

# CHARLOTTE COUNTY UTILITIES

## DESIGN STANDARDS FOR REMOTE STATIONS

### RECLAIMED VALVE CONTROL PANEL



RECLAIMED WATER VALVE RTU PANEL	
Sheet Number	Sheet Title
E6.0	COVER SHEET AND DRAWING INDEX
E6.1	ELECTRICAL SYMBOLS
E6.2	ENCLOSURE DETAILS
E6.3	BACKPANEL DETAIL AND BILL OF MATERIAL
E6.4	TERMINAL BLOCK AND EXTERNAL CONNECTION DETAIL
E6.5	CONTROL POWER WIRING
E6.6	CONTROL AND EMC-SEL DIAGRAM

**SHEET INDEX**

REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
1	REVISED	OCT-2023
0	STANDARDS	MAR-2023

REVISIONS

CHARLOTTE COUNTY UTILITIES DEPARTMENT

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**CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS**

**RECLAIMED WATER VALVE RTU PANEL  
COVER SHEET AND DRAWING INDEX**

DATE: OCTOBER 2023
MCE PROJ. # 07169-0012
DRAWN: CJA
DESIGNED: CJA
CHECKED: EEB
PROJ. MGR.: EEB

SCALE
HORIZONTAL:
VERTICAL:

<b>E6.0</b>
DRAWING NO.
1
REVISION

STATUS:

# ELECTRICAL SYMBOLS

## ISA-5.3 LOOP SYMBOLS

### DISTRIBUTED CONTROL/SHARED DISPLAY SYMBOLS

	NORMALLY ACCESSIBLE TO OPERATOR
	AUXILLIARY OPERATOR'S INTERFACE DEVICE
	NOT NORMALLY ACCESSIBLE TO OPERATOR

### COMPUTER SYMBOLS

	NORMALLY ACCESSIBLE TO OPERATOR
	NOT NORMALLY ACCESSIBLE TO OPERATOR

### LOGIC AND SEQUENTIAL CONTROL SYMBOLS

	GENERAL LOGIC
	DISTRIBUTED INTERCONNECTING CONTROLLER, NOT NORMALLY ACCESSIBLE TO OPERATOR
	DISTRIBUTED INTERCONNECTING CONTROLLER, NORMALLY ACCESSIBLE TO OPERATOR
	COMPUTATION/SIGNAL CONDITIONING
	SYSTEM/SOFTWARE/NETWORK LINK

## DEVICE SYMBOLS

	RELAY COIL
	CONTACT, N.O.
	CONTACT, N.C.
	TIMER RELAY COIL
	TIME-ON DELAY, N.O. CONTACT
	TIME-ON DELAY, N.C. CONTACT
	TIME-OFF DELAY, N.O. CONTACT
	TIME-OFF DELAY, N.C. CONTACT
	PUSH BUTTON, N.O. CONTACT
	PUSH BUTTON, N.C. CONTACT
	MUSHROOM HEAD PUSH BUTTON, N.O. CONTACT
	MUSHROOM HEAD PUSH BUTTON, N.C. CONTACT
	SELECTOR SWITCH, N.O. CONTACT
	SELECTOR SWITCH, N.C. CONTACT
	LIMIT SWITCH, N.O. CONTACT
	LIMIT SWITCH, N.C. CONTACT
	PRESSURE SWITCH, N.O. CONTACT
	PRESSURE SWITCH, N.C. CONTACT

## DEVICE SYMBOLS

	TEMPERATURE SWITCH, N.O. CONTACT
	TEMPERATURE SWITCH, N.C. CONTACT
	FLOW SWITCH, N.O. CONTACT
	FLOW SWITCH, N.C. CONTACT
	FLOAT SWITCH, N.O. CONTACT
	FLOAT SWITCH, N.C. CONTACT
	FOOT SWITCH, N.O. CONTACT
	FOOT SWITCH, N.C. CONTACT
	TOGGLE SWITCH, N.O. CONTACT
	TOGGLE SWITCH, N.C. CONTACT
	THERMAL OVERLOAD
	SOLENOID
	HORN
	PILOT LIGHT W - WHITE G - GREEN A - AMBER R - RED B - BLUE
	PILOT LIGHT, PUSH TO TEST
	FUSE
	CIRCUIT BREAKER
	GROUND

## DEVICE SYMBOLS

	CONTROL POWER TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIOMETER
	RESISTOR
	CAPACITOR, ELECTROLYTIC
	DIODE
	ZENER DIODE
	BATTERY
	TERMINAL BLOCK, "PTB 120VAC"
	TERMINAL BLOCK, "DIGITAL INPUT"
	TERMINAL BLOCK, "DRY CONTACT"
	TERMINAL BLOCK, "ANALOG SIGNAL"
	TERMINAL BLOCK, OTHER (SPECIFY)
	ELAPSED TIME METER

## WIRE SYMBOLS

	CONDUCTORS, WITH JUNCTION
	CONDUCTORS, NOT CONNECTED
	SHIELDED CABLE
	TWISTED-PAIR CABLE
	FIELD WIRING

## ABBREVIATIONS

AIT	ANALYSIS INDICATING TRANSMITTER
AFD	ADJUST FREQUENCY DRIVE
BC	BYPASS CONTACTOR
BFI	BLOWN FUSE INDICATOR
C	CONTACTOR
CB	CIRCUIT BREAKER
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CRI	CONTROL RELAY, INTRINSIC
CRL	CONTROL RELAY, LATCH
DFR	DRIVE FAIL RELAY
DI	DIGITAL INDICATOR
DUP	DUPLEXOR
DRR	DRIVE RUN RELAY
DSC	DISCONNECT SWITCH
ETM	ELAPSED TIME METER
FIT	FLOW INDICATING TRANSMITTER
FS	FLOAT SWITCH
FSR	FLOAT SWITCH RELAY
FU	FUSE
GRD	GROUND
HS	HAND SWITCH
IC	ISOLATION CONTACTOR
ISO	SIGNAL ISOLATOR/BOOSTER
LT	PILOT LIGHT
LIT	LEVEL INDICATING TRANSMITTER
LS	LIMIT SWITCH
M	MOTOR STARTER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MSP	MAIN SURGE PROTECTOR
OL	OVERLOAD
PB	PUSH BUTTON
PDB	POWER DISTRIBUTION BLOCK
PIT	PRESSURE INDICATING TRANSMITTER
RIO	REMOTE I/O PANEL
POT	POTENTIOMETER
PM	PHASE MONITOR
PS	POWER SUPPLY
RCR	RUN COMMAND RELAY
RES	RESISTOR
S	SWITCH
SP	SURGE PROTECTOR
SS	SELECTOR SWITCH
SSRV	SOLID STATE REDUCED VOLTAGE STARTER
TB	TERMINAL BOARD, TERMINAL BLOCK
TC	TIME CLOCK
TR	TIME DELAY RELAY
TS	TEMPERATURE SWITCH
VFD	VARIABLE FREQUENCY DRIVE
XFMR	TRANSFORMER
ZS	LIMIT SWITCH

NOTES:  
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.  
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS.

REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
1	REVISED	OCT-2023
0	STANDARDS	MAR-2023

REVISIONS

### CHARLOTTE COUNTY UTILITIES DEPARTMENT

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### CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS

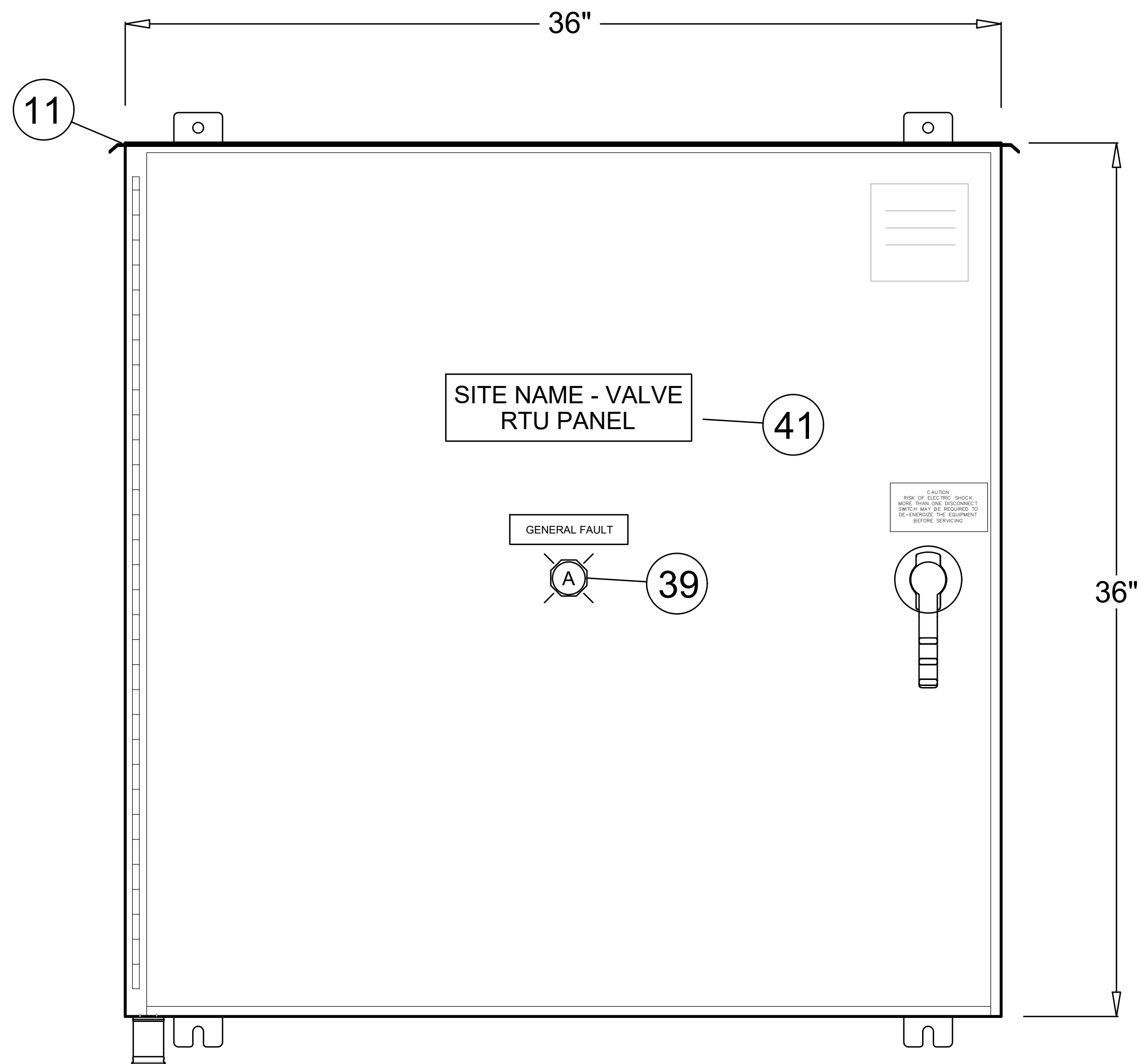
#### RECLAIMED WATER VALVE RTU PANEL ELECTRICAL SYMBOLS

DATE: OCTOBER 2023
MCE PROJ. # 07169-0012
DRAWN: CJA
DESIGNED: CJA
CHECKED: EEB
PROJ. MGR.: EEB

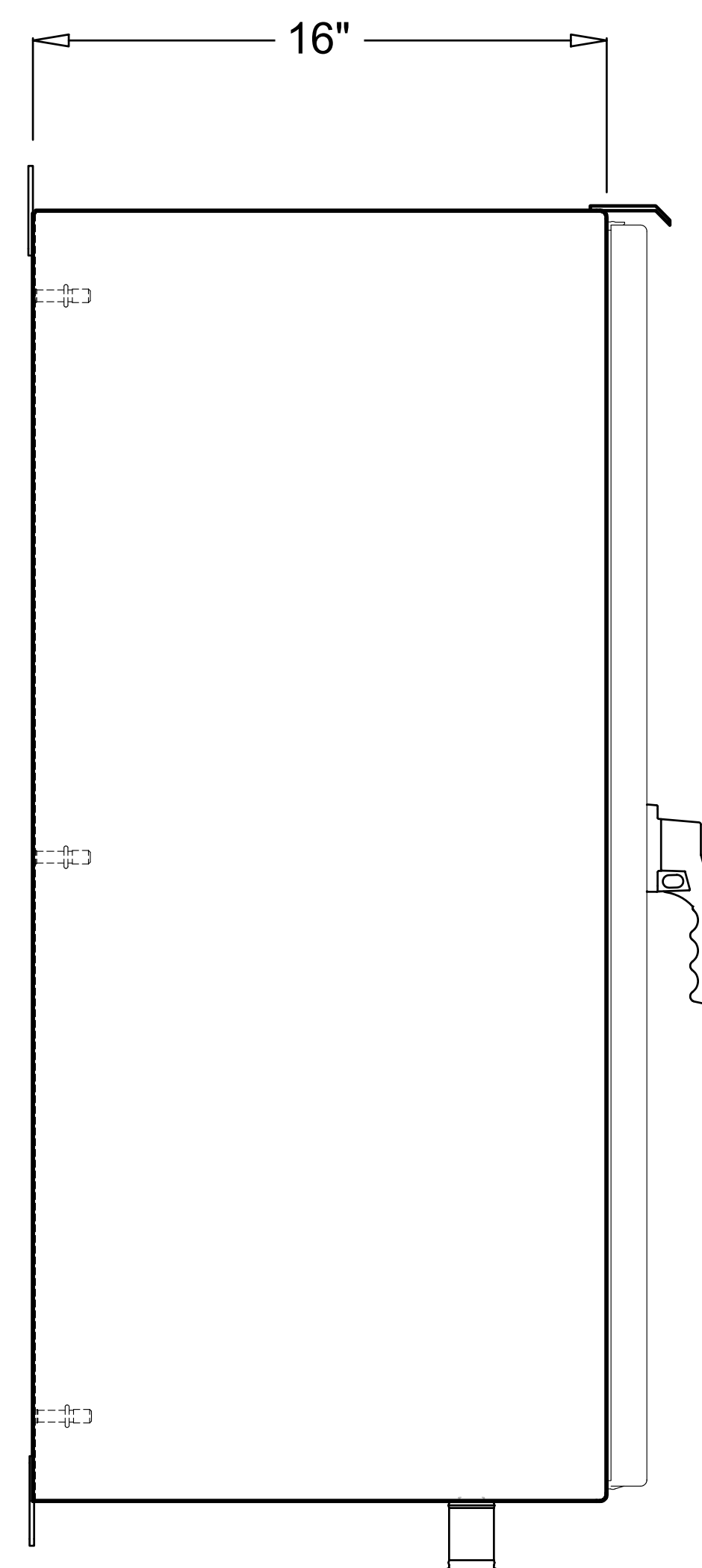
SCALE
HORIZONTAL:
VERTICAL:

<b>E6.1</b>
DRAWING NO.
1
REVISION

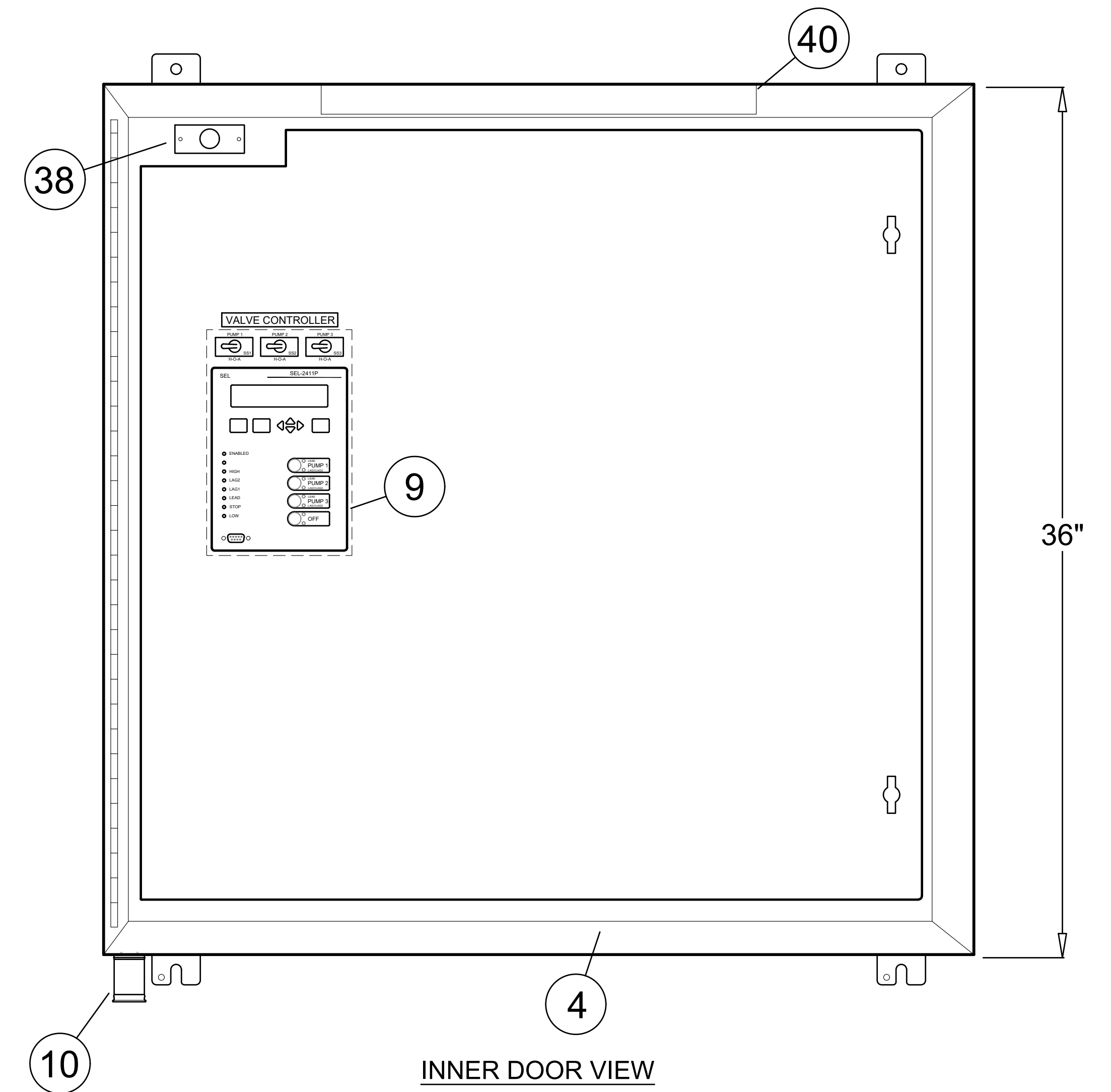
STATUS:



FRONT ENCLOSURE VIEW



RIGHT SIDE VIEW



INNER DOOR VIEW

NOTES:

1. ITEM NUMBERS REFER TO BILL OF MATERIALS SHOWN ON SHEET E6.3.

REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
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0	STANDARDS	MAR-2023
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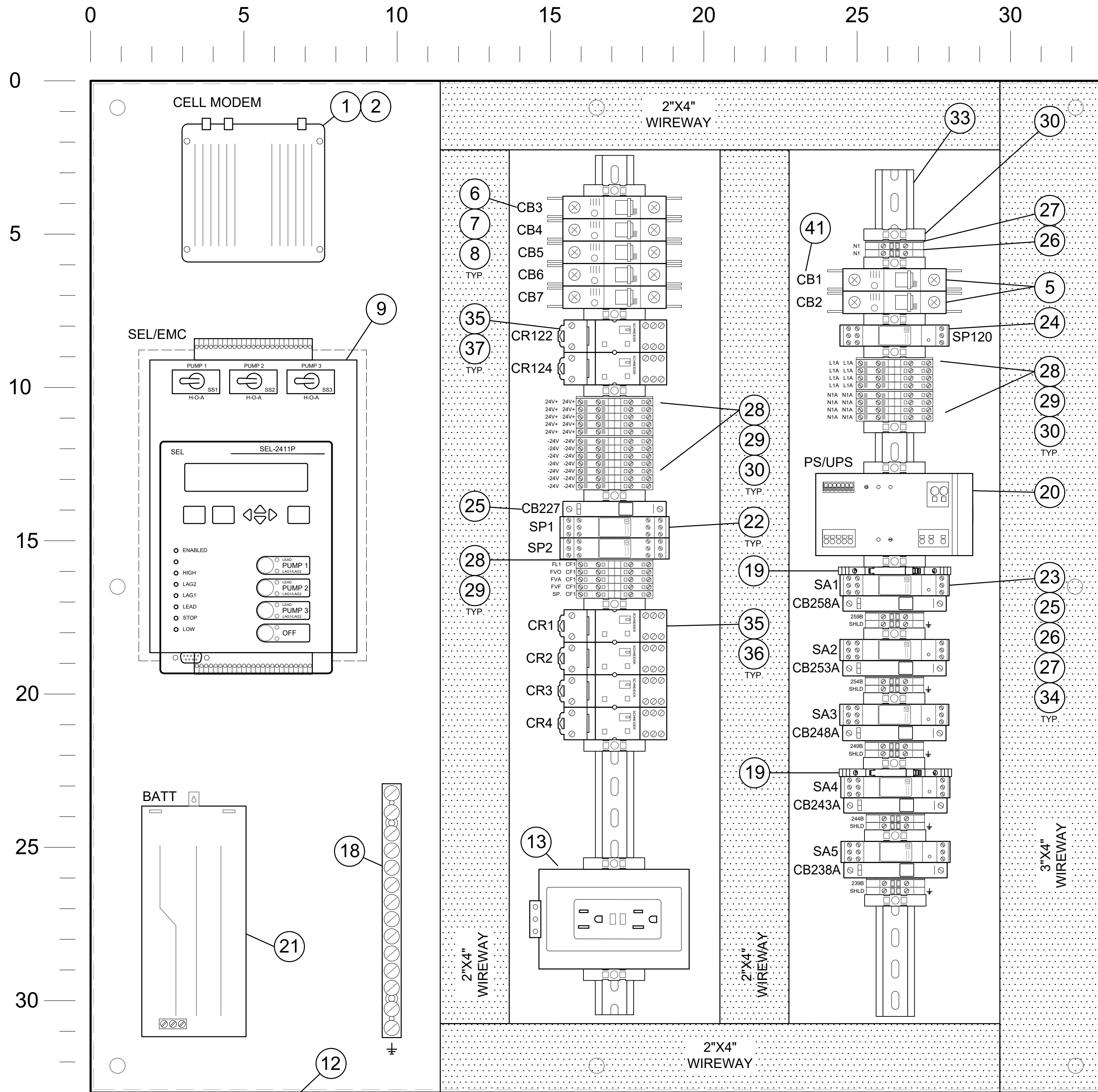
CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS

RECLAIMED WATER VALVE RTU PANEL ENCLOSURE DETAILS

DATE: OCTOBER 2023	SCALE
MCE PROJ. # 07169-0012	HORIZONTAL: E6.2
DRAWN: CJA	VERTICAL:
DESIGNED: CJA	1
CHECKED: EEB	REVISION
PROJ. MGR.: EEB	

STATUS:





BACKPANEL VIEW

ID	QTY	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
1	1	CRADLEPOINT	S700-C4D-WIRELESS ROUTER	CRADLEPOINT S700 SERIES, VERIZON
2	1	CRADLEPOINT	170656-002	RADIO DIN RAIL BRACKET
3	1	SIGNALPLUS STORE	698-2700MHZ 12dBi	WIDE-BAND WIFI 4G LTE & 5G GSM UMTS CDMA 12DBI OUTDOOR OMNI DIRECTIONAL CELLULAR ANTENNA
4	1	CUSTOM	PANEL SHOP	12GA. STEEL INNER DOOR DEADFRONT, BLACK POLYESTER POWDERCOATED
5	2	EATON	FAZ-C15/1-NA	CIRCUIT BREAKER, 15 AMP
6	1	EATON	FAZ-C10/1-NA	CIRCUIT BREAKER, 10 AMP
7	2	EATON	FAZ-C5/1-NA	CIRCUIT BREAKER, 5 AMP
8	2	EATON	FAZ-C3/1-NA	CIRCUIT BREAKER, 3 AMP
9	1	EMC/SEL	SEL-70C1-V	SEL-2411P CONTROLLER EMC WITH HOUSING KIT AND WIRING HARNESS
10	1	HOFFMAN	AVDR4SS4	H20MIT VENT DRAIN, 4X, 304 STAINLESS STEEL
11	1	HOFFMAN	A36H3616SS6LP3PT-CUSTOM	36\"/>

**BILL OF MATERIALS**

NOTES:

- BILL OF MATERIALS IS PROVIDED FOR EXAMPLE ONLY. PANEL COMPONENTS WILL VARY WITH EACH SPECIFIC VALVE SYSTEM. CONTROL PANEL MANUFACTURER TO PROVIDE A COMPLETE LIST OF CONTROL PANEL MATERIALS FOR COUNTY APPROVAL BEFORE FABRICATION.
- CONTROL PANEL TO BE UL508A LISTED TYPE 4X.

REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
1	REVISED	OCT-2023
0	STANDARDS	MAR-2023

