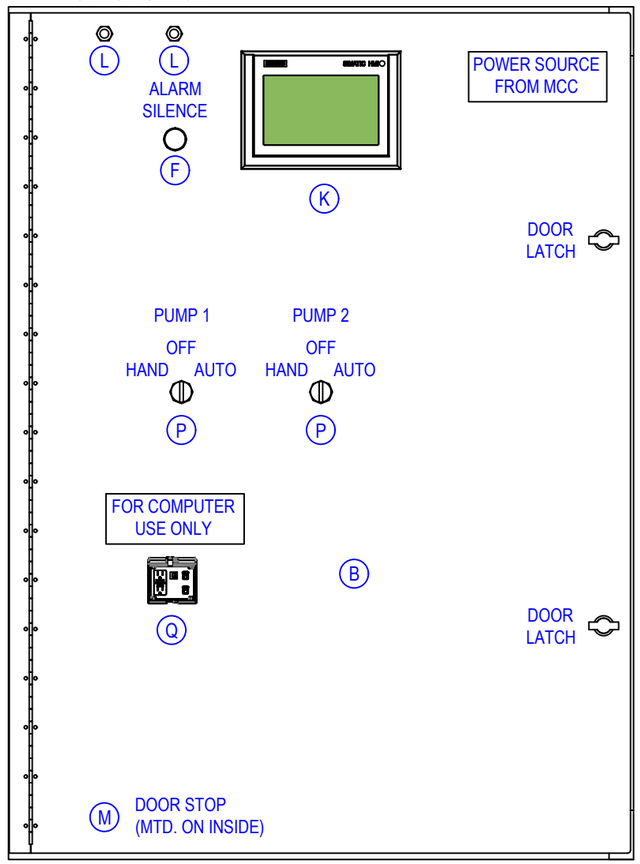
BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	SCHAEFER	CUSTOM ENCLOSURE	SEE THIS SHEET FOR DETAILS
B	1	OEM	CUSTOM INNER DOORS	SEE THIS SHEET FOR DETAILS
C	1	SCHAEFER	SPN1AL-888-JEA	BATTERY ENCLOSURE, .125 ALUMINUM
	2	POWER SONIC	PS-12180 F2	BATTERY, LEAD-ACID, 12VDC, 18Ah
D	1	RITTAL	4140820	13" 20 LED LIGHT 24VDC
E	--	--	--	--
F	1	SIEMENS	52PX8A1K / 52BAK	MOMENTARY PUSHBUTTON, 30mm, FLUSH
G	1	INGRAM PRODUCTS	LX40F	ALARM LIGHT W/ FLASHER, 120VAC, RED
H	1	INGRAM PRODUCTS	PW120AR	ALARM HORN, ELECTRONIC, 120VAC, RED
I	--	--	--	--
J	1	TIMES-PROTECT	LP-STR-NFF	COAXIAL SURGE ARRESTOR (ANTENNA)
K	1	SIEMENS	6AV2 124-0GC01-0AX0	OPERATOR PANEL, TP700 COMFORT DISPLAY
	1	SIEMENS	6AV2 181-8XP00-0AX0	HMI MEMORY CARD, 2GB
L	1	OMRON	6X283	SNAP ACTION SWITCH (DOOR AJAR)
	1	ALLIED	642-2137	ACTUATOR FOR SWITCH
M	2	SCHAEFER	SP-DSTOPK-SS-SW	INNER/OUTER DOOR STOP KIT, SS
N	--	--	--	--
O	--	--	--	--
P	2	SIEMENS	52SX2BAB	3 POSITION MAINTAINED SWITCH, 30mm
	8	SIEMENS	52BJK	CONTACT BLOCK, 1NO-1NC
Q	1	MENCOM	LP3-GF-2RJ45-R	GFCI RECPT W/ RJ45, 3A

CUSTOM ENCLOSURE:
SPN12AL-483610 (48"H x 36"W x 10"D) NEMA 12/3R RATED, FABRICATED FROM .125 MARINE GRADE ALUMINUM WITH WHITE POLYESTER POWDER COAT FINISH INSIDE AND OUT. OUTER DOORS ARE FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOPS.

HEAT SHIELDS FABRICATED FROM .125 MARINE GRADE ALUMINUM SHALL BE INSTALLED ON FRONT, BACK, TOP, AND SIDES. HOLES SHALL BE CUT IN SHIELD FOR ALARM LIGHT AND HORN. HEAT SHIELDS SHALL ALSO HAVE WHITE POLYESTER POWDER COAT FINISH ON ALL SIDES.

INNER DOOR VIEW



HINGED INNER DOORS:
FABRICATED FROM .125 ALUMINUM WITH CONTINUOUS HINGE, TWIST LATCHES, AND DOOR STOP MOUNTED ON INSIDE OF EACH.

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

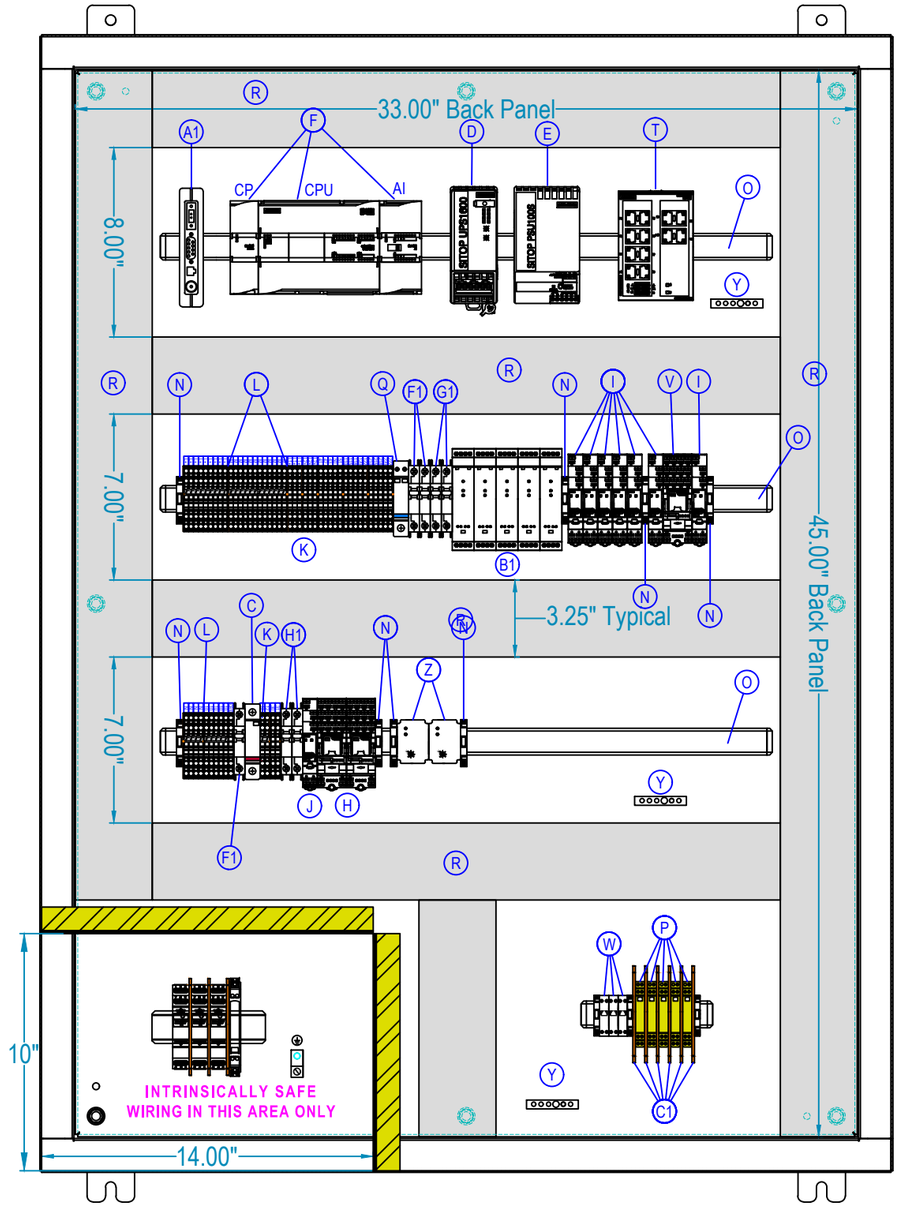
DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE: SCADA RTU - FRONT VIEW

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No:	SHEET	OF
12345678	2	17

BACK PANEL LAYOUT



BACK PANEL:
45" H x 33" W. FABRICATED FROM 12ga. CARBON STEEL WITH WHITE INDUSTRIAL GRADE ENAMEL FINISH.

BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	SCHAEFER	SPP-4836	BACK PANEL, CARBON STEEL, WHITE
B	--	--	--	--
C	1	CITEL	DS41S-120	120VAC SURGE SUPPRESSOR, BASE
D	1	SIEMENS	6AG113-43AB00-7AY2	SIPLUS PS UPS1600, 10A, PROFINET
E	1	SIEMENS	6AG133-42BA20-4AA0	SIPLUS PSU100S, 10A
F	1	SIEMENS	6AG1215-1AG40-4XB0	SIPLUS S7-1200, 1215C DC/DC/DC
	1	SIEMENS	6ES795-48LC04-0AA0	SIMATIC S7 SD CARD, 4MB
	1	SIEMENS	6AG123-14HF32-4XB0	SIPLUS S7-1200 SM 1231 8AI
	1	SIEMENS	6AG1241-1AH32-4XB0	COMMUNICATION MODULE, RS232, 9-PIN MALE
	-	SIEMENS	6ES7231-5PA30-0XB0	S7-1200 SB 1231, ANALOG INPUT, RTD
G	--	--	--	--
H	2	FINDER	58P481205060	RELAY, STATUS, SPRING, 4NO-NC, 120VAC
I	7	FINDER	4CP190245050	RELAY, STATUS, SPRING, SPDT, 24VDC
J	1	FINDER	4CP181205060	RELAY, STATUS, SPRING, SPDT, 120VAC
K	65	WAGO	2002-1401	TERMINAL, 2002, SPRING, GRAY
L	20	WAGO	2002-1492	TERMINAL END / PART. PLATE, ORANGE
M	20	WAGO	2002-400	ADJACENT JUMPER, 2-WAY CONTINUOUS
N	10	WAGO	249-116	TERMINAL END STOP, GRAY
O	1	WAGO	210-112	2M DIN RAIL, GALVANIZED, SLOTTED
P	5	CITEL	DLAW-24D3	ANALOG SURGE SUPPRESSOR, 24VDC
Q	1	CITEL	DS220S-24DC	24VDC SURGE SUPPRESSOR
R	4	PANDUIT	3" W X 3"H X 72" L	WIREWAY, HINGE COVER, WIDE FINGER
S	--	--	--	--
T	1	SIEMENS	6GK5112-0BA00-2AB2	SCALANCE XB112 ETHERNET SWITCH
U	--	--	--	--
V	1	FINDER	58P490245050	RELAY, STATUS, SPRING, 4NO-NC, 24VDC
W	3	PHOENIX	2313931	PROFINET SURGE PROTECTOR
X	--	--	--	--
Y	2	SIEMENS	ECGB5	EQUIPMENT GROUND BAR, 5-POINT
Z	2	MACROMATIC	TCP2G100	SEAL LEAK / OVERTEMP RELAY, 120VAC
A1	1	---	---	RADIO, SPREAD-SPECTRUM, UNLICENSED
	1	---	---	DIN RAIL MOUNT KIT
	1	---	---	RADIO ANTENNA CABLE
B1	5	PR ELECTRONICS	4114	ANALOG SIGNAL ISOLATOR
	5	PR ELECTRONICS	4501	DISPLAY UNIT
C1	5	WAGO	2002-1492	SEPARATOR, ORANGE
D1	3	SIEMENS	6GK1901-1BB10-2AA0	PROFINET CONNECTOR, SIPLUS
E1	2	SIEMENS	6XV1840-2AH10	PROFINET CABLE, FAST CONNECT
F1	3	SIEMENS	5SJ4110-7HG41	CB4, CB5, CB10, UL489, 1 POLE, 10A
G1	2	SIEMENS	5SJ4103-7HG40	CB6 and CB7, UL489, 1 POLE, 3A
H1	2	SIEMENS	5SJ4105-7HG40	CB11 and CB12, UL489, 1 POLE, 0.5A

