INSTRUCTIONS:

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

2. RETURN COMPLETED SHOP DRAWINGS AS PDF FILE TO ARISS FAJARDO AT FAJAAJ@JEA.COM FOR APPROVAL.

3. PLEASE CONTACT ARISS FAJARDO FOR QUESTIONS OR ADDITIONAL INFORMATION.

4. DO NOT PRINT THIS SHEET IN SUBMITAL SET.

NO.	BY	DATE	REVISIONS
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1.	AJF	11/14/17	UPDATED BOM, ADDED NEW COMPONENTS

ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA Building Community sm

DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2017 STANDARD PACKAGE, REV. 1	

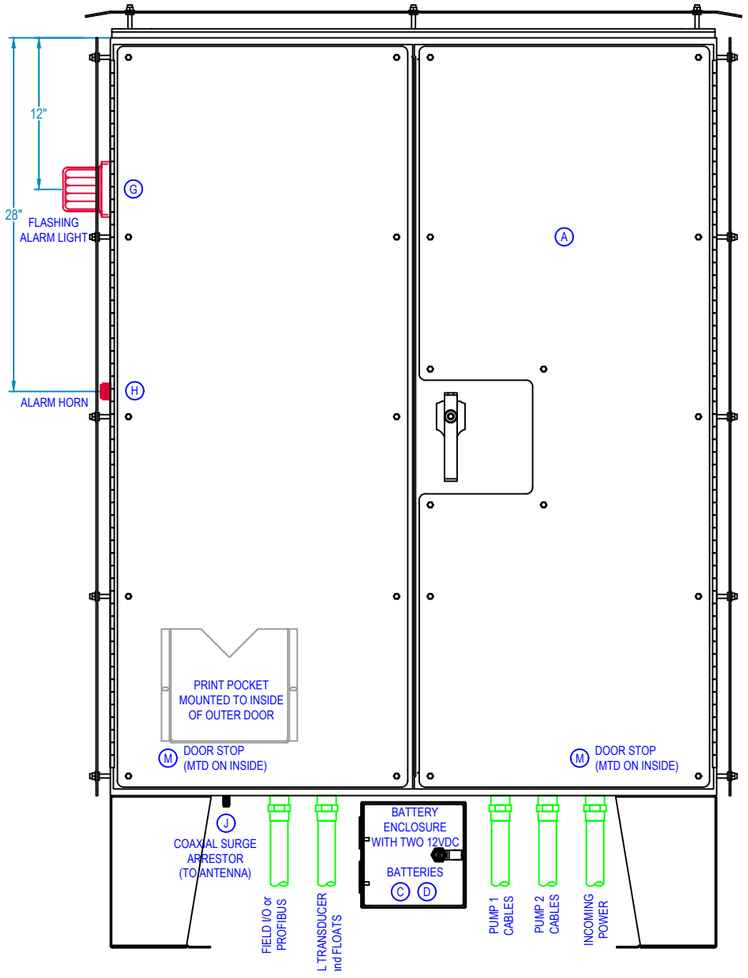
SHEET TITLE: INSTRUCTION SHEET

PROJECT: --- PROJECT NAME ---
1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 0 OF 10

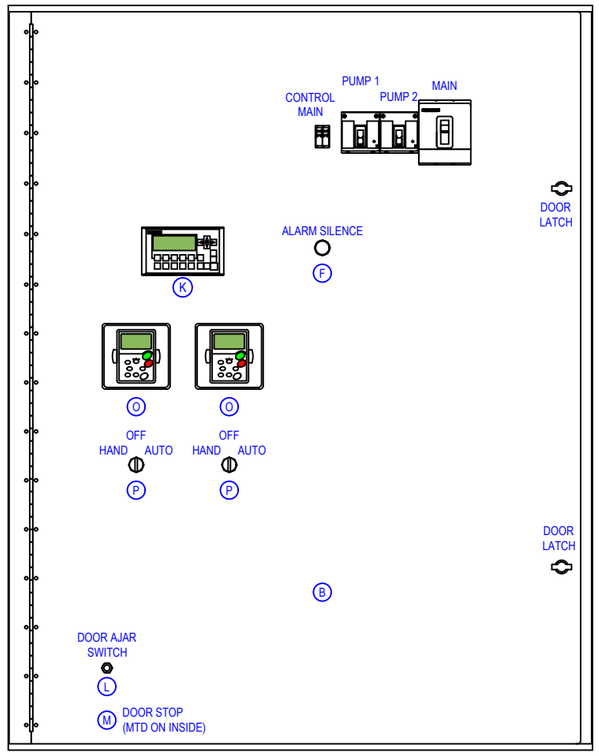
FRONT VIEW



BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	OEM	CUSTOM ENCLOSURE	SEE THIS SHEET FOR DETAILS
B	1	OEM	CUSTOM INNER DOOR	SEE THIS SHEET FOR DETAILS
C	1	SCHAEFER	SPN1AL-888-JEA	BATTERY ENCLOSURE, .125 ALUMINUM
D	2	POWER SONIC	PS-12180 F2	BATTERY, LEAD-ACID, 12VDC, 18Ah
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	1	APT	S50A120V2P	SURGE PROTECTOR, 240V SPLIT PHASE
J	1	TIMES-PROTECT	LP-STR-NFF	COAXIAL SURGE ARRESTOR (ANTENNA)
K	1	SIEMENS	6AV6 647-0AH11-3AX0	OPERATOR PANEL KP300 DISPLAY
L	1	OMRON	6X283	SNAP ACTION SWITCH (DOOR AJAR)
	1	ALLIED	642-2137	ACTUATOR FOR SWITCH
M	3	SCHAEFER	SP-DSTOPK-SS-SW	INNER/OUTER DOOR STOP KIT, SS
N	-	-	-	-
O	2	CUTLER-HAMMER	OPTRMT-9000-KIT	VFD HMI DISPLAY
P	2	SIEMENS	52SX2BAB	3 POSITION MAINTAINED SWITCH, 30mm
	2	SIEMENS	52BJK	CONTACT BLOCK, 1NO-1NC

INNER DOOR VIEW



CONTROL WIRE UL508A COLOR:

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

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

CUSTOM ENCLOSURE:
(60"H x 48"W x 20"D) NEMA 12/3R RATED, FABRICATED FROM .125 MARINE GRADE ALUMINUM. OUTER DOORS ARE FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOPS. ENCLOSURE IS MOUNTED ON 12-INCH TYPE 316 STAINLESS STEEL LEGS.

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.

NOTE: BATTERY ENCLOSURE IS TO BE INSTALLED IN THE FIELD

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 NOTES AND DETAILS ON ALL DRAWING SHEETS FOR MORE MANUFACTURING DETAILS.
4. 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 SINGLE PHASE.
5. ALL FIELD WIRING SHALL BE #12 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
6. ALL PLC I/O WIRING INTERNAL TO THE CONTROL PANEL SHALL BE #18 AWG.
7. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
8. ALL MOUNTING SCREWS SHALL BE STAINLESS STEEL, DRILLED AND TAPPED (NO SELF-TAPPING SCREWS ARE ALLOWED).

NO.	BY	DATE	REVISIONS
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ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
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JEA sm
Building Community sm

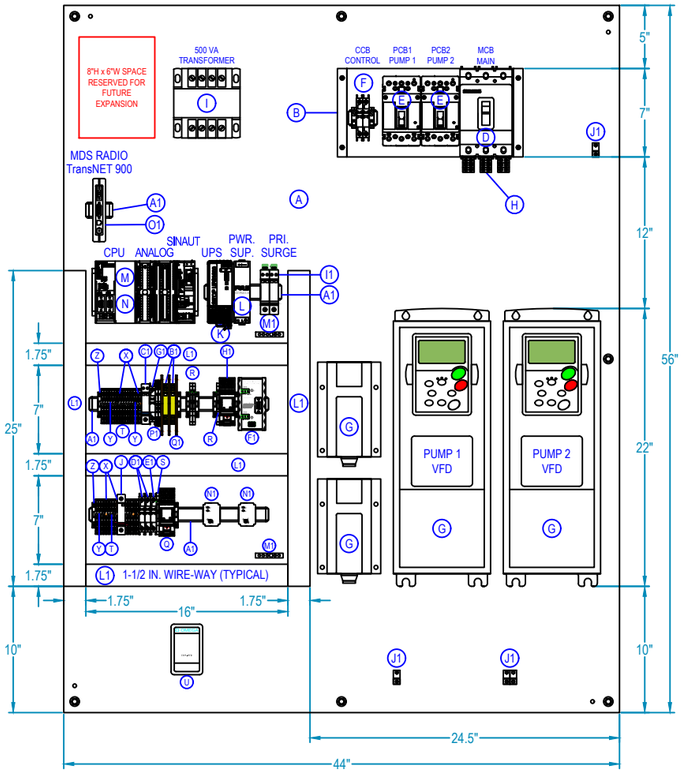
DESIGNER:	
DRAWN BY:	
DATE:	
CHECKED BY:	
DATE:	
2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: FRONT PANEL VIEW

PROJECT: --- PROJECT NAME ---

1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No:	SHEET	OF
12345678	1	10



FRONT VIEW

BILL of MATERIAL

		MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	SCH	CUSTOM ENCLOSURE	SEE THIS SHEET FOR DETAILS
A	1	SCH	CUSTOM BACK DOOR	SEE THIS SHEET FOR DETAILS
	1	CONNTEK	SPANEL-BM-JEA	BATTERY ENCLOSURE, 125 ALUMINUM
	1	POWER SONIC	PS-12180 F2	BATTERY, LEAD-ACID, 12VDC, 18ah
	1			
	1	HENGYE	STRING-14 - 120AH	SEAM/STAMP PLEB/BUTTON, 30mm, YLLW
	1	INGRAM PRODUCTS	LAMP	ALARM LIGHT W/ FLASHER, 120VAC, RED
	1	INGRAM PRODUCTS	HORN/LAMP	ALARM HORN, ELECTRONIC, 120VAC, RED
A	1	ATT	CDS415GY3P	SURGE PROTECTOR, DIN RAIL/3 PHASE
	1	TWELVE PRODUCT	LR-STA-MP	CONTROL SURGE SHIELD FOR LIFT STATIONS
	1	HENGYE	SW-M13AR1-24VAC	OPERATOR PANEL, NEMA 4X/IP65 MOUNT
	1	ORION	C1205	SNAP ACTION SWITCH (DOOR AJAR)
	1	PLC ED	SW-E101	ACTUATOR FOR SWITCH
A	1	ALLTHECTL	LIT-STATION-SS-SM	EMERGENCY STOP KIT, SS
	1			
	1	CUTLER-HAMMER	C7F7N01-600V-KIT	VFD-HW-1000HP
	1	HENGYE	SCR-M5-M	SCREW, MACHINE, PHILLIPS, M5
	1	HENGYE	SCR-M5-M	SCREW, MACHINE, PHILLIPS, M5

CONTROL WIRE (14 AWG) COLOR:

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

CUSTOM ENCLOSURE:
36"H x 48"W x 24"D NEMA 4X/12R RATED, FABRICATED FROM .125 MARINE GRADE ALUMINUM.
OUTER DOORS ARE FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOPS.
ENCLOSURE IS MOUNTED ON 12-INCH TYPE 316 STAINLESS STEEL LEGS.

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.

NOTE: BATTERY ENCLOSURE IS TO BE INSTALLED IN THE FIELD

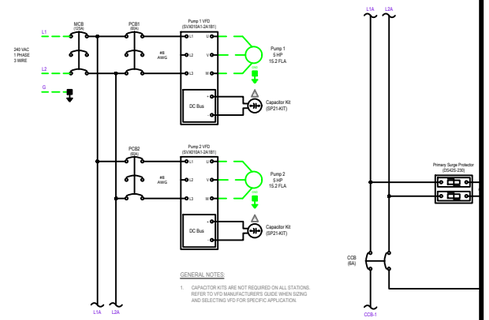
INNER DOOR VIEW

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

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 NOTES AND DETAILS ON ALL DRAWING SHEETS FOR MORE MANUFACTURING DETAILS.
4. 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 SINGLE PHASE.
5. ALL FIELD WIRING SHALL BE #12 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
6. ALL PLC I/O WIRING INTERNAL TO THE CONTROL PANEL SHALL BE #18 AWG.
7. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
8. ALL MOUNTING SCREWS SHALL BE STAINLESS STEEL, DRILLED AND TAPPED (NO SELF-TAPPING SCREWS ARE ALLOWED).

Sheet 1



GENERAL NOTES:

1. CAPACITOR KITS ARE NOT REQUIRED ON ALL STATIONS. REFER TO VFD MANUFACTURERS GUIDE WHEN SIZING AND SELECTING VFD FOR SPECIFIC APPLICATION.

Sheet 3

BACK PANEL LAYOUT

BILL of MATERIAL

		MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	CONNTEK	SPANEL-BM-JEA	BACK PANEL, FIBERGLASS, WHITE
A	1	SCH	ADVANCE-ADS36F	FLOAT SW, ON FLOAT WITH 36ADS CORD
	1			
A	1	SEMENS	3TB4016	CONTACTOR, 3 POLE, 12VDC
A	1	SEMENS	3RT2015-1BB41	CONTACTOR, 3 POLE, 120V
	1	WEIDMULLER	SSK 35 1000	TERMINAL BLOCK, 35MM, GRAY
A	1	CUTLER-HAMMER	E50DN12K80	VFD, VARIABLE TORQUE, 10HP
A	1	CUTLER-HAMMER	E7TF-4FT	KIT, CONTACTOR KIT, EXTERNAL
A	1	CUTLER-HAMMER	E7PCS	VFD PROPER DIN CONNECTOR
	1	SEMENS	3TK2830	CONTROL TRANSFORMER, 600VA
	1	SEMENS	3TK2830	CONTROL TRANSFORMER, 600VA
	1	CITEL	DSP-1-120	120VAC SURGE SUPPRESSOR (SA40)
	1	SEMENS	5SV1 324-3KB00-0HH0	GROUP GC-GFI, 10A WITH OVERCOV
	1	PULS	QS10.241	SWITCHED POWER SUPPLY 3A
	1	SEMENS	5SV2 380-1KB00-0HH0	480VAC MOUNTING KIT FOR PLVI EQUIP
	1	SEMENS	5SV2 315-6KD00-0HH0	CKT, CVO-SPST, 15-20 / 30-60 AMPS
A	1	SEMENS	5SV2 353-8LB00-0HH0	MISC MEMORY CARD, 128KB
	1	SEMENS	5SV2 331-5DD10-0HB0	4-1/2W TERMINALS (MPN? 8003314
	1	SEMENS	5SV2 392-1BM01-0AA0	480VAC SPRING CONNECTOR
	1	SEMENS	5SV1 333-3LH00	SHNT STT TM 3-15 3KD31-0LC
A	1	ERAC HARRISON	5140E1-42	PROTEUS CONNECTOR, 90°, #3, PORT
A	1	ERAC HARRISON	5140E1-40	PROTEUS CONNECTOR, 180°
	1	SEMENS	5SV1 816-2LH10	PROTEUS CABLE, FAST CONNECT TYPE
	1	WAGO	859-307	RELAY, STATUS, SPRING, 4PDT/4C, 120VAC
	1	WAGO	857-304	RELAY, STATUS, SPRING, SPDT, 24VDC
	1	WAGO	857-307	RELAY, STATUS, SPRING, SPDT, 120VAC

BILL of MATERIAL

		MANUFACTURER	PART NUMBER	DESCRIPTION
	1	WAGO	859-316	TERMINAL END STOP, GRAY
	1	WAGO	2002-1616	16 CKT, DIN RAIL TERMINAL BLOCK
	1	SEMENS	3SE1801-1EB10-0AA0	FACTORY CONFIGURED
	1	WAGO	2002-1607	CONTACT, DIN RAIL
	1	WAGO	2002-1692	TERMINAL END PLATE, FLARE, DRAWER
	1	WAGO	2002-1687	TERMINAL END STOP, CENTER, DRAW CONTACTOR
	1	WAGO	282-318	TERMINAL END STOP, GRAY
	1	WAGO	282-132	DIN RAIL CAN HANDLE, SLOTTED
	1	CITEL	DLA/B-24DC	24VDC/12-32VDC SURGE SUPPRESSOR, 3WIRE
	1	CITEL	DLA/B-120	120VAC SURGE SUPPRESSOR
	1	WEIDMULLER	SSK 25 1000	DIN RAIL CAN HANDLE, SLOTTED
	1	WEIDMULLER	SSK 25 1000	DIN RAIL CAN HANDLE, SLOTTED
	1	WEIDMULLER	SSK 35 1000	TERMINAL BLOCK, 35MM, GRAY
	1	PROGRESSIVE	10-0201-24	PUSHBUTTON, TERMINATOR
	1	WEIDMULLER	SSK 35 1000	DIN RAIL CAN HANDLE, SLOTTED
	1	WAGO	282-304	RELAY, STATUS, SPRING, 4PDT/4C, 24VDC
	1	CITEL	DLA/B-230	230VAC SURGE SUPPRESSOR
	1	PYRONT	LMBA1-24-DY	GROUND LUG, DUAL RATED, #2-1/0AWG
	1	CITEL	DLA-120S	120VAC SURGE PROTECTOR
	1	PYRONT	LTW-2-PH-LTL	WIREWAY, GRADE COVER, WIDE FINGER
	1	ELLIMAN D	5SV2174	COUNTERCURRENT CIRCUIT BREAKER
	1	MACROMATIC	TDR72030	30A, 120AC, OVERTEMP RELAY, 120VAC
	1	MDS	05-4457	5VDC, SPRING-SPST-TM-M, 10A-277VAC
	1	MDS	05-4124-DC	10A RAIL MOUNT-KIT
	1	TFC INC	2N4401	SINGLE TERMINAL BLOCK, 2-WIRE
	1	WAGO	859-401	4MM DIO SIGNAL INDICATOR
	1	WAGO	859-301	SEPARATOR, 10MM/2

BACK PANEL:
36"H x 44"W, FABRICATED FROM 10ga. CARBON STEEL
WITH WHITE INDUSTRIAL GRADE ENAMEL FINISH.

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

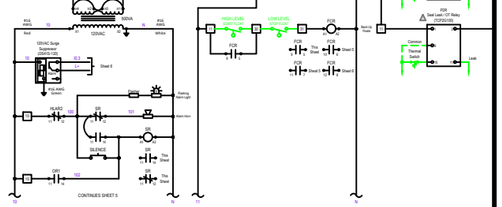
GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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. VFDs SHALL BE RATED FOR CORROSIVE ENVIRONMENTS AND DRIVE CONTROL BOARDS SHALL BE CONFORMAL COATED TO PROTECT AGAINST CORROSION.
4. SEAL LEAK/OVERTEMP RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER.
5. TECHNICAL FIELD SERVICES, INC., JACKSONVILLE, FLORIDA. (904) 278-0292
6. OBSERVE MINIMUM SPACE ALLOWANCE FOR PROPER VFD COOLING. REFER TO VFD MANUFACTURER'S GUIDE WHEN SIZING AND SELECTING VFD FOR SPECIFIC AIR FLOW AND SPACING REQUIREMENTS.
7. REFER TO VFD MANUFACTURER'S GUIDE WHEN SIZING STATIONS. REFER TO VFD MANUFACTURER'S GUIDE WHEN SIZING AND SELECTING VFD FOR SPECIFIC APPLICATION.
8. ENSURE GOOD ELECTRICAL CONTACT BETWEEN BACK PANEL AND ALL MECHANICAL GROUND CONNECTIONS.

Sheet 2

GENERAL NOTES:

1. THIS DRAWING IS FOR 240VAC SERVICE. THE TAPS ON THE TRANSFORMER MUST BE CONNECTED FOR 240VAC.
2. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMENDED SETTINGS.
3. ALL WIRES IN CONTROL PANEL SHALL BE #18 AWG SHALL BE STRANDED TIN-PLATED COPPER WIRE. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
4. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
5. ALL WIRES TERMINATING AT PLC RACK MUST BE ROUTED THROUGH WIREWAY FROM BELOW.
6. ALL ANALOG SIGNAL WIRING SHALL BE SHIELDED CABLE.
7. THIS DRAWING IS FOR A DUPLEX PUMP STATION. TRIPLEX PUMP STATIONS REQUIRE ADDITIONAL PUMP CONTROLS.



Sheet 4

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ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

DESIGNER:	
DRAWN BY:	
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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: BACK PANEL LAYOUT

PROJECT: --- PROJECT NAME ---
1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No:	SHEET	OF
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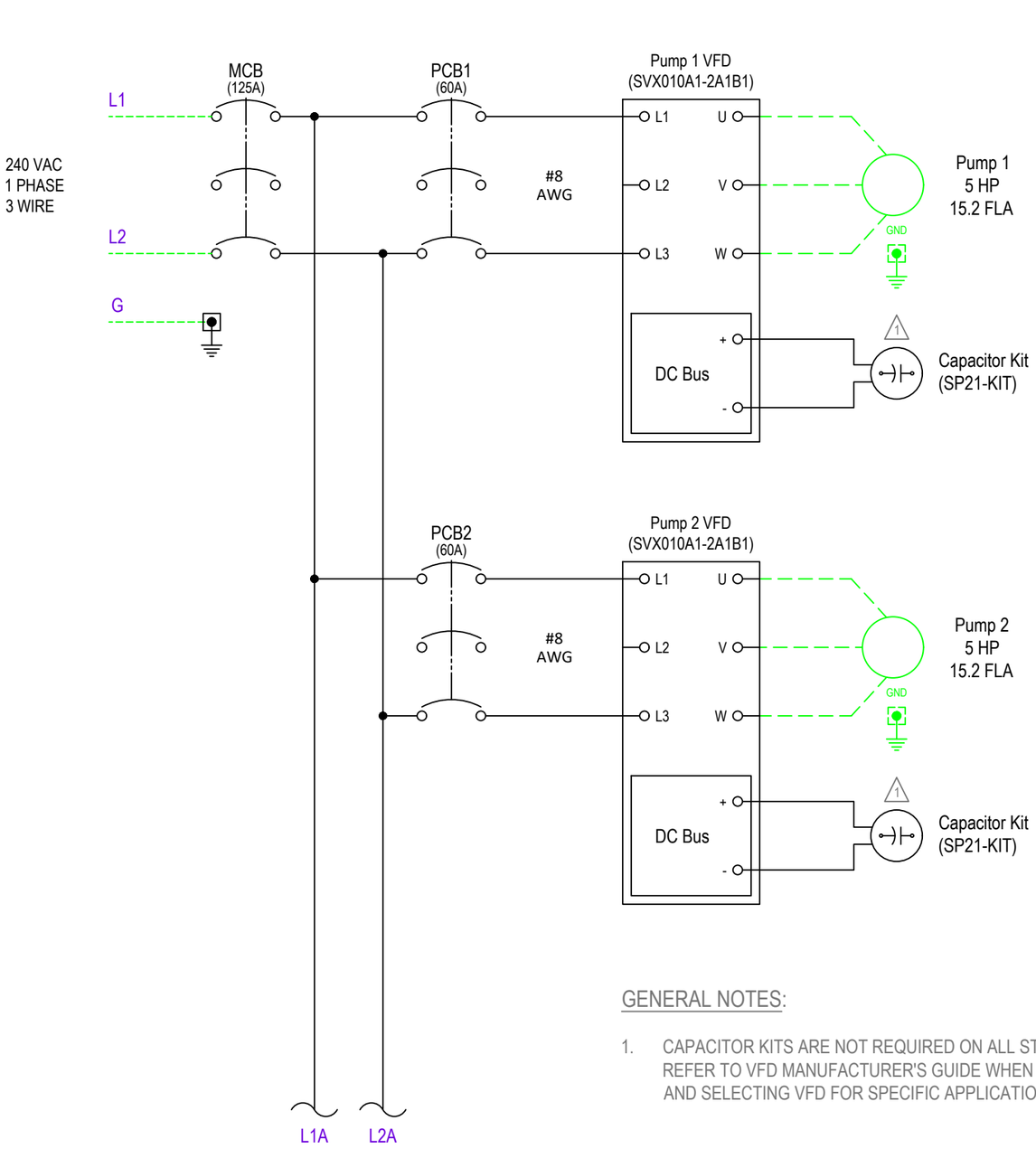