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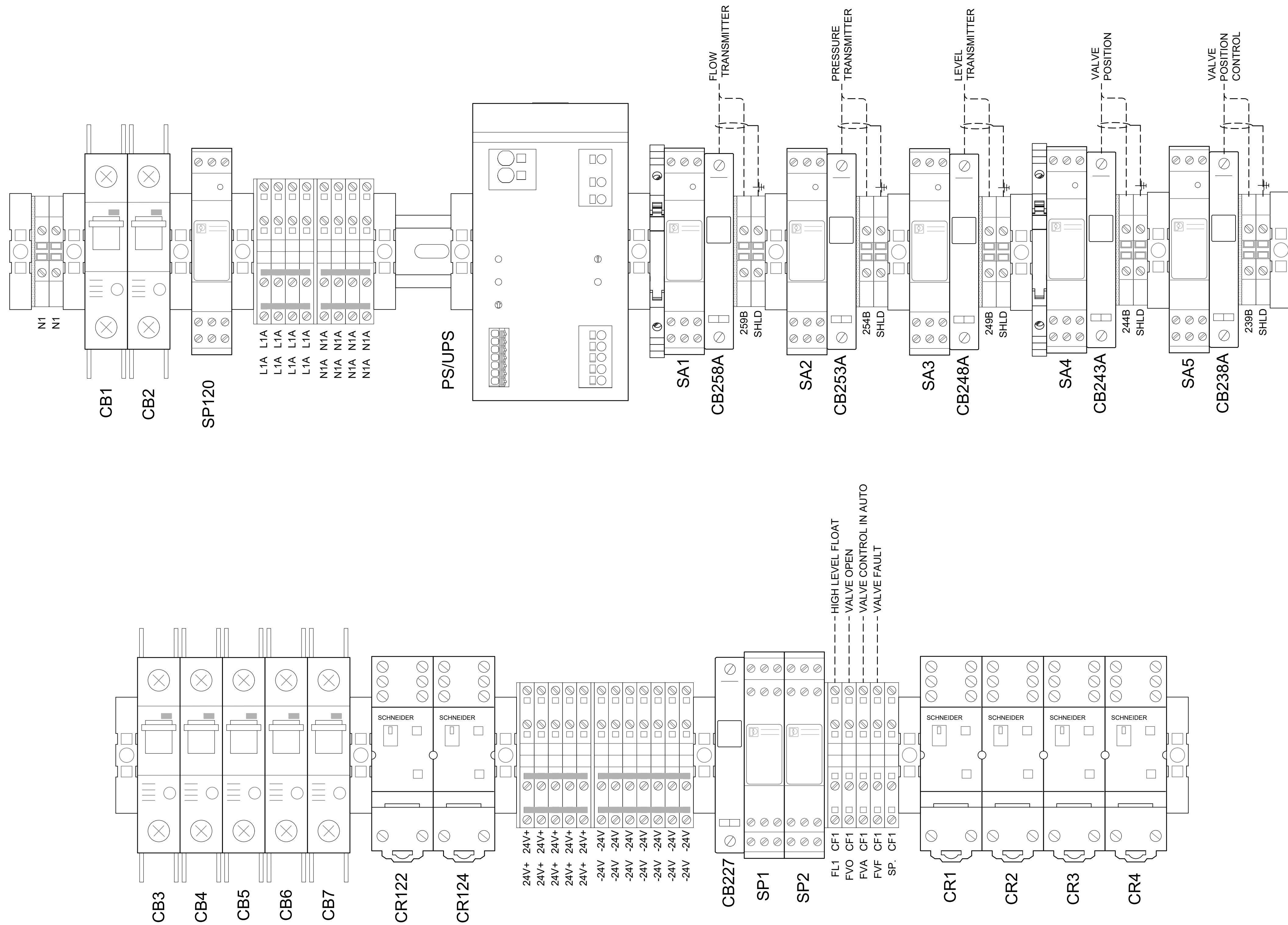
**CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS**

RECLAIMED WATER VALVE RTU PANEL  
**BACKPANEL DETAIL AND BILL OF MATERIAL**

DATE: OCTOBER 2023	SCALE	<b>E6.3</b> DRAWING NO. 1 REVISION
MCE PROJ. # 07169-0012	HORIZONTAL:	
DRAWN: CJA	VERTICAL:	
DESIGNED: CJA		
CHECKED: EEB		
PROJ. MGR.: EEB		

STATUS:





TERMINAL BLOCK AND EXTERNAL CONNECTION DETAIL

REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
1	REVISED	OCT-2023
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CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS

RECLAIMED WATER VALVE RTU PANEL  
TERMINAL BLOCK AND EXTERNAL CONNECTION DETAIL

DATE: OCTOBER 2023
MCE PROJ. # 07169-0012
DRAWN: CJA
DESIGNED: CJA
CHECKED: EEB
PROJ. MGR.: EEB

SCALE  
HORIZONTAL:

VERTICAL:

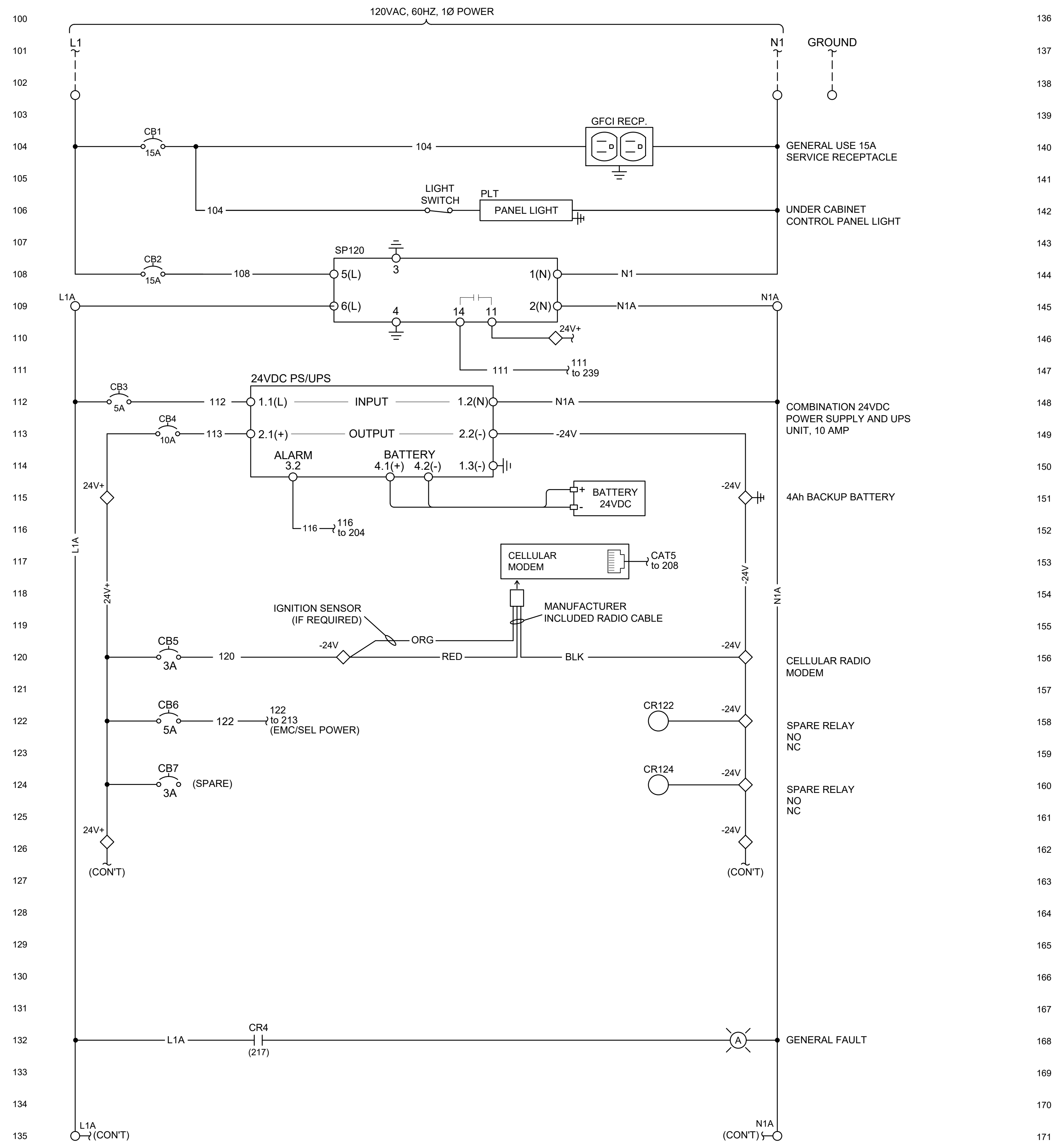
E6.4

DRAWING NO.

