

Plot Date: 28-FEB-2019 10:16:01 AM

User: svcPW

Plot Scale: 2:1

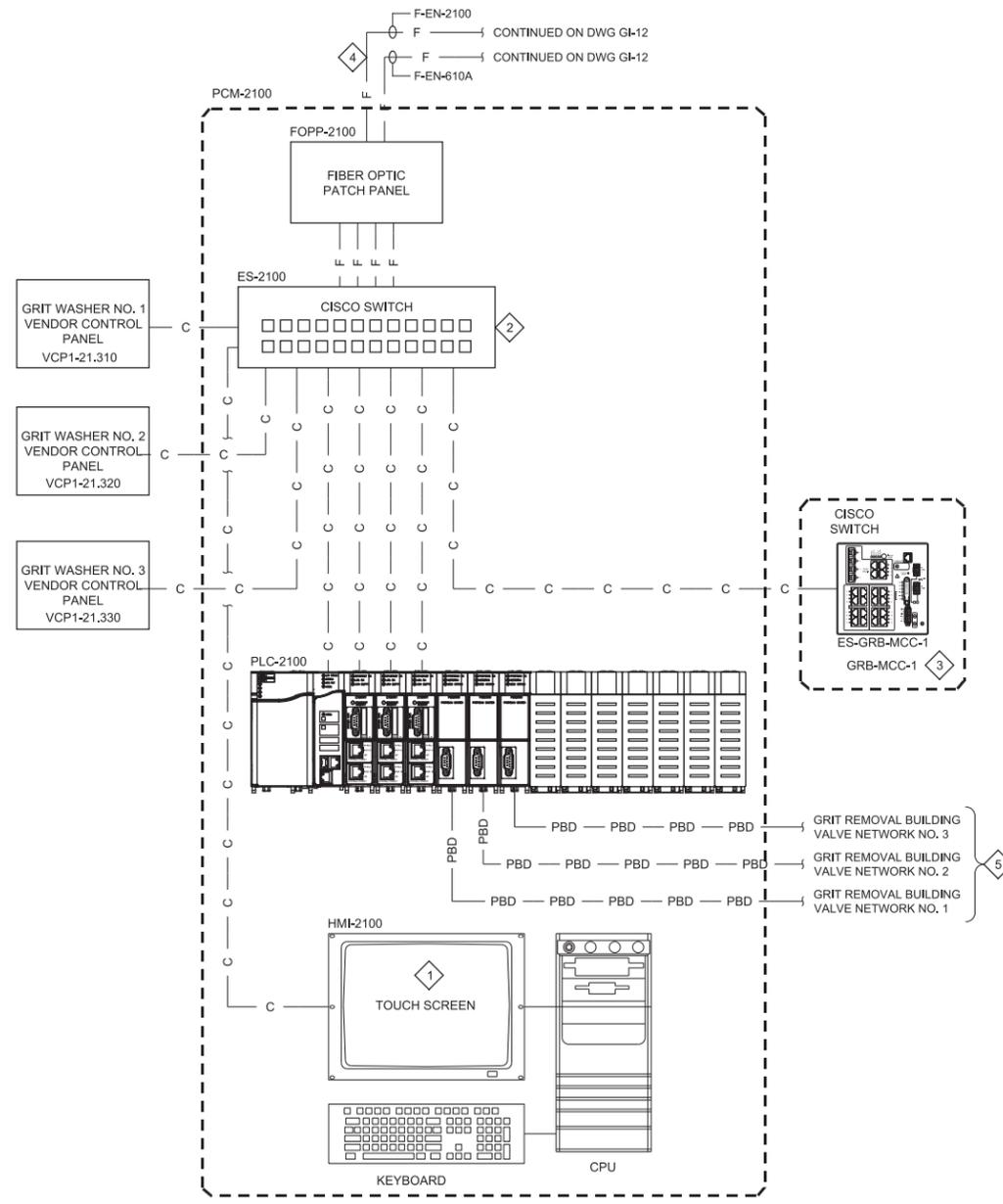
Model: Layout1

ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

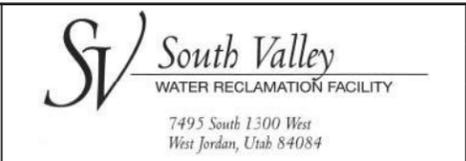
KEY NOTES:

- 1 OWNER WILL PROVIDE CPU, TOUCH SCREEN, AND KEYBOARD.
- 2 48-PORT MANAGED ENTERPRISE ETHERNET SWITCH.
- 3 20-PORT MANAGED PROCESS FLOOR ETHERNET SWITCH.
- 4 SINGLE MODE FIBER, 24 STRAND.
- 5 REFER TO FIELD NETWORK DRAWINGS FOR DETAILED NETWORK CONNECTIONS.



REV	DATE	BY	DESCRIPTION

DESIGNED MGH	
DRAWN CEY	
CHECKED DJC	
DATE MARCH 2019	

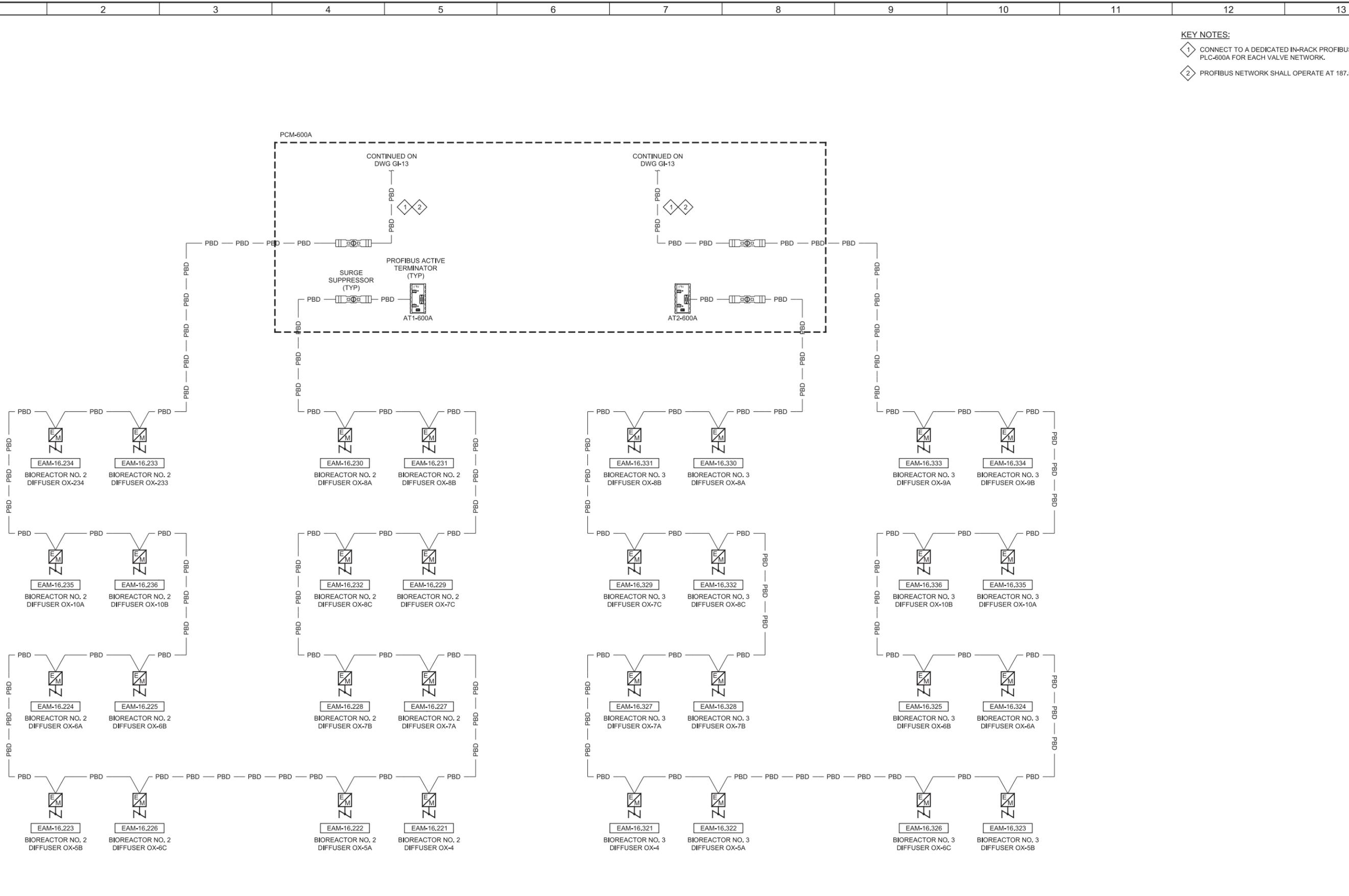


SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
 CONTROL SYSTEM BLOCK DIAGRAM - III

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 10548A.10 DRAWING NO. GI-14 SHEET NO. 85 OF 159
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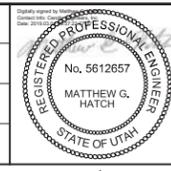
KEY NOTES:

- 1 CONNECT TO A DEDICATED IN-RACK PROFIBUS MODULE IN PLC-600A FOR EACH VALVE NETWORK.
- 2 PROFIBUS NETWORK SHALL OPERATE AT 187.5 KBPS.



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
JMR  
DRAWN  
CGR  
CHECKED  
DJC  
DATE  
MARCH 2019



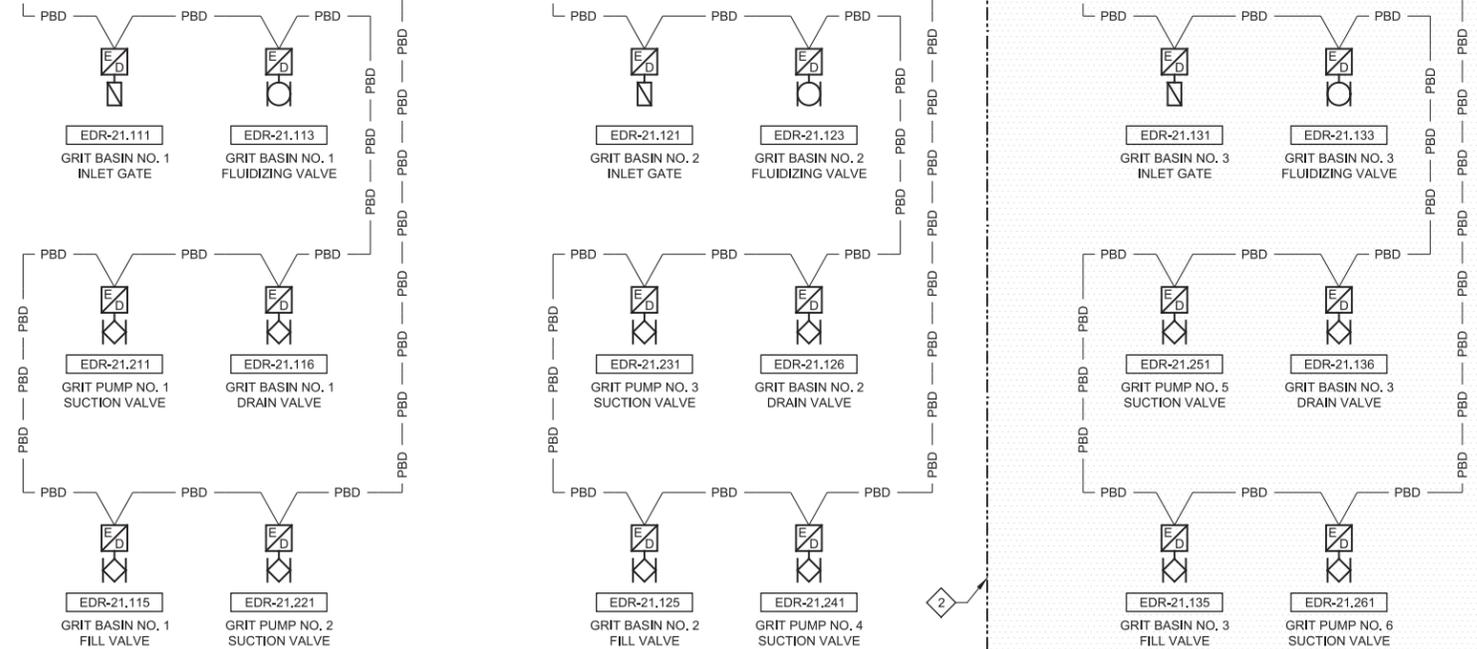
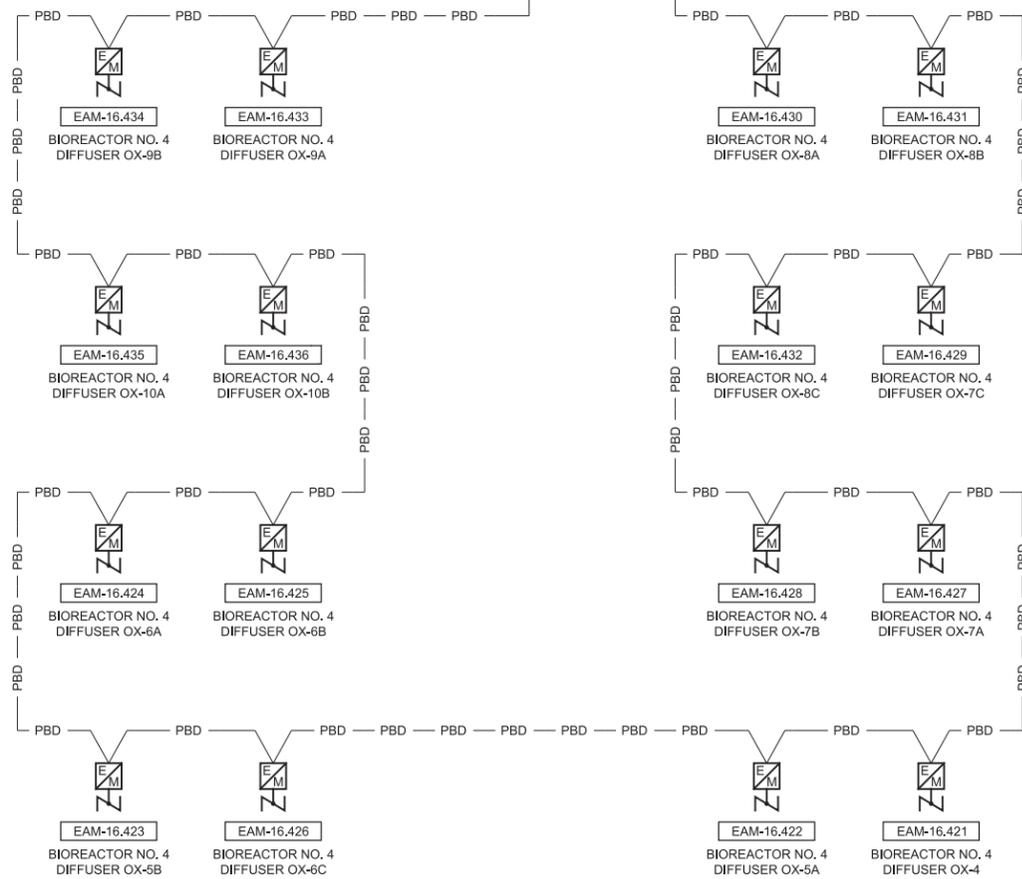
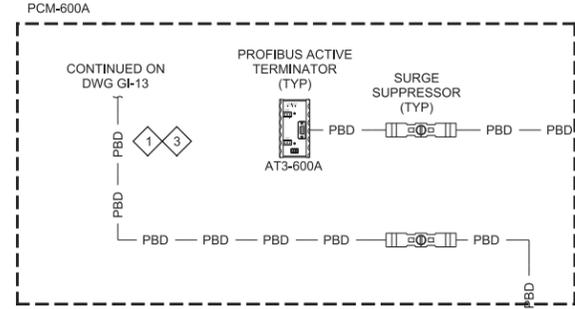
**SV South Valley**  
WATER RECLAMATION FACILITY  
7495 South 1300 West  
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
BIOREACTORS NO. 2 AND NO. 3 VALVE NETWORKS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10  
DRAWING NO.  
**GI-15**  
SHEET NO.  
86 OF 159