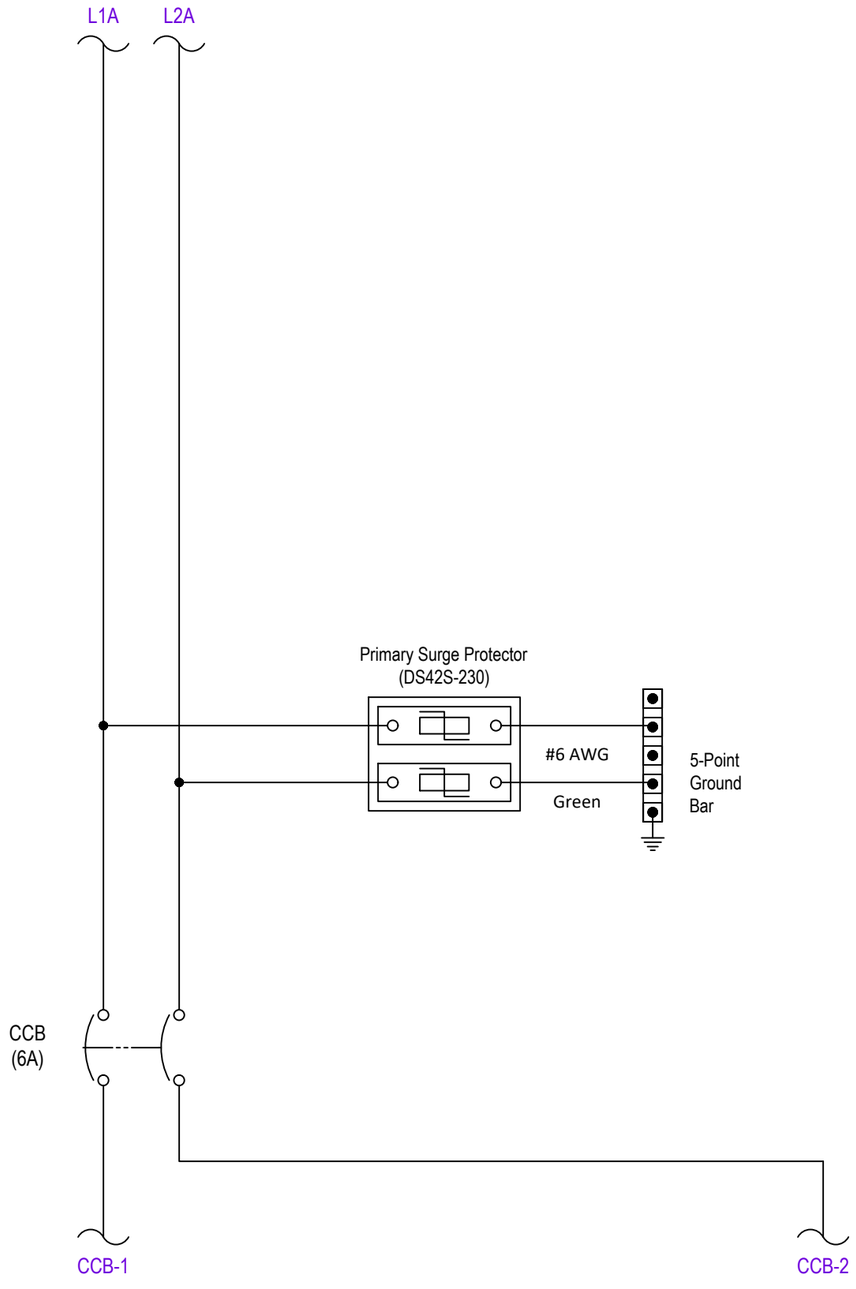

GENERAL NOTES:

1. CAPACITOR KITS ARE NOT REQUIRED ON ALL STATIONS. REFER TO VFD MANUFACTURER'S GUIDE WHEN SIZING AND SELECTING VFD FOR SPECIFIC APPLICATION.

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ELECTRICAL SCHEMATIC

MANUFACTURER
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JEA Building Community sm

DESIGNER:	
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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: 240 VAC VOLTAGE

PROJECT: --- PROJECT NAME ---

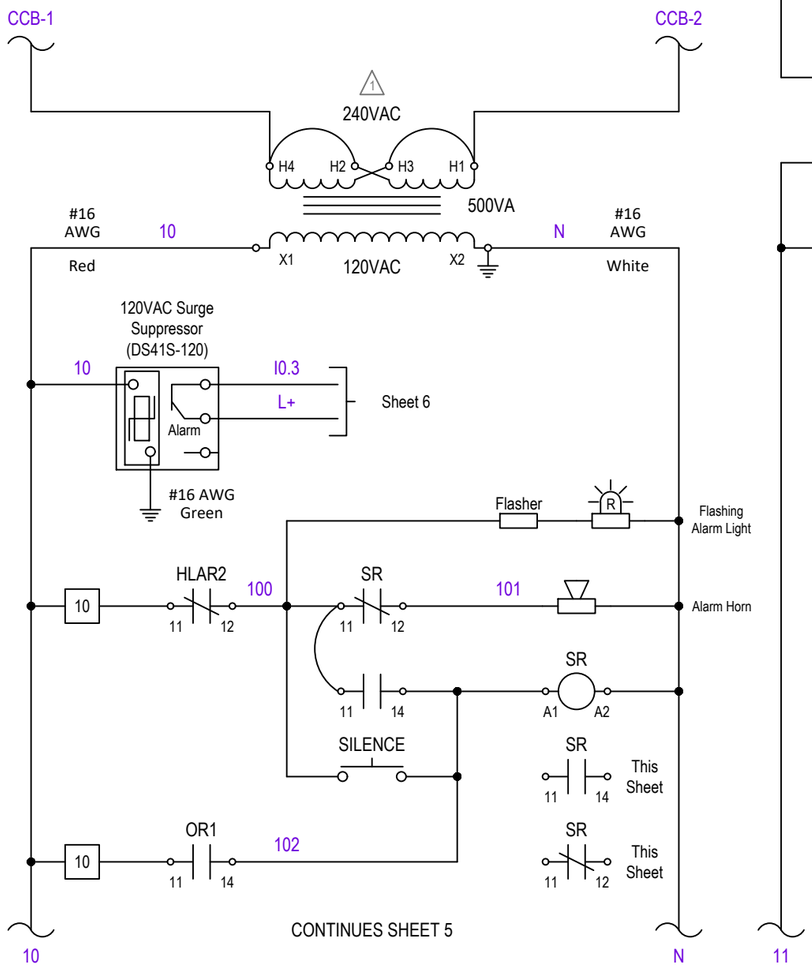
1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

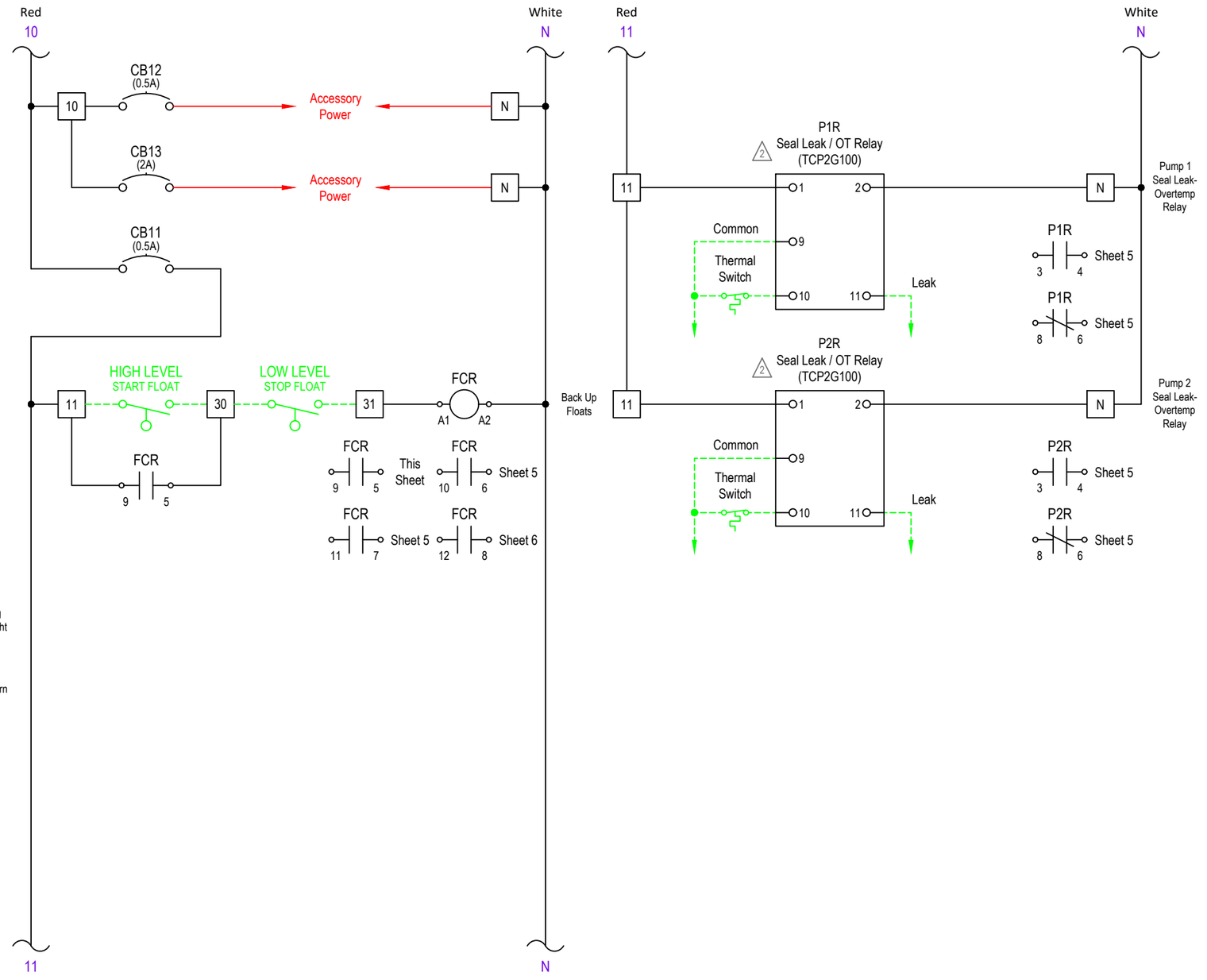
JOB No: 12345678

SHEET 3 OF 10

GENERAL NOTES:

1. THIS DRAWING IS FOR 240VAC SERVICE. THE TAPS ON THE TRANSFORMER MUST BE CONNECTED FOR 240VAC.
2. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS.
3. ALL CONTROL WIRING AND 12-18 AWG SHALL BE STRANDED TIN-PLATED COPPER WIRE. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
4. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
5. ALL WIRES TERMINATING AT PLC RACK MUST BE ROUTED THROUGH WIREWAY FROM BELOW.
6. ALL ANALOG SIGNAL WIRING SHALL BE SHIELDED CABLE.
7. THIS DRAWING IS FOR A DUPLEX PUMP STATION. TRIPLEX PUMP STATIONS REQUIRE ADDITIONAL PUMP CONTROLS.





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2017 STANDARD PACKAGE, REV. 1	

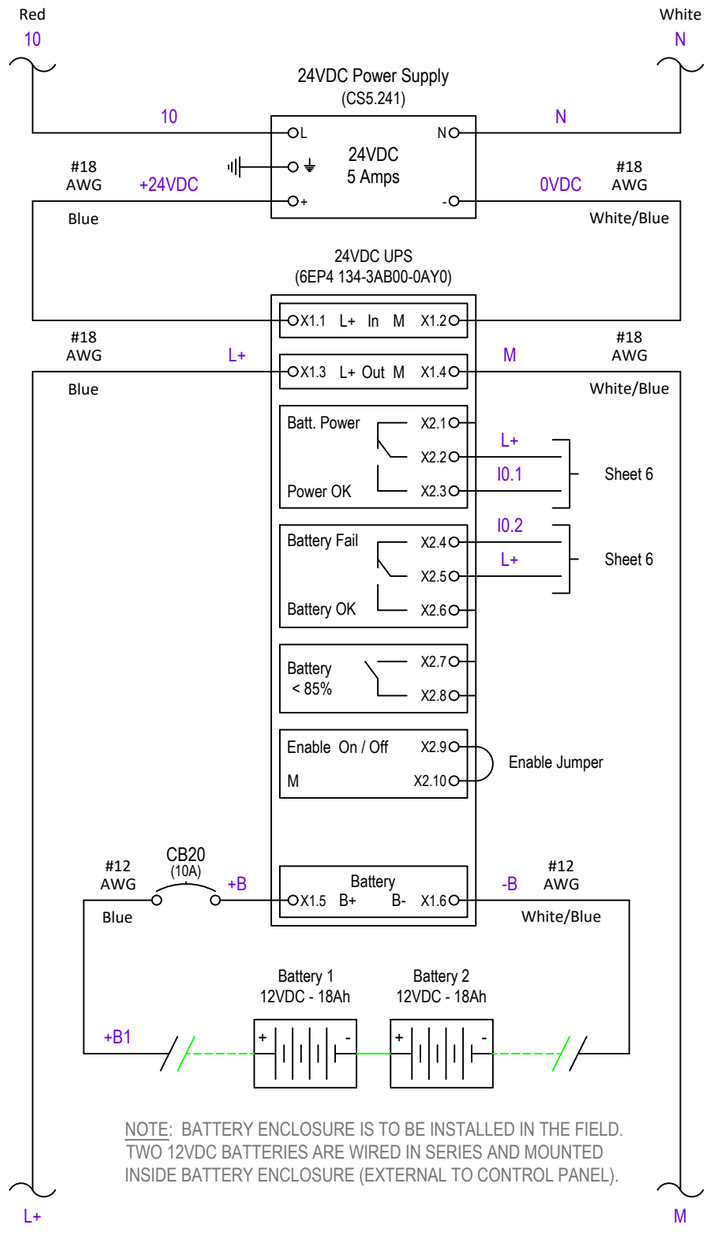
SHEET TITLE: 120 VAC VOLTAGE

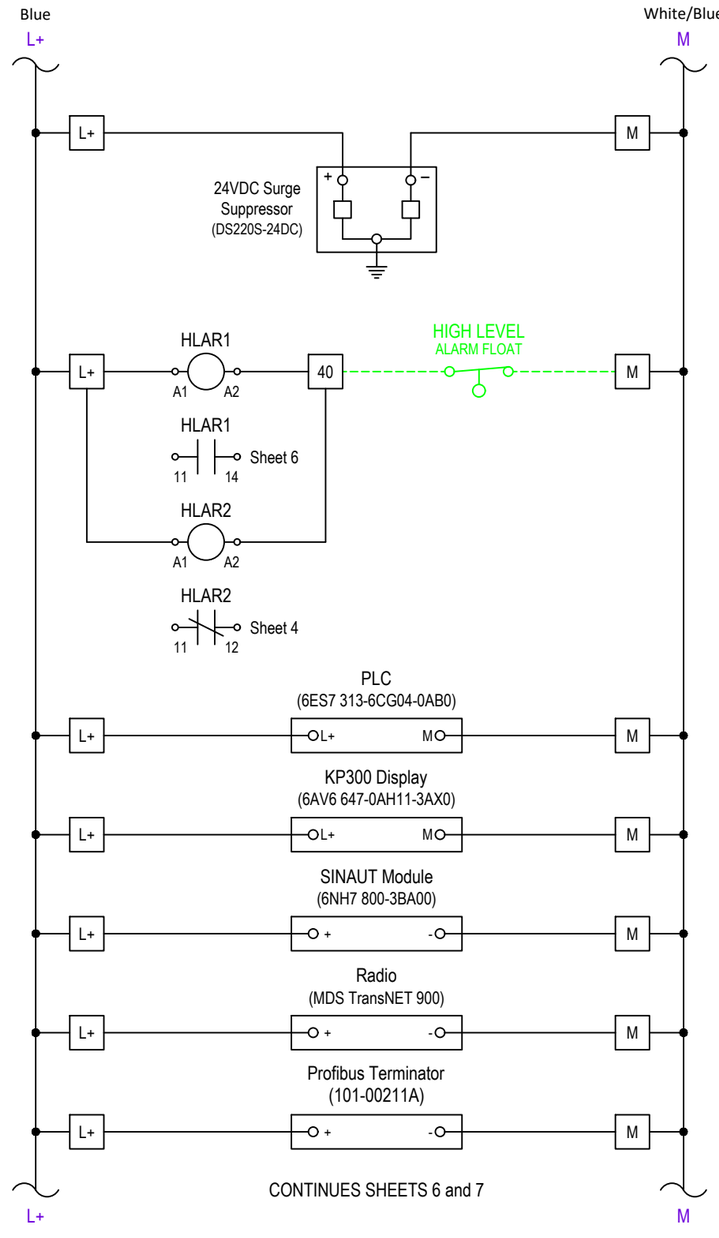
PROJECT: --- PROJECT NAME ---

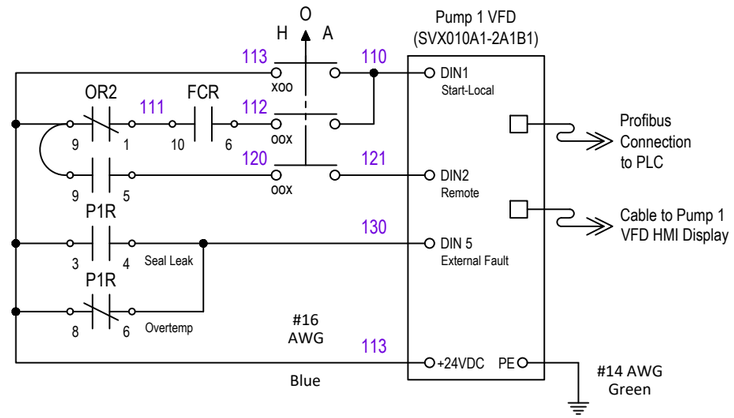
1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

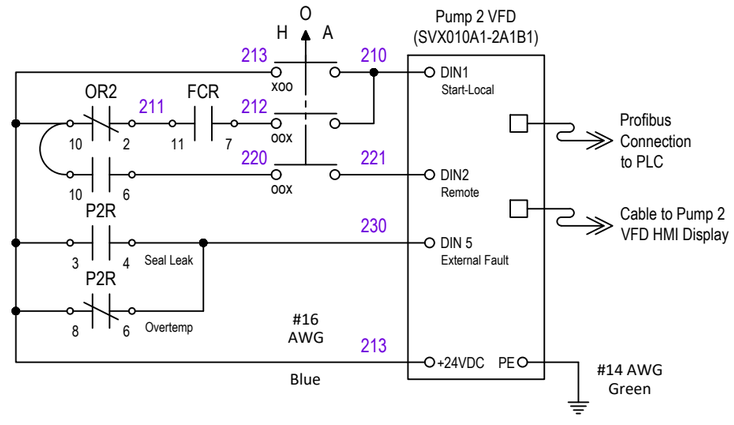
JOB No: 12345678

SHEET 4 OF 10









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ELECTRICAL SCHEMATIC

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JEA Building Community sm

DESIGNER:	
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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: 24VDC VOLTAGE

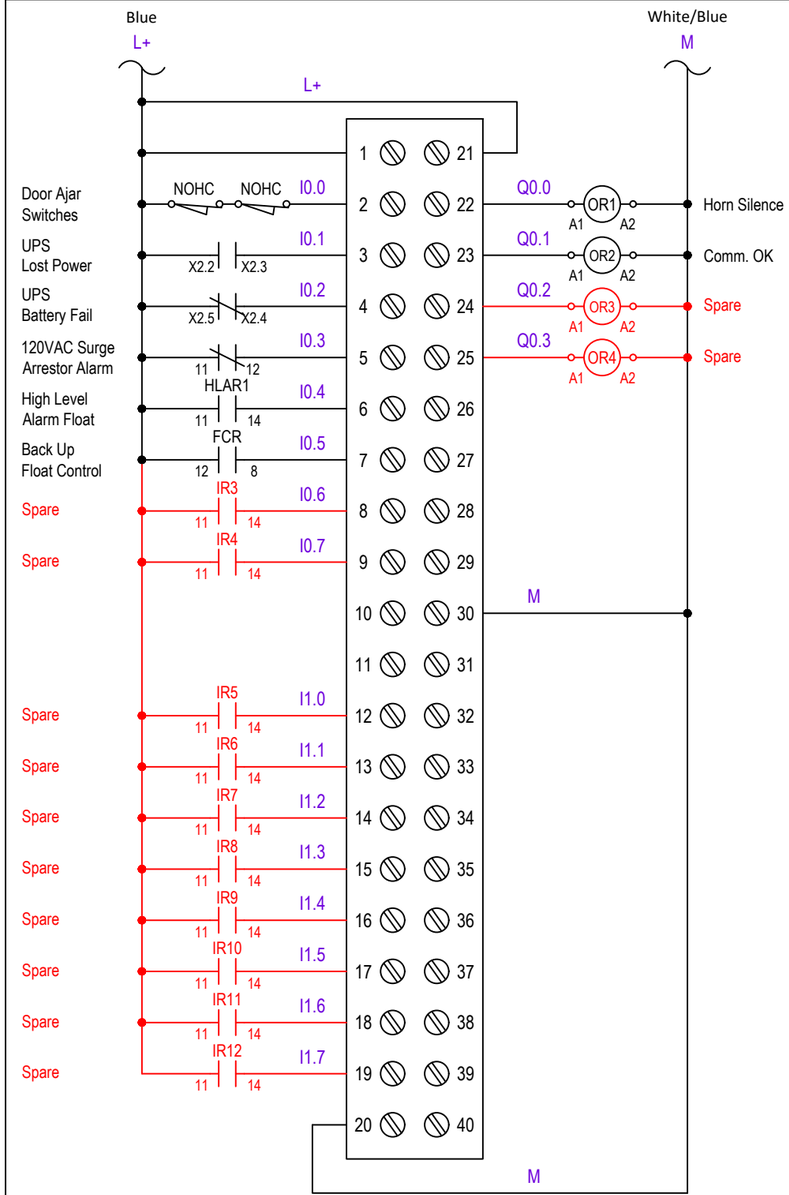
PROJECT: --- PROJECT NAME ---

1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 5 OF 10

RACK: 0 SLOT: 4



6ES7 313-6CG04-0AB0	
16 Digital Input - 16 Relay Out	
1	1L+ = +24V
2	Input 0.0
3	Input 0.1
4	Input 0.2
5	Input 0.3
6	Input 0.4
7	Input 0.5
8	Input 0.6
9	Input 0.7
10	
11	
12	Input 1.0
13	Input 1.1
14	Input 1.2
15	Input 1.3
16	Input 1.4
17	Input 1.5
18	Input 1.6
19	Input 1.7
20	1M = DC COM
21	2L+ = +24V
22	Output 0.0
23	Output 0.1
24	Output 0.2
25	Output 0.3
26	Output 0.4
27	Output 0.5
28	Output 0.6
29	Output 0.7
30	2M = DC COM
31	3L+ = +24V
32	Output 1.0
33	Output 1.1
34	Output 1.2
35	Output 1.3
36	Output 1.4
37	Output 1.5
38	Output 1.6
39	Output 1.7
40	3M = DC COM

RACK: - SLOT: -

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ELECTRICAL SCHEMATIC

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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: PLC DIGITAL I/O