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

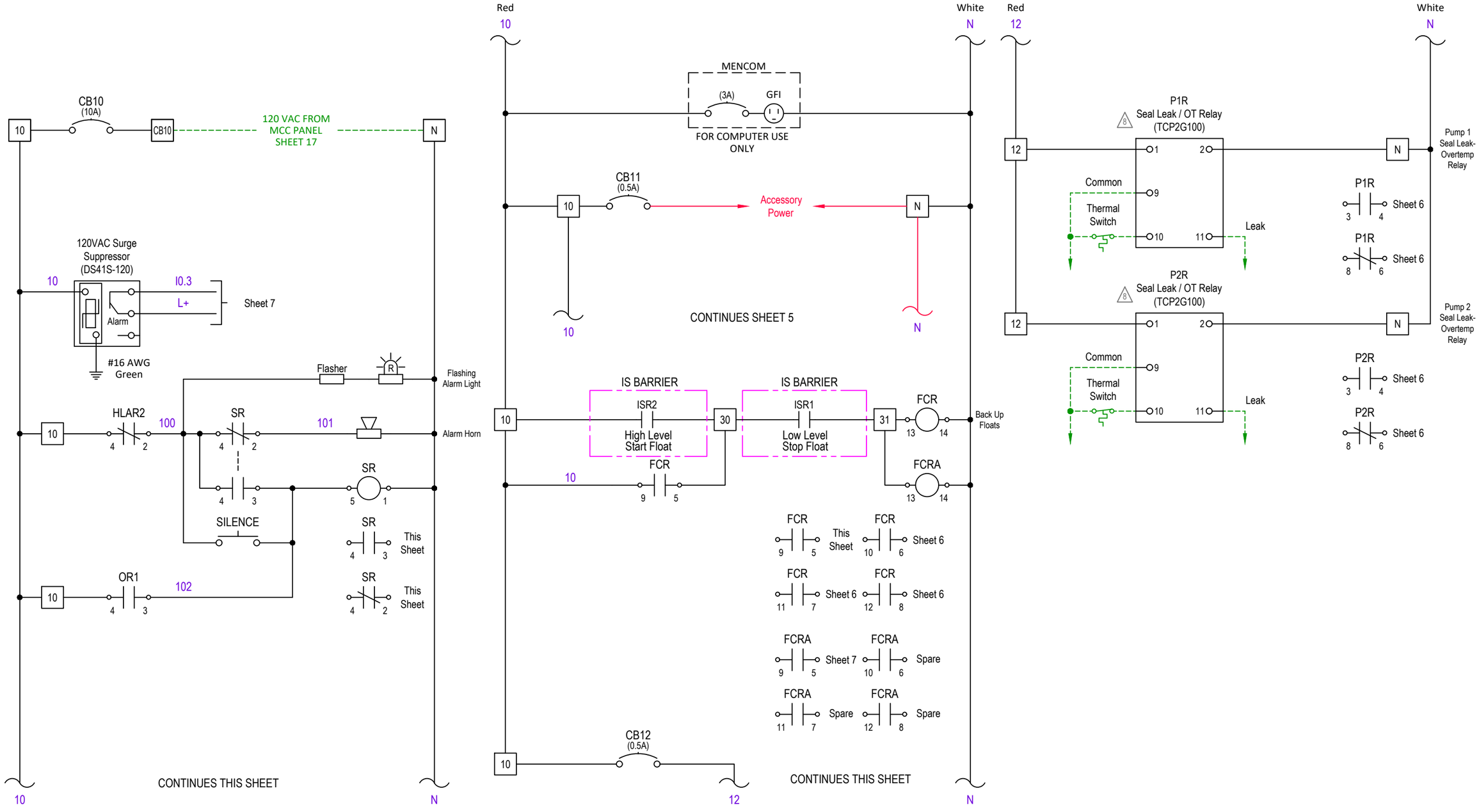
DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

SHEET TITLE: SCADA RTU - BACK PANEL LAYOUT

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 3 OF 17



NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

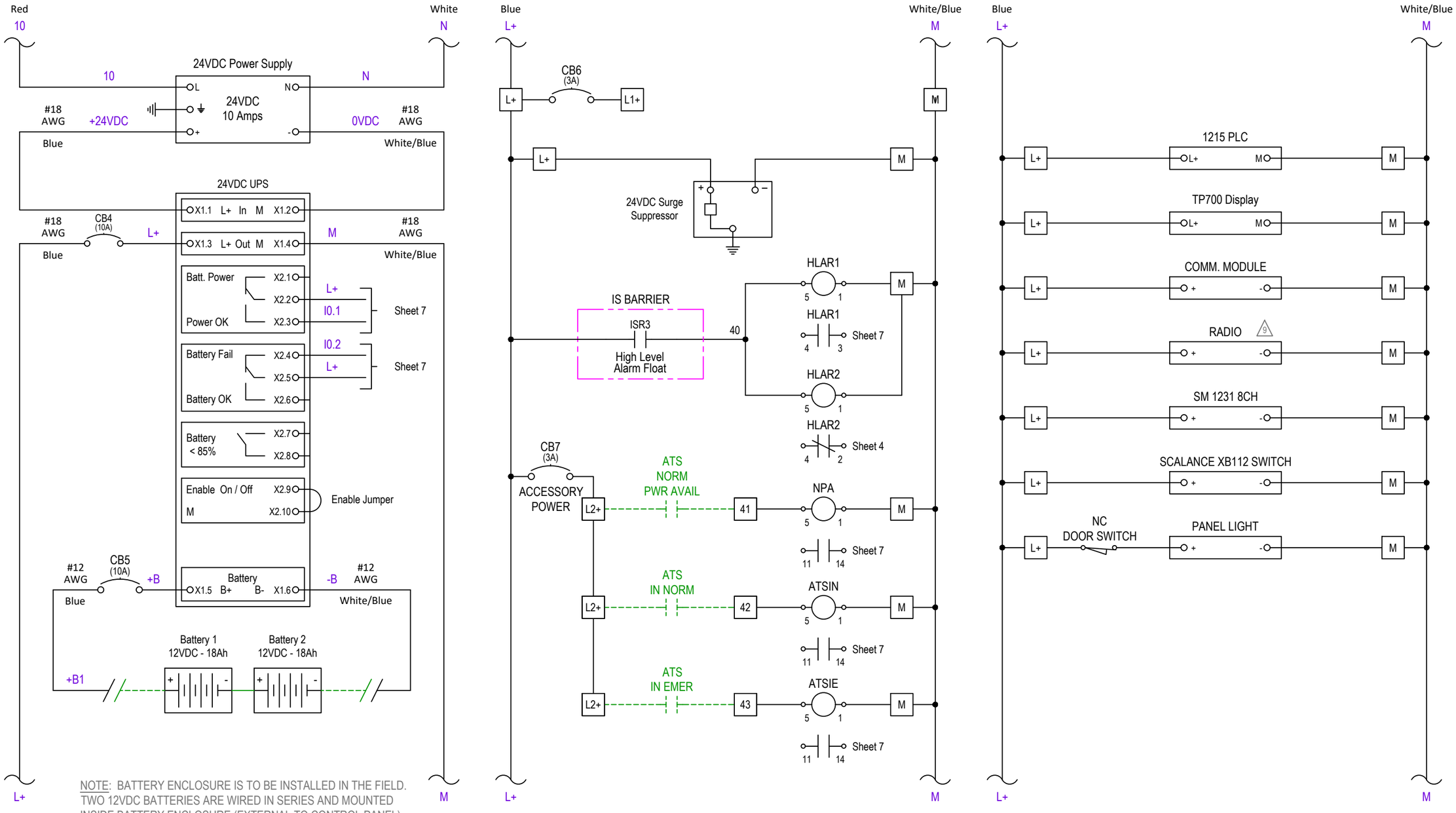
SHEET TITLE: SCADA RTU - 120 VAC VOLTAGE

PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 4 OF 17



NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

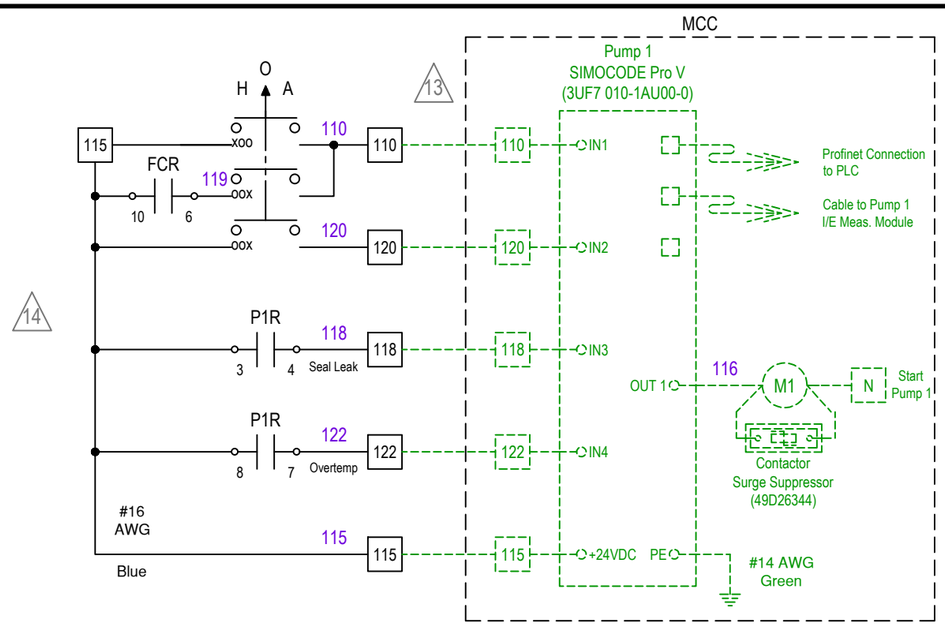
DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