1

REVISION

STATUS:



REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
1	REVISED	OCT-2023
0	STANDARDS	MAR-2023

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**CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS**

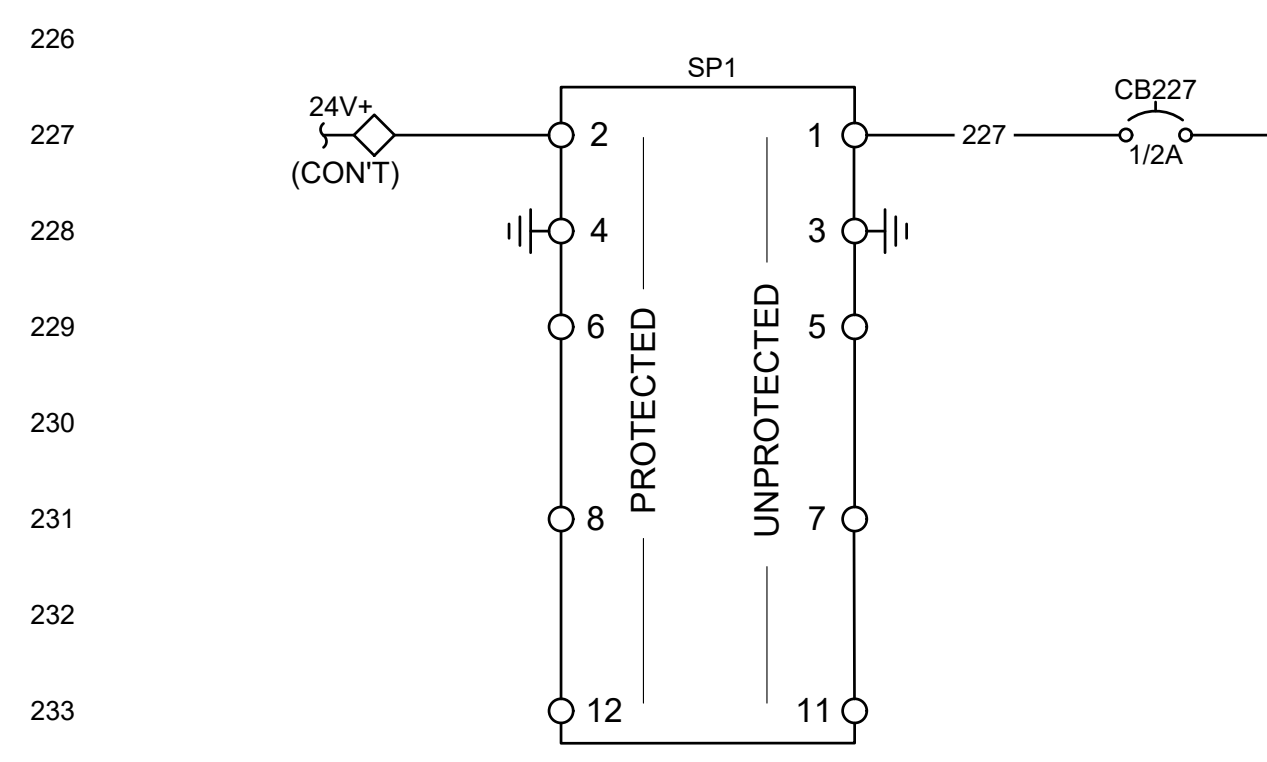
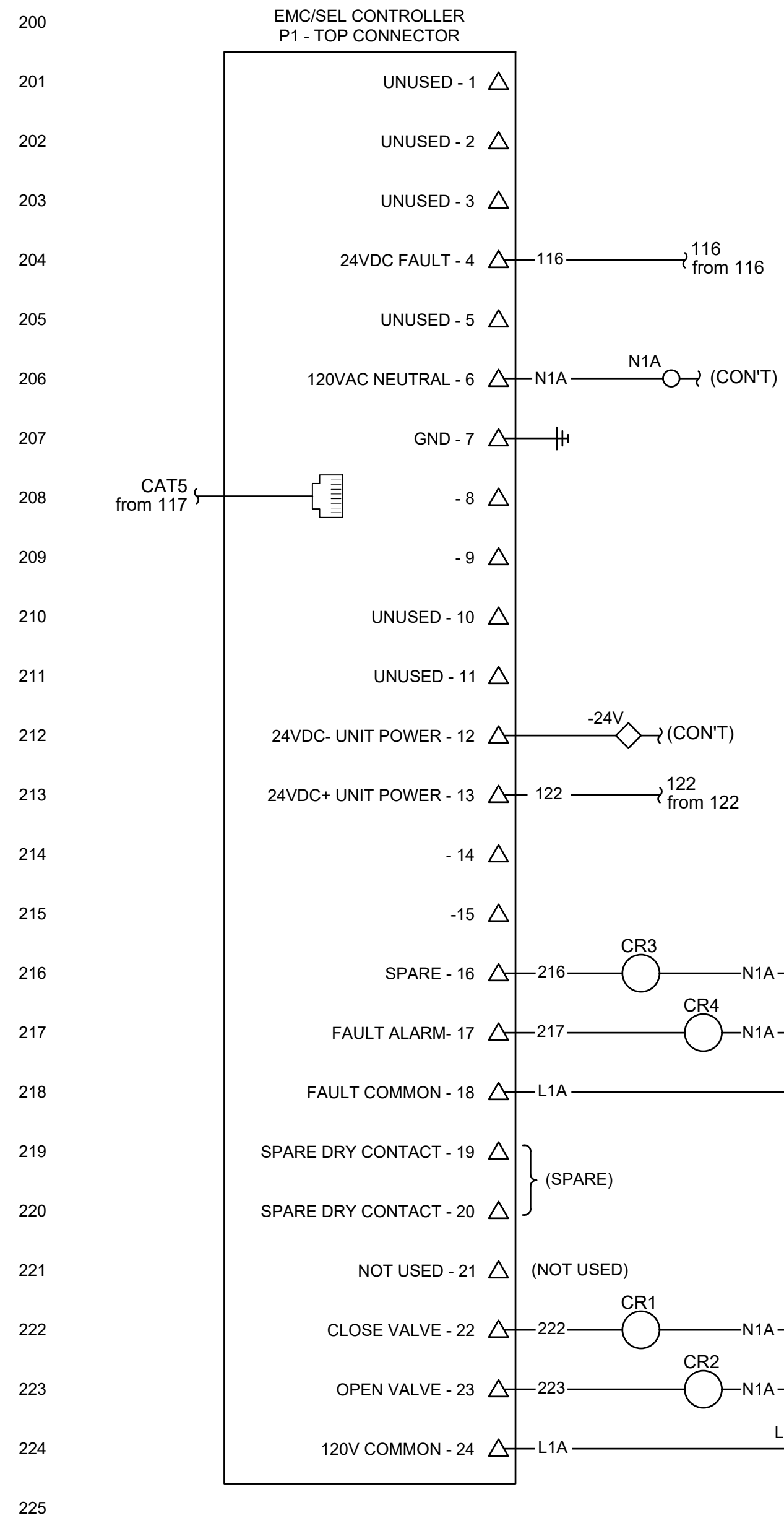
**RECLAIMED WATER VALVE RTU PANEL CONTROL POWER WIRING**