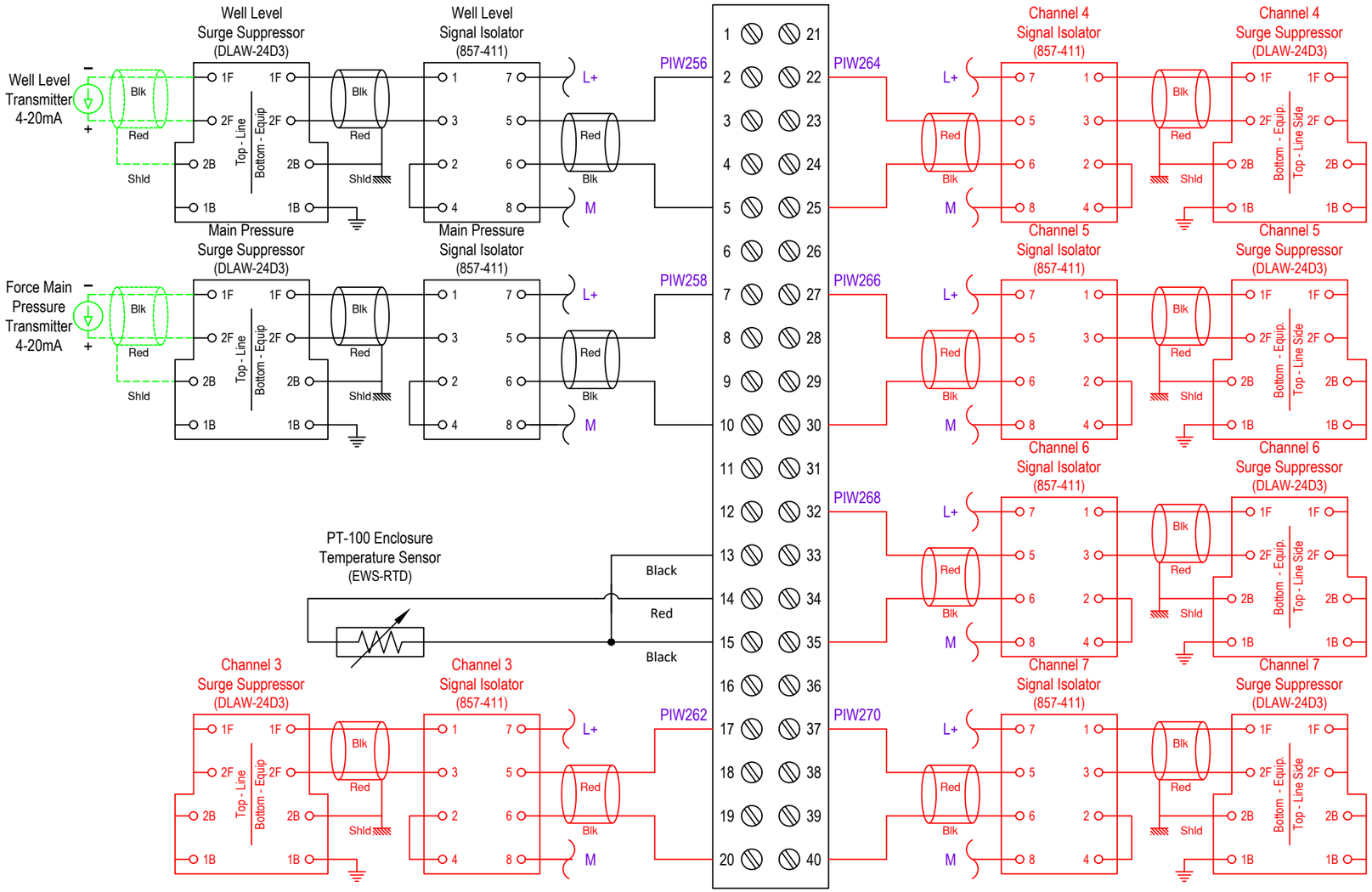
PROJECT: --- PROJECT NAME ---

1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 6 OF 10

RACK: 0 SLOT: 5



8 Input Analog	
1	U+ = > CH0 - PIW256
2	I +
3	S -
4	M +
5	M -
6	U+ = > CH1 - PIW258
7	I +
8	S -
9	M +
10	M -
11	U+ = > CH2 - PIW260
12	I +
13	S -
14	M +
15	M -
16	U+ = > CH3 - PIW262
17	I +
18	S -
19	M +
20	M -
21	U+ = > CH4 - PIW264
22	I +
23	S -
24	M +
25	M -
26	U+ = > CH5 - PIW266
27	I +
28	S -
29	M +
30	M -
31	U+ = > CH6 - PIW268
32	I +
33	S -
34	M +
35	M -
36	U+ = > CH7 - PIW270
37	I +
38	S -
39	M +
40	M -

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SHEET TITLE: PLC ANALOG INPUT

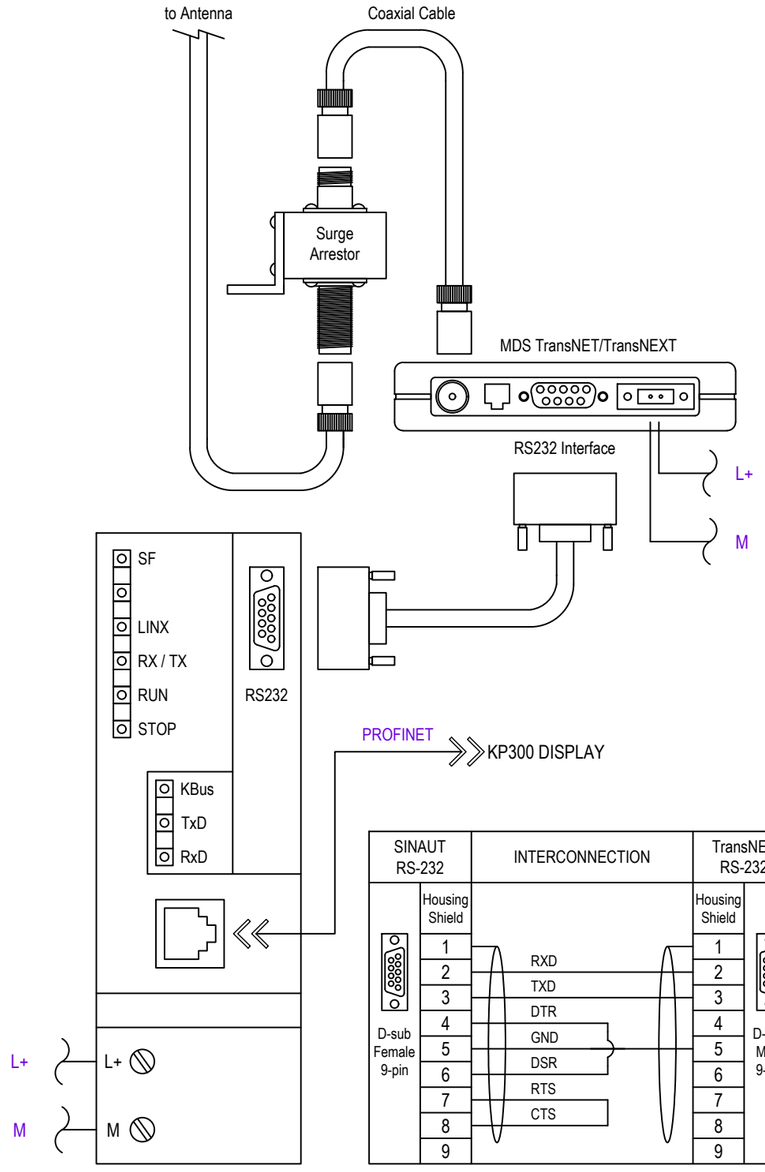
PROJECT: --- PROJECT NAME ---

1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 7 OF 10

RACK: 0 SLOT: 6



6NH7 800-3BA00	
SINAUT - > TIM3V-IE	
	RS-232 PIN OUT
1	DCD - Input
2	RXD - Input
3	TXD - Output
4	DTR - Output
5	GND
6	--
7	RTS - Output
8	CTS - Input
	RJ-45 PIN OUT
1	TXD+ - > Output
2	TXD- - > Output
3	RXD+ - > Input
4	--
5	--
6	RXD- - > Input
7	--
8	--
	Power Connector
L+	+ 24VDC
M	DC Common

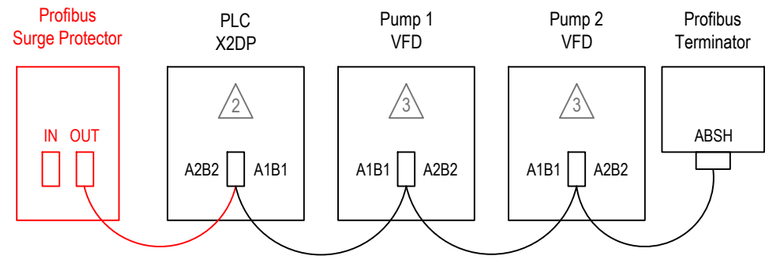
VFD Functional

- OFF - Drive is disabled.
- MANUAL - The drive will be forced to Local control and will be given a start signal to ramp it up to maximum speed.
- AUTO - If the VFD selector switch is put into Auto and Communication OK relay is good then the drive will be controlled over Profibus using PPO4. If the PLC communication is ever lost to the VFD, the communication OK relay will drop out and control the VFD from the Float Control Relay. The communication OK relay is controlled by the PLC and is to be energized as long as the VFD communication is OK.

Setting up Cutler-Hammer SVX9000 on Profibus with Backup Float Revised 6/7/13

- Contact JEA for the latest documentation.

Profibus Connection Diagram



GENERAL NOTES:

1. ALL PLC I/O WIRING SHALL BE #18 AWG. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
2. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "ON" POSITION.
3. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "OFF" POSITION.

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SHEET TITLE: PLC & RADIO CONNECTION

PROJECT: --- PROJECT NAME ---

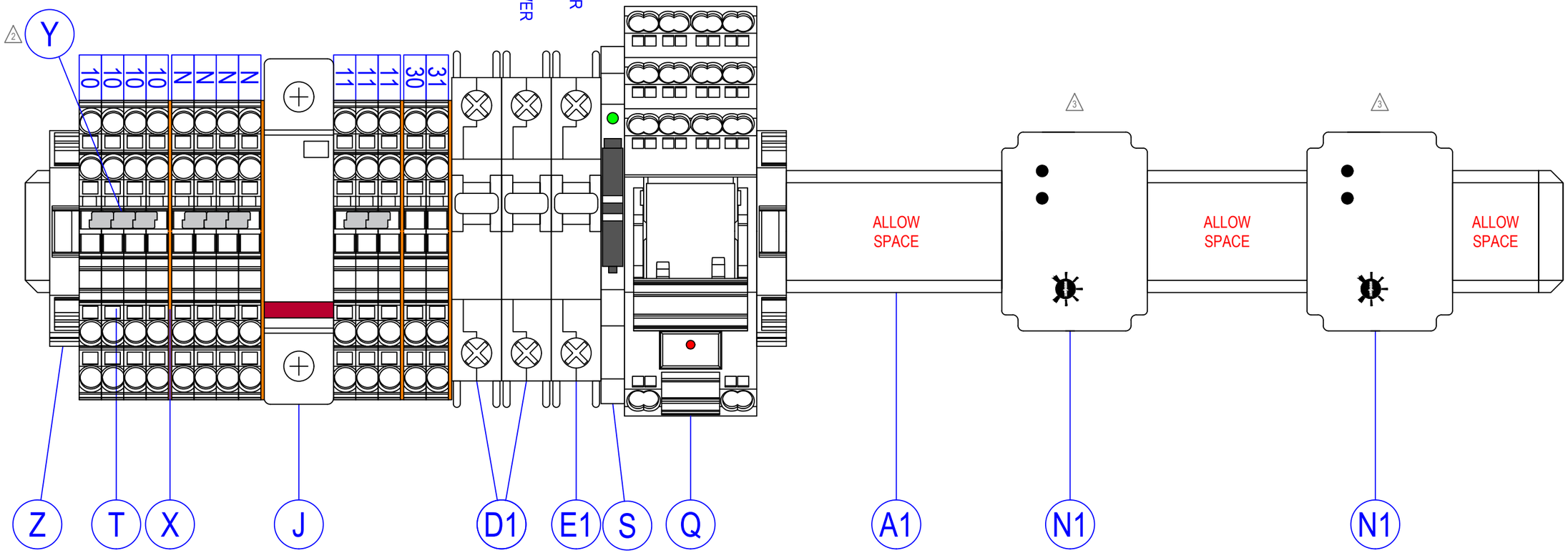
1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 8 OF 10

GENERAL NOTES:

1. ALL TERMINALS, RELAYS, BREAKERS, SURGE SUPPRESSORS, AND OTHER DEVICES MUST BE LABELED.
2. INSTALL PLUGGABLE JUMPERS (Y) ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
3. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS.
4. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.



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SHEET TITLE: 120 VAC TERMINAL BLOCK LAYOUT

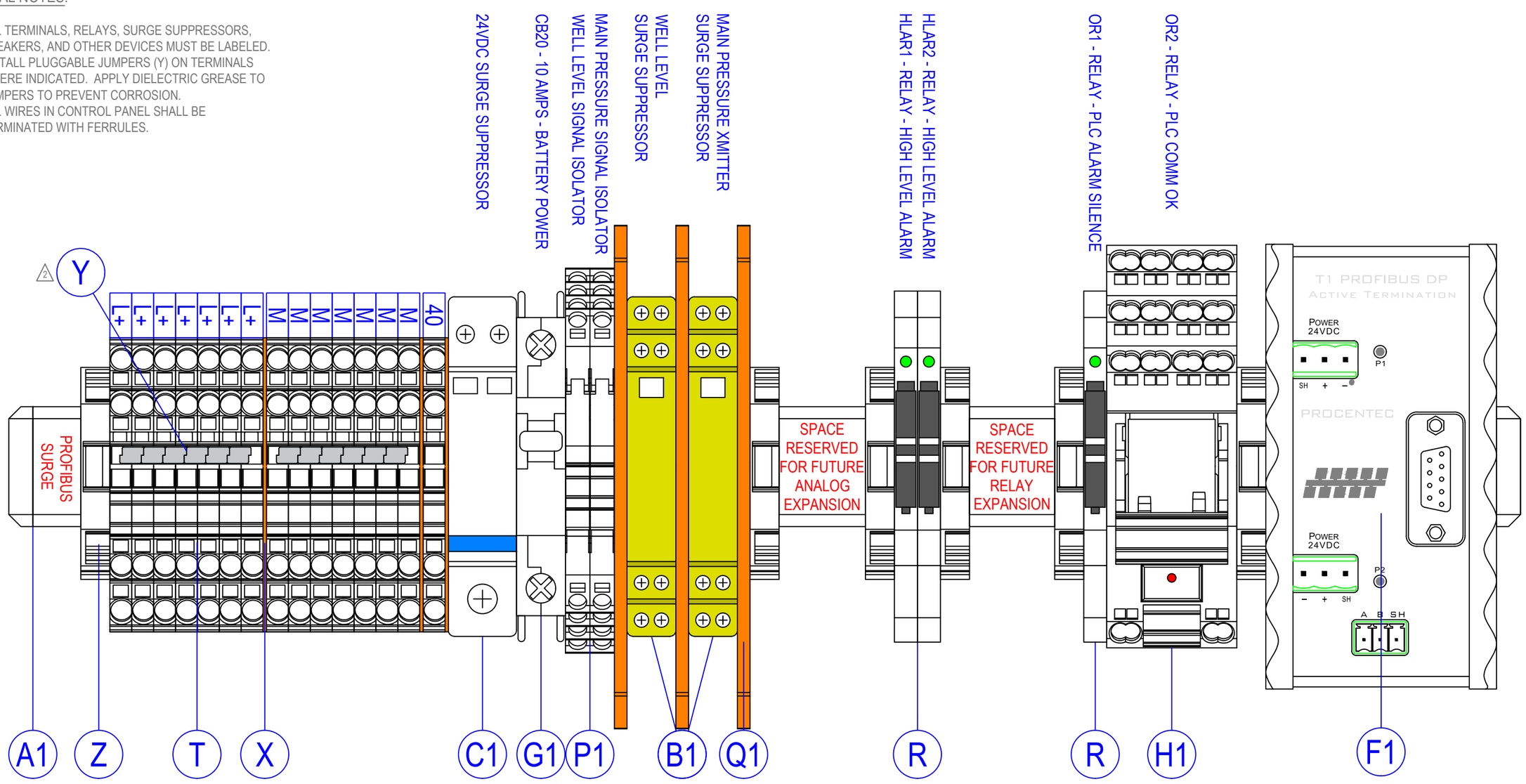
PROJECT: --- PROJECT NAME ---
1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 9 OF 10

GENERAL NOTES:

1. ALL TERMINALS, RELAYS, SURGE SUPPRESSORS, BREAKERS, AND OTHER DEVICES MUST BE LABELED.
2. INSTALL PLUGGABLE JUMPERS (Y) ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
3. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.



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SHEET TITLE: 24 VDC TERMINAL BLOCK LAYOUT

PROJECT: --- PROJECT NAME ---

1-PH. TO 3-PH. VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 10 OF 10

INSTRUCTIONS:

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

2. RETURN COMPLETED SHOP DRAWINGS AS PDF FILE TO ARISS FAJARDO AT FAJAAJ@JEA.COM FOR APPROVAL.

3. PLEASE CONTACT ARISS FAJARDO FOR QUESTIONS OR ADDITIONAL INFORMATION.

4. DO NOT PRINT THIS SHEET IN SUBMITAL SET.

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SHEET TITLE: INSTRUCTION SHEET

PROJECT:
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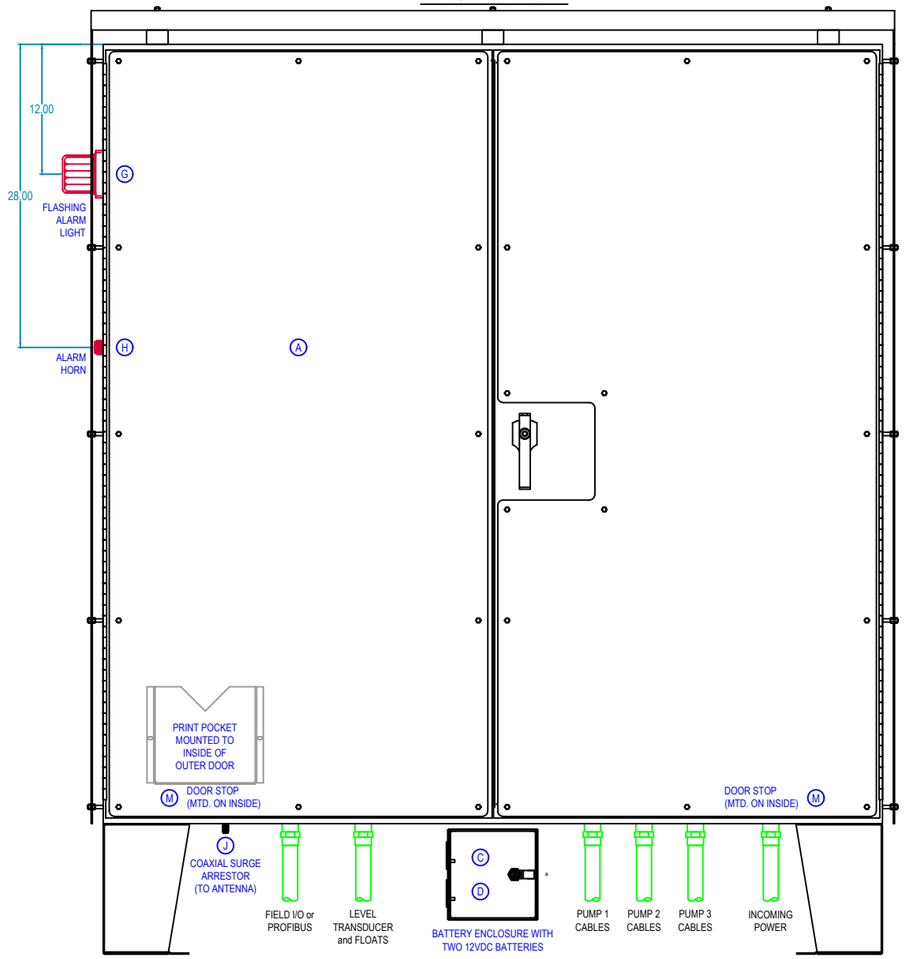
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 0 OF 10

FRONT VIEW



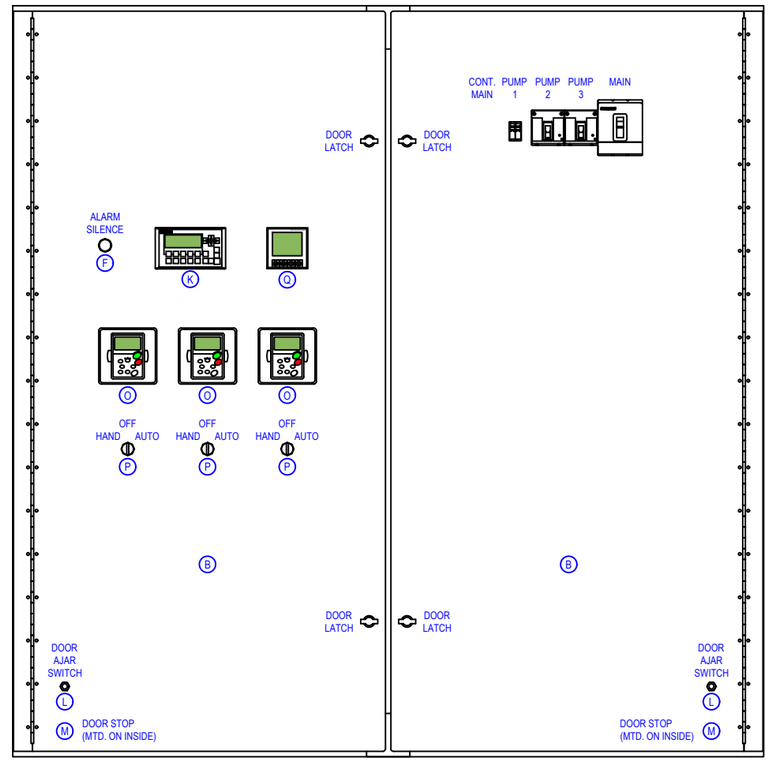
BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
2 A	1	OEM	CUSTOM ENCLOSURE	SEE THIS SHEET FOR DETAILS
2 B	2	OEM	CUSTOM INNER DOORS	SEE THIS SHEET FOR DETAILS
C	1	SCHAEFER	SPN1AL-888-JEA	BATTERY ENCLOSURE, .125 ALUMINUM
D	2	POWER SONIC	PS-12180 F2	BATTERY, LEAD-ACID, 12VDC, 18Ah
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
5 I	1	APT	S50A277V3Y	SURGE PROTECTOR, 480V WYE
J	1	TIMES-PROTECT	LP-STR-NFF	COAXIAL SURGE ARRESTOR (ANTENNA)
K	1	SIEMENS	6AV6 647-0AH11-3AX0	OPERATOR PANEL KP300 DISPLAY
L	2	OMRON	6X283	SNAP ACTION SWITCH (DOOR AJAR)
	2	ALLIED	642-2137	ACTUATOR FOR SWITCH
M	4	SCHAEFER	SP-DSTOPK-SS-SW	INNER/OUTER DOOR STOP KIT, SS
N	-	-	-	-
O	3	CUTLER-HAMMER	OPTRMT-9000-KIT	VFD HMI DISPLAY
P	3	SIEMENS	52SX2BAB	3 POSITION MAINTAINED SWITCH, 30mm
	12	SIEMENS	52BJK	CONTACT BLOCK, 1NO-1NC
Q	1	SIEMENS	7KM4 211-1BA00-3AA0	PAC-4200 POWER MONITOR, 3 PHASE
	1	SIEMENS	7KM9 300-0AB00-0AA0	PROFIBUS EXPANSION MODULE

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

INNER DOOR VIEW



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

I

CUSTOM ENCLOSURE:
NEMA 12/3R RATED, FABRICATED FROM TYPE 316 STAINLESS STEEL WITH WHITE POLYESTER POWDER COAT FINISH INSIDE AND OUT. OUTER DOORS ARE FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOPS. ENCLOSURE IS MOUNTED ON 12-INCH TYPE 316 STAINLESS STEEL LEGS.

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.

REFER TO ENCLOSURE SPECIFICATIONS FOR FURTHER DETAILS.

NOTE: BATTERY ENCLOSURE IS TO BE INSTALLED IN THE FIELD

CONTROL WIRE UL508A COLOR:

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

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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. VFD ENCLOSURES LOCATED OUTSIDE SHALL BE NEMA 12/3R WITH THE VFD HEAT SINKS VENTED OUT THE BACK. REFER TO DRAWINGS FOR FURTHER DETAILS.
4. REFER TO NOTES AND DETAILS ON ALL DRAWING SHEETS FOR MORE MANUFACTURING DETAILS.
5. 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: 480V WYE.
6. ALL FIELD WIRING SHALL BE #12 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
7. ALL PLC I/O WIRING INTERNAL TO THE CONTROL PANEL SHALL BE #18 AWG.
8. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
9. ALL MOUNTING SCREWS SHALL BE STAINLESS STEEL, DRILLED AND TAPPED (NO SELF-TAPPING SCREWS ARE ALLOWED).