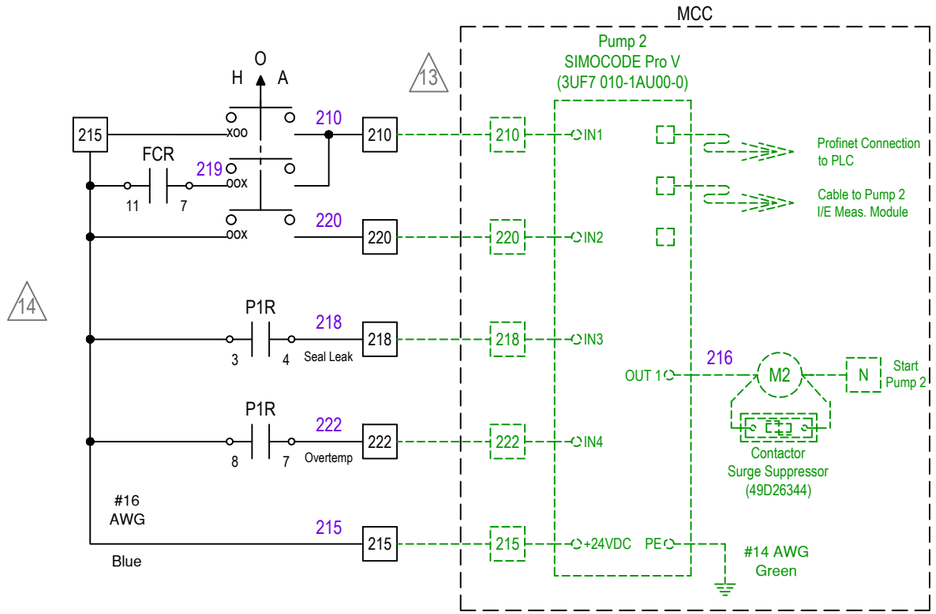
SHEET TITLE: SCADA RTU - 24 VDC VOLTAGE

PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 5 OF 17





NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

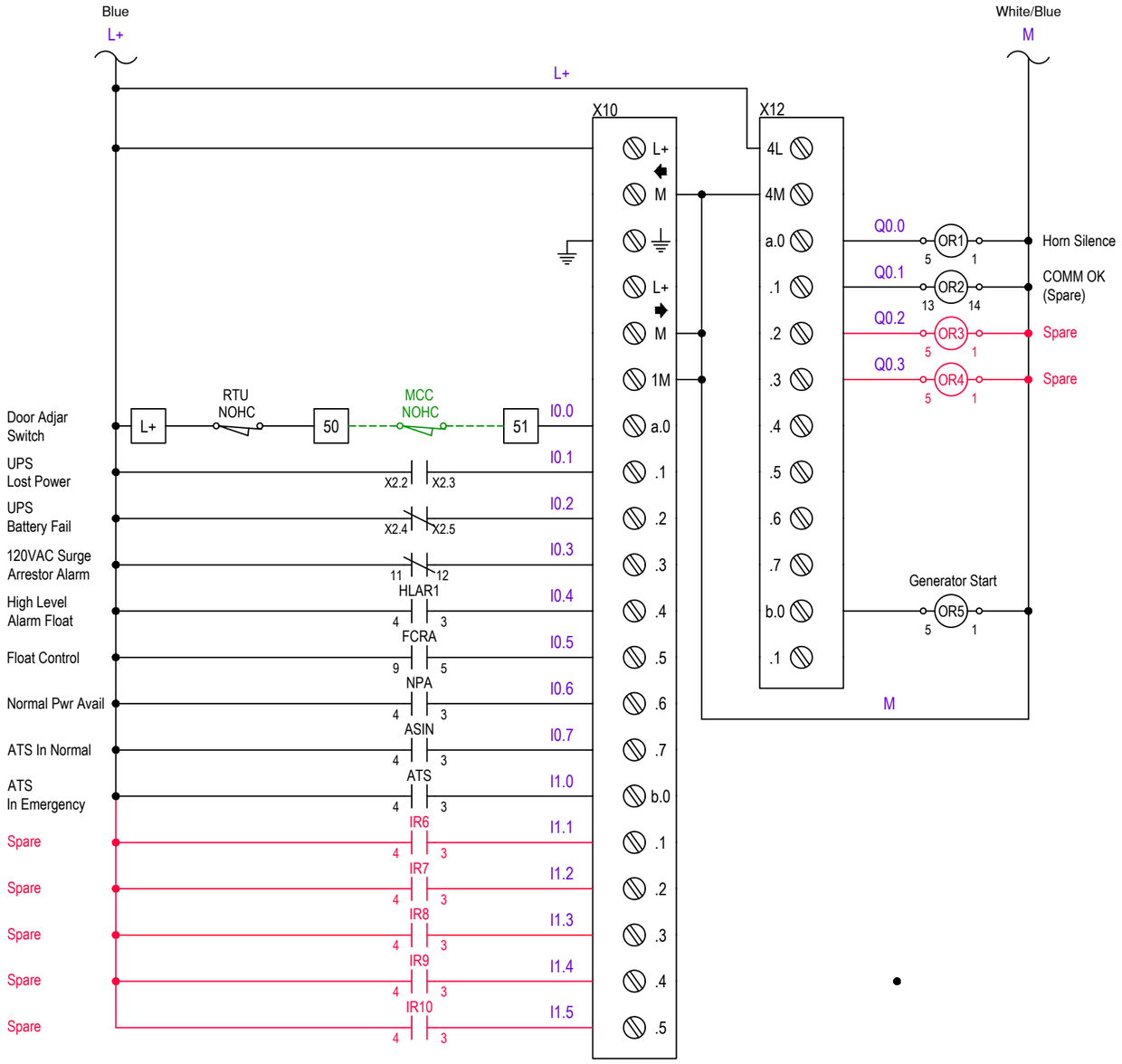
SHEET TITLE: SCADA RTU - SIMOCODE CONTROL WIRING

PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 6 OF 17

RACK: 0 SLOT: 1



6AG1 215-1AG40-4XB0	
14 Digital Input - 10 Digital Output	
L+	L+ = +24V
M	M = DC COM
GND	GND
L+	
M	M = DC COM
1M	1M = DC COM
a.0	Input 0.0
.1	Input 0.1
.2	Input 0.2
.3	Input 0.3
.4	Input 0.4
.5	Input 0.5
.6	Input 0.6
.7	Input 0.7
b.0	Input 1.0
.1	Input 1.1
.2	Input 1.2
.3	Input 1.3
.4	Input 1.4
.5	Input 1.5
4L	4L = +24V
4M	4M = DC COM
a.0	Output 0.0
.1	Output 0.1
.2	Output 0.2
.3	Output 0.3
.4	Output 0.4
.5	Output 0.5
.6	Output 0.6
.7	Output 0.7
b.0	Output 1.0
b.1	Output 1.1
2M	2M = DC COM
a.0	Output 0.0
.1	Output 0.1
3M	2M = DC COM
b.0	Input 0.0
b.1	Input 0.1

RACK: 0 SLOT: 1.3

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE: SCADA RTU - PLC DIGITAL I/O

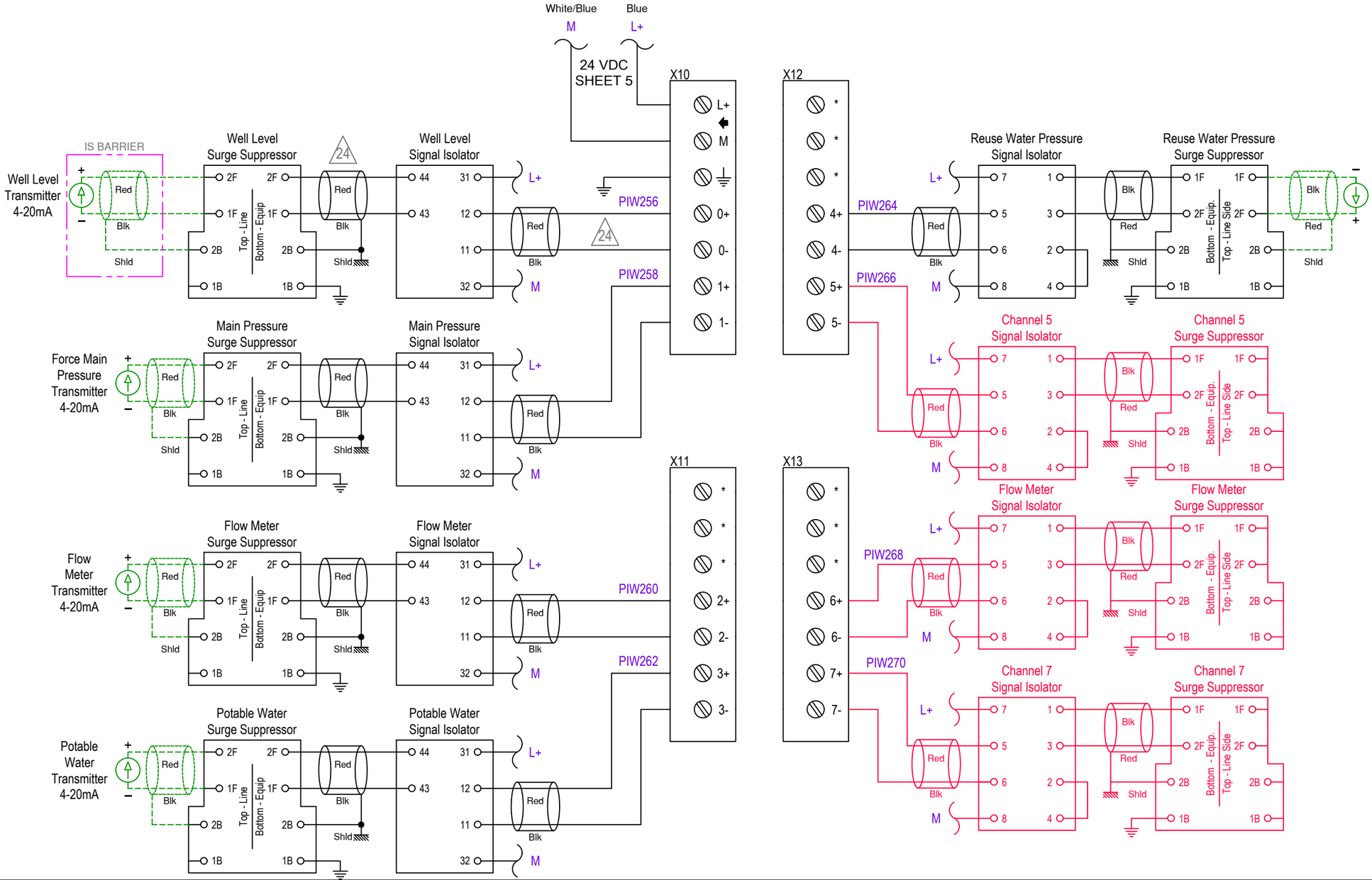
PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 7 OF 17