DATE: OCTOBER 2023	SCALE
MCE PROJ. # 07169-0012	HORIZONTAL:
DRAWN: CJA	VERTICAL:
DESIGNED: CJA	
CHECKED: EEB	
PROJ. MGR.: EEB	

<b>E6.5</b>
DRAWING NO.
1
REVISION

STATUS:





REV	DESCRIPTION	DATE
2	REVISED	AUG-2024
1	REVISED	OCT-2023
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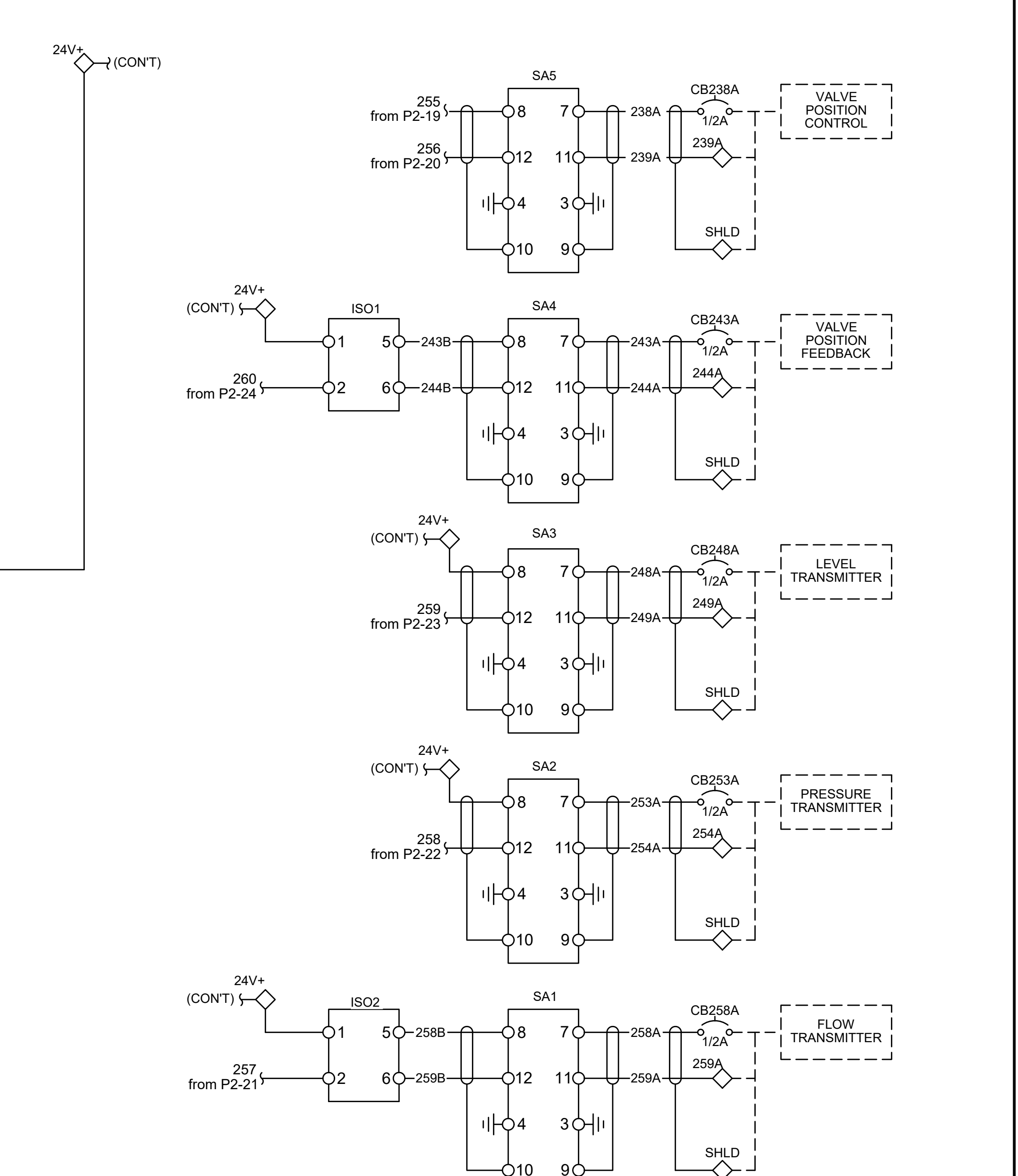
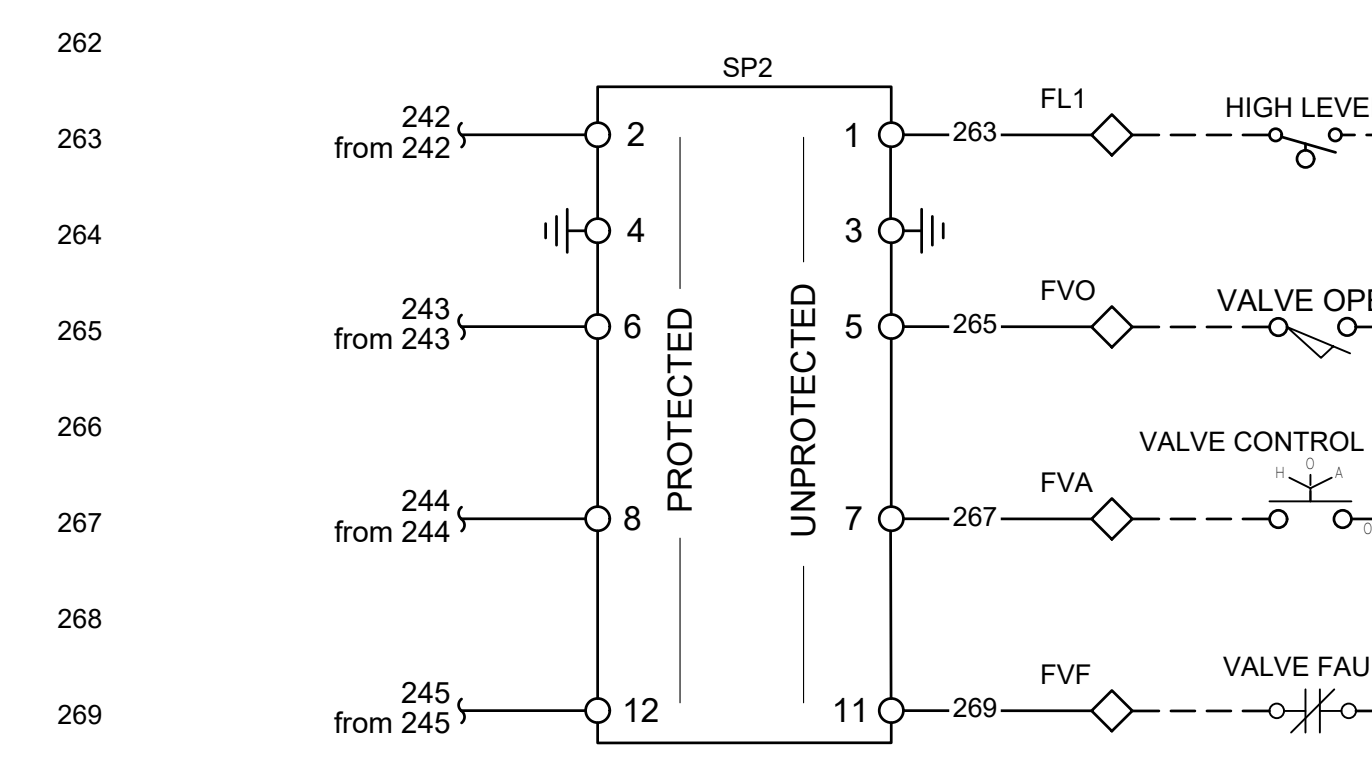