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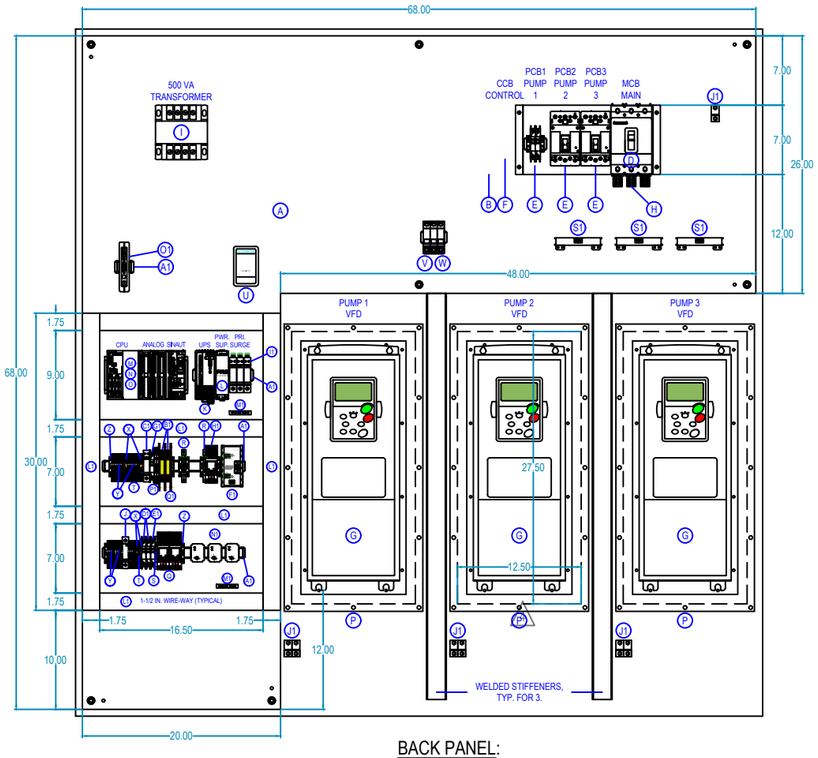
SHEET TITLE: FRONT PANEL VIEW

PROJECT:
--- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

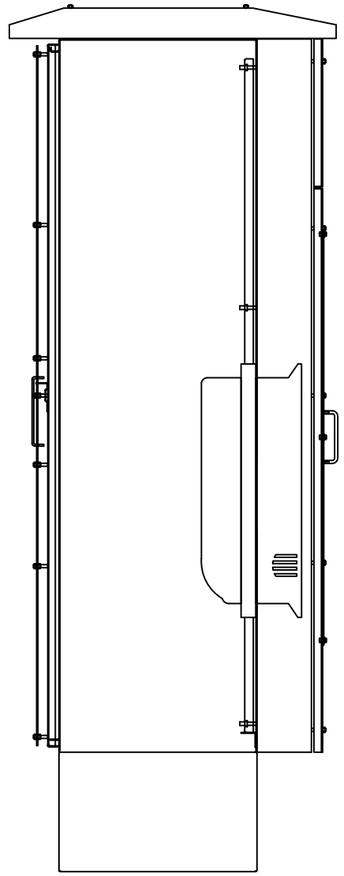
SHEET 1 OF 10

BACK PANEL LAYOUT



BACK PANEL:
CUSTOM "L" SHAPED, FABRICATED FROM 10ga. CARBON STEEL WITH WHITE INDUSTRIAL GRADE ENAMEL FINISH.

RIGHT SIDE VIEW



Installation of Flange Mount VFDs:

Provide cut-outs in the back of the enclosure to accept VFD aluminum mounting plates. Mounting plates shall be attached to studs on the back of the enclosure and gasketed.

VFDs are to be bolted to these plates with the heat sinks extending outside the enclosure for cooling.

Consult VFD manufacturer's installation guide for flange mount cut-out dimensions and recommended instructions. See General Note #4 for additional details and requirements. Dimensions of cut-out must be shown on drawing.

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.

Seal all penetrations.

BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	OEM	CUSTOM BACK PANEL	SEE THIS SHEET FOR DETAILS
B	1	OEM	BREAKER MOUNT	TO RAISE CBs FLUSH WITH INNER DOOR
C	-	-	-	-
D	1	SIEMENS	NFG3B200L	MCB, 3 POLE, 200A
E	3	SIEMENS	NEG3B100L	PCB1, PCB2 and PCB3, 3 POLE, 100A
F	1	WEIDMULLER	9926 25 2003	CCB, UL489, 2 POLE, 3A (480V SERVICE)
G	3	CUTLER-HAMMER	SVX040A1-4A1N2	VFD, VARIABLE TORQUE, 50HP
	3	CUTLER-HAMMER	OPTTHR7	VFD FLANGE MOUNTING KIT, FRAME 7
	3	CUTLER-HAMMER	OPTC5	VFD PROFIBUS DP, DB9 CONNECTOR
H	1	SIEMENS	3TA6EG06	POWER DISTRIBUTION LUGS, KIT OF 3
I	1	SIEMENS	MT0500A	CONTROL TRANSFORMER, 500VA
J	1	CITEL	DS41S-120	120VAC SURGE SUPPRESSOR, BASE
K	1	SIEMENS	6EP4 134-3AB00-0AY0	SITOP DC UPS, 10A WITH CHARGER
L	1	PULS	CS5.241	24VDC POWER SUPPLY, 5A
M	1	SIEMENS	6ES7 390-1AE80-0AA0	480mm MOUNTING RAIL FOR PLC EQUIP.
	1	SIEMENS	6ES7 313-6CG04-0AB0	CPU 313C-2DP, 16 DI - 16 DO PLC
	1	SIEMENS	6ES7 953-8LG30-0AA0	MMC MEMORY CARD, 128KB
	1	SIEMENS	6ES7 331-1KF02-0AB0	8 FUNCTION ANALOG INPUT MODULE
	2	SIEMENS	6ES7 392-1BM01-0AA0	40-PIN SPRING CONNECTOR
	1	SIEMENS	6NH7 800-3BA00	SINAUT ST7, TIM 3V-IE MODULE
N	2	BRAD HARRISON	PA9D01-42	PROFIBUS CONNECTOR, 90°, PG PORT
O	3	BRAD HARRISON	MA9D00-42	PROFIBUS CONNECTOR, 180°
P	3	OEM	VFD MOUNTING PLATE	SEE THIS SHEET FOR DETAILS
Q	2	WAGO	858-507	RELAY, STATUS, SPRING, 4NO-NC, 120VAC
R	3	WAGO	857-304	RELAY, STATUS, SPRING, SPDT, 24VDC
S	1	WAGO	857-357	RELAY, STATUS, SPRING, SPDT, 120VAC
T	28	WAGO	2002-1401	TERMINAL, 2002, SPRING, GRAY
U	1	OMEGA	EWS-RTD	PT100 TEMPERATURE SENSOR, RTD
V	1	WAGO	811-430	3-POLE CLASS CC FUSE HOLDER
W	3	BUSSMANN	FNQ-R-1	FUSE, CLASS CC REJECTION, 600V, 1A
X	7	WAGO	2002-1492	TERMINAL END / PART. PLATE, ORANGE
Y	20	WAGO	2002-400	ADJACENT JUMPER, 2-WAY CONTINUOUS
Z	10	WAGO	249-116	TERMINAL END STOP, GRAY
A1	1	WAGO	210-112	2M DIN RAIL, GALVANIZED, SLOTTED
B1	2	CITEL	DLAW-24D3	ANALOG SURGE SUPPRESSOR, 24VDC
C1	1	CITEL	DS220S-24DC	24VDC SURGE SUPPRESSOR
D1	2	WEIDMULLER	9926 25 1000	CB11 and CB12, UL489, 1 POLE, 0.5A
E1	1	WEIDMULLER	9926 25 1002	CB13, UL489, 1 POLE, 2A
F1	1	PROCENTEC	101-00211A	PROFIBUS TERMINATOR
G1	1	WEIDMULLER	9926 25 1910	CB20, UL489, 1 POLE, 10A
H1	1	WAGO	585-304	RELAY, STATUS, SPRING, 4NO-NC, 24VDC
I1	1	CITEL	DS43S-400	PRIMARY SPD, 480V WYE
J1	7	PANDUIT	LAMA2-14-QY	GROUND LUG, DUAL-RATED, #2-14AWG
K1	-	CITEL	DLA-12D3	PROFIBUS SURGE PROTECTOR
L1	2	PANDUIT	1.5"W x 3"H x 72"L	WIREWAY, HINGE COVER, WIDE FINGER
M1	2	SQUARE D	PK5GTA	EQUIPMENT GROUND BAR, 5-POINT
N1	3	MACROMATIC	TCP2G100	SEAL LEAK / OVERTEMP RELAY, 120VAC
O1	1	MDS	TRANSNET/TRANSNEXT	RADIO, SPREAD-SPECTRUM, UNLICENSED
	1	MDS	03-4124A01	DIN RAIL MOUNT KIT
	1	TFS, INC.	-	SINAUT TO RADIO NULL CABLE
P1	2	WAGO	857-411	ANALOG SIGNAL ISOLATOR
Q1	3	WAGO	209-191	SEPARATOR, ORANGE
R1	1	SIEMENS	6XV1830-0EH10	PROFIBUS CABLE, FAST CONNECT TYPE
S1	3	SIEMENS	PDS-CTSC-021	CURRENT XFMR, 200:5 RATIO, SPLIT CORE
T1	1	SIEMENS	6GK1901-1BB10-2AA0	PROFINET CONNECTOR
U1	2	SIEMENS	6XV1840-2AH10	PROFINET CABLE

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 LIFT STATION SCADA CONTROLS SPECIFICATION" 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.
6. 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.
7. SEAL LEAK/OVERTEMP RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER.
8. TECHNICAL FIELD SERVICES, INC., JACKSONVILLE, FLORIDA (904) 278-5250
9. ENSURE GOOD ELECTRICAL CONTACT BETWEEN BACK PANEL AND ALL MECHANICAL GROUND CONNECTIONS.

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ELECTRICAL SCHEMATIC

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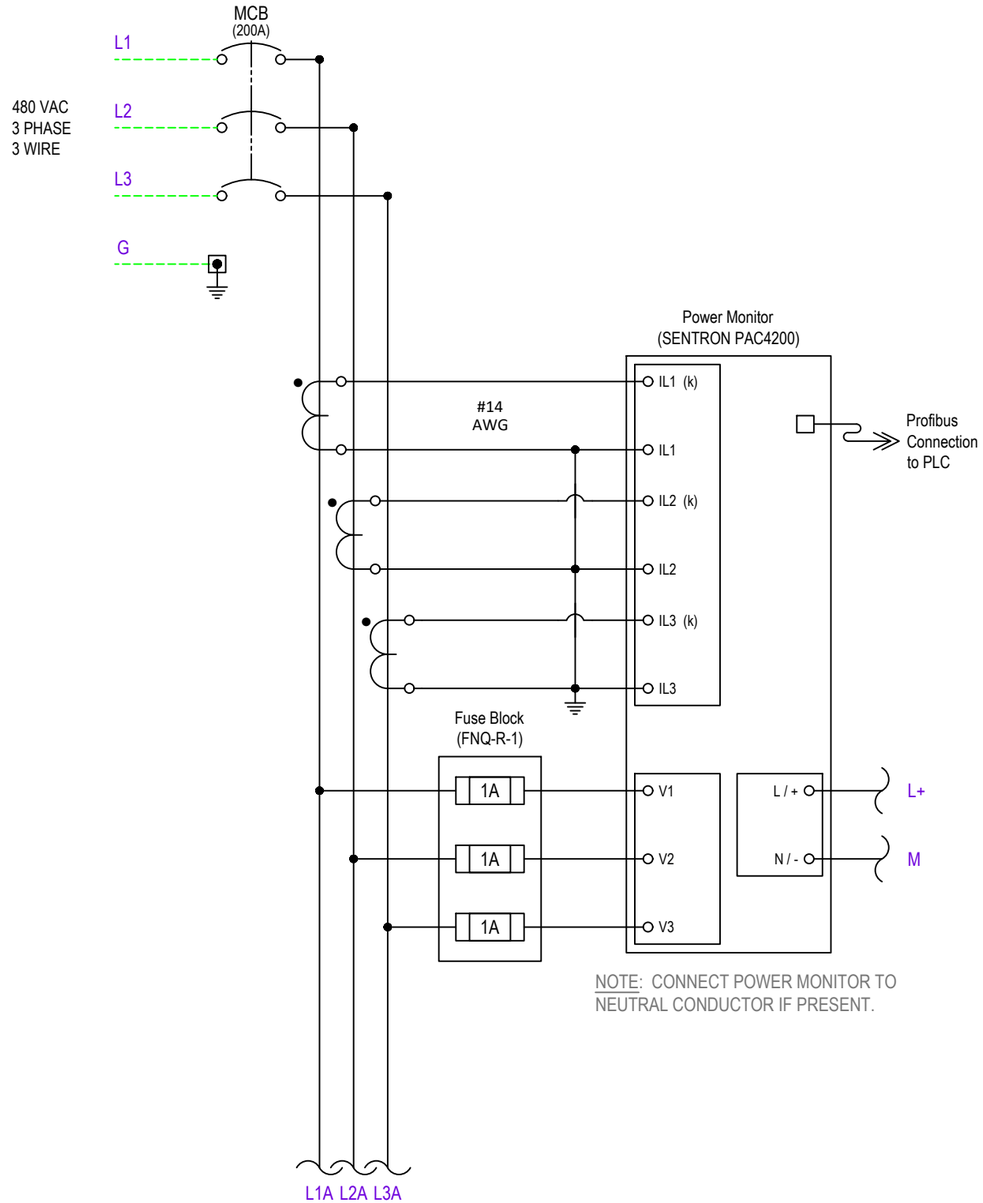
2017 STANDARD PACKAGE, REV. 1

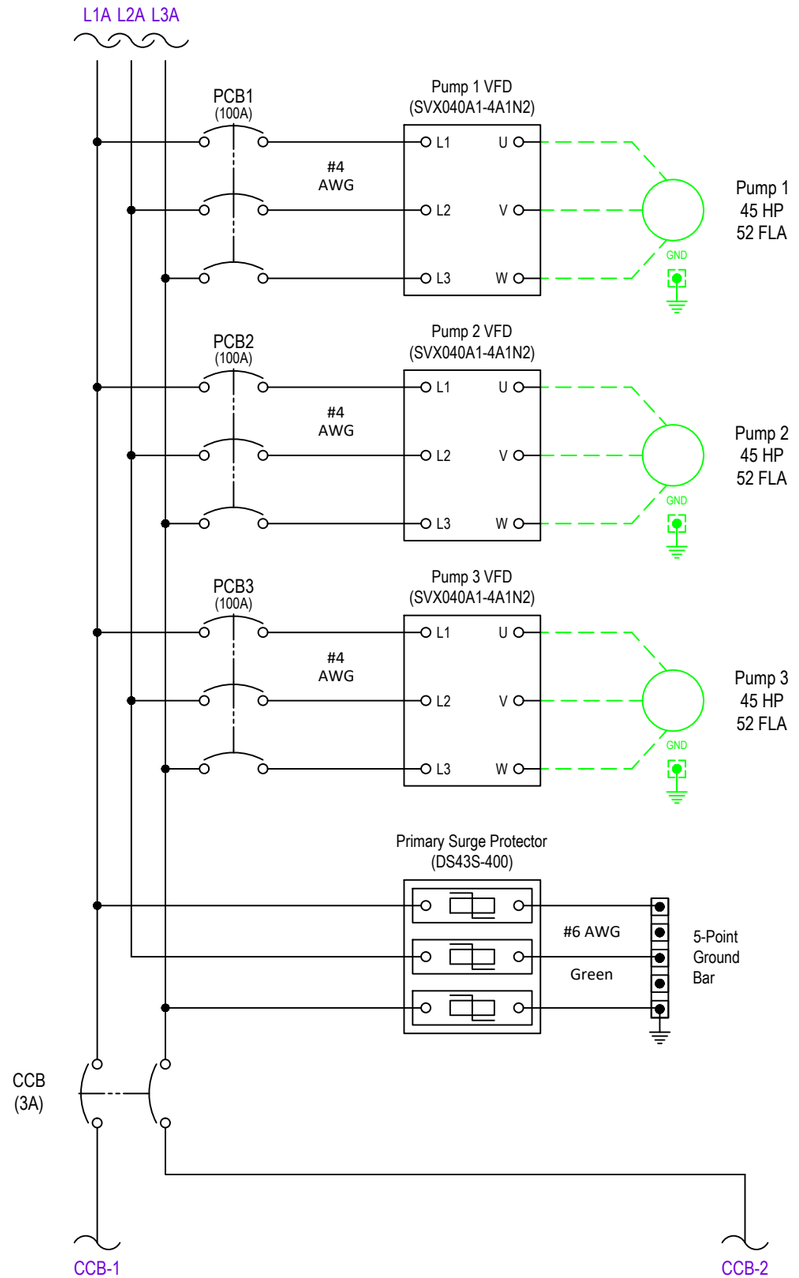
SHEET TITLE: BACK PANEL LAYOUT

PROJECT:
--- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 2 OF 10





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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: 240 VAC VOLTAGE

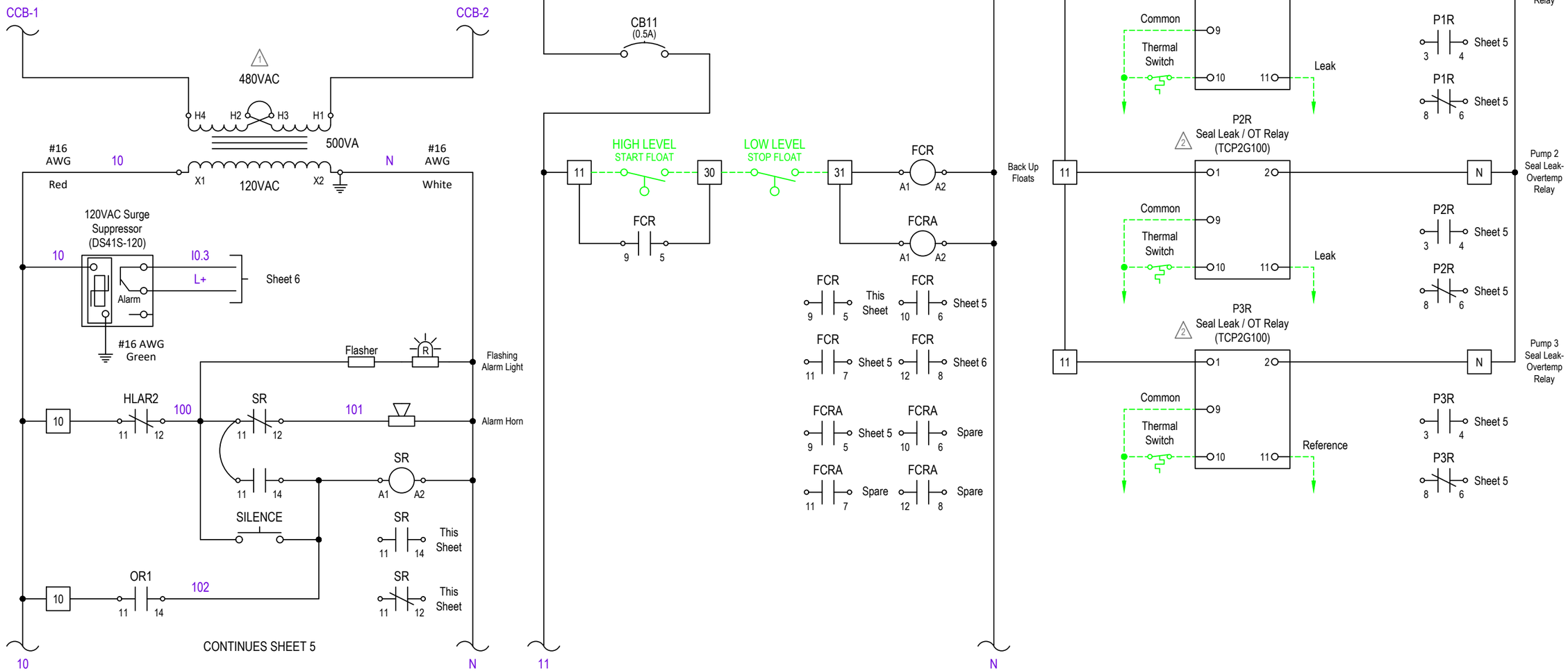
PROJECT: --- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 3 OF 10

GENERAL NOTES:

1. THIS DRAWING IS FOR 480VAC SERVICE. THE TAPS ON THE TRANSFORMER MUST BE CONNECTED FOR 480VAC.
2. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS.
3. ALL CONTROL WIRING AND 12-18 AWG SHALL BE STRANDED TIN-PLATED COPPER WIRE. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
4. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
5. ALL WIRES TERMINATING AT PLC RACK MUST BE ROUTED THROUGH WIREWAY FROM BELOW.
6. ALL ANALOG SIGNAL WIRING SHALL BE SHIELDED CABLE.
7. THIS DRAWING IS FOR A TRIPLEX PUMP STATION. DUPLEX PUMP STATIONS REQUIRE FEWER PUMP CONTROLS.