- KEY NOTES:**
- 1 CONNECT TO A DEDICATED IN-RACK PROFIBUS MODULE IN PLC-600A FOR EACH VALVE NETWORK.
  - 2 ALTERNATE BID ITEM NO. 3 REFER TO SECTION 01230.
  - 3 PROFIBUS NETWORKS SHALL OPERATE AT 187.5 KBPS.
  - 4 CONNECT TO A DEDICATED IN-RACK PROFIBUS MODULE IN PLC-2100 FOR EACH VALVE NETWORK.



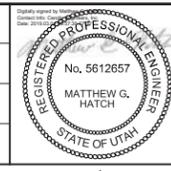
REV	DATE	BY	DESCRIPTION

DESIGNED  
JMR

DRAWN  
CGR

CHECKED  
DJC

DATE  
MARCH 2019



**SV South Valley**  
WATER RECLAMATION FACILITY

7495 South 1300 West  
West Jordan, Utah 84084

**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 4 AND GRIT BASIN VALVE NETWORKS**

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**GI-16**

SHEET NO.  
87 OF 159

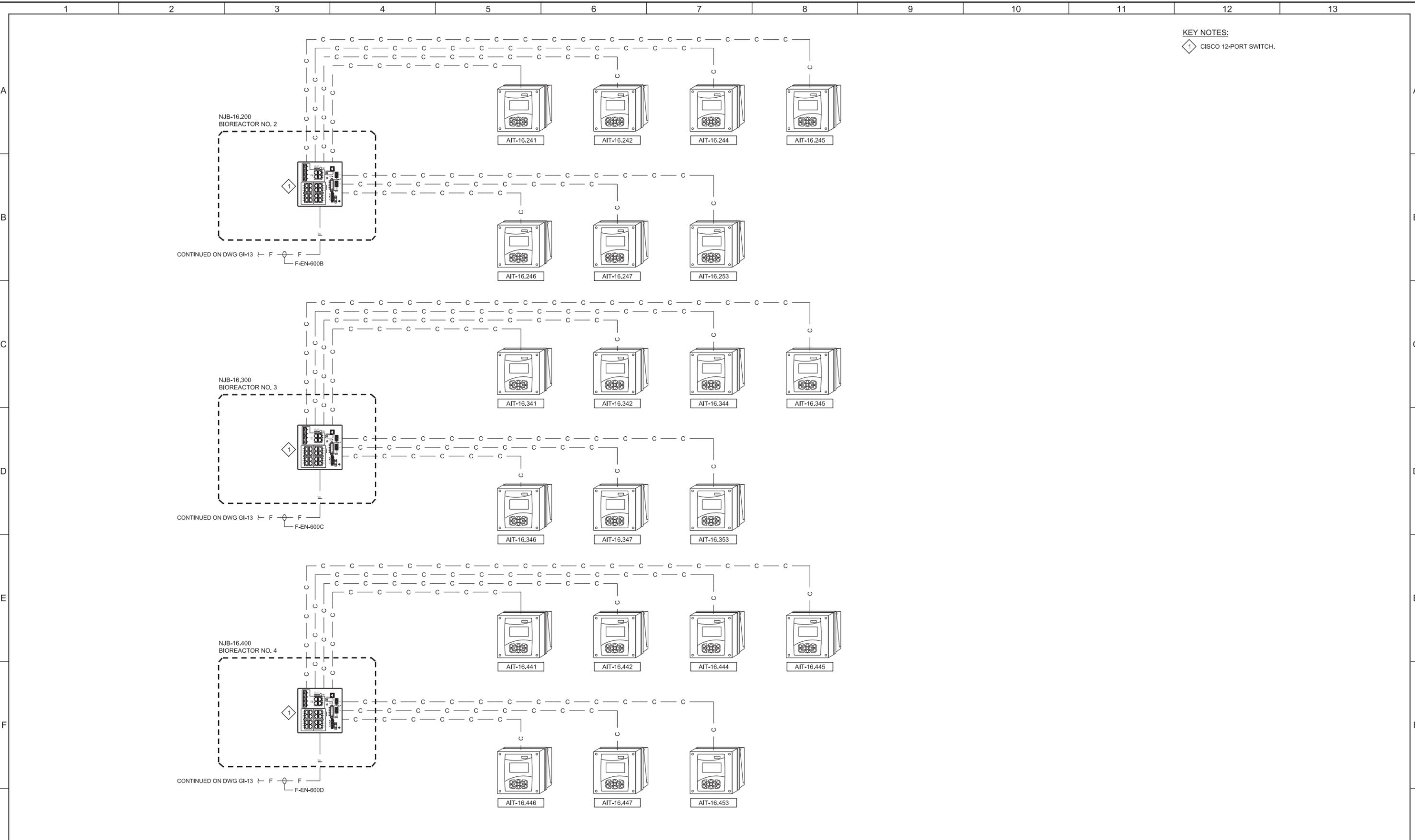
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User: svcPW

Plot Scale: 2:1

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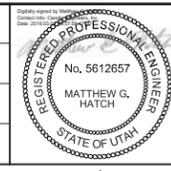
LAST SAVED BY: CYoung



**KEY NOTES:**  
 1 CISCO 12-PORT SWITCH.

REV	DATE	BY	DESCRIPTION
1			

DESIGNED  
JMR  
 DRAWN  
CGR  
 CHECKED  
DJC  
 DATE  
MARCH 2019



**SV South Valley**  
 WATER RECLAMATION FACILITY  
 7495 South 1300 West  
 West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
 BIOREACTOR ANALYZER NETWORKS

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10  
 DRAWING NO.  
**GI-17**  
 SHEET NO.  
88 OF 159

Plot Date: 28-FEB-2019 10:16:02 AM

User: svcPW

Plot Scale: 2:1

Model: Layout1

ColorTable: gshade.ctb

LAST SAVED BY: CYoung

1 2 3 4 5 6 7 8 9 10 11 12 13

A

B

C

D

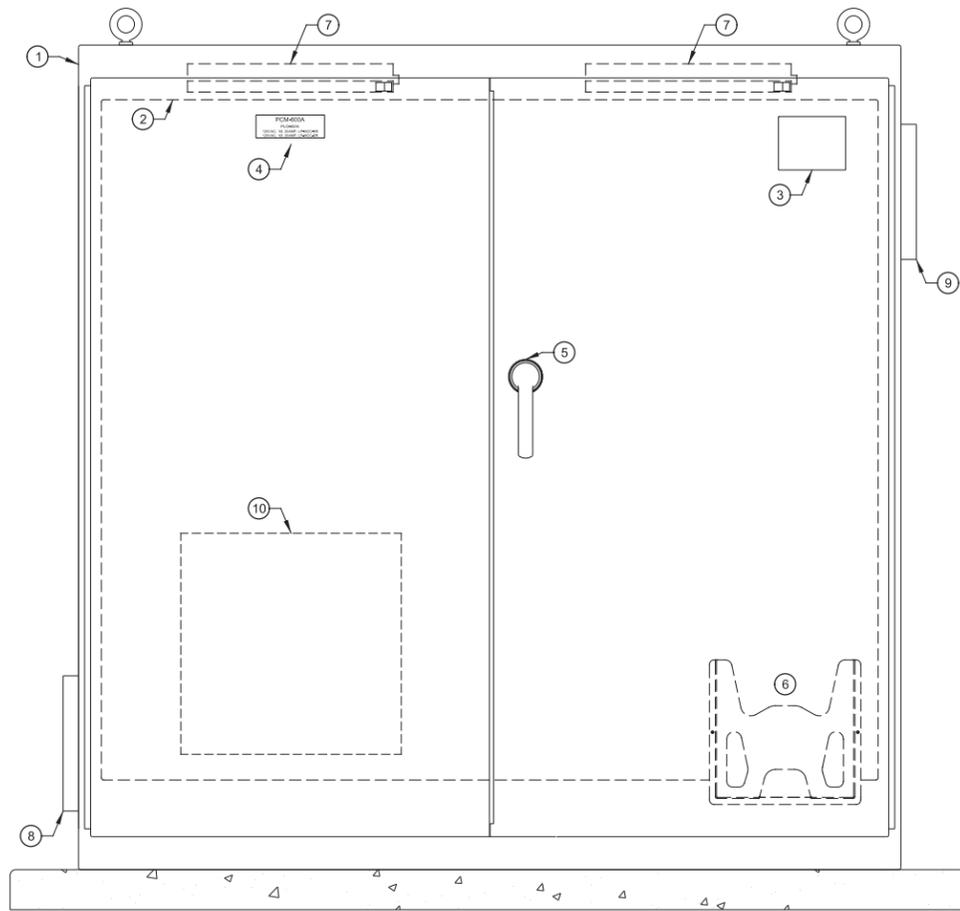
E

F

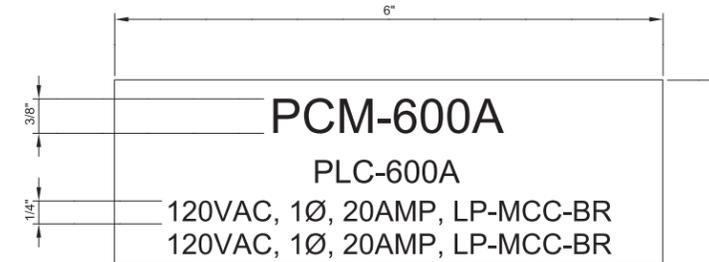
G

GENERAL NOTES:

1. PROVIDE LABEL INDICATING INTEGRATOR'S LOGO WITH COMPANY NAME AND ADDRESS MOUNTED ON THE FRONT OF THE ENCLOSURE.
2. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS. ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
5. ALL ENCLOSURES SHALL BE MOUNTED ON A HOUSEKEEPING PAD.
6. ENCLOSURE SHALL BE A MINIMUM OF 72" HIGH AND A MAXIMUM OF 60" WIDE.



MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	NEMA 12 ENCLOSURE
2	SUBPANEL
3	MANUFACTURER'S LABEL
4	NAMEPLATE
5	HANDLE, LOCKABLE
6	DATA POCKET
7	LED LIGHT W/ INTRUSTION SWITCH
8	INTAKE LOUVER
9	COOLING FAN
10	FOLDING SHELF



EXTERNAL ELEVATION

SCALE: NO SCALE  
FILE: 10548A1002N601

NAMEPLATE DETAIL

SCALE: NO SCALE  
FILE: 10548A1002N601

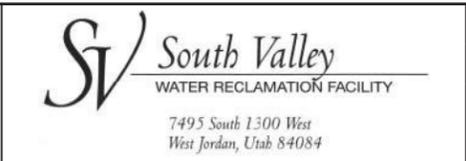
REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MJR

DRAWN  
CGR

CHECKED  
DJC

DATE  
MARCH 2019



SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5

INSTRUMENTATION

PCM-600A EXTERNAL ELEVATION

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
GI-18

SHEET NO.  
89 OF 159

PROJECT NO. 10548A10 FILE NAME: 10548A10-GI-18.dgn

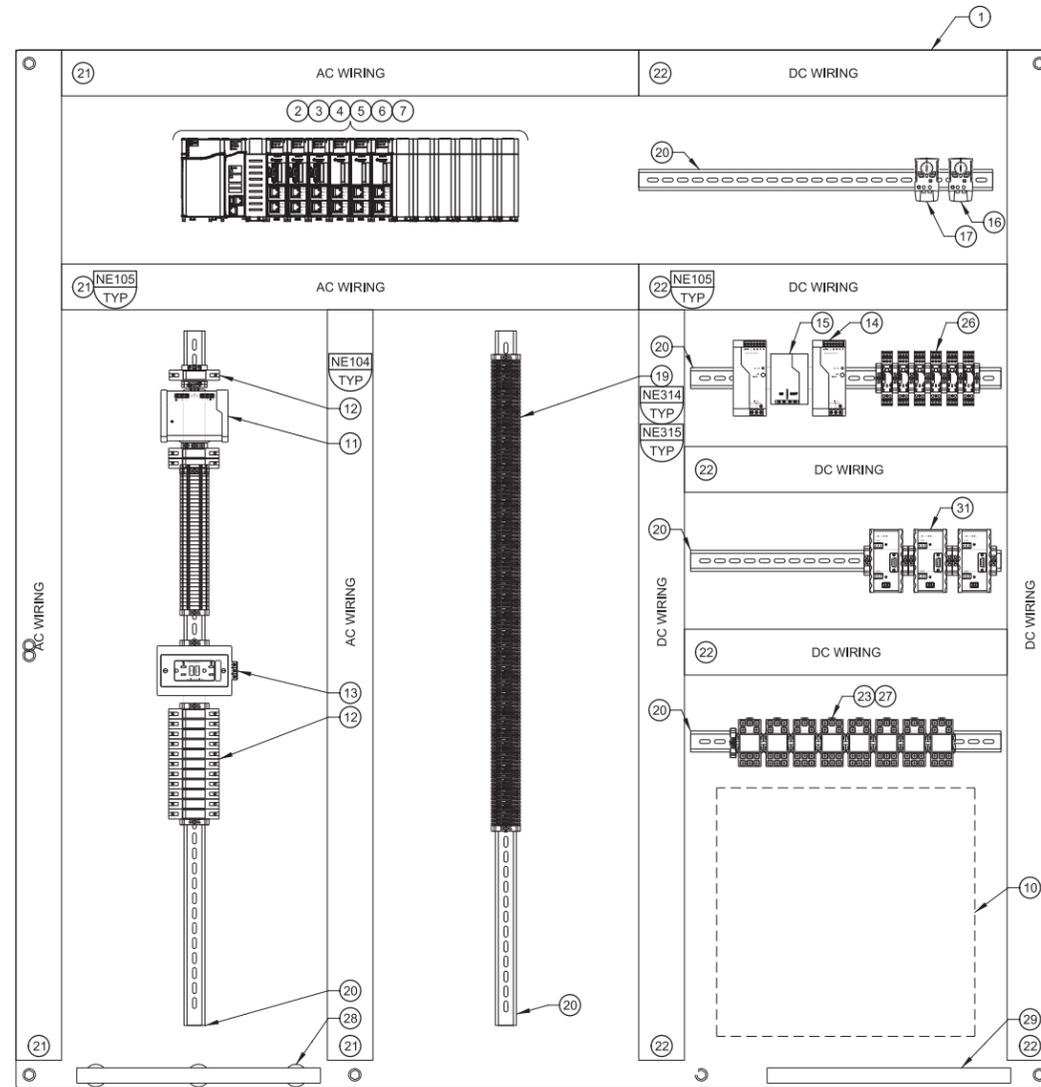
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User: svcPW

PlotScale: 2:1

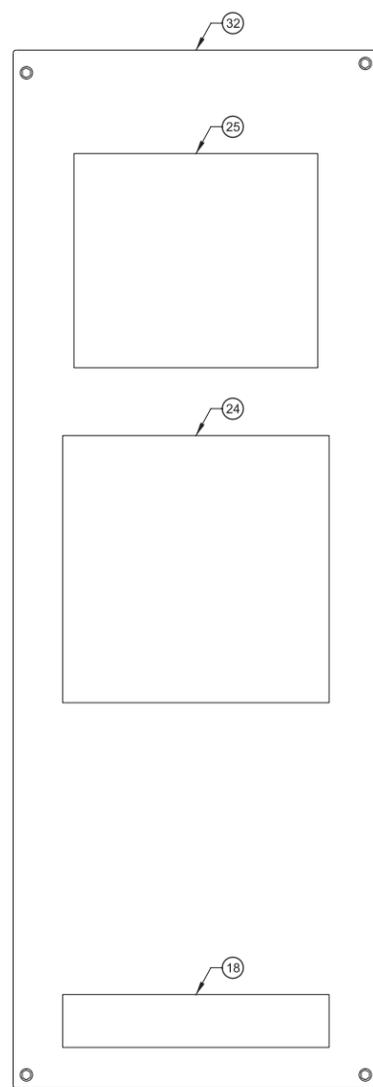
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LAST SAVED BY: CYoung



**INTERNAL ELEVATION**

SCALE: NOT TO SCALE  
FILE: 10548A1002N601



**SIDE PANEL ELEVATION**

SCALE: NOT TO SCALE  
FILE: 10548A1002N601

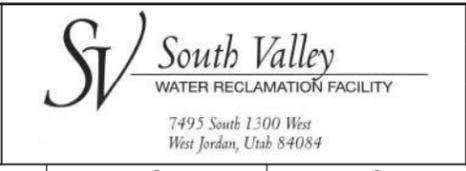
MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC BACKPLANE
3	PLC PROCESSOR
4	PLC POWER SUPPLY
5	PLC ETHERNET COMMUNICATION MODULE
6	PLC PROFIBUS COMMUNICATION MODULE
7	PLC DI MODULE
8	NOT USED
9	NOT USED
10	UNINTERRUPTIBLE POWER SUPPLY
11	PANEL SURGE PROTECTOR
12	120 VAC CIRCUIT BREAKERS
13	RECEPTACLE, 5A
14	REDUNDANT 24 VDC POWER SUPPLY
15	DIODE BRIDGE
16	HVAC CONTROL
17	ENCLOSURE TEMPERATURE SWITCH
18	MAINTENANCE BYPASS SWITCH
19	24 VDC FUSED TERMINAL BLOCKS
20	DIN RAIL
21	GRAY WIRE DUCT
22	WHITE WIRE DUCT
23	TIME/CONTROL RELAYS
24	ETHERNET SWITCH
25	FIBER PATCH PANEL
26	PROFIBUS SURGE PROTECTIVE DEVICES
27	INTERPOSING RELAYS
28	ISOLATED GROUND BAR
29	GROUND BAR
30	NOT USED
31	PROFIBUS ACTIVE TERMINATORS
32	SIDE PANEL

**GENERAL NOTES:**

- ENCLOSURE DRAWING REPRESENTS DESIGN INTENT. CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
- REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
- CONSTRUCT PANEL TO MEET THE FULL INTENT OF ARTICLE 409 OF THE NATIONAL ELECTRIC CODE.
- FOLLOW ALL UL 508 AND 508 SUPPLEMENT 5B TO DETERMINE SHORT CIRCUIT RATINGS.
- CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
- ALL WRAPS SHALL BE LOCATED AT THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
- ELEVATE ALL TERMINAL BLOCK DIN RAIL A MINIMUM OF 2 INCHES OFF OF BACK PANEL.
- NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
- NO CAMERA OR TELEPHONE CABLES SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
- ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE TOP OR BOTTOM OF THE ENCLOSURE. NO SIDE, FRONT, OR REAR PENETRATIONS ALLOWED.
- QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
- PROVIDE BOTH A GROUND BAR AND ISOLATED GROUND BAR.
- PROVIDE PANEL SURGE PROTECTION AND SIGNAL WIRES FOR ALL ANALOG/DIGITAL INSTRUMENT SIGNAL LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.
- PROVIDE ADEQUATE SPACING FOR THE MANUFACTURER'S RECOMMENDED BEND RADIUS FOR ALL CABLES.
- PROVIDE LABEL INDICATING INTEGRATOR'S LOGO WITH COMPANY NAME AND ADDRESS MOUNTED ON THE FRONT OF THE ENCLOSURE.
- SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS. ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
- ALL ENCLOSURES SHALL BE MOUNTED ON A HOUSEKEEPING PAD.

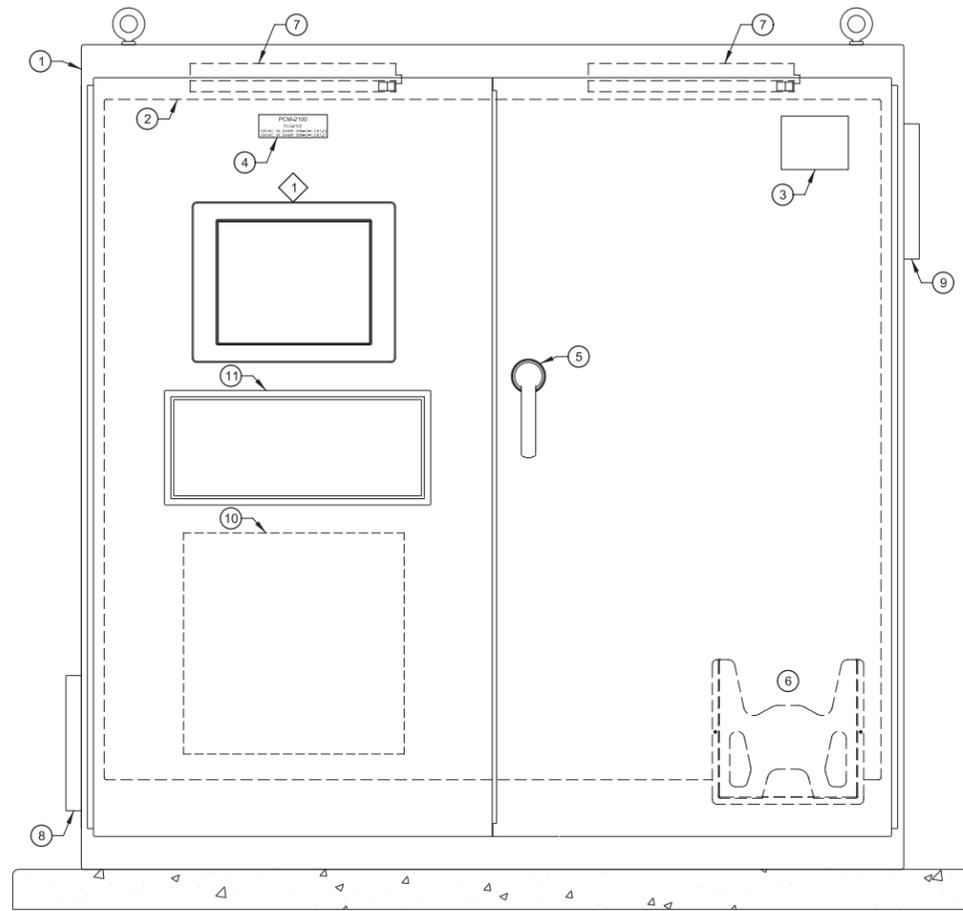
REV	DATE	BY	DESCRIPTION

DESIGNED MJR	
DRAWN CGR	
CHECKED DJC	
DATE MARCH 2019	



SOUTH VALLEY WATER RECLAMATION FACILITY	
PROJECT 5	
INSTRUMENTATION	
PCM-600A INTERNAL ELEVATION	

VERIFY SCALES	JOB NO. 10548A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. <b>GI-19</b>
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 90 OF 159



**EXTERNAL ELEVATION**

SCALE: NO SCALE  
FILE: 10548A1002N602

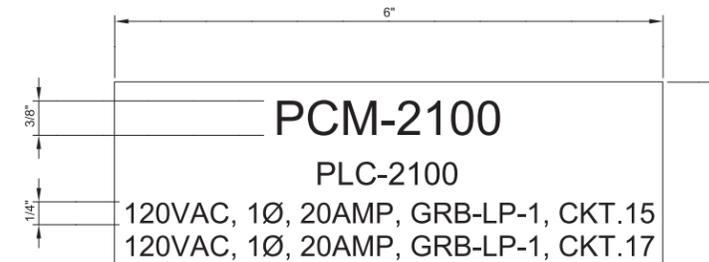
MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	NEMA 12 ENCLOSURE
2	SUBPANEL
3	MANUFACTURER'S LABEL
4	NAMEPLATE
5	HANDLE, LOCKABLE
6	DATA POCKET
7	LED LIGHT W/ INTRUSTION SWITCH
8	INTAKE LOUVER
9	COOLING FAN
10	FOLDING SHELF
11	KEYBOARD BOX

**GENERAL NOTES:**

1. PROVIDE LABEL INDICATING INTEGRATOR'S LOGO WITH COMPANY NAME AND ADDRESS MOUNTED ON THE FRONT OF THE ENCLOSURE.
2. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS. ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
5. ALL ENCLOSURES SHALL BE MOUNTED ON A HOUSEKEEPING PAD.
6. ENCLOSURE SHALL BE A MINIMUM OF 72" HIGH AND A MAXIMUM OF 72" WIDE.