RACK: 0 SLOT: 2



6AG1 231-4HF32-4XB0	
8 Analog Input	
L+	L+ = +24V
M	M = DC COM
GND	GND
0+	CH0 + => PIW256
0-	CH0 -
1+	CH1 + => PIW258
1-	CH1 -
*	
*	
*	
2+	CH2 + => PIW260
2-	CH2 -
3+	CH3 + => PIW262
3-	CH3 -
*	
*	
*	
4+	CH4 + => PIW264
4-	CH4 -
5+	CH5 + => PIW266
5-	CH5 -
*	
*	
*	
6+	CH6 + => PIW268
6-	CH6 -
7+	CH7 + => PIW270
7-	CH7 -

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

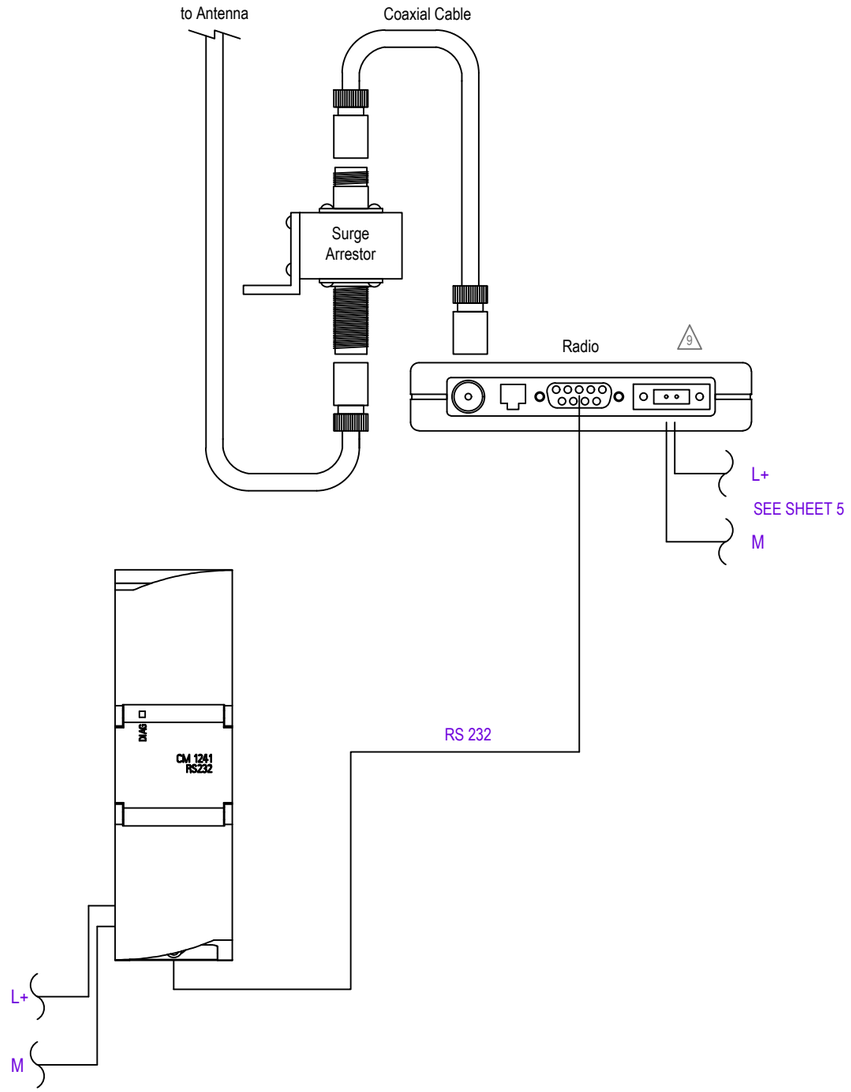
DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE:
SCADA RTU - PLC ANALOG INPUT

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

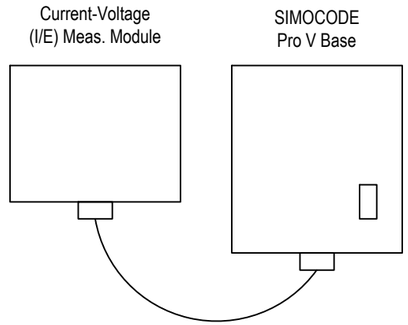
JOB No:	SHEET	OF
12345678	8	17

RACK: 0 SLOT: 101



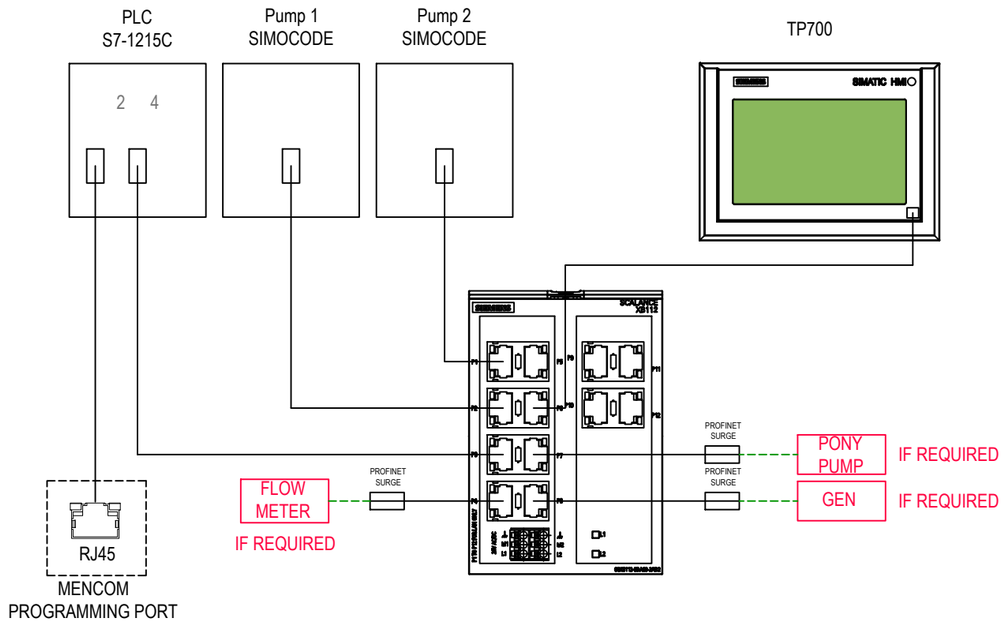
CP 1241	
	RS232 PIN OUT
1	GND
2	TXD- ->
3	RXD+ ->
4	--
5	--
6	--
7	--
8	--
	Power Connector
L+	+ 24VDC
M	DC Common

SIMOCODE Bus Connection Diagram



Notes
1. Typical for each pump.
2. Follow manufacturer's installation instructions.

Profinet Connection Diagram



NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

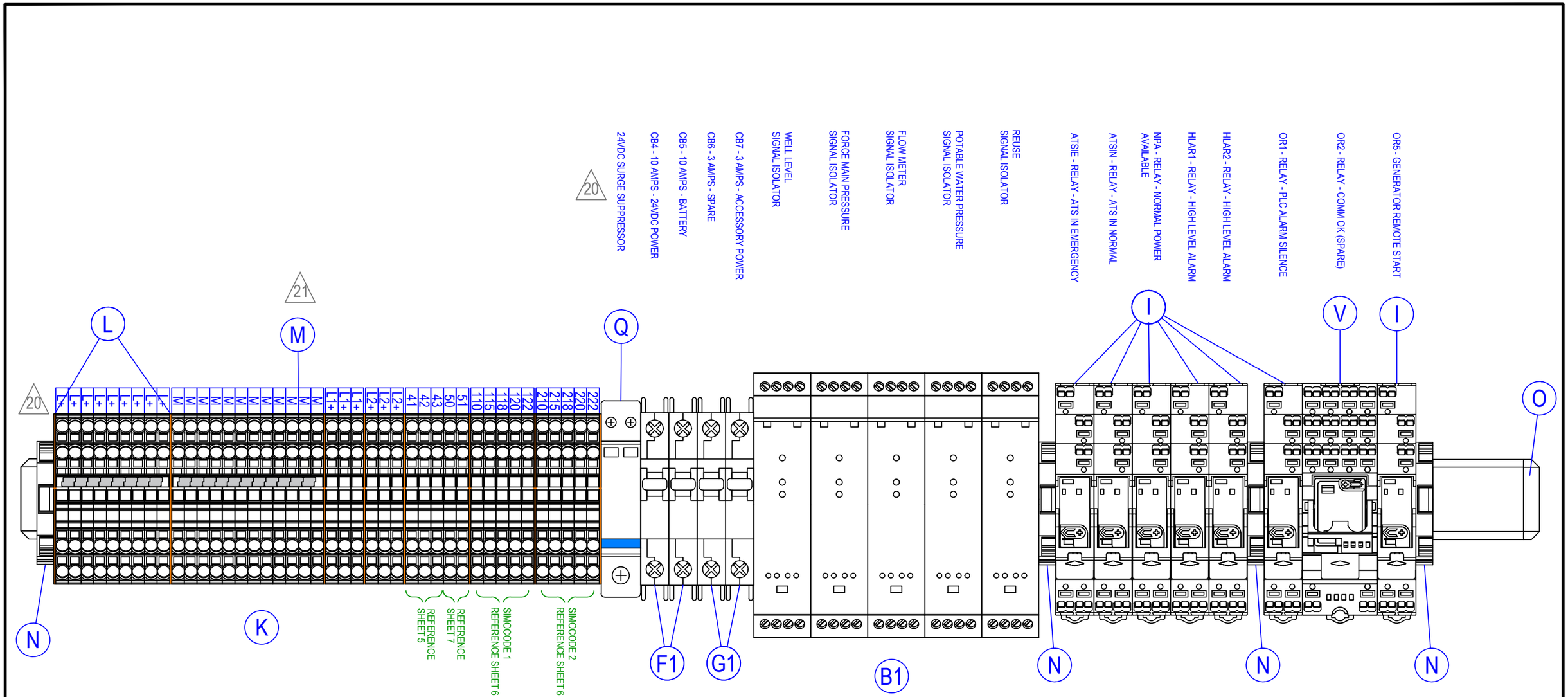
DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE:
SCADA RTU - PLC & RADIO CONNECTION