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2017 STANDARD PACKAGE, REV. 1	

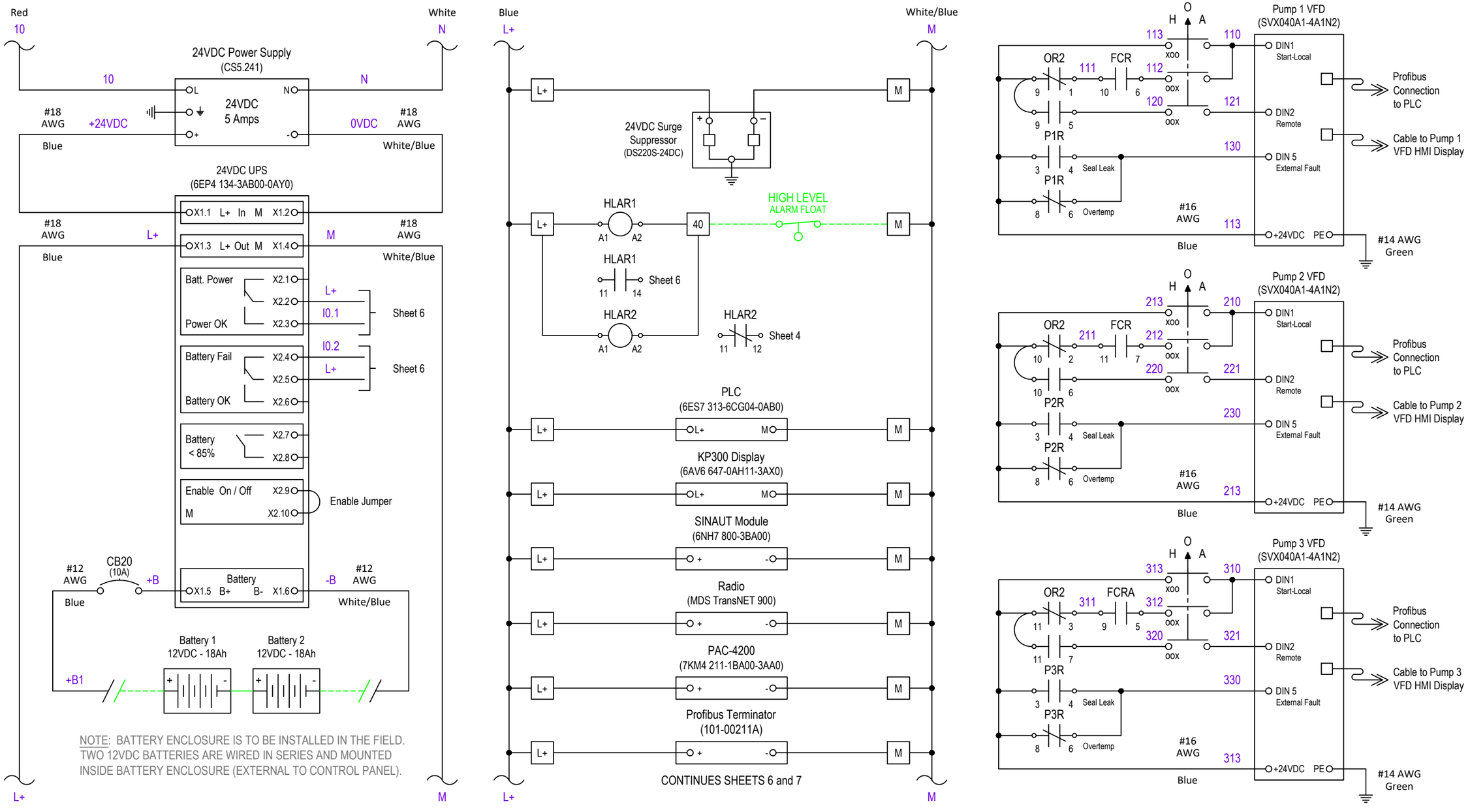
SHEET TITLE: 120 VAC VOLTAGE

PROJECT: --- PROJECT NAME ---

3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 4 OF 10



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SHEET TITLE: 24 VDC VOLTAGE

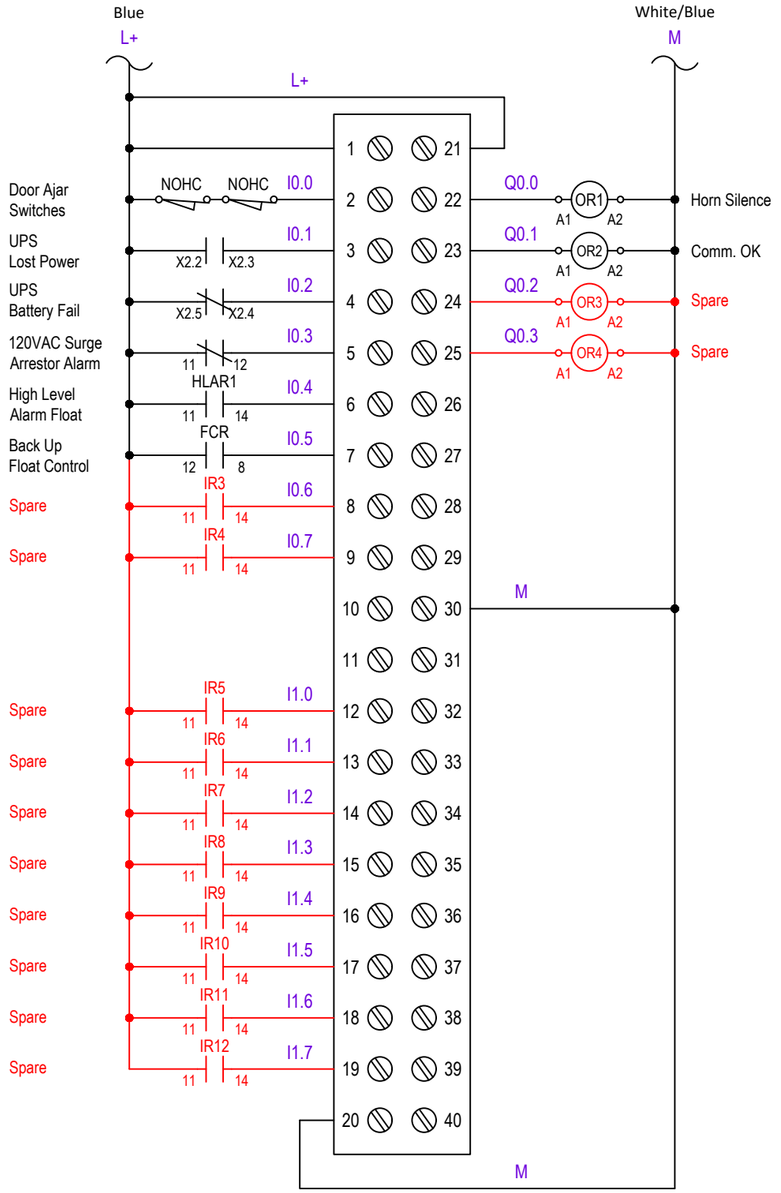
PROJECT: --- PROJECT NAME ---

3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 5 OF 10

RACK: 0 SLOT: 4



6ES7 313-6CG04-0AB0	
16 Digital Input - 16 Relay Out	
1	1L+ = +24V
2	Input 0.0
3	Input 0.1
4	Input 0.2
5	Input 0.3
6	Input 0.4
7	Input 0.5
8	Input 0.6
9	Input 0.7
10	
11	
12	Input 1.0
13	Input 1.1
14	Input 1.2
15	Input 1.3
16	Input 1.4
17	Input 1.5
18	Input 1.6
19	Input 1.7
20	1M = DC COM
21	2L+ = +24V
22	Output 0.0
23	Output 0.1
24	Output 0.2
25	Output 0.3
26	Output 0.4
27	Output 0.5
28	Output 0.6
29	Output 0.7
30	2M = DC COM
31	3L+ = +24V
32	Output 1.0
33	Output 1.1
34	Output 1.2
35	Output 1.3
36	Output 1.4
37	Output 1.5
38	Output 1.6
39	Output 1.7
40	3M = DC COM

RACK: - SLOT: -

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2017 STANDARD PACKAGE, REV. 1	

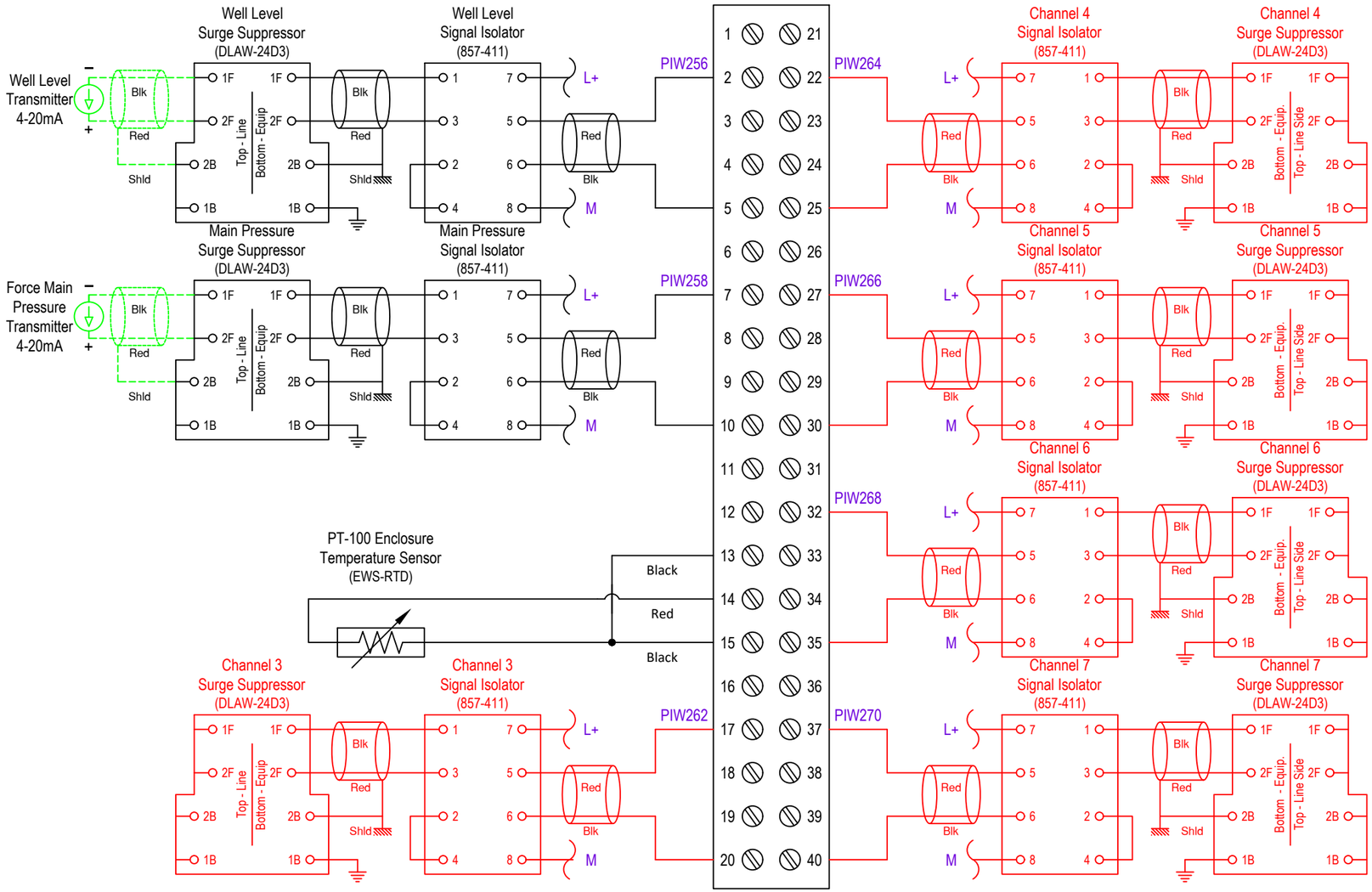
SHEET TITLE: PLC DIGITAL I/O

PROJECT: --- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 6 OF 10

RACK: 0 SLOT: 5



8 Input Analog	
1	U+ = > CH0 - PIW256
2	I +
3	S -
4	M +
5	M -
6	U+ = > CH1 - PIW258
7	I +
8	S -
9	M +
10	M -
11	U+ = > CH2 - PIW260
12	I +
13	S -
14	M +
15	M -
16	U+ = > CH3 - PIW262
17	I +
18	S -
19	M +
20	M -
21	U+ = > CH4 - PIW264
22	I +
23	S -
24	M +
25	M -
26	U+ = > CH5 - PIW266
27	I +
28	S -
29	M +
30	M -
31	U+ = > CH6 - PIW268
32	I +
33	S -
34	M +
35	M -
36	U+ = > CH7 - PIW270
37	I +
38	S -
39	M +
40	M -

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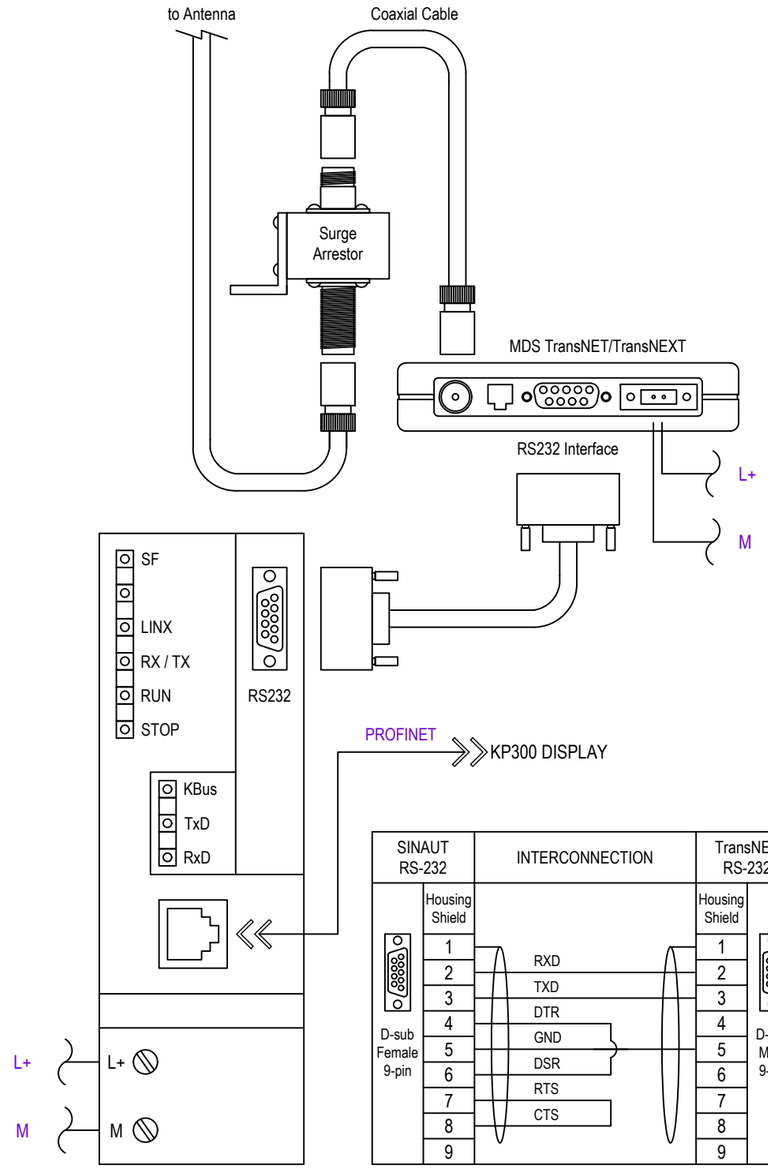
SHEET TITLE: PLC ANALOG INPUT

PROJECT:
--- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 7 OF 10

RACK: 0 SLOT: 6



6NH7 800-3BA00	
SINAUT - > TIM3V-IE	
	RS-232 PIN OUT
1	DCD - Input
2	RXD - Input
3	TXD - Output
4	DTR - Output
5	GND
6	--
7	RTS - Output
8	CTS - Input
	RJ-45 PIN OUT
1	TXD+ - > Output
2	TXD- - > Output
3	RXD+ - > Input
4	--
5	--
6	RXD- - > Input
7	--
8	--
	Power Connector
L+	+ 24VDC
M	DC Common

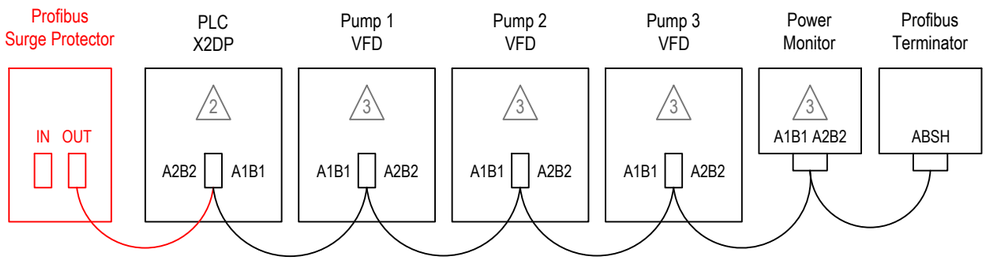
VFD Functional

- OFF - Drive is disabled.
- MANUAL - The drive will be forced to Local control and will be given a start signal to ramp it up to maximum speed.
- AUTO - If the VFD selector switch is put into Auto and Communication OK relay is good then the drive will be controlled over Profibus using PPO4. If the PLC communication is ever lost to the VFD, the communication OK relay will drop out and control the VFD from the Float Control Relay. The communication OK relay is controlled by the PLC and is to be energized as long as the VFD communication is OK.

Setting up Cutler-Hammer SVX9000 on Profibus with Backup Float Revised 6/7/13

- Contact JEA for the latest documentation.

Profibus Connection Diagram



GENERAL NOTES:

1. ALL PLC I/O WIRING SHALL BE #18 AWG. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
2. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "ON" POSITION.
3. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "OFF" POSITION.

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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: PLC & RADIO CONNECTION

PROJECT: --- PROJECT NAME ---

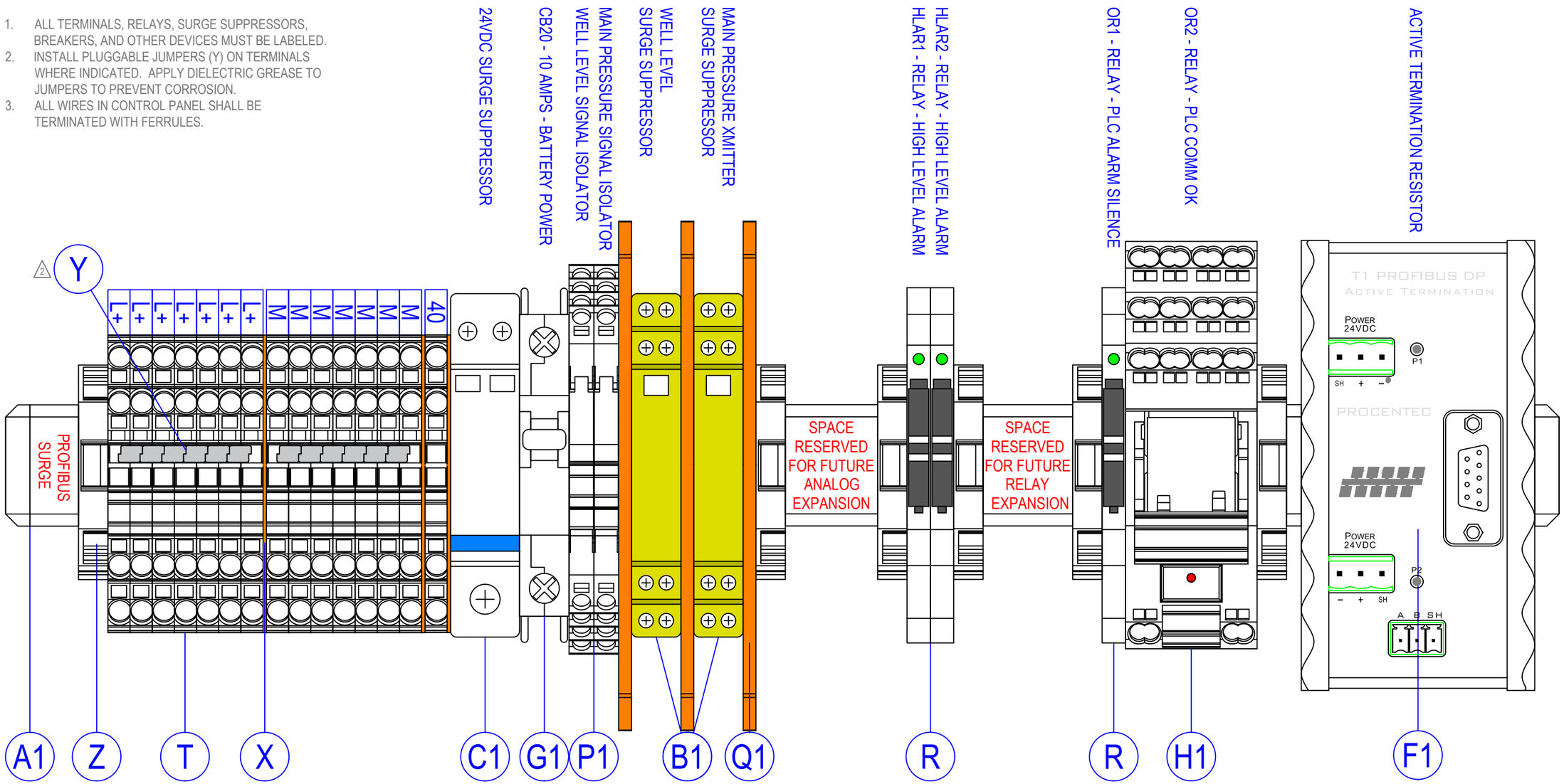
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 8 OF 10

GENERAL NOTES:

1. ALL TERMINALS, RELAYS, SURGE SUPPRESSORS, BREAKERS, AND OTHER DEVICES MUST BE LABELED.
2. INSTALL PLUGGABLE JUMPERS (Y) ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
3. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.



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SHEET TITLE: 24 VDC TERMINAL BLOCK LAYOUT

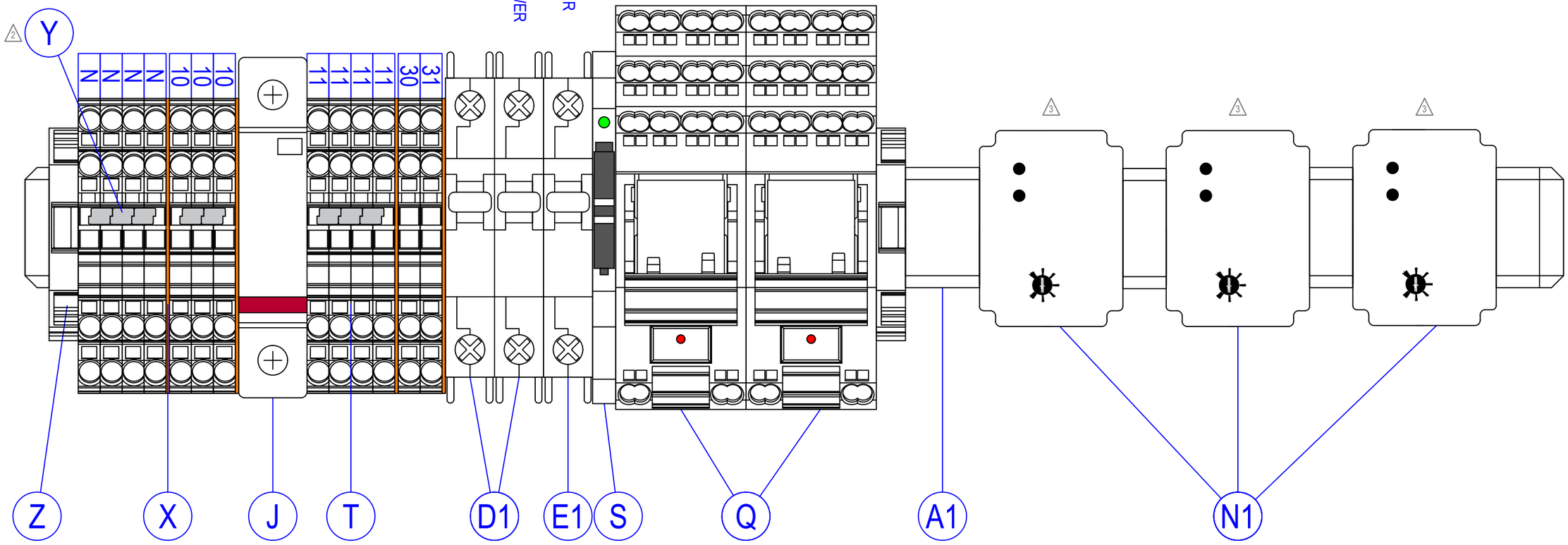
PROJECT: --- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 9 OF 10

GENERAL NOTES:

1. ALL TERMINALS, RELAYS, BREAKERS, SURGE SUPPRESSORS, AND OTHER DEVICES MUST BE LABELED.
2. INSTALL PLUGGABLE JUMPERS (Y) ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
3. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS.
4. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.