**KEY NOTES:**

1. OWNER WILL PROVIDE CPU, TOUCHSCREEN HMI, AND KEYBOARD. COORDINATE EQUIPMENT DIMENSIONS WITH OWNER FOR PANEL CUTOUTS.



**NAMEPLATE DETAIL**

SCALE: NO SCALE  
FILE: 10548A1002N602

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED	MJR
DRAWN	AAW
CHECKED	DJC
DATE	MARCH 2019



SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5

INSTRUMENTATION

PCM-2100 EXTERNAL ELEVATION

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10

DRAWING NO. GI-20

SHEET NO. 91 OF 159

Plot Date: 28-FEB-2019 10:15:34 AM

User: svcPW

PlotScale: 2:1

DesignScript: Carollo\_Std\_Pen\_v0905.pen

ColorTable: gshade.ctb

Model: Layout1

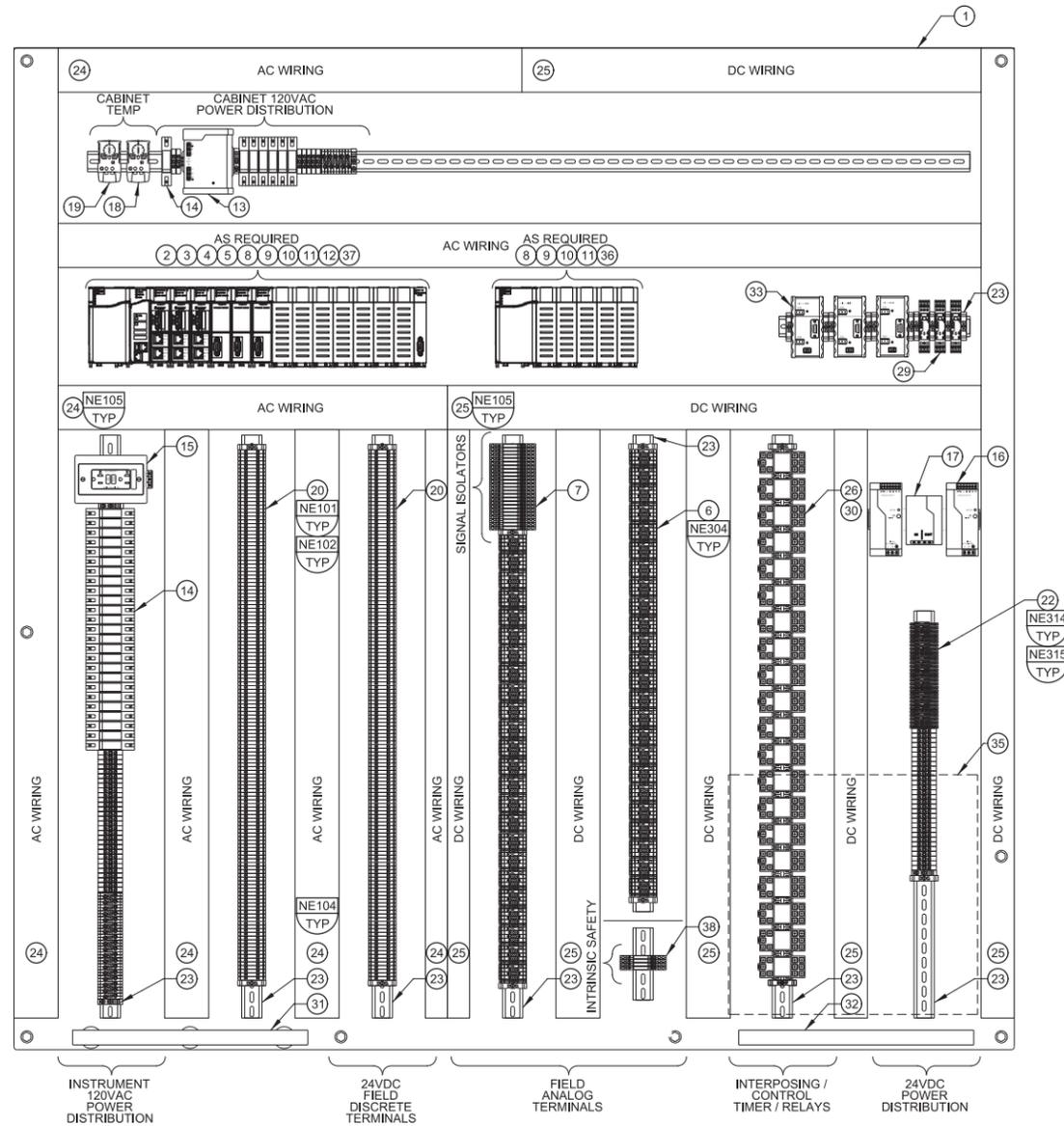
PROJECT NO. 10548A10

FILE NAME: 10548A10-GI-21.dgn

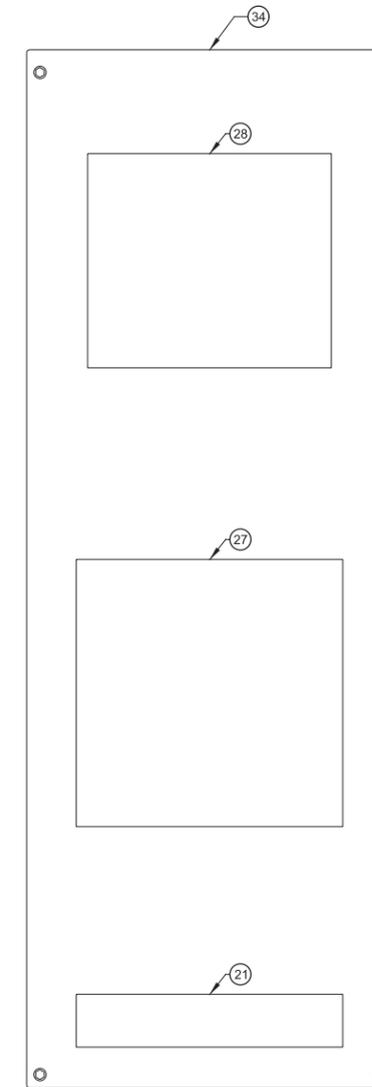
GENERAL NOTES:

- ENCLOSURE DRAWING REPRESENTS DESIGN INTENT. CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
- REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES. CONSTRUCT PANEL TO MEET FULL INTENT OF ARTICLE 409 OF THE NATIONAL ELECTRIC CODE.
- FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
- CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
- ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
- ELEVATE ALL TERMINAL BLOCK DIN RAIL A MINIMUM OF 2 INCHES OFF OF BACK PANEL.
- NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
- NO CAMERA OR TELEPHONE CABLES SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
- ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE TOP OR BOTTOM OF THE ENCLOSURE. NO SIDE, FRONT, OR REAR PENETRATIONS ALLOWED.
- QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
- PROVIDE BOTH A GROUND BAR AND AN ISOLATED GROUND BAR.
- PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.

ITEM	DESCRIPTION
1	BACK PANEL
2	16 SLOT PLC BACKPLANE
3	PLC PROCESSOR
4	PLC POWER SUPPLY
5	PLC ETHERNET COMMUNICATION MODULE
6	SURGE SUPPRESSION TERMINAL BLOCKS
7	SIGNAL ISOLATORS
8	PLC DI MODULE
9	PLC DO MODULE
10	PLC AI MODULE
11	PLC AO MODULE
12	PLC PROFIBUS COMMUNICATION MODULE
13	PANEL SURGE PROTECTOR
14	120 VAC CIRCUIT BREAKERS
15	RECEPTACLE, 5A
16	REDUNDANT 24 VDC POWER SUPPLY
17	DIODE BRIDGE
18	HVAC CONTROL
19	ENCLOSURE TEMPERATURE SWITCH
20	DISCRETE TERMINAL BLOCKS
21	MAINTENANCE BYPASS SWITCH
22	24 VDC FUSED TERMINAL BLOCKS
23	DIN RAIL
24	GRAY WIRE DUCT
25	WHITE WIRE DUCT
26	TIME/CONTROL RELAYS
27	ETHERNET SWITCH
28	FIBER PATCH PANEL
29	PROFIBUS SURGE PROTECTIVE DEVICES
30	INTERPOSING RELAYS
31	ISOLATED GROUND BAR
32	GROUND BAR
33	PROFIBUS ACTIVE TERMINATORS
34	SIDE PANEL
35	UNINTERRUPTIBLE POWER SUPPLY
36	5 SLOT EXPANSION BACKPLANE
37	EXPANSION MODULE
38	IS BARRIERS



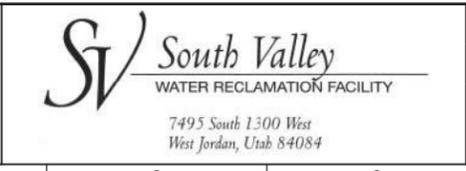
**INTERNAL ELEVATION**  
 SCALE: NO SCALE  
 FILE: 10548A1002N602



**SIDE PANEL ELEVATION**  
 SCALE: NO SCALE  
 FILE: 10548A1002N602

REV	DATE	BY	DESCRIPTION

DESIGNED MJR	
DRAWN AAW	
CHECKED DJC	
DATE MARCH 2019	



SOUTH VALLEY WATER RECLAMATION FACILITY	
PROJECT 5	
INSTRUMENTATION	
PCM-2100 INTERNAL ELEVATION	

VERIFY SCALES	JOB NO. 10548A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. GI-21
0 1"	SHEET NO. 92 OF 159
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	

Plot Date: 28-FEB-2019 10:15:50 AM

User: svcBW

PlotScale: 2:1

DesignScript: Carollo\_Sld\_Pen\_v0905.pen

ColorTable: gshade.ctb

Model: Layout1

ColorTable: gshade.ctb

LAST SAVED BY: CYoung

AIT1				
DISSOLVED OXYGEN				
PROTOCOL: MODBUS TCP				
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND
COMMUNICATIONS			X	
CALIBRATION ERROR			X	
ELECTRONIC SETTINGS ERROR			X	
QUESTIONABLE CALIBRATION WARNING			X	
SAFETY WARNING			X	
SERVICE REQUEST WARNING			X	
HARDWARE ERROR			X	
INTERNAL COMMUNICATIONS ERROR			X	
EXCESSIVE TEMPERATURE			X	
SYSTEM INTIALIZATION			X	
CALIBRATION IN PROGRESS			X	
GENERAL ERROR MESSAGE			X	
SERVICE MODE ACTIVATED			X	
MEASUREMENT VALUE CHANNEL 0 POOR QUALITY			X	
MEASUREMENT VALUE CHANNEL 0 RANGE SHORT-FALL			X	
MEASUREMENT VALUE CHANNEL 0 RANGE EXCEEDED			X	
DISSOLVED OXYGEN	X	X	X	X

AIT2				
ORP				
PROTOCOL: MODBUS TCP				
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND
COMMUNICATIONS			X	
CALIBRATION ERROR			X	
ELECTRONIC SETTINGS ERROR			X	
QUESTIONABLE CALIBRATION WARNING			X	
SAFETY WARNING			X	
SERVICE REQUEST WARNING			X	
HARDWARE ERROR			X	
INTERNAL COMMUNICATIONS ERROR			X	
EXCESSIVE TEMPERATURE			X	
SYSTEM INTIALIZATION			X	
CALIBRATION IN PROGRESS			X	
GENERAL ERROR MESSAGE			X	
SERVICE MODE ACTIVATED			X	
MEASUREMENT VALUE CHANNEL 0 POOR QUALITY			X	
MEASUREMENT VALUE CHANNEL 0 RANGE SHORT-FALL			X	
MEASUREMENT VALUE CHANNEL 0 RANGE EXCEEDED			X	
OXIDATION-REDUCTION POTENTIAL	X	X	X	X
ORP CYCLE SETPOINT LEVEL	X	X		
TEMPERATURE	X	X	X	X

EDR				
OPEN/CLOSE (O/C) ACTUATOR				
PROTOCOL: PROFIBUS DP				
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND
LOCAL		X		
OFF		X		
REMOTE		X		
OPEN COMMAND		X		
CLOSE COMMAND		X		
STOP COMMAND		X		
EMERGENCY STOP		X		
RUNNING CLOSE		X		
RUNNING OPEN		X		
CLOSE LIMIT	X	X		X
OPEN LIMIT	X	X		X
MOVE INHIBITED	X	X	X	
SLOW MODE		X		
OPEN LOCKOUT		X		
CLOSE LOCKOUT		X		
INSTANTANEOUS TORQUE	X	X	X	X
CLOSE TORQUE SET				
OPEN TORQUE SET				
TORQUE ALARM	X		X	
HIGH MOTOR TEMPERATURE	X		X	
OBSTRUCTION	X		X	
WATCHDOG TIMER			X	
BATTERY LOW			X	
PARTIAL STROKE ERROR	X		X	

AIT3				
DISSOLVED OXYGEN/ORP/MLSS				
PROTOCOL: MODBUS TCP				
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND
COMMUNICATIONS			X	
CALIBRATION ERROR			X	
ELECTRONIC SETTINGS ERROR			X	
QUESTIONABLE CALIBRATION WARNING			X	
SAFETY WARNING			X	
SERVICE REQUEST WARNING			X	
HARDWARE ERROR			X	
INTERNAL COMMUNICATIONS ERROR			X	
EXCESSIVE TEMPERATURE			X	
SYSTEM INTIALIZATION			X	
CALIBRATION IN PROGRESS			X	
GENERAL ERROR MESSAGE			X	
SERVICE MODE ACTIVATED			X	
MEASUREMENT VALUE CHANNEL 0 POOR QUALITY			X	
MEASUREMENT VALUE CHANNEL 0 RANGE SHORT-FALL			X	
MEASUREMENT VALUE CHANNEL 0 RANGE EXCEEDED			X	
MLSS	X	X	X	X

AIT4				
DISSOLVED OXYGEN/AMMONIA				
PROTOCOL: MODBUS TCP				
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND
COMMUNICATIONS			X	
CALIBRATION ERROR			X	
ELECTRONIC SETTINGS ERROR			X	
QUESTIONABLE CALIBRATION WARNING			X	
SAFETY WARNING			X	
SERVICE REQUEST WARNING			X	
HARDWARE ERROR			X	
INTERNAL COMMUNICATIONS ERROR			X	
EXCESSIVE TEMPERATURE			X	
SYSTEM INTIALIZATION			X	
CALIBRATION IN PROGRESS			X	
GENERAL ERROR MESSAGE			X	
SERVICE MODE ACTIVATED			X	
MEASUREMENT VALUE CHANNEL 0 POOR QUALITY			X	
MEASUREMENT VALUE CHANNEL 0 RANGE SHORT-FALL			X	
MEASUREMENT VALUE CHANNEL 0 RANGE EXCEEDED			X	
DISSOLVED OXYGEN	X	X	X	X
AMMONIA	X	X	X	X