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 9 OF 17



NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

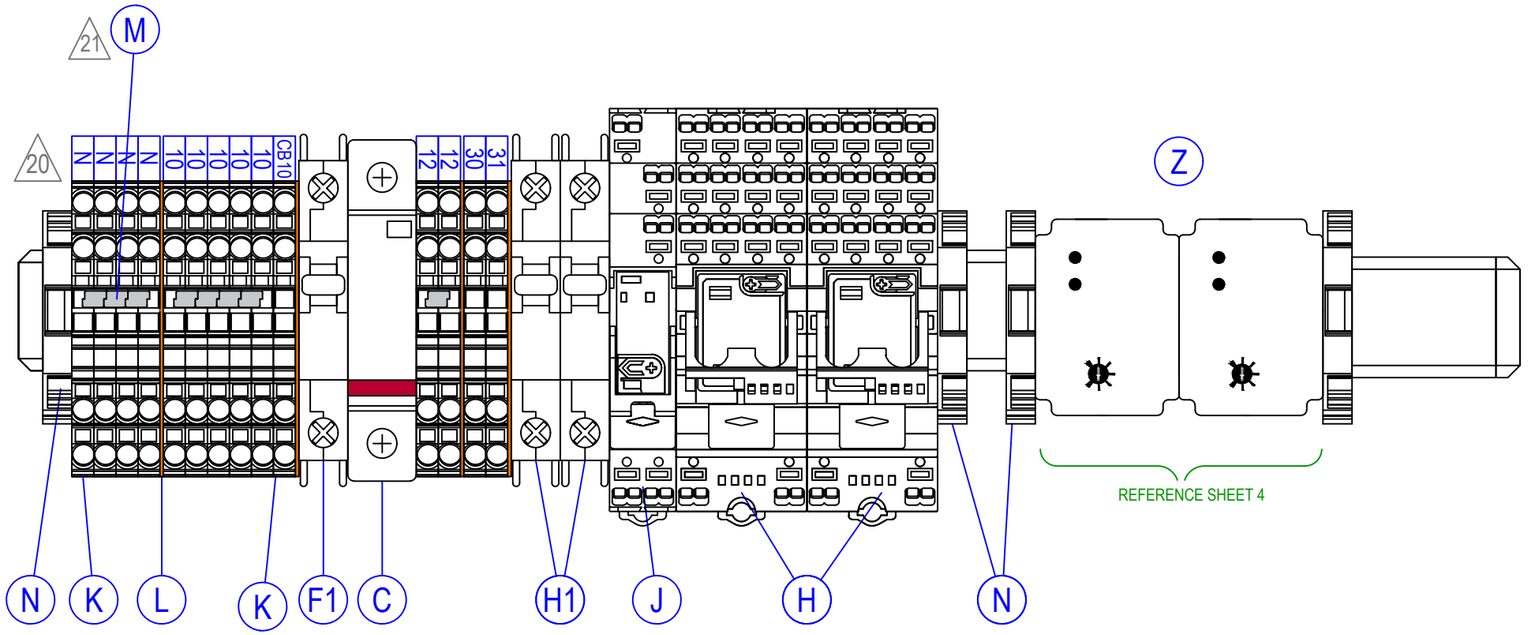
DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE:
CONTROL PANEL - 24 VDC TERMINAL BLOCK LAYOUT

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 10 OF 17



120VAC SURGE SUPPRESSOR

CB10 - 10 AMPS - CONTROL PANEL POWER

CB11 - 0.5 AMPS - ACCESSORY POWER

CB12 - 0.5 AMPS - FIELD DEVICES

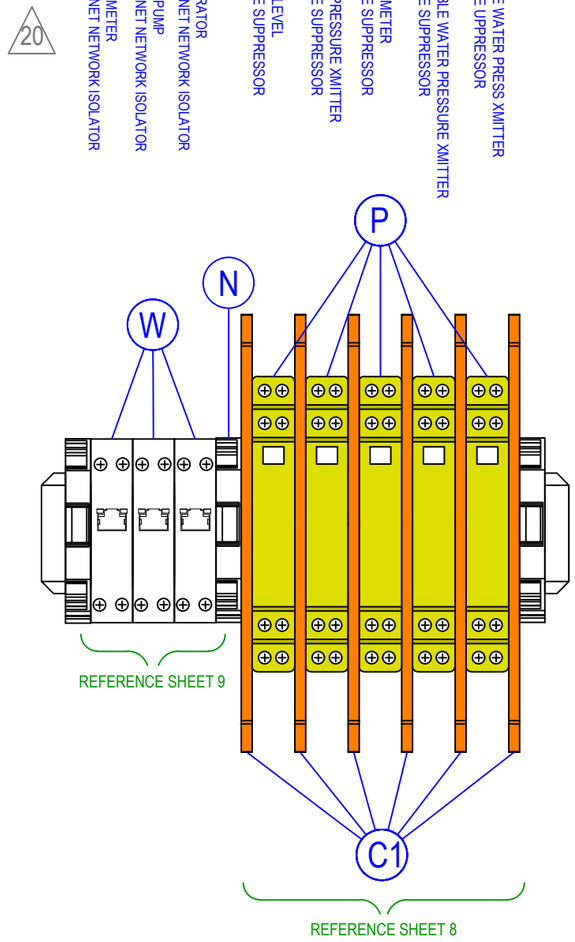
SR - RELAY - ALARM SILENCE

FCR - RELAY - FLOAT CONTROL

FCRA - RELAY - FLOAT CONTROL

P1R - PUMP 1

P2R - PUMP 2



REUSE WATER PRESS XMITTER SURGE UPPRESSOR

POTABLE WATER PRESSURE XMITTER SURGE SUPPRESSOR

FLOW METER SURGE SUPPRESSOR

MAIN PRESSURE XMITTER SURGE SUPPRESSOR

WELL LEVEL SURGE SUPPRESSOR

GENERATOR PROFINET NETWORK ISOLATOR

PONY PUMP PROFINET NETWORK ISOLATOR

FLOW METER PROFINET NETWORK ISOLATOR

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE: SCADA RTU - 120 VAC TERMINAL BLOCK LAYOUT

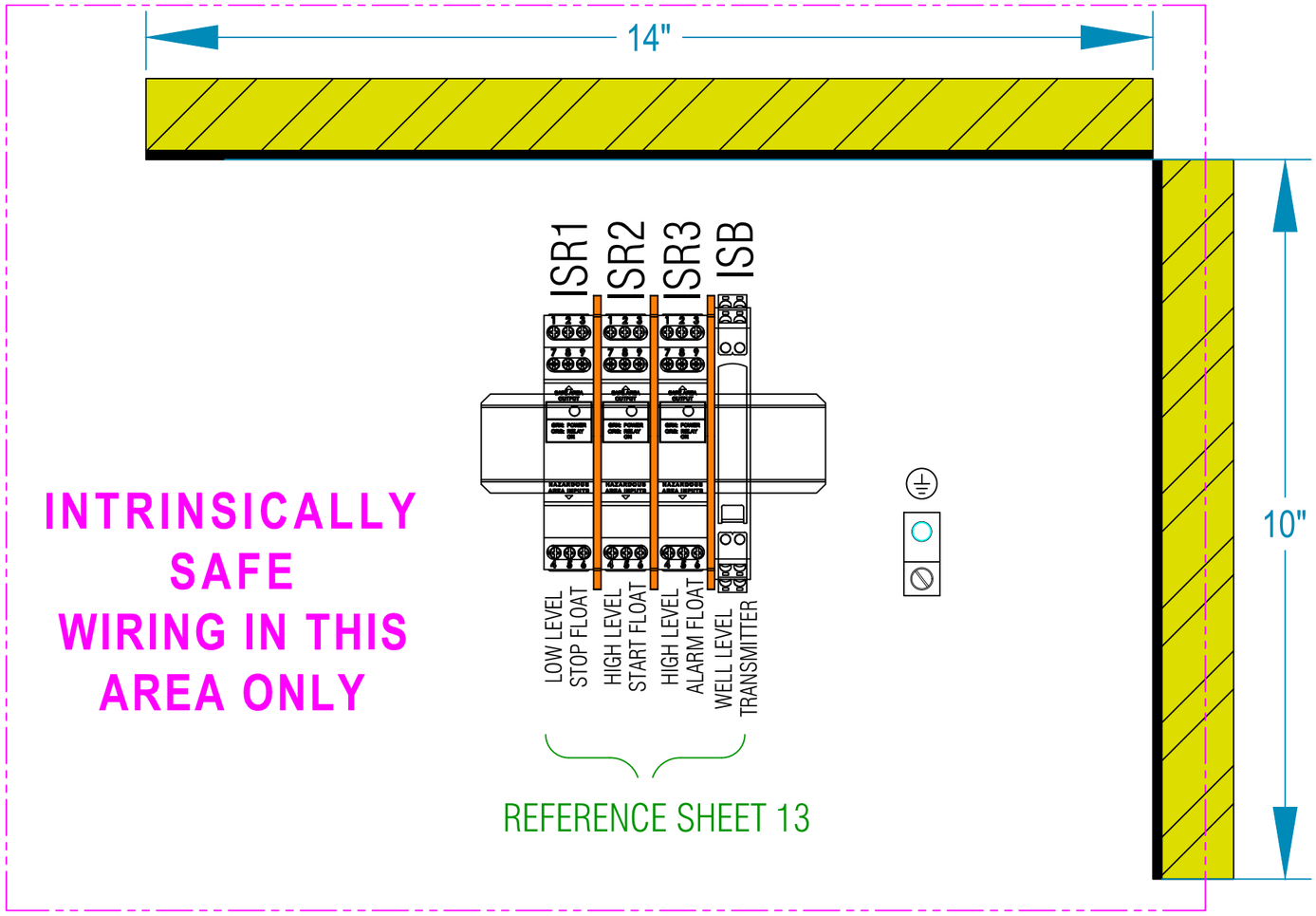
PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 11 OF 17

BACK PANEL LAYOUT



REFERENCE SHEET 13

BACK PANEL:

INSTALL PANEL IN CONTROL PANEL ENCLOSURE (48 X 36 X 12) LOWER LEFT CORNER. SEE SHEET 3

FABRICATED FROM 12ga. STEEL WITH WHITE POLYESTER POWDER COAT FINISH.