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2017 STANDARD PACKAGE, REV. 1	

SHEET TITLE: 120 VAC TERMINAL BLOCK LAYOUT

PROJECT: --- PROJECT NAME ---
3-PHASE VFD LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 10 OF 10

INSTRUCTIONS:

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

2. RETURN COMPLETED SHOP DRAWINGS AS PDF FILE TO ARISS FAJARDO AT FAJAAJ@JEA.COM FOR APPROVAL.

3. PLEASE CONTACT ARISS FAJARDO FOR QUESTIONS OR ADDITIONAL INFORMATION.

4. DO NOT PRINT THIS SHEET IN SUBMITAL SET.

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2.	AJF	12/16/17	UPDATED BOM
1.	AJF	11/14/17	ADDED NEW COMPONENTS

ELECTRICAL SCHEMATIC

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2017 STANDARD PACKAGE, REV. 2

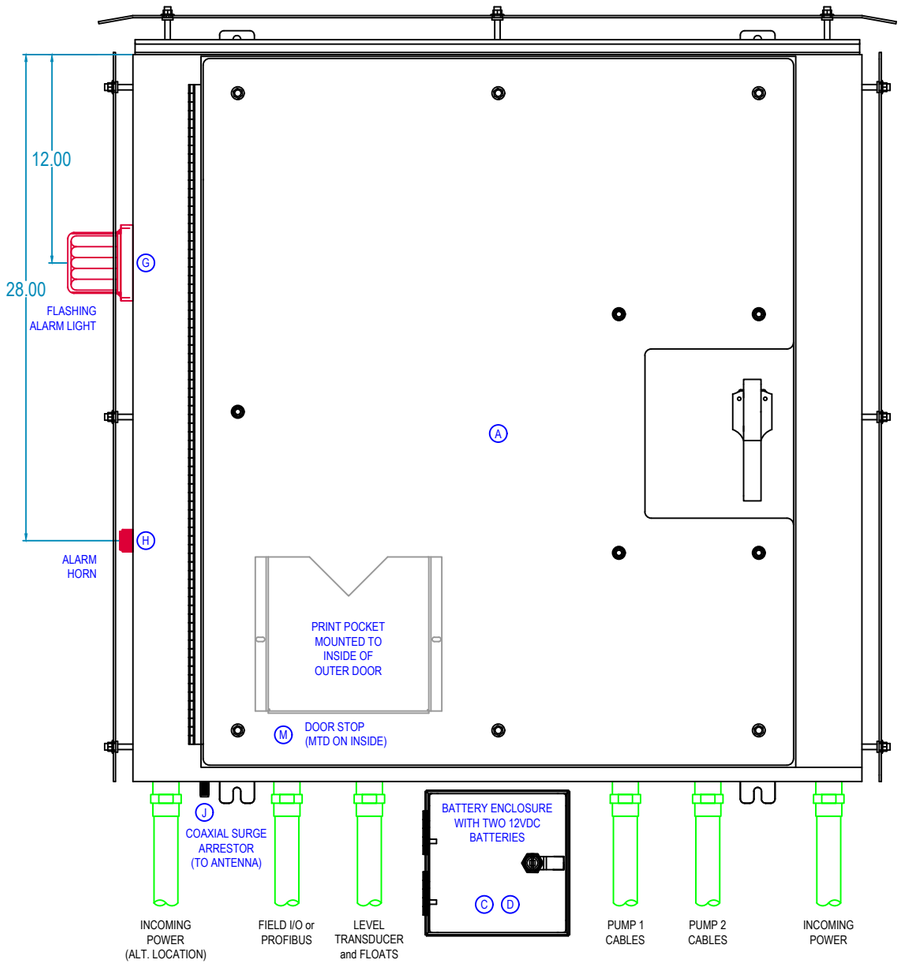
SHEET TITLE: INSTRUCTION SHEET

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

JOB No: 12345678

SHEET 0 OF 10

FRONT VIEW



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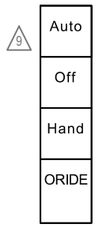
CUSTOM ENCLOSURE:
SPN123RAL-424210-JEA (42"H x 42"W x 10"D) NEMA 12/3R RATED, FABRICATED FROM .125 MARINE GRADE ALUMINUM. OUTER DOOR IS FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOP.

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.

NOTE: BATTERY ENCLOSURE IS TO BE INSTALLED IN THE FIELD

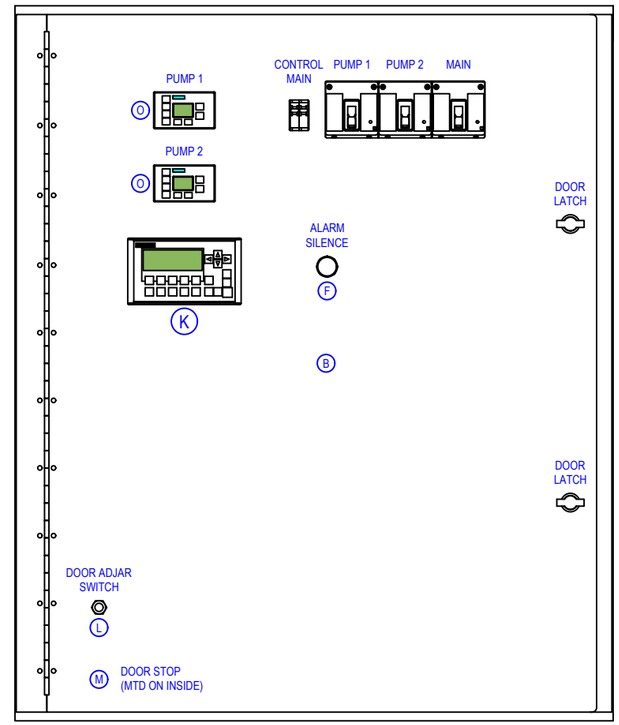
BILL of MATERIAL

		QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
2	A	1	SCHAEFER	SPN123RAL-424210-JEA	CUSTOM ENCLOSURE, NEMA 12/3R, ALUM.
2	B	1	OEM	-	HINGED INNER DOOR, .125 ALUMINUM
	C	1	SCHAEFER	SPN1AL-888-JEA	BATTERY ENCLOSURE, .125 ALUMINUM
	D	2	POWER SONIC	PS-12180 F2	BATTERY, LEAD-ACID, 12VDC, 18Ah
	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
4 2	I	1	APT	S50A240V3H	SURGE PROTECTOR, 240V DELTA HI-LEG
			APT	S50A277V3Y	SURGE PROTECTOR, 480V WYE
	J	1	TIMES-PROTECT	LP-STR-NFF	COAXIAL SURGE ARRESTOR (ANTENNA)
	K	1	SIEMENS	6AV6 647-0AH11-3AX0	OPERATOR PANEL KP300 DISPLAY
	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	-	-	-	-
9	O	2	SIEMENS	3UF7 210-1AA00-0	SIMOCODE PRO V DISPLAY (PUMPS)



SIMOCODE PRO-V DISPLAY INSERT, TYPICAL FOR TWO (N.T.S.)

INNER DOOR VIEW



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

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 CIRCUIT BREAKER SIZE, WIRE SIZE, CONTACTOR SIZE, SIMOCODE VOLTAGE/CURRENT MODULE, AND OTHER ITEMS. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
3. REFER TO NOTES AND DETAILS ON ALL DRAWING SHEETS FOR MORE MANUFACTURING DETAILS.
4. 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.
5. ALL FIELD WIRING SHALL BE #12 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
6. ALL PLC I/O WIRING INTERNAL TO THE CONTROL PANEL SHALL BE #18 AWG.
7. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
8. ALL MOUNTING SCREWS SHALL BE STAINLESS STEEL, DRILLED AND TAPPED (NO SELF-TAPPING SCREWS ARE ALLOWED).
9. PRINT LED LEGEND STRIPS (BLACK & WHITE ON TRANSPARENCY) AND INSERT INTO EACH PUMP SIMOCODE PRO-V DISPLAY (ITEM O).

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2017 STANDARD PACKAGE, REV. 2	

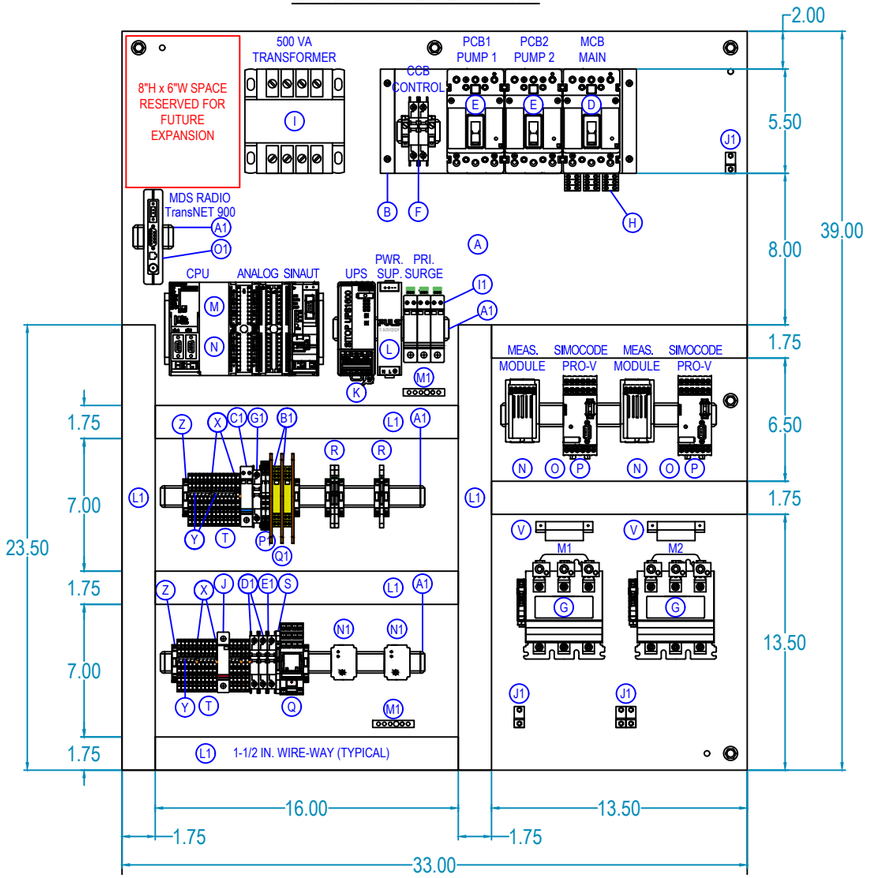
SHEET TITLE: 100 AMP FRONT PANEL VIEW

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

JOB No: 12345678

SHEET 1 OF 10

BACK PANEL LAYOUT



BACK PANEL:
SPP-4236 (39"H x 33"W) FABRICATED FROM 12ga. CARBON STEEL WITH WHITE INDUSTRIAL GRADE ENAMEL FINISH.

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

BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	SCHAEFER	SPP-4236	BACK PANEL, CARBON STEEL, WHITE
B	1	OEM	BREAKER MOUNT	TO RAISE CBs FLUSH WITH INNER DOOR
C	-	-	-	-
D	1	SIEMENS	NEG3B100L	MCB, 3 POLE, 100A
E	2	SIEMENS	NEG3B020L	PCB1 and PCB2, 3 POLE, 20A
F	1	WEIDMULLER	9926 25 2006	CCB, UL489, 2 POLE, 6A (240V SERVICE)
		WEIDMULLER	9926 25 2003	CCB, UL489, 2 POLE, 3A (480V SERVICE)
G	2	SIEMENS	40DP32A	FVNR CONTACTOR, 3 POLE, NEMA 1
H	1	SIEMENS	3TA6EG06	POWER DISTRIBUTION LUGS, KIT OF 3
I	1	SIEMENS	MT0500A	CONTROL TRANSFORMER, 500VA
J	1	CITEL	DS41S-120	120VAC SURGE SUPPRESSOR, BASE
K	1	SIEMENS	6EP4 134-3AB00-0AY0	SITOP DC UPS, 10A WITH CHARGER
L	1	PULS	CS5.241	24VDC POWER SUPPLY, 5A
M	1	SIEMENS	6ES7 390-1AE80-0AA0	480mm MOUNTING RAIL FOR PLC EQUIP.
	1	SIEMENS	6ES7 313-6CG04-0AB0	CPU 313C-2DP, 16 DI - 16 DO PLC
	1	SIEMENS	6ES7 953-8LG30-0AA0	MMC MEMORY CARD, 128KB
	1	SIEMENS	6ES7 331-1KF02-0AB0	8 FUNCTION ANALOG INPUT MODULE
	2	SIEMENS	6ES7 392-1BM01-0AA0	40-PIN SPRING CONNECTOR
	1	SIEMENS	6NH7 800-3BA00	SINAUT ST7, TIM 3V-IE MODULE
	-	-	-	-
N	3	BRAD HARRISON	PA9D01-42	PROFIBUS CONNECTOR, 90°, PG PORT
O	-	BRAD HARRISON	MA9D00-42	PROFIBUS CONNECTOR, 180°
P	2	SIEMENS	3UF7 010-1AU00-0	SIMOCODE PRO V BASE UNIT, 120VAC
	2	SIEMENS	3UF7 112-1AA01-0	SIMOCODE PRO I/E MEAS. MODULE
	2	SIEMENS	3UF7 933-0BA00-0	SIMOCODE CABLE TO DISPLAY, 2.5M
	2	SIEMENS	3UF7 935-0AA00-0	SIMOCODE CABLE, 0.3M
	-	-	-	-
Q	1	WAGO	858-507	RELAY, STATUS, SPRING, 4NO-NC, 120VAC
R	3	WAGO	857-304	RELAY, STATUS, SPRING, SPDT, 24VDC

BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
S	1	WAGO	857-357	RELAY, STATUS, SPRING, SPDT, 120VAC
T	28	WAGO	2002-1401	TERMINAL, 2002, SPRING, GRAY
U	1	SIEMENS	6XV1830-0EH10	PROFIBUS CABLE, FAST CONNECT TYPE
V	2	SIEMENS	49D26344	CONTACTOR SURGE SUPPRESSOR
W	2	SIEMENS	6GK1901-1BB10-2AA0	PROFINET CONNECTOR
X	7	WAGO	2002-1492	TERMINAL END / PART. PLATE, ORANGE
Y	20	WAGO	2002-400	ADJACENT JUMPER, 2-WAY CONTINUOUS
Z	8	WAGO	249-116	TERMINAL END STOP, GRAY
A1	1	WAGO	210-112	2M DIN RAIL, GALVANIZED, SLOTTED
B1	2	CITEL	DLAW-24D3	ANALOG SURGE SUPPRESSOR, 24VDC
C1	1	CITEL	DS220S-24DC	24VDC SURGE SUPPRESSOR
D1	2	WEIDMULLER	9926 25 1000	CB11 and CB12, UL489, 1 POLE, 0.5A
E1	1	WEIDMULLER	9926 25 1002	CB13, UL489, 1 POLE, 2A
F1	1	SIEMENS	6XV1840-2AH10	PROFINET CABLE
G1	1	WEIDMULLER	9926 25 1910	CB20, UL489, 1 POLE, 10A
H1	-	-	-	-
I1	1	CITEL	DS43S-230	PRIMARY SPD, 240V DELTA HI-LEG
		CITEL	DS43S-400	PRIMARY SPD, 480V WYE
J1	4	PANDUIT	LAMA2-14-QY	GROUND LUG, DUAL-RATED, #2-14AWG
K1	-	CITEL	DLA-12D3	PROFIBUS SURGE PROTECTOR
L1	2	PANDUIT	1.5"W x 3"H x 72"L	WIREWAY, HINGE COVER, WIDE FINGER
M1	2	SQUARE D	PK5GTA	EQUIPMENT GROUND BAR, 5-POINT
N1	2	MACROMATIC	TCP2G100	SEAL LEAK / OVERTEMP RELAY, 120VAC
O1	1	MDS	TRANSNET/TRANSNEXT	RADIO, SPREAD-SPECTRUM, UNLICENSED
	1	MDS	03-4124A01	DIN RAIL MOUNT KIT
	1	TFS, INC.	-	SINAUT TO RADIO NULL CABLE
P1	2	WAGO	857-411	ANALOG SIGNAL ISOLATOR
Q1	3	WAGO	209-191	SEPARATOR, ORANGE
R1	-	-	-	-

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 CIRCUIT BREAKER SIZE, WIRE SIZE, CONTACTOR SIZE, SIMOCODE VOLTAGE/CURRENT MODULE, AND OTHER ITEMS. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
3. SEAL LEAK/OVERTEMP RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER.
4. TECHNICAL FIELD SERVICES, INC., JACKSONVILLE, FLORIDA (904) 278-5250
5. MINIMUM SIZE FOR MOTOR CONTACTORS SHALL BE NEMA SIZE 1.
6. WIRE BEND FROM CIRCUIT BREAKERS SHALL NOT BE ROUTED OVER OR OBSTRUCT WIREWAY BELOW.
7. ENSURE GOOD ELECTRICAL CONTACT BETWEEN BACK PANEL AND ALL MECHANICAL GROUND CONNECTIONS.

CONTROL WIRE UL508A COLOR:

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

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DESIGNER:
DRAWN BY:
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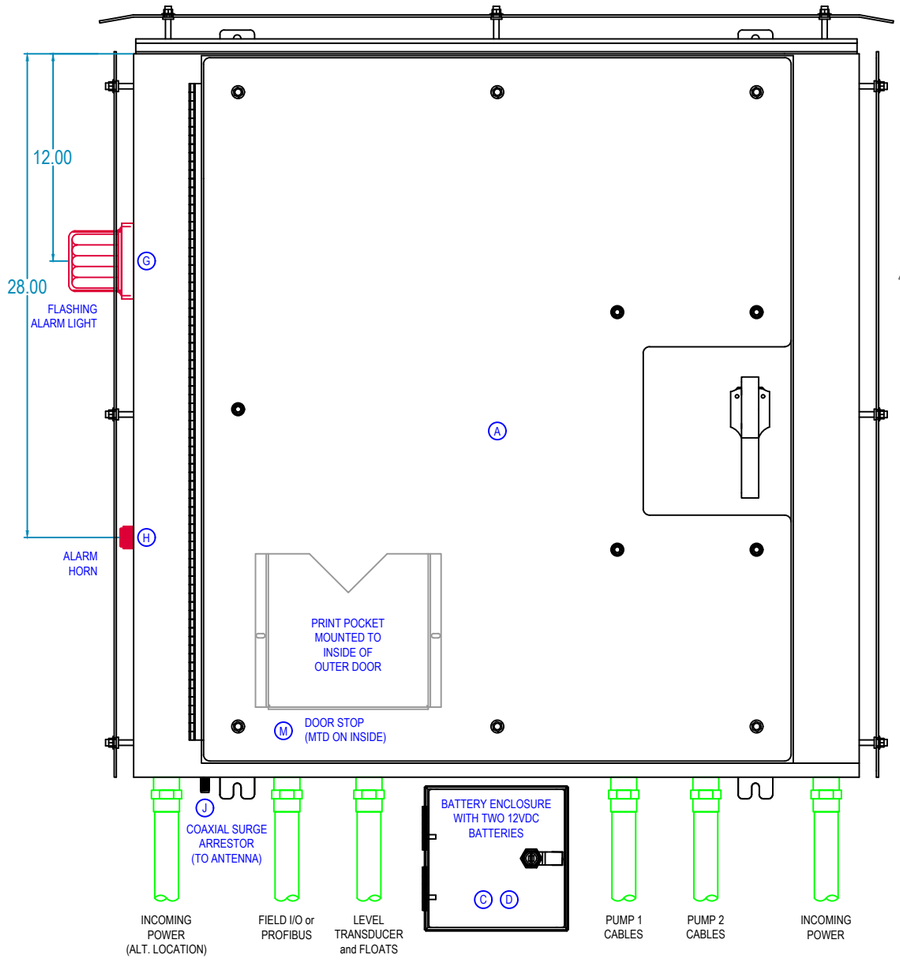
2017 STANDARD PACKAGE, REV. 2

SHEET TITLE: 100 AMP BACK PANEL LAYOUT
PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM
JOB No: 12345678
SHEET 2 OF 10

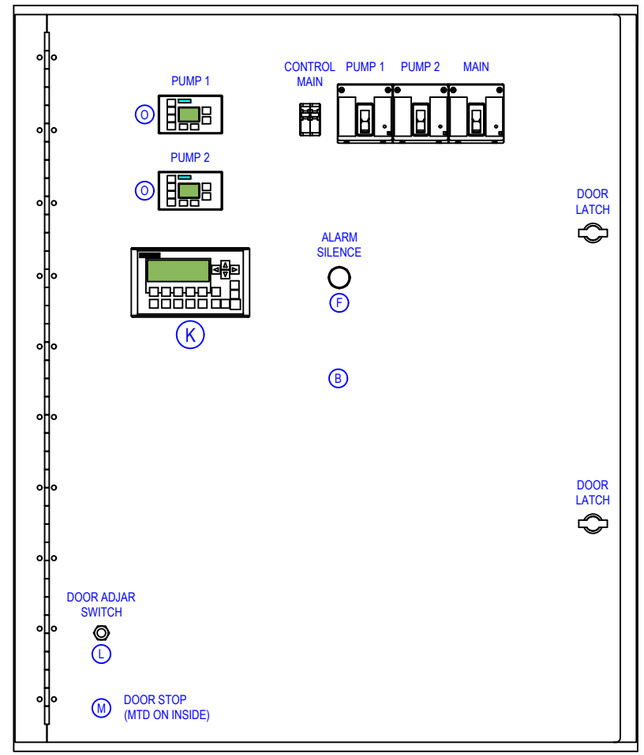
FRONT VIEW



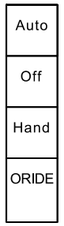
BILL of MATERIAL

		QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
2	A	1	SCHAEFER	SPN123RAL-424210-JEA	CUSTOM ENCLOSURE, NEMA 12/3R, ALUM.
2	B	1	OEM	-	HINGED INNER DOOR, .125 ALUMINUM
	C	1	SCHAEFER	SPN1AL-888-JEA	BATTERY ENCLOSURE, .125 ALUMINUM
	D	2	POWER SONIC	PS-12180 F2	BATTERY, LEAD-ACID, 12VDC, 18Ah
	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
4 2	I	1	APT	S50A240V3H	SURGE PROTECTOR, 240V DELTA HI-LEG
			APT	S50A277V3Y	SURGE PROTECTOR, 480V WYE
	J	1	TIMES-PROTECT	LP-STR-NFF	COAXIAL SURGE ARRESTOR (ANTENNA)
	K	1	SIEMENS	6AV6 647-0AH11-3AX0	OPERATOR PANEL KP300 DISPLAY
	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	-	-	-	-
9	O	2	SIEMENS	3UF7 210-1AA00-0	SIMOCODE PRO V DISPLAY (PUMPS)

INNER DOOR VIEW



9 SIMOCODE PRO-V DISPLAY INSERT, TYPICAL FOR TWO (N.T.S.)



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CUSTOM ENCLOSURE:
SPN123RAL-424210-JEA (42"H x 42"W x 10"D) NEMA 12/3R RATED, FABRICATED FROM .125 MARINE GRADE ALUMINUM. OUTER DOOR IS FITTED WITH A PADLOCKABLE 3-POINT LATCH AND DOOR STOP.

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.

NOTE: BATTERY ENCLOSURE IS TO BE INSTALLED IN THE FIELD

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

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 CIRCUIT BREAKER SIZE, WIRE SIZE, CONTACTOR SIZE, SIMOCODE VOLTAGE/CURRENT MODULE, AND OTHER ITEMS. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
3. REFER TO NOTES AND DETAILS ON ALL DRAWING SHEETS FOR MORE MANUFACTURING DETAILS.
4. 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.
5. ALL FIELD WIRING SHALL BE #12 AWG STRANDED, TIN-PLATED COPPER. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
6. ALL PLC I/O WIRING INTERNAL TO THE CONTROL PANEL SHALL BE #18 AWG.
7. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
8. ALL MOUNTING SCREWS SHALL BE STAINLESS STEEL, DRILLED AND TAPPED (NO SELF-TAPPING SCREWS ARE ALLOWED).
9. PRINT LED LEGEND STRIPS (BLACK & WHITE ON TRANSPARENCY) AND INSERT INTO EACH PUMP SIMOCODE PRO-V DISPLAY (ITEM O).

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2017 STANDARD PACKAGE, REV. 2	

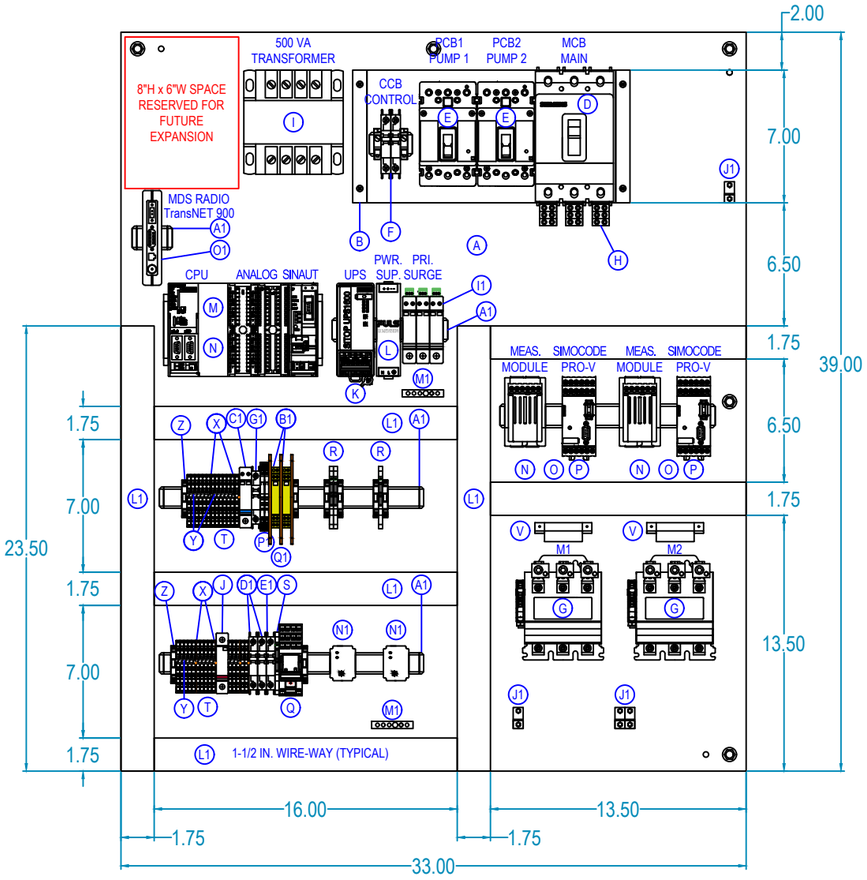
SHEET TITLE: 200 AMP FRONT PANEL VIEW

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

JOB No: 12345678

SHEET 1 OF 10

BACK PANEL LAYOUT



BACK PANEL:
SPP-4236 (39"H x 33"W) FABRICATED FROM 12ga. CARBON STEEL WITH WHITE INDUSTRIAL GRADE ENAMEL FINISH.