EAM				
MODULATING ACTUATOR				
PROTOCOL: PROFIBUS DP				
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND
LOCAL		X		
OFF		X		
REMOTE		X		
OPEN COMMAND		X		
CLOSE COMMAND		X		
STOP COMMAND		X		
POSITION COMMAND		X		
POSITION		X	X	X
EMERGENCY STOP		X	X	
RUNNING CLOSE		X		
RUNNING OPEN		X		
CLOSE LIMIT	X	X		
OPEN LIMIT	X	X		
MOVE INHIBITED	X	X	X	
SLOW MODE		X		
OPEN LOCKOUT		X		
CLOSE LOCKOUT		X		
INSTANTANEOUS TORQUE	X	X	X	X
CLOSE TORQUE SET				
OPEN TORQUE SET				
TORQUE ALARM	X	X	X	
HIGH MOTOR TEMPERATURE	X	X	X	
OBSTRUCTION	X	X	X	
WATCHDOG TIMER		X	X	
BATTERY LOW		X	X	
PARTIAL STROKE ERROR	X	X	X	

REV	DATE	BY	DESCRIPTION
1			
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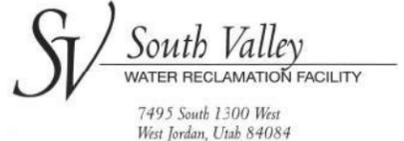
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MGH

DRAWN  
CEY

CHECKED  
DJC

DATE  
MARCH 2019





7495 South 1300 West  
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5

INSTRUMENTATION

DIGITAL NETWORK TABLES - I

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

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JOB NO.  
10548A.10

DRAWING NO.  
GI-22

SHEET NO.  
93 OF 159

Plot Date: 28-FEB-2019 10:15:47 AM

User: svcBW

Plot Scale: 2:1

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen

LAST SAVED BY: CYoung

FVNR1					
FULL VOLTAGE NON-REVERSING STARTER - FLOAT MIXER, VERTICAL SHAFT MIXER					
PROTOCOL: MODBUS TCP					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL		X			
OFF		X			
REMOTE		X			
START		X			
STOP		X			
RESET		X			
RESET ELAPSED TIME		X			
RUNNING		X		X	
TOTAL STARTS	X	X			
DAILY STARTS	X	X			
ELAPSED TIME	X	X			
DAILY RUN TIME	X	X			
AVERAGE CURRENT	X	X		X	
PHASE A CURRENT	X	X		X	
PHASE B CURRENT	X	X		X	
PHASE C CURRENT	X	X		X	
POWER KVA	X	X		X	
POWER FACTOR	X	X		X	
VOLTAGE	X	X		X	
PHASE A VOLTAGE (L1-L2)	X	X		X	
PHASE B VOLTAGE (L2-L3)	X	X		X	
PHASE C VOLTAGE (L3-L1)	X	X		X	
CURRENT ALARM HIGH	X	X	X		X
OVERLOAD	X	X	X		X
FAIL TO RESPOND	X	X	X		X
SMART OVERLOAD FAILED	X	X	X		X
GROUND FAULT TRIP	X	X	X		X
SINGLE PHASE TRIP	X	X	X		X
CURRENT UNBALANCE TRIP	X	X	X		X
CONTACTOR FAILURE	X	X	X		X
REMOTE TRIP ACTIVE		X			

FVNR2					
FULL VOLTAGE NON-REVERSING STARTER - GRIT PUMP					
PROTOCOL: MODBUS TCP					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL		X			
OFF		X			
REMOTE		X			
START		X			
STOP		X			
RESET		X			
RESET ELAPSED TIME		X			
RUNNING		X		X	
TOTAL STARTS	X	X			
DAILY STARTS	X	X			
ELAPSED TIME	X	X			
DAILY RUN TIME	X	X			
AVERAGE CURRENT	X	X		X	
PHASE A CURRENT	X	X		X	
PHASE B CURRENT	X	X		X	
PHASE C CURRENT	X	X		X	
POWER KVA	X	X		X	
POWER FACTOR	X	X		X	
VOLTAGE	X	X		X	
PHASE A VOLTAGE (L1-L2)	X	X		X	
PHASE B VOLTAGE (L2-L3)	X	X		X	
PHASE C VOLTAGE (L3-L1)	X	X		X	
CURRENT ALARM HIGH	X	X	X		X
OVERLOAD	X	X	X		X
FAIL TO RESPOND	X	X	X		X
SMART OVERLOAD FAILED	X	X	X		X
GROUND FAULT TRIP	X	X	X		X
SINGLE PHASE TRIP	X	X	X		X
CURRENT UNBALANCE TRIP	X	X	X		X
CONTACTOR FAILURE	X	X	X		X
REMOTE TRIP ACTIVE		X			

HARDWIRED INTERLOCKS					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOW SEAL WATER FLOW		X	X		X
LOW PRESSURE		X	X		X

VFD1					
VARIABLE FREQUENCY DRIVE - MLR RECYCLE PUMP					
PROTOCOL: MODBUS TCP					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL		X			
OFF		X			
REMOTE		X			
START		X			
STOP		X			
RESET		X			
RESET ELAPSED TIME		X			
RUNNING		X		X	
TOTAL STARTS	X	X			
DAILY STARTS	X	X			
ELAPSED TIME	X	X			
DAILY RUN TIME	X	X			
AVERAGE CURRENT	X	X		X	
POWER KVA	X	X		X	
POWER FACTOR	X	X		X	
VOLTAGE	X	X		X	
FAULT	X	X	X		X
CURRENT ALARM HIGH	X	X	X		X
OVERLOAD	X	X	X		X
FAIL TO RESPOND	X	X	X		X

HARDWIRED INTERLOCKS					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
MOTOR TEMPERATURE HIGH	X	X	X		X
MOISTURE DETECTED	X	X	X		X

VFD2					
VARIABLE FREQUENCY DRIVE - ODOR CONTROL FAN					
PROTOCOL: MODBUS TCP					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL		X			
OFF		X			
REMOTE		X			
START		X			
STOP		X			
SPEED IN		X			
SPEED OUT		X			
RESET		X			
RESET ELAPSED TIME		X			
RUNNING		X		X	
TOTAL STARTS	X	X			
DAILY STARTS	X	X			
ELAPSED TIME	X	X			
DAILY RUN TIME	X	X			
AVERAGE CURRENT	X	X		X	
POWER KVA	X	X		X	
POWER FACTOR	X	X		X	
VOLTAGE	X	X		X	
FAULT	X	X	X		X
CURRENT ALARM HIGH	X	X	X		X
OVERLOAD	X	X	X		X
FAIL TO RESPOND	X	X	X		X

HARDWIRED INTERLOCKS					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
SMOKE DETECTED		X	X		X
LOW SUCTION FLOW		X	X		X

VFD3					
VARIABLE FREQUENCY DRIVE - EXHAUST FAN					
PROTOCOL: MODBUS TCP					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL		X			
OFF		X			
REMOTE		X			
START		X			
STOP		X			
SPEED IN		X			
SPEED OUT		X			
RESET		X			
RESET ELAPSED TIME		X			
RUNNING		X		X	
TOTAL STARTS	X	X			
DAILY STARTS	X	X			
ELAPSED TIME	X	X			
DAILY RUN TIME	X	X			
AVERAGE CURRENT	X	X		X	
POWER KVA	X	X		X	
POWER FACTOR	X	X		X	
VOLTAGE	X	X		X	
FAULT	X	X	X		X
CURRENT ALARM HIGH	X	X	X		X
OVERLOAD	X	X	X		X
FAIL TO RESPOND	X	X	X		X

HARDWIRED INTERLOCKS					
DESCRIPTION	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
SMOKE DETECTED		X	X		X

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED  
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CEY

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DJC

DATE  
MARCH 2019



**SV South Valley**  
WATER RECLAMATION FACILITY

7495 South 1300 West  
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5

INSTRUMENTATION

DIGITAL NETWORK TABLES - II

VERIFY SCALES  
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JOB NO.  
10548A.10

DRAWING NO.  
GI-23

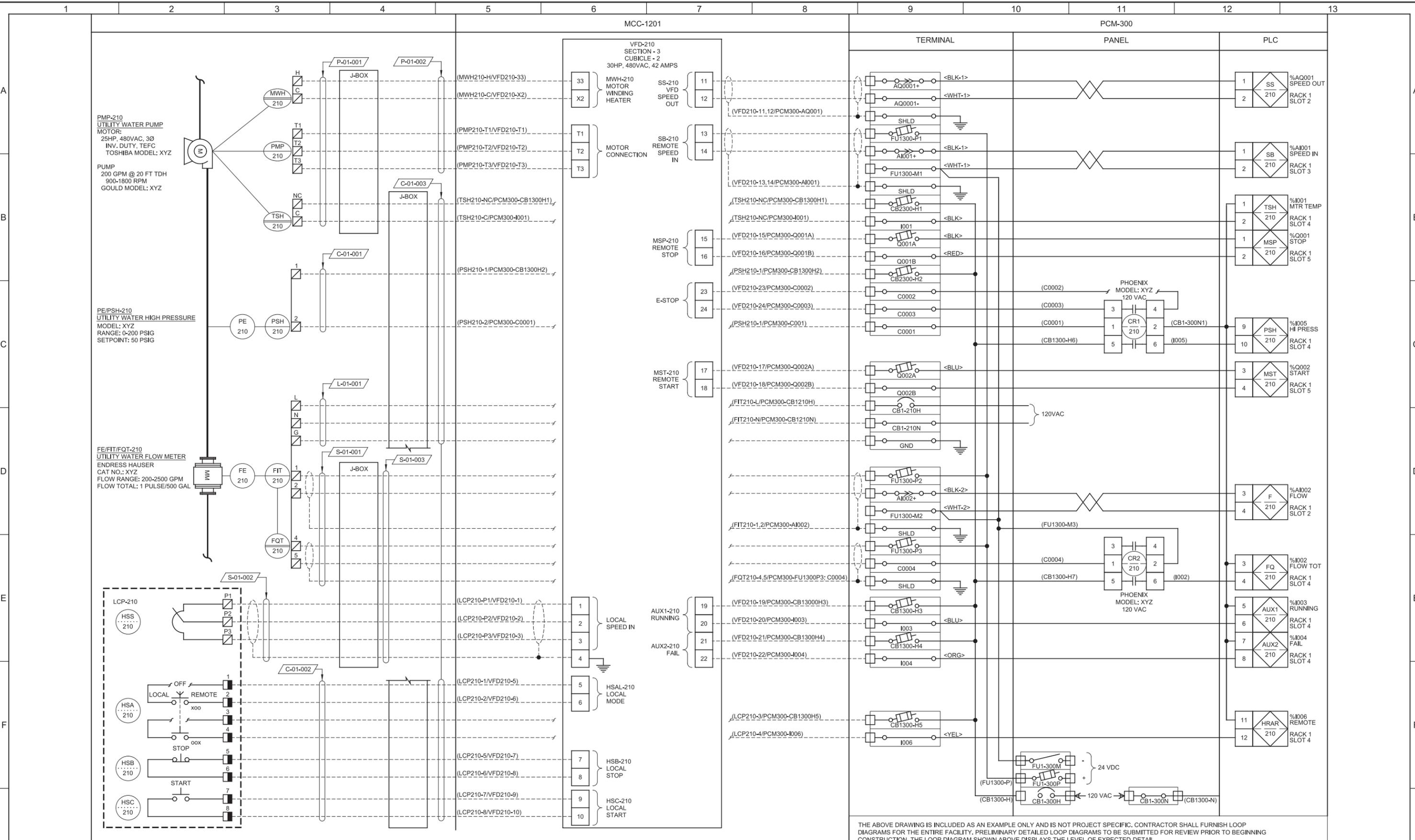
SHEET NO.  
94 OF 159

Plot Date: 28-FEB-2019 10:15:30 AM

User: svcPW

Model: Layout1 ColorTable: DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

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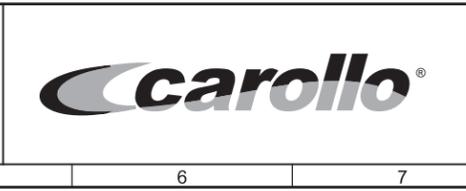


THE ABOVE DRAWING IS INCLUDED AS AN EXAMPLE ONLY AND IS NOT PROJECT SPECIFIC. CONTRACTOR SHALL FURNISH LOOP DIAGRAMS FOR THE ENTIRE FACILITY. PRELIMINARY DETAILED LOOP DIAGRAMS TO BE SUBMITTED FOR REVIEW PRIOR TO BEGINNING CONSTRUCTION. THE LOOP DIAGRAM SHOWN ABOVE DISPLAYS THE LEVEL OF EXPECTED DETAIL.