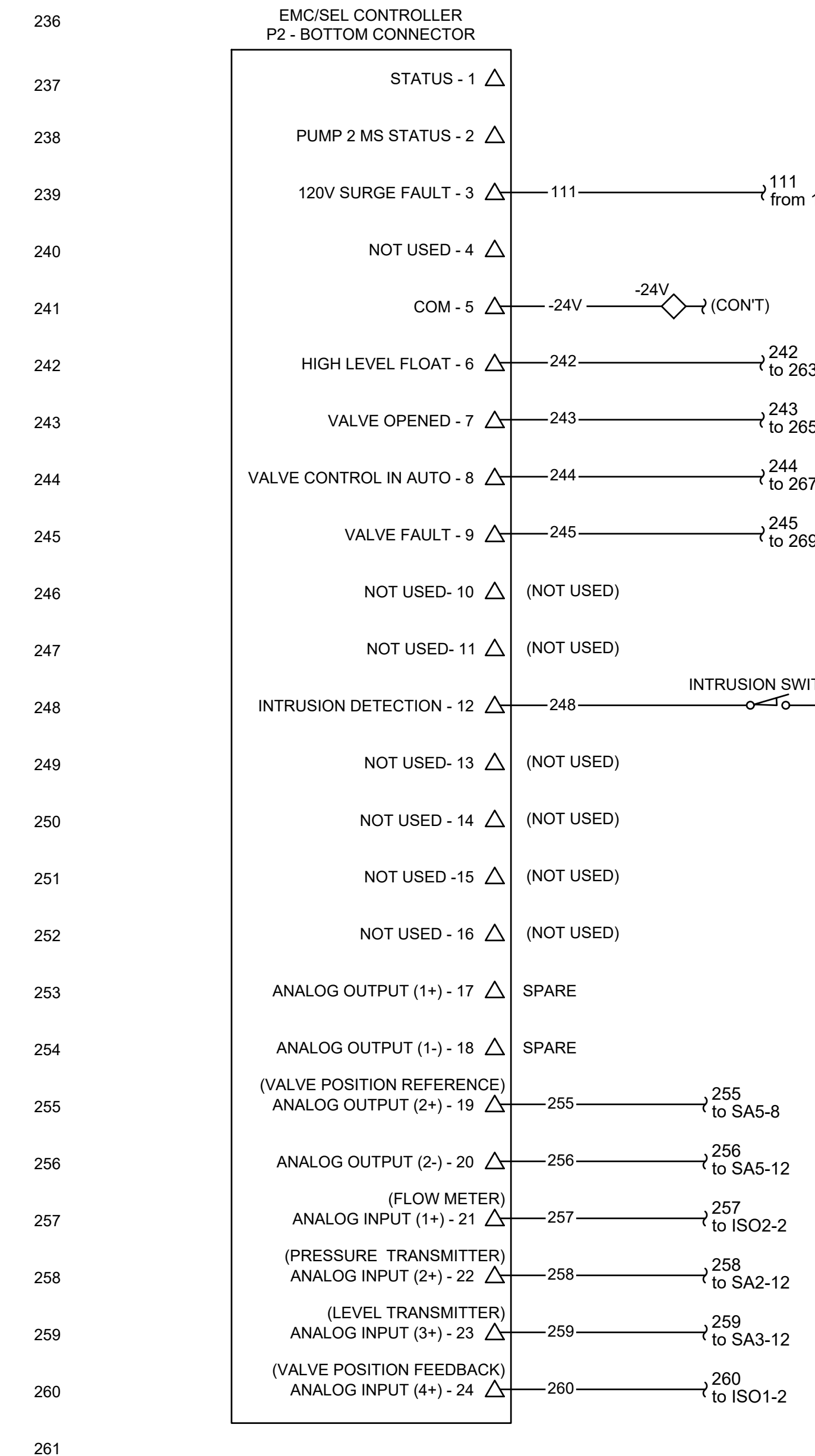


CHARLOTTE COUNTY UTILITIES - REMOTE SITES CONTROL PANEL STANDARDS

RECLAIMED WATER VALVE RTU PANEL CONTROL AND EMC-SEL DIAGRAM

DATE: OCTOBER 2023	SCALE	<b>E6.6</b> DRAWING NO. 1 REVISION
MCE PROJ. # 07169-0012	HORIZONTAL:	
DRAWN: CJA	VERTICAL:	
DESIGNED: CJA		
CHECKED: EEB		
PROJ. MGR: EEB		

STATUS:



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