DRAWING LAYER COLOR LEGEND:

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

BILL of MATERIAL

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
A	1	SCHAEFER	SPP-4236	BACK PANEL, CARBON STEEL, WHITE
B	1	OEM	BREAKER MOUNT	TO RAISE CBs FLUSH WITH INNER DOOR
C	-	-	-	-
D	1	SIEMENS	NFG3B200L	MCB, 3 POLE, 200A
E	2	SIEMENS	NEG3B100L	PCB1 and PCB2, 3 POLE, 100A
F	1	WEIDMULLER	9926 25 2006	CCB, UL489, 2 POLE, 6A (240V SERVICE)
		WEIDMULLER	9926 25 2003	CCB, UL489, 2 POLE, 3A (480V SERVICE)
G	2	SIEMENS	40HP32A	FVNR CONTACTOR, 3 POLE, NEMA 3
H	1	SIEMENS	3TA6FG04	POWER DISTRIBUTION LUGS, KIT OF 3
I	1	SIEMENS	MT0500A	CONTROL TRANSFORMER, 500VA
J	1	CITEL	DS41S-120	120VAC SURGE SUPPRESSOR, BASE
K	1	SIEMENS	6EP4 134-3AB00-0AY0	SITOP DC UPS, 10A WITH CHARGER
L	1	PULS	CS5.241	24VDC POWER SUPPLY, 5A
M	1	SIEMENS	6ES7 390-1AE80-0AA0	480mm MOUNTING RAIL FOR PLC EQUIP.
	1	SIEMENS	6ES7 313-6CG04-0AB0	CPU 313C-2DP, 16 DI - 16 DO PLC
	1	SIEMENS	6ES7 953-8LG30-0AA0	MMC MEMORY CARD, 128KB
	1	SIEMENS	6ES7 331-1KF02-0AB0	8 FUNCTION ANALOG INPUT MODULE
	2	SIEMENS	6ES7 392-1BM01-0AA0	40-PIN SPRING CONNECTOR
	1	SIEMENS	6NH7 800-3BA00	SINAUT ST7, TIM 3V-IE MODULE
	-	-	-	-
N	3	BRAD HARRISON	PA9D01-42	PROFIBUS CONNECTOR, 90°, PG PORT
O	-	BRAD HARRISON	MA9D00-42	PROFIBUS CONNECTOR, 180°
P	2	SIEMENS	3UF7 010-1AU00-0	SIMOCODE PRO V BASE UNIT, 120VAC
	2	SIEMENS	3UF7 113-1AA01-0	SIMOCODE PRO I/E MEAS. MODULE
	2	SIEMENS	3UF7 933-0BA00-0	SIMOCODE CABLE TO DISPLAY, 2.5M
	2	SIEMENS	3UF7 935-0AA00-0	SIMOCODE CABLE, 0.3M
	-	-	-	-
Q	1	WAGO	858-507	RELAY, STATUS, SPRING, 4NO-NC, 120VAC
R	3	WAGO	857-304	RELAY, STATUS, SPRING, SPDT, 24VDC

	QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
S	1	WAGO	857-357	RELAY, STATUS, SPRING, SPDT, 120VAC
T	28	WAGO	2002-1401	TERMINAL, 2002, SPRING, GRAY
U	1	SIEMENS	6XV1830-0EH10	PROFIBUS CABLE, FAST CONNECT TYPE
V	2	SIEMENS	49D26344	CONTACTOR SURGE SUPPRESSOR
W	2	SIEMENS	6GK1901-1BB10-2AA0	PROFINET CONNECTOR
X	7	WAGO	2002-1492	TERMINAL END / PART. PLATE, ORANGE
Y	20	WAGO	2002-400	ADJACENT JUMPER, 2-WAY CONTINUOUS
Z	8	WAGO	249-116	TERMINAL END STOP, GRAY
A1	1	WAGO	210-112	2M DIN RAIL, GALVANIZED, SLOTTED
B1	2	CITEL	DLAW-24D3	ANALOG SURGE SUPPRESSOR, 24VDC
C1	1	CITEL	DS220S-24DC	24VDC SURGE SUPPRESSOR
D1	2	WEIDMULLER	9926 25 1000	CB11 and CB12, UL489, 1 POLE, 0.5A
E1	1	WEIDMULLER	9926 25 1002	CB13, UL489, 1 POLE, 2A
F1	1	SIEMENS	6XV1840-2AH10	PROFINET CABLE
G1	1	WEIDMULLER	9926 25 1910	CB20, UL489, 1 POLE, 10A
H1	-	-	-	-
I1	1	CITEL	DS43S-230	PRIMARY SPD, 240V DELTA HI-LEG
		CITEL	DS43S-400	PRIMARY SPD, 480V WYE
J1	4	PANDUIT	LAMA2-14-QY	GROUND LUG, DUAL-RATED, #2-14AWG
K1	-	CITEL	DLA-12D3	PROFIBUS SURGE PROTECTOR
L1	2	PANDUIT	1.5"W x 3"H x 72"L	WIREWAY, HINGE COVER, WIDE FINGER
M1	2	SQUARE D	PK5GTA	EQUIPMENT GROUND BAR, 5-POINT
N1	2	MACROMATIC	TCP2G100	SEAL LEAK / OVERTEMP RELAY, 120VAC
O1	1	MDS	TRANSNET/TRANSNEXT	RADIO, SPREAD-SPECTRUM, UNLICENSED
	1	MDS	03-4124A01	DIN RAIL MOUNT KIT
	1	TFS, INC.	-	SINAUT TO RADIO NULL CABLE
P1	2	WAGO	857-411	ANALOG SIGNAL ISOLATOR
Q1	3	WAGO	209-191	SEPARATOR, ORANGE
R1	-	-	-	-

GENERAL NOTES:

1. REFER TO "433 LIFT STATION SCADA CONTROLS SPECIFICATION" 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 CIRCUIT BREAKER SIZE, WIRE SIZE, CONTACTOR SIZE, SIMOCODE VOLTAGE/CURRENT MODULE, AND OTHER ITEMS. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
3. SEAL LEAK/OVERTEMP RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER.
4. TECHNICAL FIELD SERVICES, INC., JACKSONVILLE, FLORIDA (904) 278-5250
5. MINIMUM SIZE FOR MOTOR CONTACTORS SHALL BE NEMA SIZE 1.
6. WIRE BEND FROM CIRCUIT BREAKERS SHALL NOT BE ROUTED OVER OR OBSTRUCT WIREWAY BELOW.
7. ENSURE GOOD ELECTRICAL CONTACT BETWEEN BACK PANEL AND ALL MECHANICAL GROUND CONNECTIONS.

CONTROL WIRE UL508A COLOR:

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

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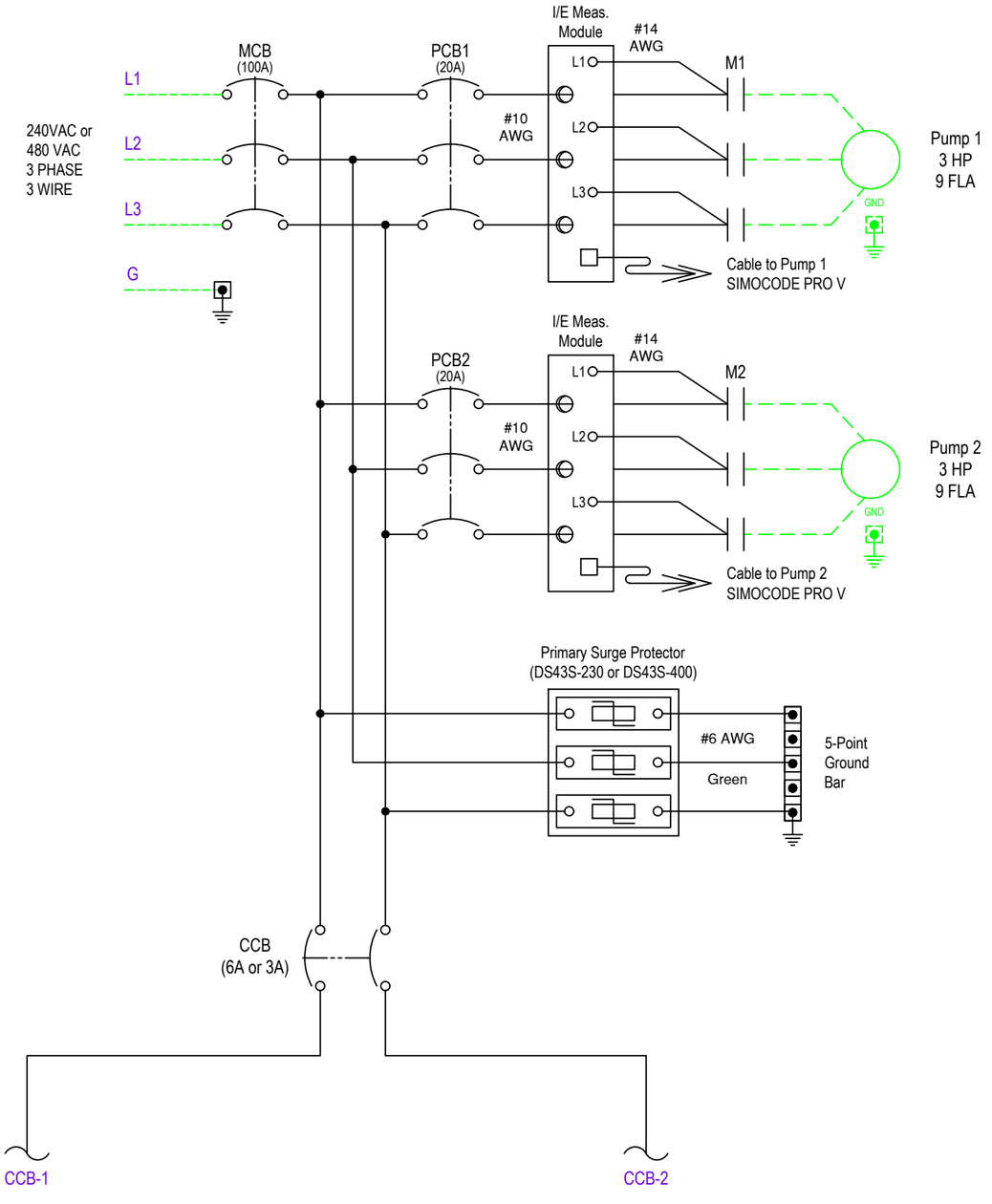
2017 STANDARD PACKAGE, REV. 2	

SHEET TITLE: 200 AMP BACK PANEL LAYOUT
PROJECT: --- PROJECT NAME ---
ACROSS THE LINE LIFT STATION DIAGRAM
JOB No: 12345678
SHEET 2 OF 10



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2017 STANDARD PACKAGE, REV. 2	

SHEET TITLE: 240 VAC VOLTAGE

PROJECT: --- PROJECT NAME ---

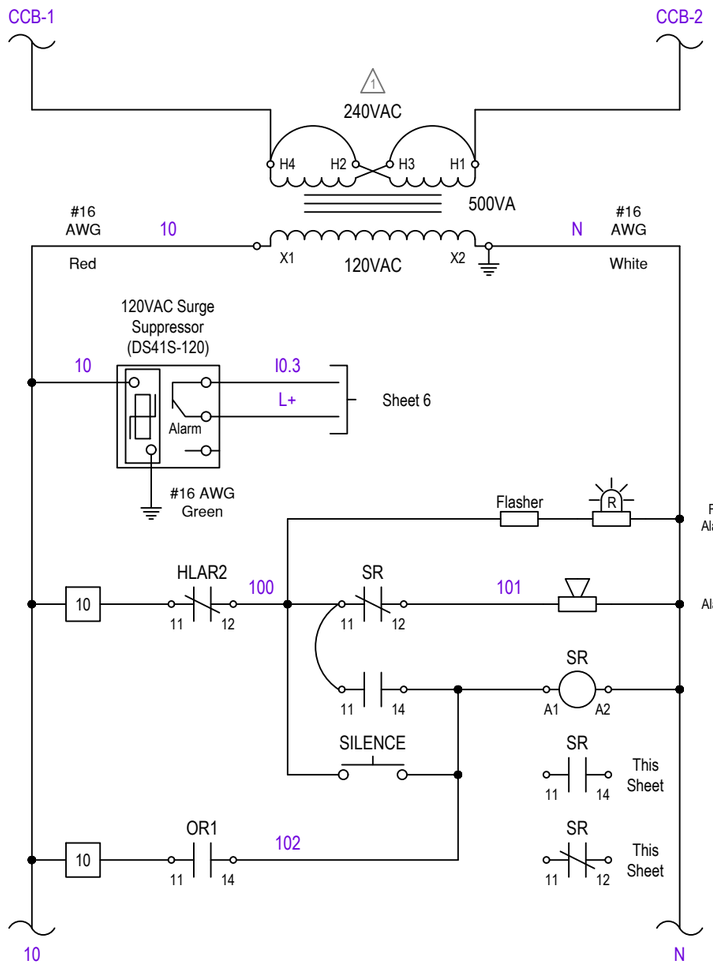
ACROSS THE LINE LIFT STATION DIAGRAM

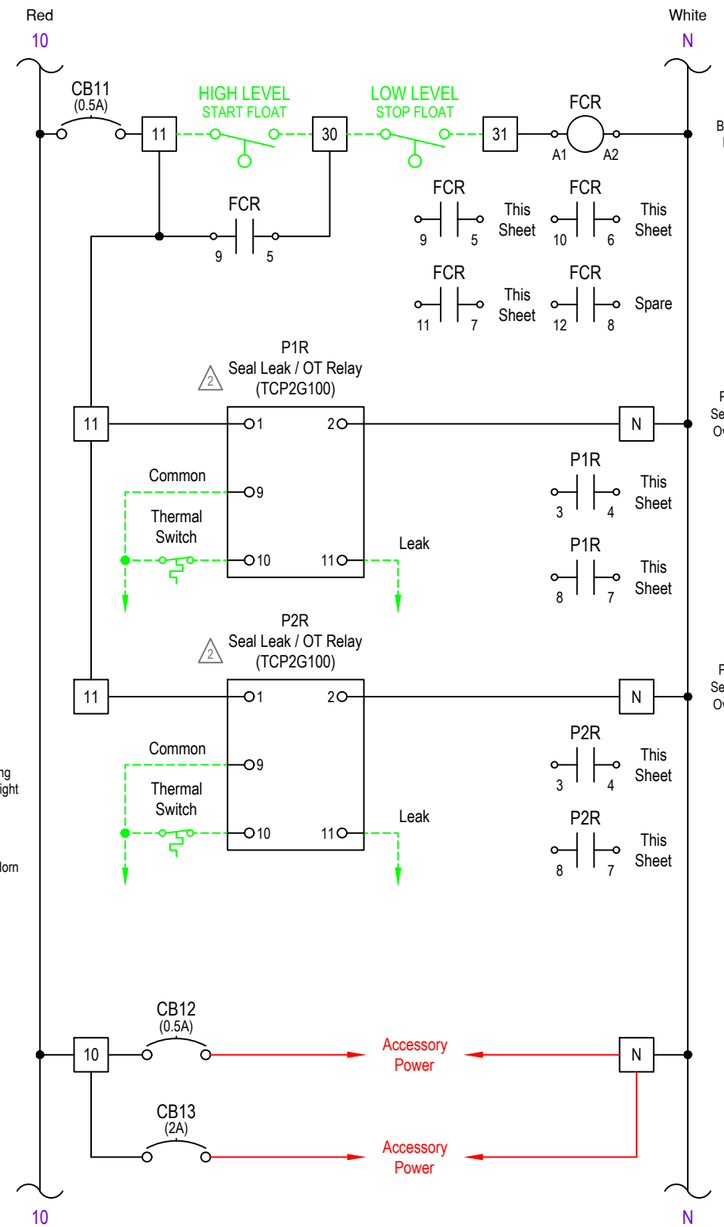
JOB No: 12345678

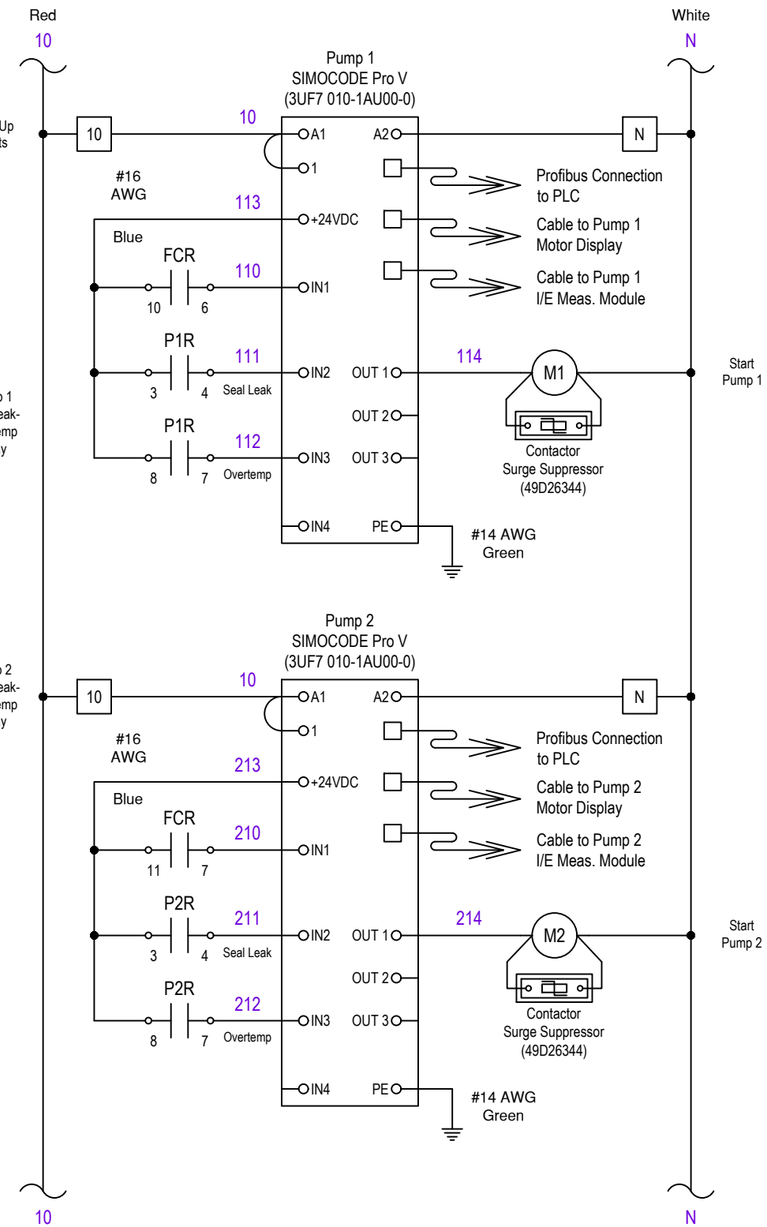
SHEET 3 OF 10

GENERAL NOTES:

1. THIS DRAWING IS FOR A 240VAC CONNECTION. IF SERVICE IS 480VAC, THE TAPS ON THE TRANSFORMER MUST BE CHANGED.
2. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS.
3. ALL CONTROL WIRING AND 12-18 AWG SHALL BE STRANDED TIN-PLATED COPPER WIRE. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
4. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
5. ALL WIRES TERMINATING AT PLC RACK MUST BE ROUTED THROUGH WIREWAY FROM BELOW.
6. ALL ANALOG SIGNAL WIRING SHALL BE SHIELDED CABLE.
7. THIS DRAWING IS FOR A DUPLEX PUMP STATION. TRIPLEX PUMP STATIONS REQUIRE ADDITIONAL PUMP CONTROLS.