NOTES:

1. ☑ TERMINAL ON CONTROL CIRCUIT TERMINAL STRIP
2. ----- FIELD WIRING (EXTERNAL TO CONTROL PANEL)
3. ——— PANEL WIRING
4. SEAL ALL CONDUITS ENTERING CONTROL PANEL
5. CONTROL PANEL IS UL698A LABELED
6. INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE N.E.C.
7. MINIMUM #16 AWG WIRE AT 600V

CONTROL WIRE COLOR CODE:

120VAC POWER	BLACK	24VDC POSITIVE (+)	BLUE
120VAC CONTROL	RED	24VDC NEGATIVE (-)	WHITE / BLUE
120VAC NEUTRAL	WHITE	GROUND	GREEN

TORQUE TABLES:

GROUND TERMINALS			
RECOMMENDED TIGHTENING TORQUE			
MFG	PART#	WIRE SIZE	TORQUE - SCREWDRIVER
DISCONNECTS OF FLORIDA, INC.	DLA2	14-10AWG	35 lb.in.
		8AWG	40 lb.in.
		6-4AWG	45 lb.in.
		3-2AWG	50 lb.in.
Cutler-Hammer	GBK_ - Small Holes	14-10AWG	20 lb.in.
		8AWG	25 lb.in.
		6AWG	35 lb.in.
	GBK_ - Large Holes	14-10AWG	35 lb.in.
		8AWG	40 lb.in.
		6-4AWG	45 lb.in.
		3-1/0AWG	50 lb.in.

BILL OF MATERIALS				
ITEM	QTY	PART NUMBER	DESCRIPTION	MANUFACTURER
-	1	UL-698A-LBL	UL 698A Label, Hazardous Location	UL
C	3	ISEUR1	Intrinsically safe relay, 120VAC	Macromatic
E	1	MTL7787+	Intrinsically safe barrier, 4-20mA	Eaton
F	2	DLA2	Ground Lug	Disc of FL
G	0.25	210-112	Din Rail, 35mm, 2M	Wago

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

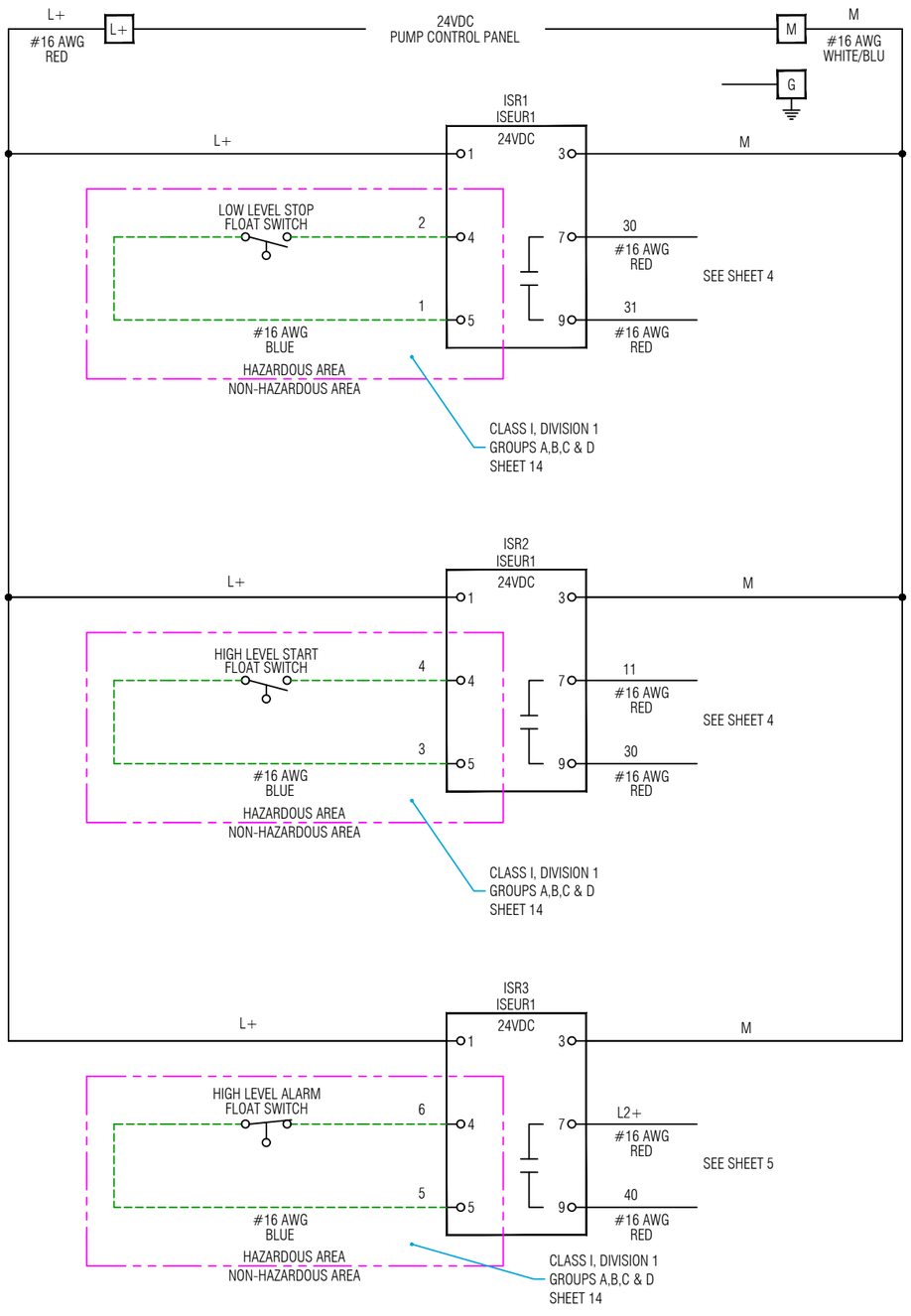
DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

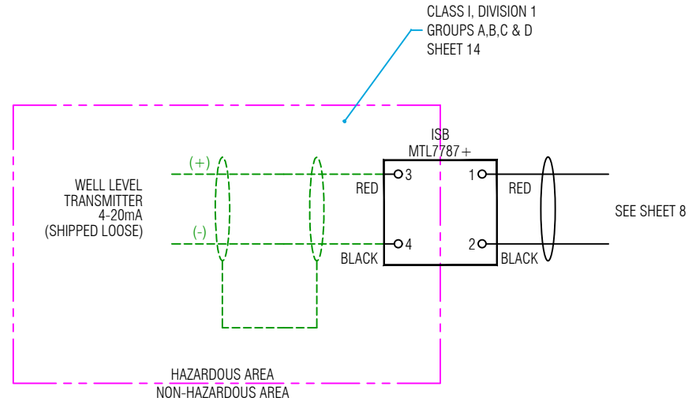
SHEET TITLE: SCADA RTU - INTRINSIC SAFETY DETAIL

PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 12 OF 17





NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE: SCADA RTU - INTRINSIC SAFETY WIRING

PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 13 OF 17

CONTROL DRAWING ISD2A01

ASSOCIATED APPARATUS / APPAREILLAGE CONNEXE

Revision A

Notes:

1. The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

2. This associated apparatus may be connected to simple apparatus as defined in Article 504.2 installed and temperature classified in accordance with Article 504.10(D) of the National Electrical Code (ANSI/NFPA 70), or other local codes as applicable.

3. Capacitance and inductance of the field wiring from the simple aparatus to the associated apparatus shall be calculated. Cable capacitance, Ccable, must be less than the marked capacitance, Ca (or Co), shown on the associated apparatus used. The same applies for inductance (Lcable, Li and La or Lo, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft., Lcable = 0.2 µH/ft.

4. If connected to intrinsically safe equipment, the equipment must be third party listed as intrinsically safe for the application, and have intrinsically safe entity parameters conforming with the below.

I.S. Equipment		Associated Apparatus
V max (or Ui)	≥	Voc (or Uo)
I max (or Ii)	≥	Isc (or Io)
P max, Pi Ci +	≥	Po
Ccable Li +	≥	Ca (or Co)
Lcable	≥	La (or Lo)

5. If connected to intrinsically safe equipment, capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and included in the system calculations as shown in Note 6.

6. Cable capacitance, Ccable, plus intrinsically safe equipment capacitance, Ci must be less than the marked capacitance, Ca (or Co), shown on any associated apparatus used. The same applies for inductance (Lcable, La (or Lo), respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft., Lcable = 0.2 µH/ft.

7. Associated apparatus must be installed in an enclosure suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code for installations in Canada, or other local codes, as applicable.

8. Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) or other local codes, as applicable.

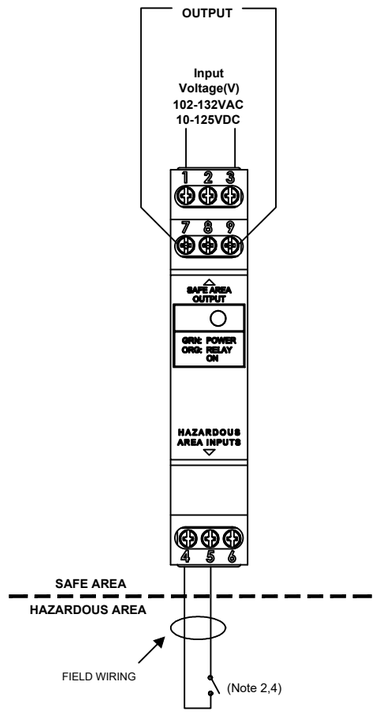
9. This associated apparatus has not been evaluated for use in combination with another associated apparatus.

10. If connected to intrinsically safe equipment, installations in which both the Ci and Li of the intrinsically safe equipment exceed 1% of the Ca (or Co) and La (or Lo) parameters of the associated apparatus (excluding the cable), then 50% of Ca (or Co) and La (or Lo) parameters are applicable and shall not be exceeded. The reduced capacitance shall not be greater than 1 µF for Groups C and/or D, and 600 nF for Groups A and B. The values of Ca (or Co) and La (or Lo) determined by this method shall not be exceeded by the sum of all of Ci plus cable capacitances and the sum of all of the Li plus cable inductances.