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED JR  
 DRAWN SGS  
 CHECKED DJC  
 DATE MARCH 2019

REGISTERED PROFESSIONAL ENGINEER  
 No. 5612657  
 MATTHEW G. HATCH  
 STATE OF UTAH

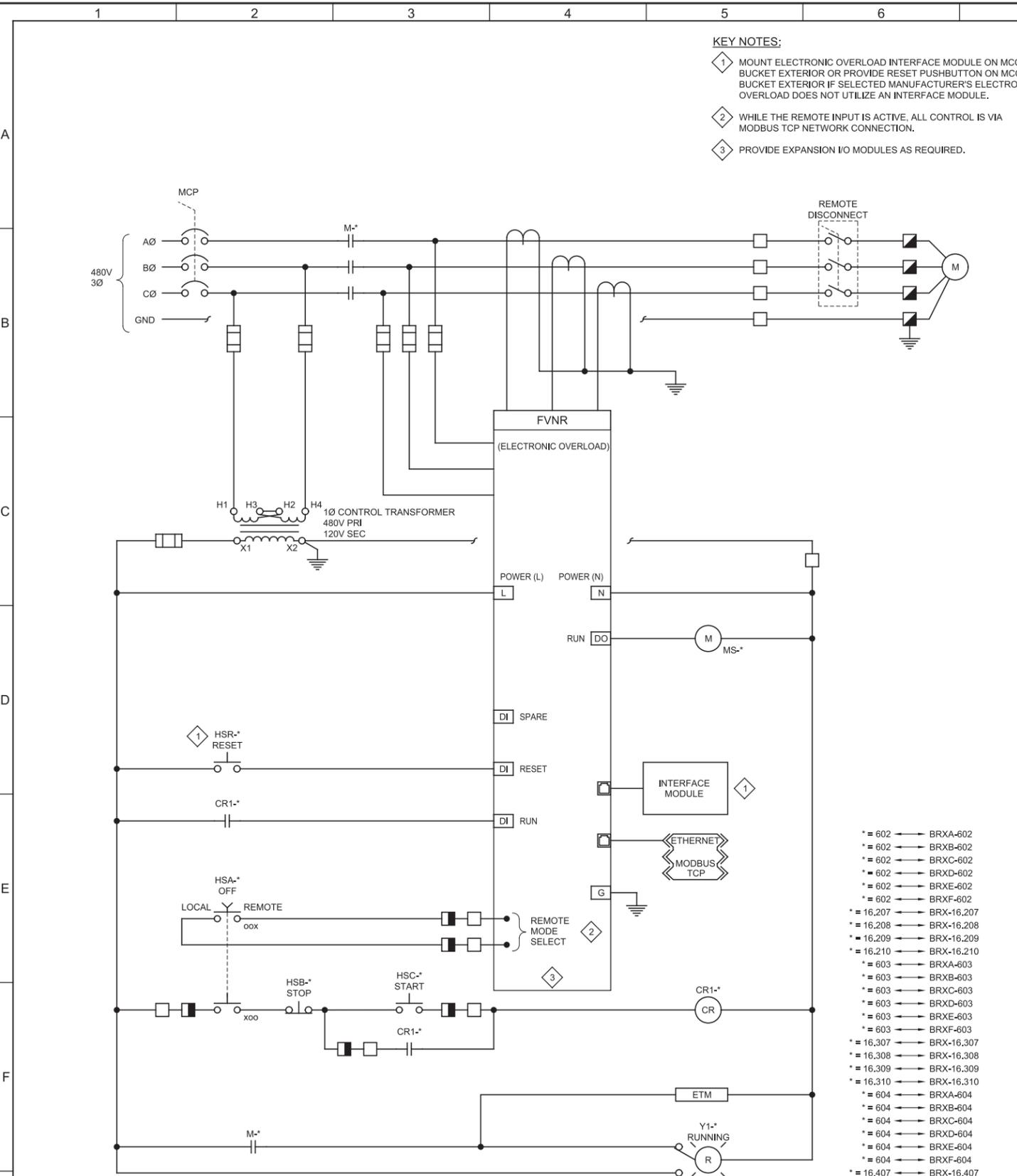


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 West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
 SAMPLE LOOP DRAWING

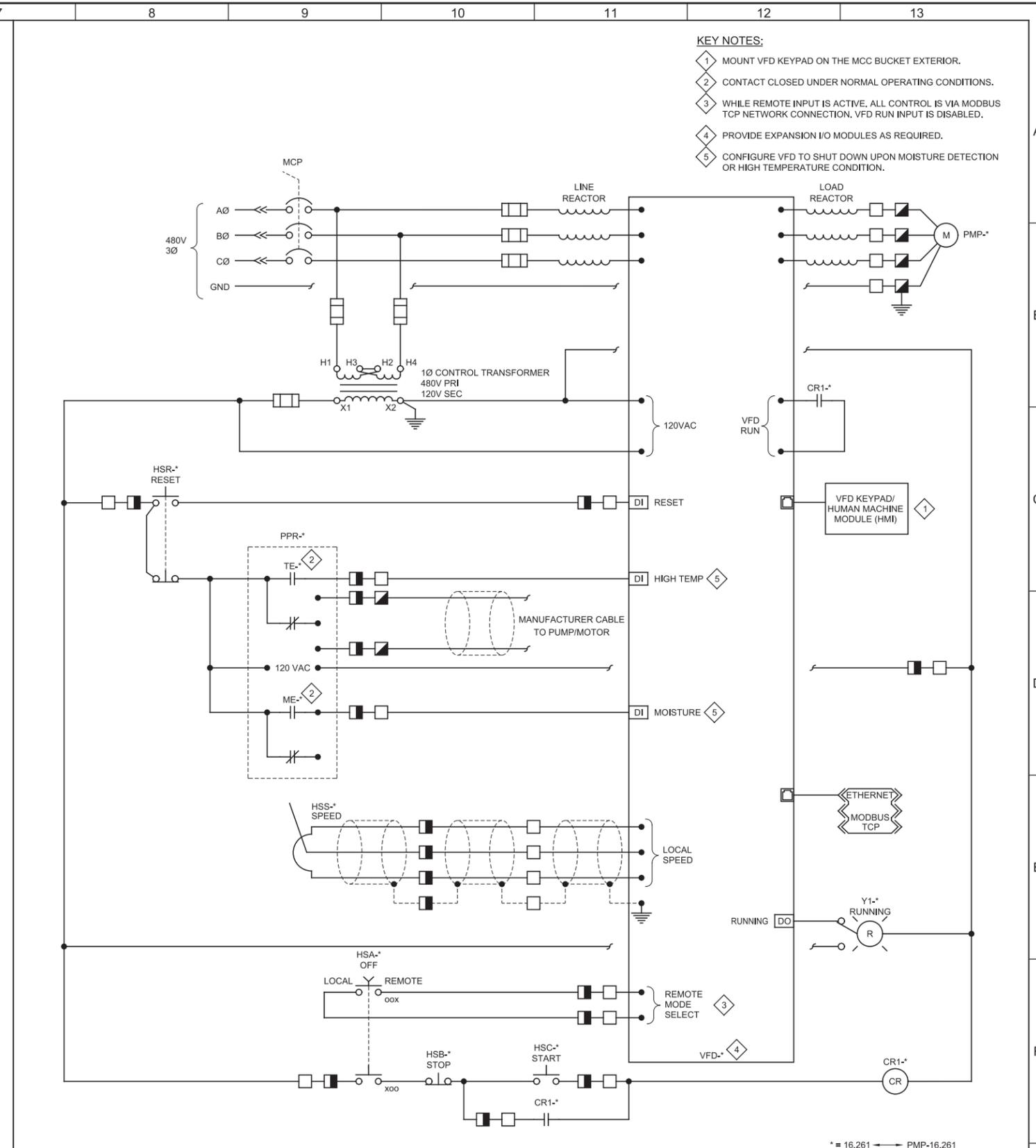
VERIFY SCALES  
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 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10  
 DRAWING NO. GI-24  
 SHEET NO. 95 OF 159



- KEY NOTES:**
- 1 MOUNT ELECTRONIC OVERLOAD INTERFACE MODULE ON MCC BUCKET EXTERIOR OR PROVIDE RESET PUSHBUTTON ON MCC BUCKET EXTERIOR IF SELECTED MANUFACTURER'S ELECTRONIC OVERLOAD DOES NOT UTILIZE AN INTERFACE MODULE.
  - 2 WHILE THE REMOTE INPUT IS ACTIVE, ALL CONTROL IS VIA MODBUS TCP NETWORK CONNECTION.
  - 3 PROVIDE EXPANSION I/O MODULES AS REQUIRED.

- \* = 602 → BRXA-602
- \* = 602 → BRXB-602
- \* = 602 → BRXC-602
- \* = 602 → BRXD-602
- \* = 602 → BRXE-602
- \* = 602 → BRXF-602
- \* = 16.207 → BRX-16.207
- \* = 16.208 → BRX-16.208
- \* = 16.209 → BRX-16.209
- \* = 16.210 → BRX-16.210
- \* = 603 → BRXA-603
- \* = 603 → BRXB-603
- \* = 603 → BRXC-603
- \* = 603 → BRXD-603
- \* = 603 → BRXE-603
- \* = 603 → BRXF-603
- \* = 16.307 → BRX-16.307
- \* = 16.308 → BRX-16.308
- \* = 16.309 → BRX-16.309
- \* = 16.310 → BRX-16.310
- \* = 604 → BRXA-604
- \* = 604 → BRXB-604
- \* = 604 → BRXC-604
- \* = 604 → BRXD-604
- \* = 604 → BRXE-604
- \* = 604 → BRXF-604
- \* = 16.407 → BRX-16.407
- \* = 16.408 → BRX-16.408
- \* = 16.409 → BRX-16.409
- \* = 16.410 → BRX-16.410



- KEY NOTES:**
- 1 MOUNT VFD KEYPAD ON THE MCC BUCKET EXTERIOR.
  - 2 CONTACT CLOSED UNDER NORMAL OPERATING CONDITIONS.
  - 3 WHILE REMOTE INPUT IS ACTIVE, ALL CONTROL IS VIA MODBUS TCP NETWORK CONNECTION. VFD RUN INPUT IS DISABLED.
  - 4 PROVIDE EXPANSION I/O MODULES AS REQUIRED.
  - 5 CONFIGURE VFD TO SHUT DOWN UPON MOISTURE DETECTION OR HIGH TEMPERATURE CONDITION.

- \* = 16.261 → PMP-16.261
- \* = 16.262 → PMP-16.262
- \* = 16.361 → PMP-16.361
- \* = 16.362 → PMP-16.362
- \* = 16.461 → PMP-16.461
- \* = 16.462 → PMP-16.462

**IS001 MIXER**

PI16-01, PI16-02, PI16-03, PI16-04, PI16-14, PI16-15, PI16-17, PI16-18, PI16-27, PI16-28, PI16-29, PI16-30, GE-OL-16-2, GE-OL-16-3, GE-OL-16-4, GE-OL-16-6, GE-OL-7, GE-OL-16-10, GE-OL-16-11, GE-OL-16-12, GE-OL-16-14, GE-OL-16-17, GE-OL-16-20

**IS002 INTERNAL RECYCLE PUMPS**

PI16-12, PI16-25, PI16-38, GE-OL-16-14, GE-OL-16-15, GE-OL-16-17, GE-OL-16-18, GE-OL-16-20, GE-OL-16-21

LAST SAVED BY:

REV	DATE	BY	DESCRIPTION
1			
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DESIGNED

DRAWN AAW

CHECKED DJC

DATE MARCH 2019

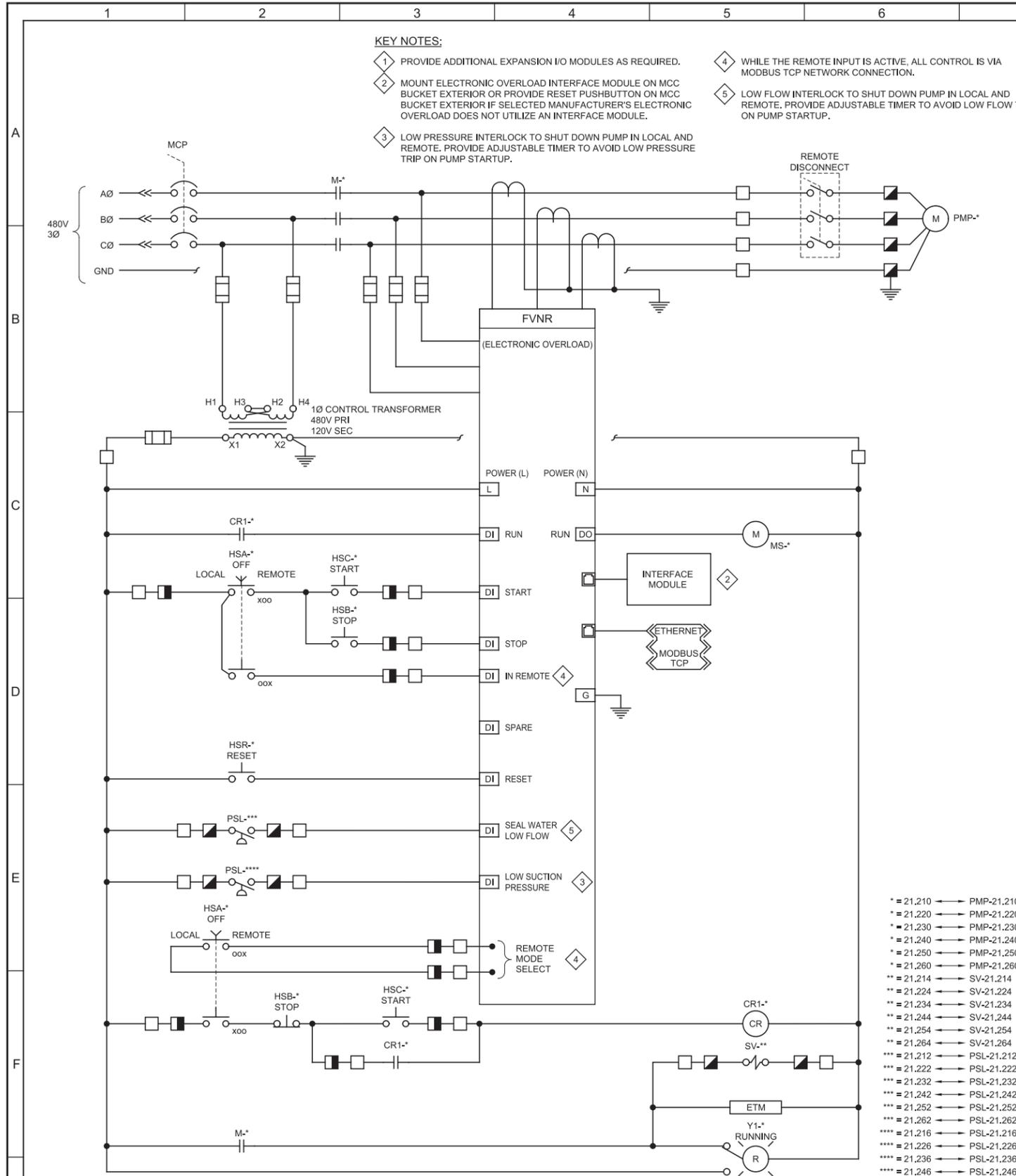
REGISTERED PROFESSIONAL ENGINEER  
No. 5612657  
MATTHEW G. HATCH  
STATE OF UTAH