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2017 STANDARD PACKAGE, REV. 2	

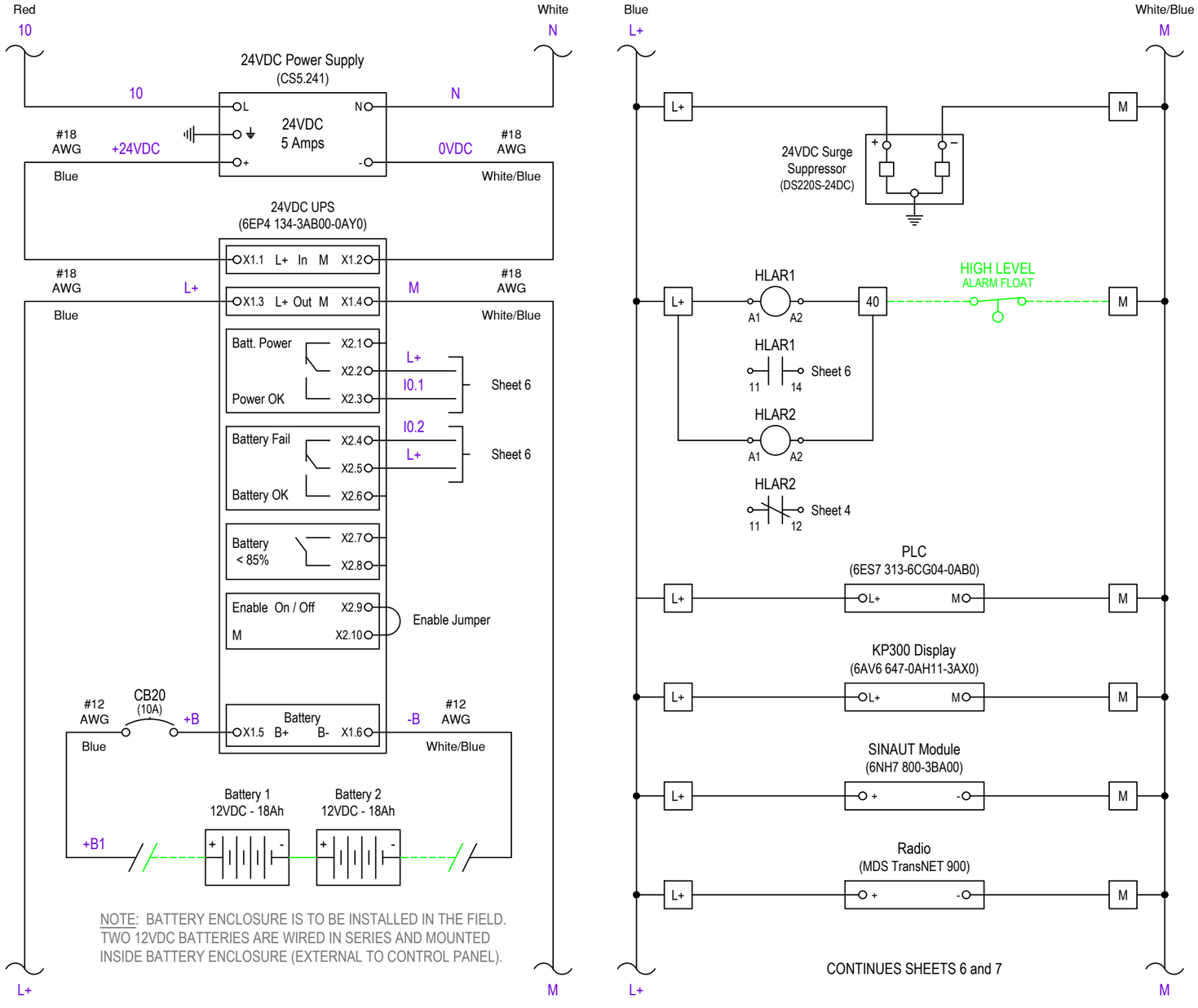
SHEET TITLE: 120 VAC VOLTAGE

PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 4 OF 10



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DESIGNER:
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2017 STANDARD PACKAGE, REV. 2

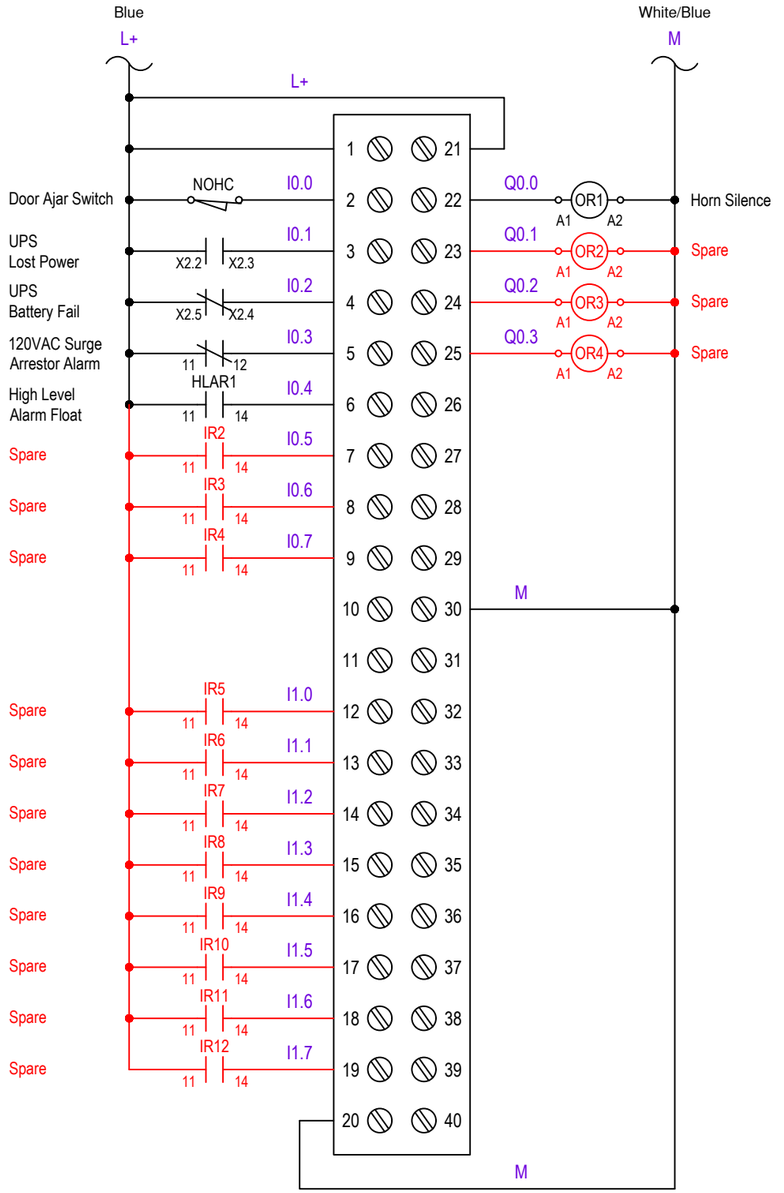
SHEET TITLE: 24 DCV VOLTAGE

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

JOB No: 12345678

SHEET 5 OF 10

RACK: 0 SLOT: 4



6ES7 313-6CG04-0AB0	
16 Digital Input - 16 Relay Out	
1	1L+ = +24V
2	Input 0.0
3	Input 0.1
4	Input 0.2
5	Input 0.3
6	Input 0.4
7	Input 0.5
8	Input 0.6
9	Input 0.7
10	
11	
12	Input 1.0
13	Input 1.1
14	Input 1.2
15	Input 1.3
16	Input 1.4
17	Input 1.5
18	Input 1.6
19	Input 1.7
20	1M = DC COM
21	2L+ = +24V
22	Output 0.0
23	Output 0.1
24	Output 0.2
25	Output 0.3
26	Output 0.4
27	Output 0.5
28	Output 0.6
29	Output 0.7
30	2M = DC COM
31	3L+ = +24V
32	Output 1.0
33	Output 1.1
34	Output 1.2
35	Output 1.3
36	Output 1.4
37	Output 1.5
38	Output 1.6
39	Output 1.7
40	3M = DC COM

RACK: - SLOT: -

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ELECTRICAL SCHEMATIC

MANUFACTURER
ADDRESS1
ADDRESS2

CONTACT_NAME
CONTACT_NUMBER

JEA sm
Building Community sm

DESIGNER:	
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DATE:	
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2017 STANDARD PACKAGE, REV. 2	

SHEET TITLE: PLC DIGITAL I/O

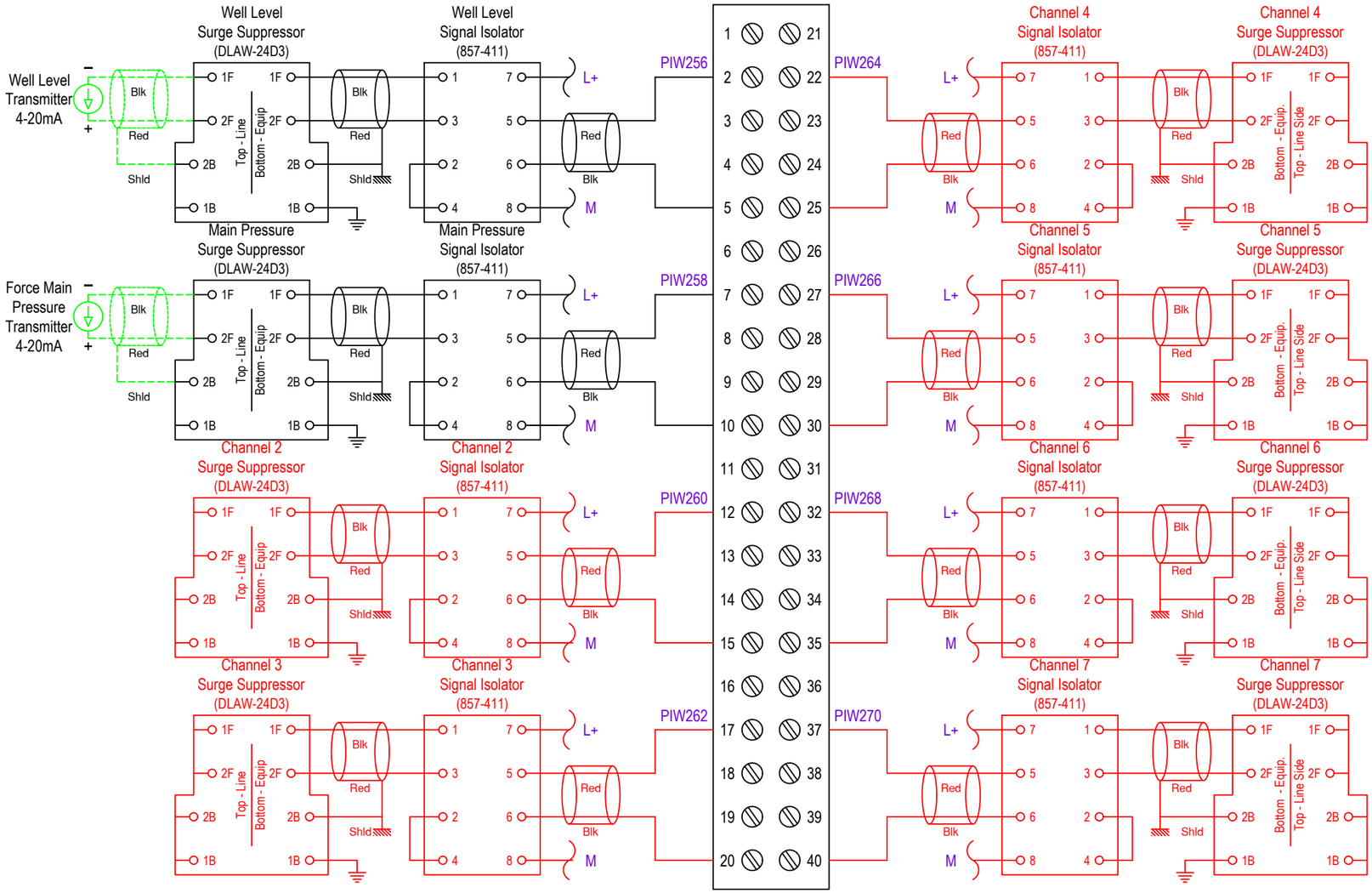
PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 6 OF 10

RACK: 0 SLOT: 5



8 Input Analog	
1	U+ = > CH0 - PIW256
2	I +
3	S -
4	M +
5	M -
6	U+ = > CH1 - PIW258
7	I +
8	S -
9	M +
10	M -
11	U+ = > CH2 - PIW260
12	I +
13	S -
14	M +
15	M -
16	U+ = > CH3 - PIW262
17	I +
18	S -
19	M +
20	M -
21	U+ = > CH4 - PIW264
22	I +
23	S -
24	M +
25	M -
26	U+ = > CH5 - PIW266
27	I +
28	S -
29	M +
30	M -
31	U+ = > CH6 - PIW268
32	I +
33	S -
34	M +
35	M -
36	U+ = > CH7 - PIW270
37	I +
38	S -
39	M +
40	M -

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SHEET TITLE: PLC ANALOG INPUT

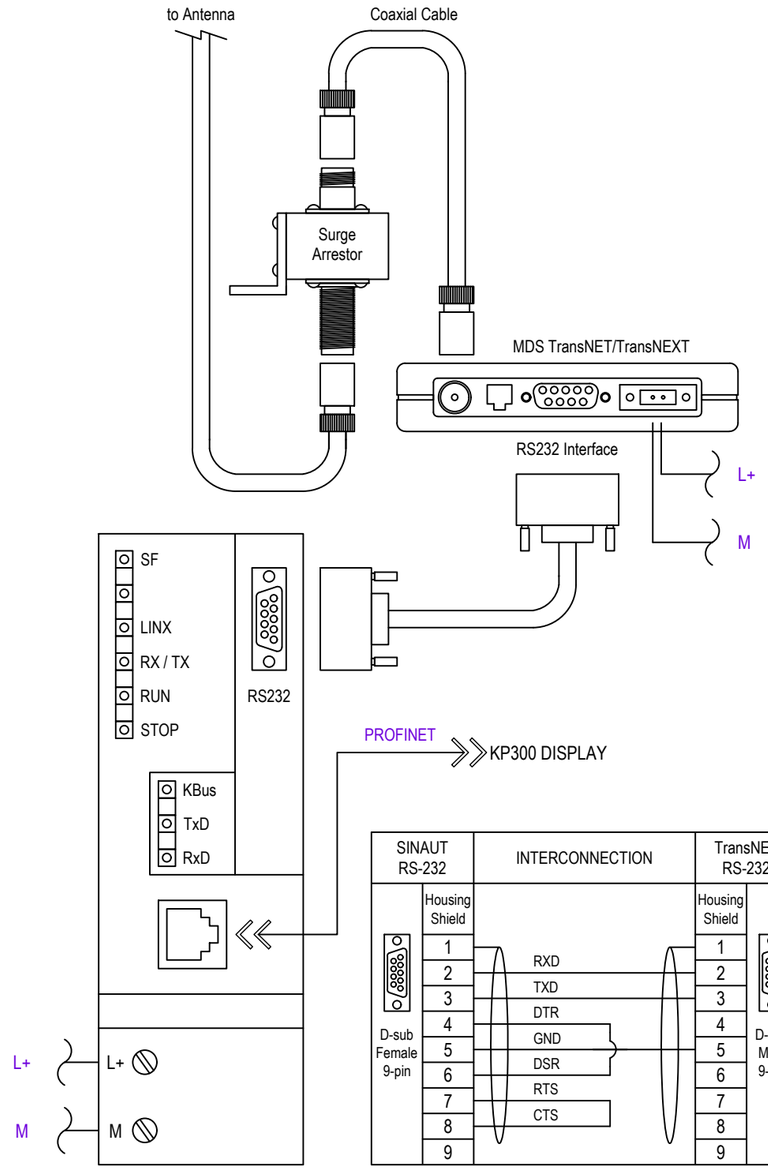
PROJECT: --- PROJECT NAME ---

ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 7 OF 10

RACK: 0 SLOT: 6

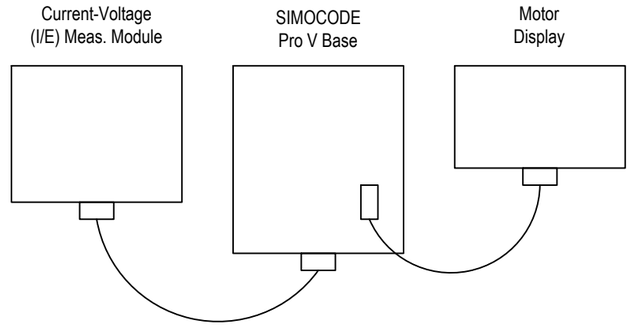


SINAUT RS-232		INTERCONNECTION		TransNET RS-232
D-sub Female 9-pin	Housing Shield		Housing Shield	D-sub Male 9-pin
	1		1	
	2	RXD	2	
	3	TXD	3	
	4	DTR	4	
	5	GND	5	
	6	DSR	6	
	7	RTS	7	
	8	CTS	8	
	9		9	

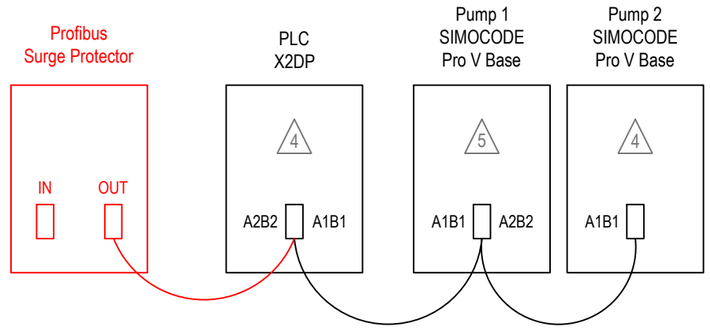
6NH7 800-3BA00	
SINAUT - > TIM3V-IE	
	RS-232 PIN OUT
1	DCD - Input
2	RXD - Input
3	TXD - Output
4	DTR - Output
5	GND
6	--
7	RTS - Output
8	CTS - Input
	RJ-45 PIN OUT
1	TXD+ - > Output
2	TXD- - > Output
3	RXD+ - > Input
4	--
5	--
6	RXD- - > Input
7	--
8	--
	Power Connector
L+	+ 24VDC
M	DC Common

SIMOCODE Bus Connection Diagram

(Typical for each Pump)



Profibus Connection Diagram



GENERAL NOTES:

1. ALL PLC I/O WIRING SHALL BE #18 AWG. APPLY DIELECTRIC GREASE TO ENDS TO PREVENT CORROSION.
2. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "ON" POSITION.
3. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "OFF" POSITION.

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SHEET TITLE: PLC & RADIO CONNECTION

PROJECT: --- PROJECT NAME ---

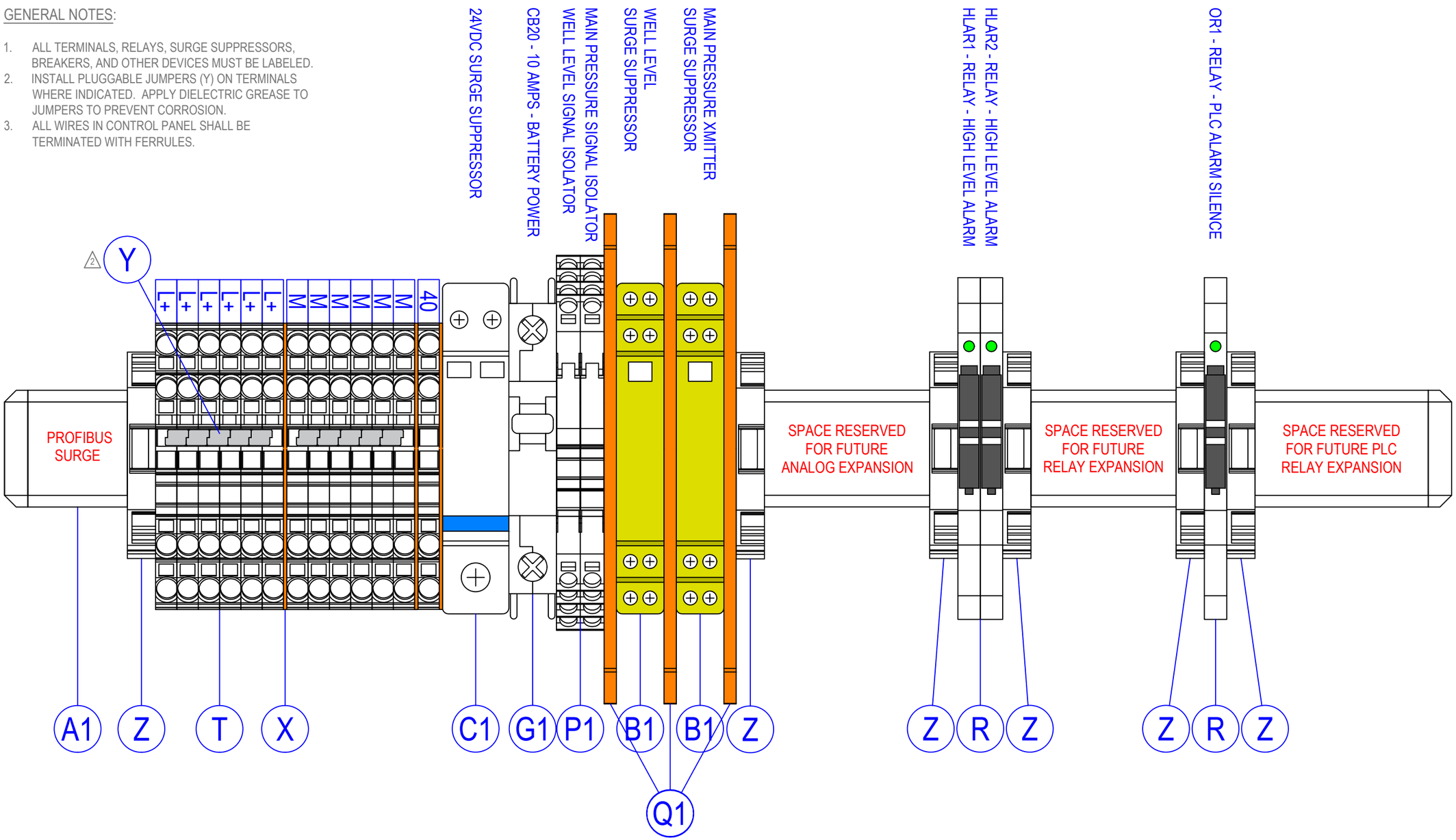
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 8 OF 10

GENERAL NOTES:

1. ALL TERMINALS, RELAYS, SURGE SUPPRESSORS, BREAKERS, AND OTHER DEVICES MUST BE LABELED.
2. INSTALL PLUGGABLE JUMPERS (Y) ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
3. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.



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SHEET TITLE: 24 VDC TERMINAL BLOCK LAYOUT

PROJECT: --- PROJECT NAME ---

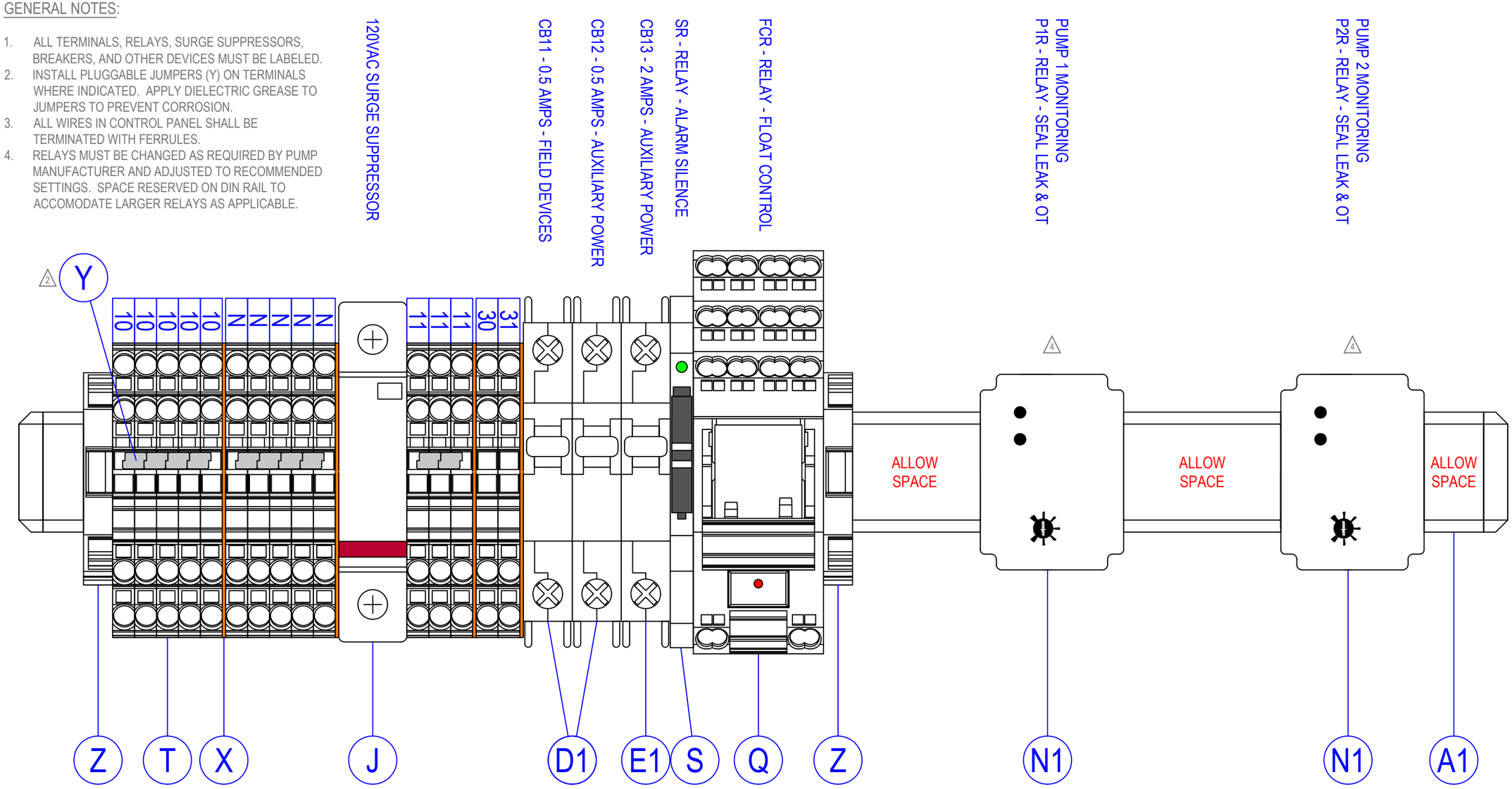
ACROSS THE LINE LIFT STATION DIAGRAM

JOB No: 12345678

SHEET 9 OF 10

GENERAL NOTES:

1. ALL TERMINALS, RELAYS, SURGE SUPPRESSORS, BREAKERS, AND OTHER DEVICES MUST BE LABELED.
2. INSTALL PLUGGABLE JUMPERS (Y) ON TERMINALS WHERE INDICATED. APPLY DIELECTRIC GREASE TO JUMPERS TO PREVENT CORROSION.
3. ALL WIRES IN CONTROL PANEL SHALL BE TERMINATED WITH FERRULES.
4. RELAYS MUST BE CHANGED AS REQUIRED BY PUMP MANUFACTURER AND ADJUSTED TO RECOMMENDED SETTINGS. SPACE RESERVED ON DIN RAIL TO ACCOMODATE LARGER RELAYS AS APPLICABLE.



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SHEET TITLE:
120 VAC TERMINAL BLOCK LAYOUT

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

JOB No: 12345678

SHEET 10 OF 10