11. All channels comprise a single intrinsically safe circuit.

WARNING!
SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT!
LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

ISE, MBE SERIES



Approvals:

Class I; Division I; Groups A,B,C,D
Class II; Division I; Groups E,F,G
Class III
Zone 0; [Ex ia] IIC Ga
Zone 20; [Ex ia] IIIC Da

Ratings:

Input Voltage(V): 102-132VAC 10-125VDC

Temperature(Ta): -28°C≤Ta≤60°C (Max. 3 A)
-28°C≤Ta≤40°C (Max. 5 A)

Maximum Voltage(Um): 132VAC

Contacts Ratings (terminals 7,9):
-5A 125VAC/30VDC (Max. Ta 40°C)
-3A 125VAC/30VDC (Max. Ta 60°C)
-D300 Pilot Duty (Max. Ta 60°C)

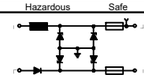
Entity Parameters(terminals 4-5):

Voc(Uo)	10.29 V
Isc(Io)	18.05 mA
Po	46.44 mW
Ca(Co)	2.63 uF
La(Lo)	109.10 mH

DRAFT 01 February 2018

SPECIFICATIONS

'Key' barriers shown in blue — **For notes 1 to 7 see 'Terminology' (later in this section)**

Model No.	Safety description1			Polarities 2 available			Application	Basic circuit	Max. end-3 to-end resistance	Vwkg at 4 10µA or (1µA)	5 Vmax	Fuse6 rating
MTL	V	Ω	mA	+	–	ac		Hazardous Safe	Ω	V	V	mA
7787+/-	28	300	93	✓	✓		Transmitters Controller outputs, switches		333	26.6	27.2	50
	28	diode	—						0.9V+21Ω	26.6	27.2	50
7787P+	28	234	119	✓					253	26.4	27.2	80
	28	diode	—						0.9V+21Ω	26.4	27.2	80

a Terminals 3 & 7 connected together. Diagrams show positive versions. All diodes reversed on negative versions. Additional diodes fitted on ac versions.

DRAFT 01 February 2018

MTL7700 RANGE BARRIER APPLICATIONS

MTL7700 range barriers protect devices located in all normally occurring explosive atmospheres, including air/flammable gas mixtures, dusts and fibres. Applications covered include the protection of installations incorporating uncertified devices ('simple apparatus') such as thermocouples, switches and resistive sensors, or separately certified 'energy storing' (or 'voltage producing') apparatus including ac sensors, transmitters and current-to-pneumatic (I/P) converters. Recommended choices for specific applications are discussed briefly in the following pages.

ANALOGUE INPUTS (HIGH LEVEL)

2-wire transmitters, 4/20mA, conventional and smart

The recommended barrier for use with 'conventional' and 'smart' 4/20mA transmitters (fed by a 26V regulated supply) is the MTL7787+. This provides up to 12.9V (14.6V for MTL7787P+) at Vwkg and 20mA for a transmitter and its lines as well as 5V for the typical 250Ω load. This application and this barrier is suitable for use with the optional power bus facility.

The MTL7706+ is recommended for applications where an unregulated supply of up to 35V is used. It provides 16.0V for conventional and Smart transmitters at 20mA, as well as 5V for a typical 250Ω load. With the MTL7706+ terminal 3 is negative with respect to earth, so the connections to terminals 3 and 4 should be reversed.

Vibration probes

The 3-wire transmitters used with vibration monitoring equipment are invariably supplied by a –24V dc power supply – hence the recommended barrier choice is the negatively-polarised MTL7796–.

ANALOGUE INPUTS (LOW-LEVEL)

Thermocouples and mV sources

The recommended barrier for thermocouples and mV sources is the MTL7760ac. This 2-channel non-polarised barrier retains the 'earth-free' nature of the signal and, providing the receiver's input 'floats', rejects common-mode ac and dc interference up to at least 7V and is unaffected by earth faults on the primary element.

AC sensors, photocells, microphones and turbine flowmeters

The MTL7760ac is the recommended choice for these devices. While many of these are designated 'simple apparatus' and thus do not need certification, note that some ac sensors may be subject to a significant level of inductance and will therefore need to be designed and certified for hazardous-area locations.

Slidewire displacement transducers

The simplest choice is the MTL7760ac. This barrier supplies power and brings back a unipolar signal.

Hazardous Area | Safe Area

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

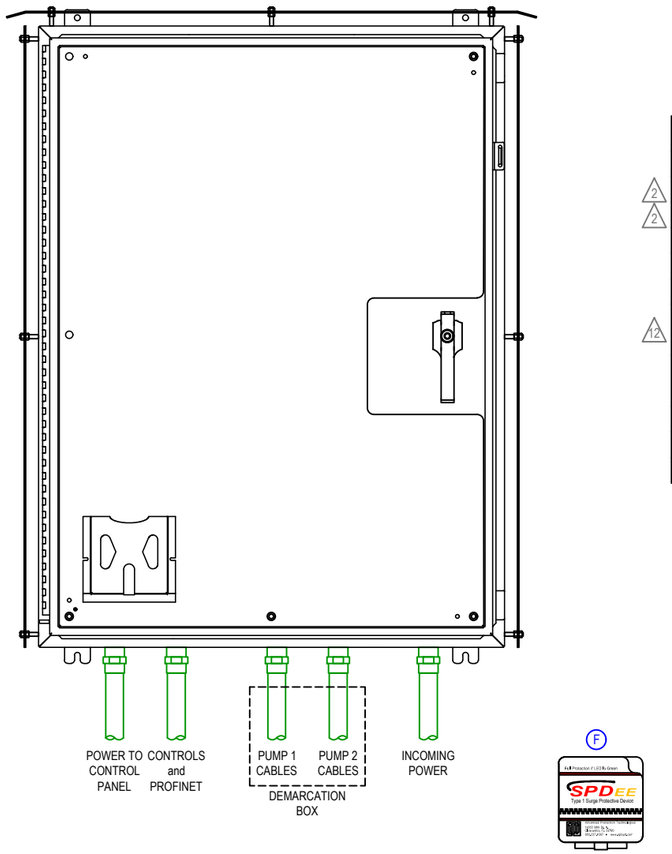
SHEET TITLE: SCADA RTU - INTRINSIC SAFETY NOTES

PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

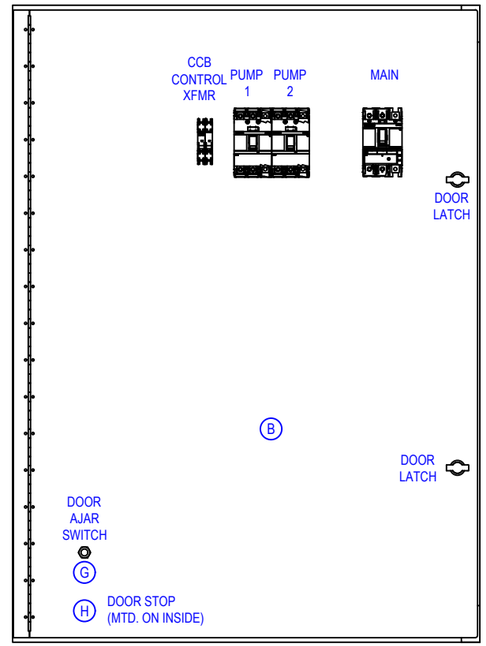
JOB No: 12345678

SHEET 14 OF 17

FRONT VIEW



INNER DOOR VIEW



BILL of MATERIAL

		QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
2	A	1	SCHAEFER	CUSTOM ENCLOSURE	SEE THIS SHEET FOR DETAILS
2	B	1	OEM	CUSTOM INNER DOORS	SEE THIS SHEET FOR DETAILS
	C	--	--	--	--
	D	--	--	--	--
	E	--	--	--	--
12	F	1	APT	S50A240V3H	SURGE PROTECTOR, 240V DELTA HI-LEG
			APT	S50A277V3Y	SURGE PROTECTOR, 480V WYE
	G	2	OMRON	6X283	SNAP ACTION SWITCH (DOOR AJAR)
		2	ALLIED	642-2137	ACTUATOR FOR SWITCH
	H	2	SCHAEFER	SP-DSTOPK-SS-SW	INNER/OUTER DOOR STOP KIT, SS
	I	--	--	--	--
	J	--	--	--	--

CUSTOM ENCLOSURE:
SPN12AL-483610 (48"H x 36"W x 10"D) NEMA 12/3R RATED, FABRICATED FROM .125 MARINE GRADE ALUMINUM WITH WHITE POLYESTER POWDER COAT FINISH INSIDE AND OUT. OUTER DOORS ARE FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOPS.

HEAT SHIELDS FABRICATED FROM .125 MARINE GRADE ALUMINUM SHALL BE INSTALLED ON FRONT, BACK, TOP, AND SIDES. HOLES SHALL BE CUT IN SHIELD FOR ALARM LIGHT AND HORN. HEAT SHIELDS SHALL ALSO HAVE WHITE POLYESTER POWDER COAT FINISH ON ALL SIDES.

HINGED INNER DOORS:
FABRICATED FROM .125 ALUMINUM WITH CONTINUOUS HINGE, TWIST LATCHES, AND DOOR STOP MOUNTED ON INSIDE OF EACH.

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

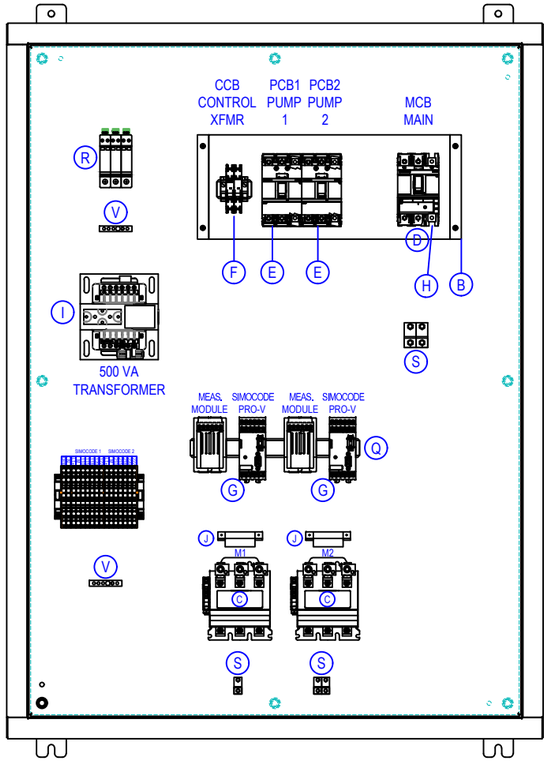
SHEET TITLE: MCC - FRONT PANEL VIEW

PROJECT:
--- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 15 OF 17

BACK PANEL LAYOUT

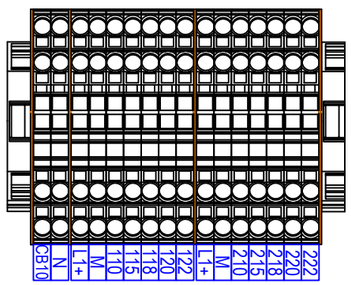


BACK PANEL:
45" H x 33" W. FABRICATED FROM 12ga. CARBON STEEL WITH WHITE INDUSTRIAL GRADE ENAMEL FINISH.

BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	SCHAEFER	SPP-4836	BACK PANEL, CARBON STEEL, WHITE
B	1	OEM	BREAKER MOUNT	TO RAISE CBs FLUSH WITH INNER DOOR
C	2	SIEMENS	40HP32A	FVNR CONTACTOR, 3 POLE, NEMA 3
D	1	SIEMENS	3VA5220-5ED31-0AA0	MCB, 3P, 200A
E	2	SIEMENS	3VA5120-5ED31-0AA0	PCB1 AND PCB2, 3P, 20A
F	1	SIEMENS	5SJ4206-7HG41	CCB, 2P, 6A, 240V
		SIEMENS	5SJ4203-7HG42	CCB, 2P, 3A, 480V
G	2	SIEMENS	3UF7 011-1AU00-0	SIMOCODE PRO V BASE UNIT, PN, 120VAC
	2	SIEMENS	3UF7 112-1AA01-0	SIMOCODE PRO I/E MEAS. MODULE (100A)
	2	SIEMENS	3UF7 935-0AA00-0	SIMOCODE CABLE, 0.3M
H	1	SIEMENS	3TA6FG04	POWER DISTRIBUTION LUGS, KIT OF 3
I	1	SIEMENS	MT0500A	CONTROL TRANSFORMER, 500VA
J	2	SIEMENS	49D26344	CONTACTOR SURGE SUPPRESSOR
K	--	--	--	--
L	--	--	--	--
M	16	WAGO	2002-1401	TERMINAL, 2002, SPRING, GRAY
N	5	WAGO	2002-1492	TERMINAL END / PART. PLATE, ORANGE
O	-	WAGO	2002-400	ADJACENT JUMPER, 2-WAY CONTINUOUS
P	10	WAGO	249-116	TERMINAL END STOP, GRAY
Q	1	WAGO	210-112	2M DIN RAIL, GALVANIZED, SLOTTED
R	1	CITEL	DS43S-400	PRIMARY SPD, TYPE 1, 240V DELTA HI-LEG
		CITEL	DS43S-480	PRIMARY SPD, TYPE 1, 480V WYE
S	9	PANDUIT	LAMA2-14-QY	GROUND LUG, DUAL-RATED, #2-14AWG
T	--	--	--	--
U	-	PANDUIT	1.5"W x 3"H x 72"L	WIREWAY, HINGE COVER, WIDE FINGER
V	2	SIEMENS	ECGB5	EQUIPMENT GROUND BAR, 5-POINT
W	--	--	--	--
X	3	SIEMENS	6GK1901-1BB10-2AA0	PROFINET CONNECTOR, SIPLUS
Y	2	SIEMENS	6XV1840-2AH10	PROFINET CABLE, FAST CONNECT
Z	--	--	--	--

TERMINAL STRIP DETAIL



REFERENCE SHEET 6

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

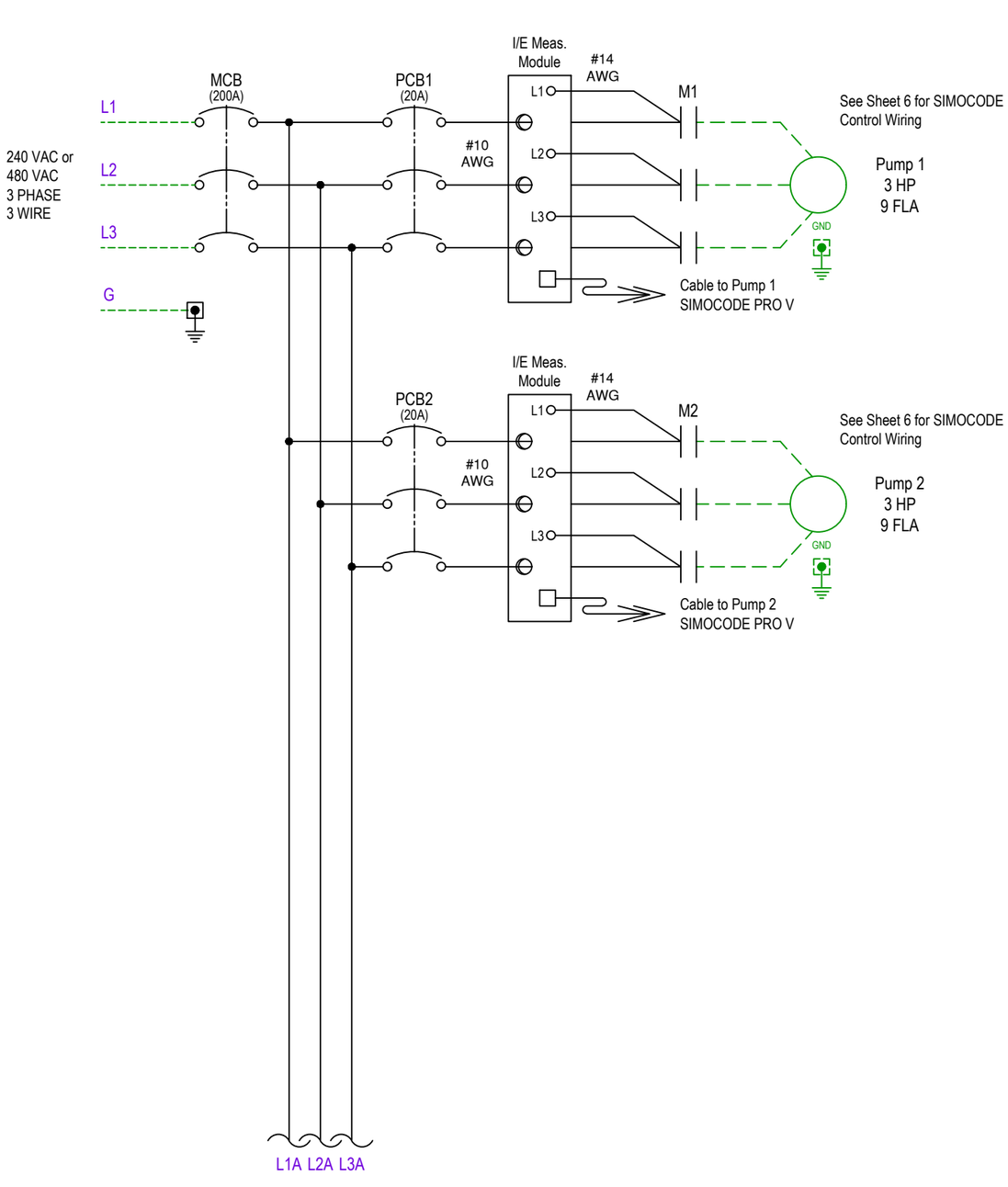
MANUFACTURER
ADDRESS1
ADDRESS2

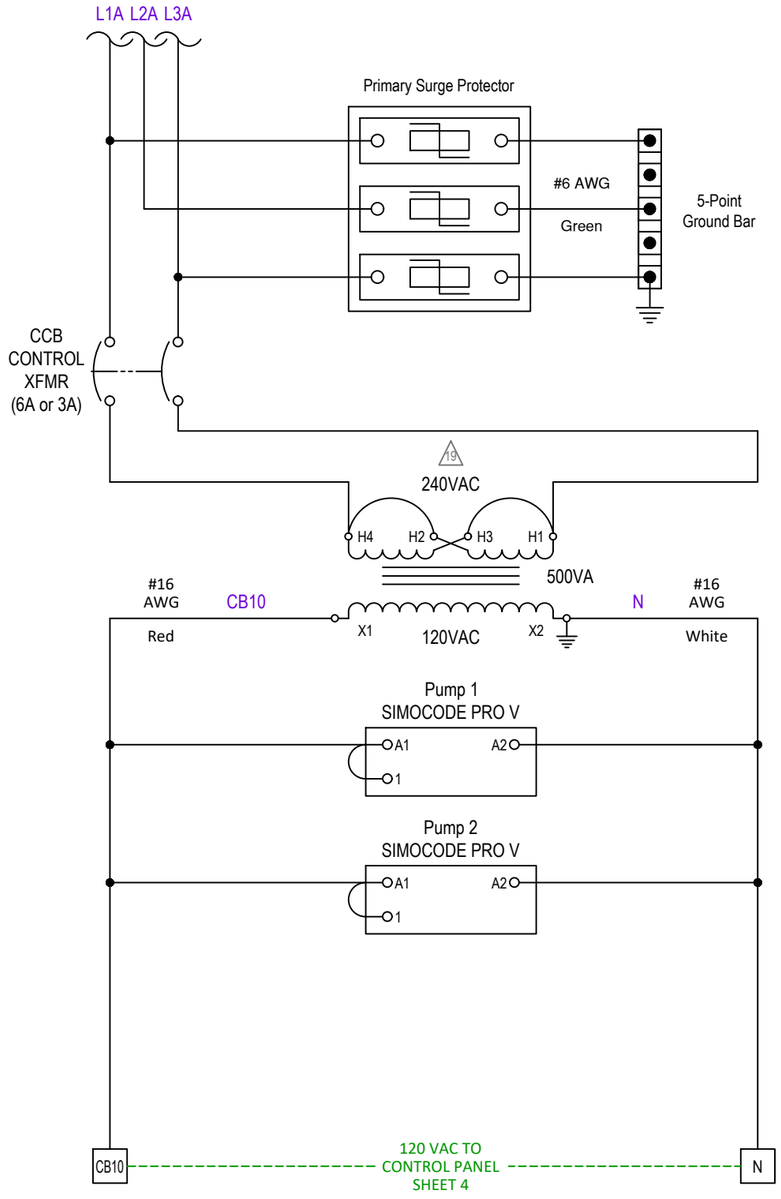
CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:
2025 STANDARD PACKAGE, REV. 0

SHEET TITLE: MCC - BACK PANEL LAYOUT
PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM
JOB No: 12345678
SHEET 16 OF 17





NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2025 STANDARD PACKAGE, REV. 0	

SHEET TITLE: MCC - PANEL MAIN VAC VOLTAGE

PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 17 OF 17