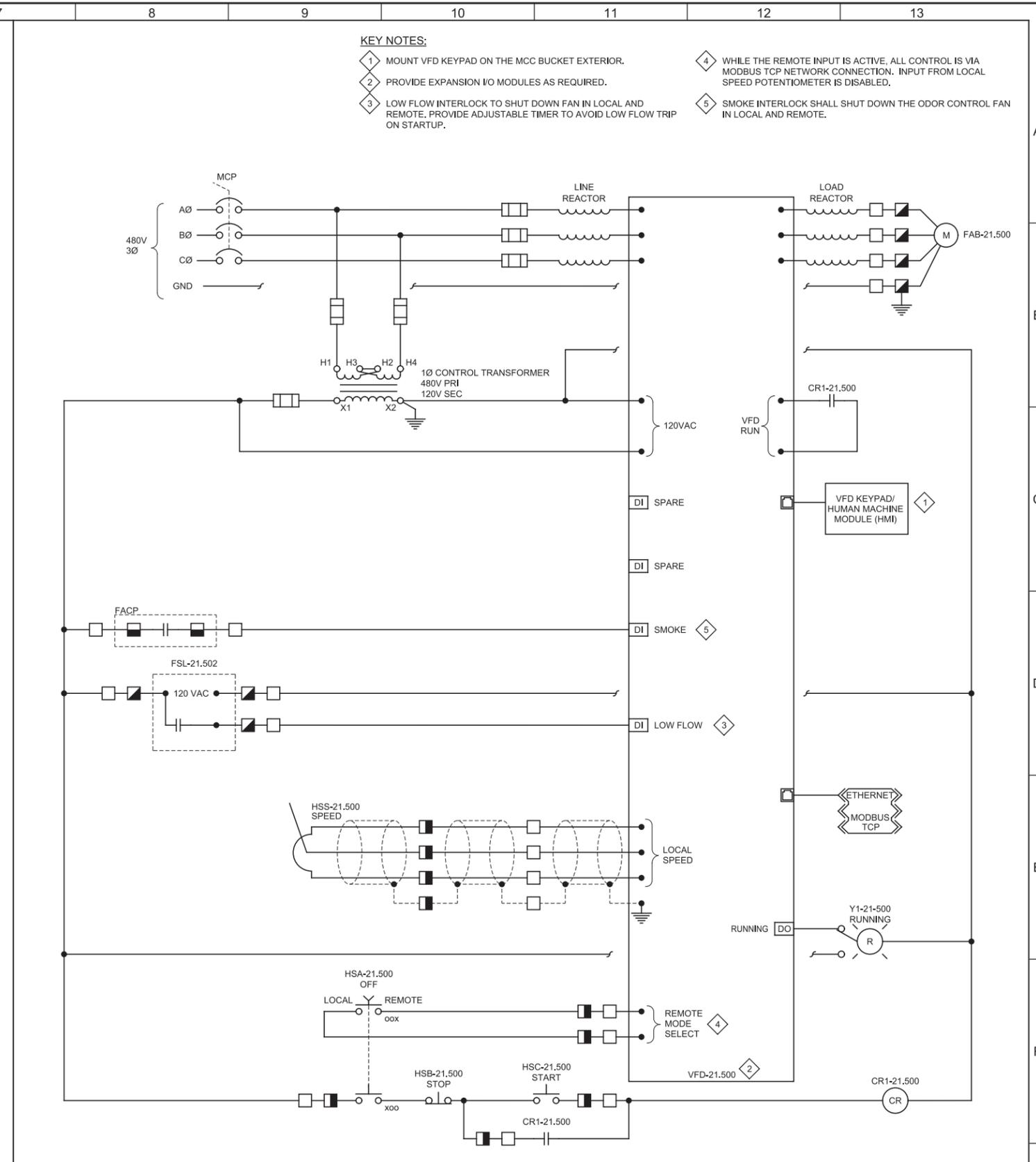
**SV South Valley**  
WATER RECLAMATION FACILITY  
7495 South 1300 West  
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
CONTROL SCHEMATICS - I

VERIFY SCALES  
JOB NO. 10548A.10  
DRAWING NO. IS-01  
SHEET NO. 96 OF 159



- \* = 21.210 → PMP-21.210
- \* = 21.220 → PMP-21.220
- \* = 21.230 → PMP-21.230
- \* = 21.240 → PMP-21.240
- \* = 21.250 → PMP-21.250
- \*\* = 21.260 → PMP-21.260
- \*\* = 21.214 → SV-21.214
- \*\* = 21.224 → SV-21.224
- \*\* = 21.234 → SV-21.234
- \*\* = 21.244 → SV-21.244
- \*\* = 21.254 → SV-21.254
- \*\* = 21.264 → SV-21.264
- \*\*\* = 21.212 → PSL-21.212
- \*\*\* = 21.222 → PSL-21.222
- \*\*\* = 21.232 → PSL-21.232
- \*\*\* = 21.242 → PSL-21.242
- \*\*\* = 21.252 → PSL-21.252
- \*\*\*\* = 21.262 → PSL-21.262
- \*\*\*\* = 21.216 → PSL-21.216
- \*\*\*\* = 21.226 → PSL-21.226
- \*\*\*\* = 21.236 → PSL-21.236
- \*\*\*\* = 21.246 → PSL-21.246
- \*\*\*\* = 21.256 → PSL-21.256
- \*\*\*\* = 21.266 → PSL-21.266

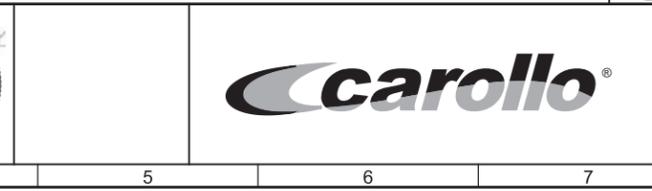


**IS004 ODOR CONTROL FAN**  
PI21-10, GE-OL-21-3

**IS003 GRIT PUMP**  
PI21-04, PI21-05, PI21-06, GE-OL-21-2, GE-OL-21-3

REV	DATE	BY	DESCRIPTION
1			
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DESIGNED	
DRAWN	
CHECKED	
DATE	



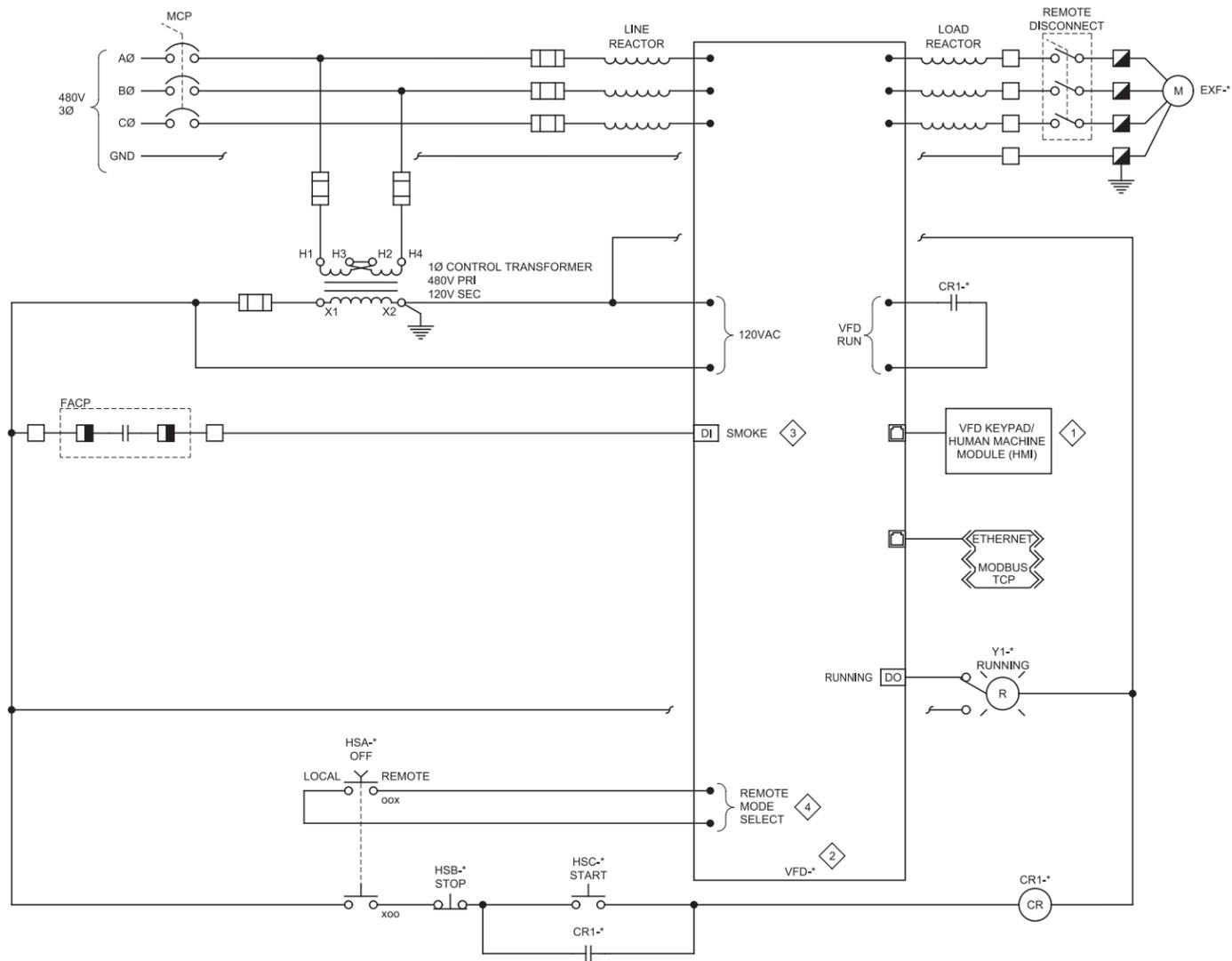
**South Valley**  
WATER RECLAMATION FACILITY  
7495 South 1300 West  
West Jordan, Utah 84084

**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
INSTRUMENTATION  
**CONTROL SCHEMATICS - II**

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	10548A.10
0 1"	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	IS-02
	SHEET NO.
	97 OF 159

**KEY NOTES:**

- 1 MOUNT VFD KEYPAD ON THE MCC BUCKET EXTERIOR.
- 2 PROVIDE EXPANSION I/O MODULES AS REQUIRED.
- 3 SMOKE INTERLOCK SHALL SHUT DOWN THE EXHAUST FAN IN LOCAL AND REMOTE.
- 4 WHILE THE REMOTE INPUT IS ACTIVE, ALL CONTROL IS VIA MODBUS TCP NETWORK CONNECTION.



\* = 21.830 → EXF-21.830  
 \* = 21.840 → EXF-21.840  
 \* = 21.850 → EXF-21.850  
 \* = 21.860 → EXF-21.860

**IS005 HVAC FANS**

PI21-15, PI21-16, GE-OL-21-2, GE-OL-21-3, GE-OL-21-4

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1			
2			
3			

DESIGNED  
 DRAWN CGR  
 CHECKED DJC  
 DATE MARCH 2019

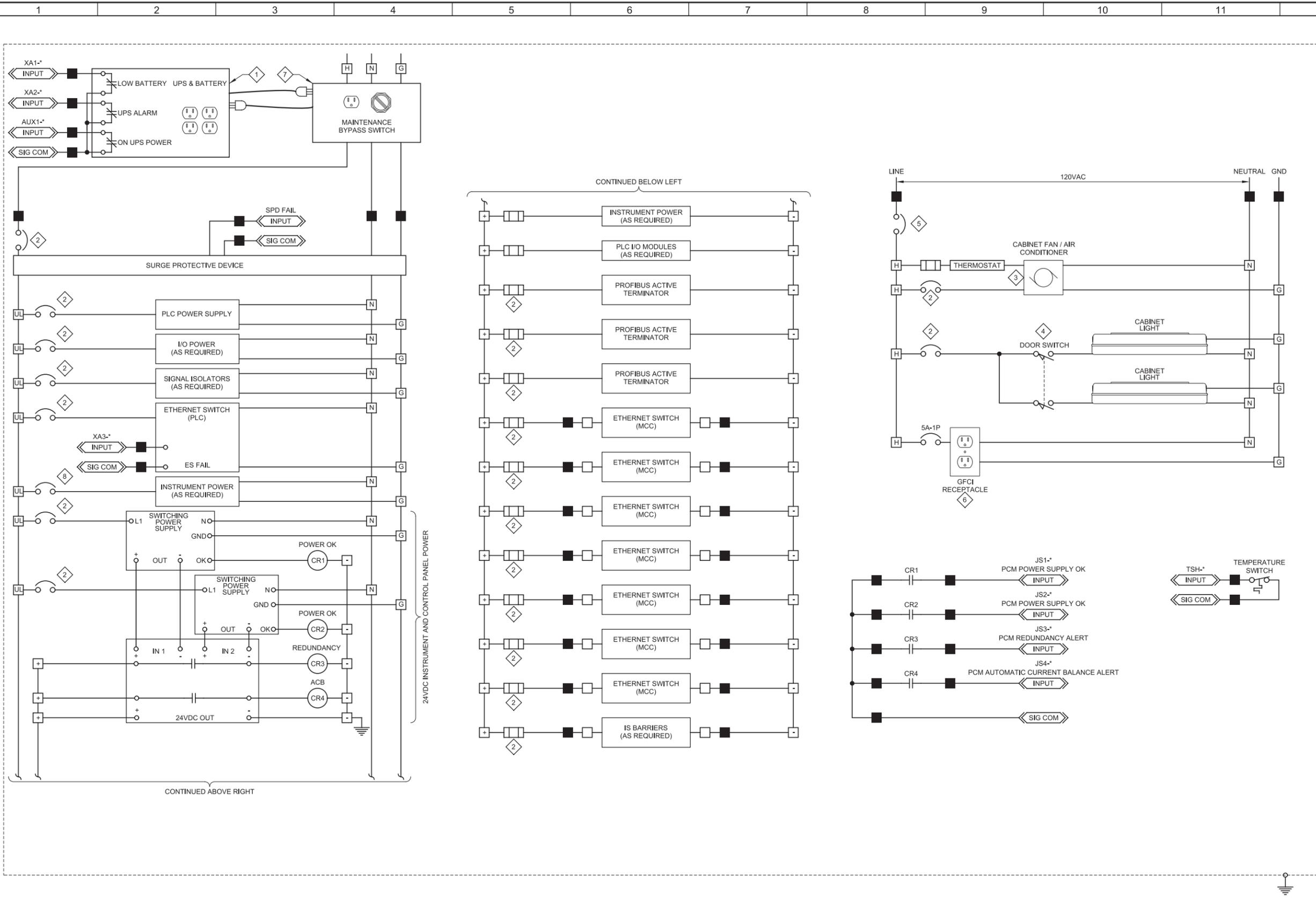


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SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
 CONTROL SCHEMATICS - III

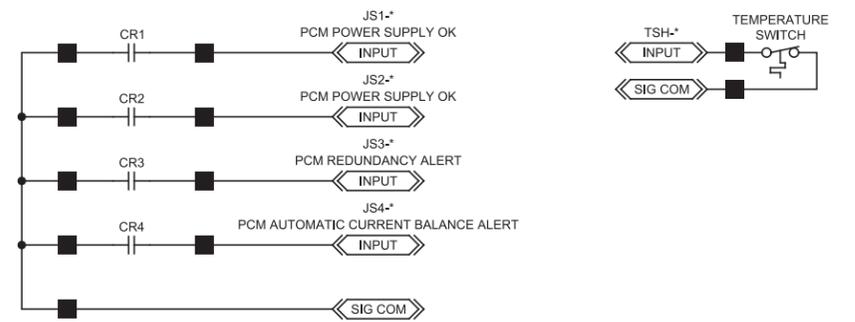
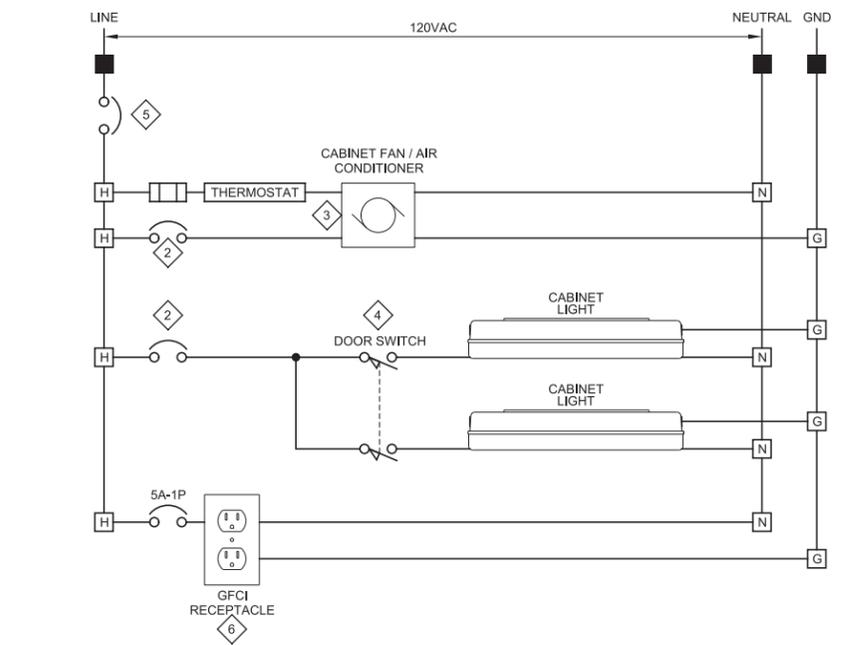
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JOB NO. 10548A.10  
 DRAWING NO. IS-03  
 SHEET NO. 98 OF 159



- GENERAL NOTES:**
1. SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
- KEY NOTES:**
- 1 SIZE UPS AND BATTERY BASED ON UPS SPECIFICATION REQUIREMENTS.
  - 2 SIZE BASED ON PROTECTION NEEDS.
  - 3 VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS. PROVIDE ADDITIONAL CIRCUIT IF REQUIRED.
  - 4 INTEGRAL SWITCH WITH LIGHT.
  - 5 SIZE BASED ON LOAD REQUIREMENT.
  - 6 PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS. SIZE RECEPTACLE FOR LAPTOP.
  - 7 PROVIDE HARDWIRED CONNECTIONS OR RECEPTACLE/PLUG AS REQUIRED BY MAINTENANCE BYPASS SWITCH.
  - 8 SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PCM CABINET.

- TERMINAL BLOCK LEGEND**
- PCM
  - [H] 120VAC
  - [N] NEUTRAL
  - [G] GROUND
  - [UL] UPS 120VAC
  - [+] 24VDC (+)
  - [-] 24VDC (-)



IS007 **PCM-600A**  
P116-40

REV	DATE	BY	DESCRIPTION

DESIGNED  
DRAWN SGS  
CHECKED DJC  
DATE MARCH 2019

REGISTERED PROFESSIONAL ENGINEER  
No. 5612657  
MATTHEW G. HATCH  
STATE OF UTAH

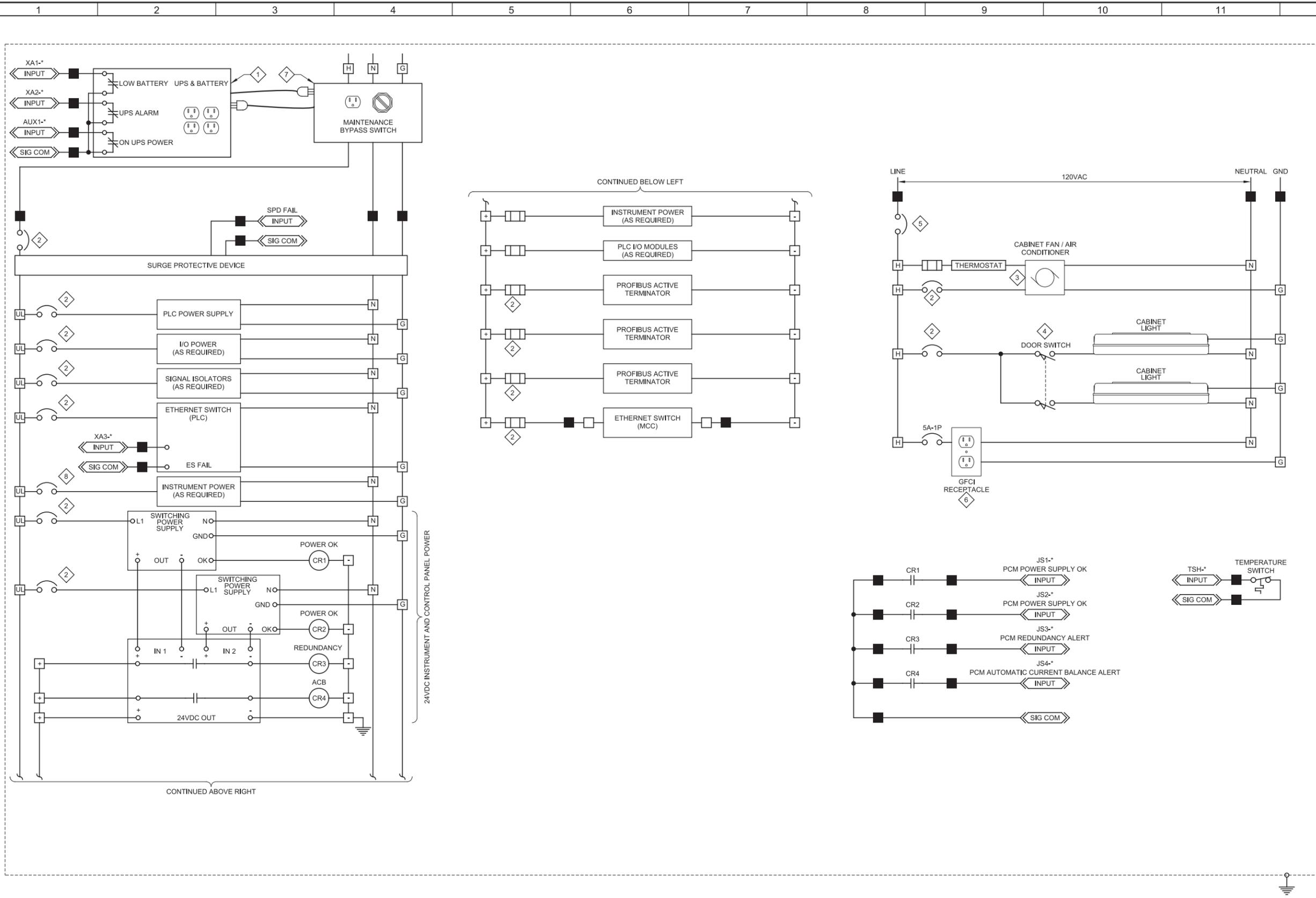


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SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
**CONTROL SCHEMATICS - IV**

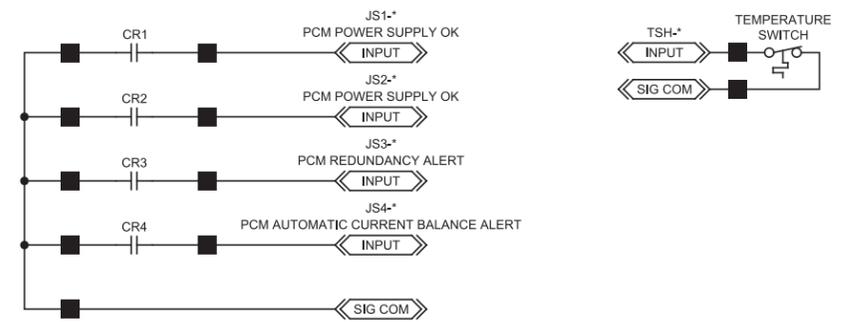
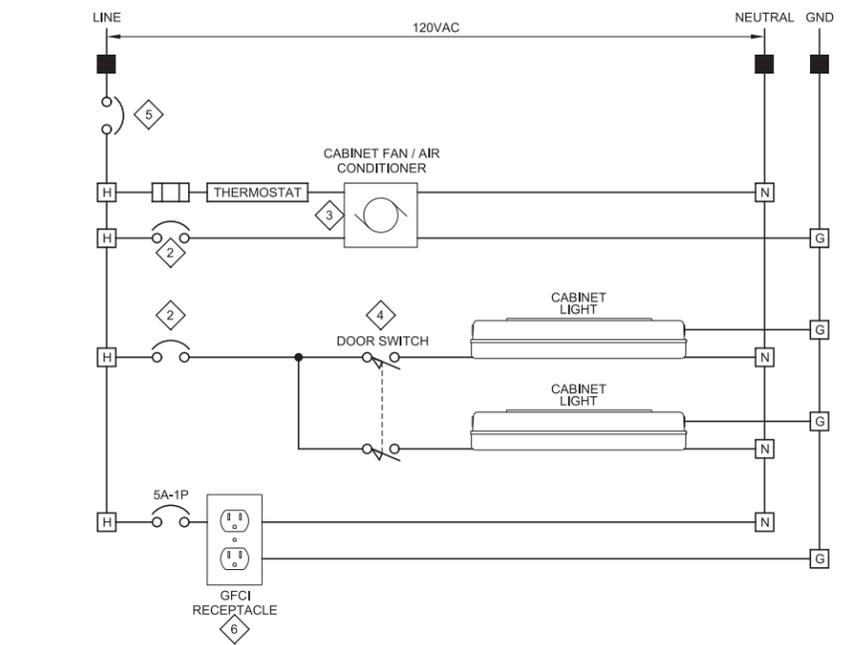
VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10  
DRAWING NO. **IS-04**  
SHEET NO. 99 OF 159



- GENERAL NOTES:**
1. SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
- KEY NOTES:**
- 1 SIZE UPS AND BATTERY BASED ON UPS SPECIFICATION REQUIREMENTS.
  - 2 SIZE BASED ON PROTECTION NEEDS.
  - 3 VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS. PROVIDE ADDITIONAL CIRCUIT IF REQUIRED.
  - 4 INTEGRAL SWITCH WITH LIGHT.
  - 5 SIZE BASED ON LOAD REQUIREMENT.
  - 6 PROVIDE QUANTITY REQUIRED PER RECEPTACLE/PLUG AS REQUIRED FOR LAPTOP.
  - 7 PROVIDE HARDWIRED CONNECTIONS OR RECEPTACLE/PLUG AS REQUIRED BY MAINTENANCE BYPASS SWITCH.
  - 8 SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PCM CABINET.

- TERMINAL BLOCK LEGEND**
- PCM
  - [H] 120VAC
  - [N] NEUTRAL
  - [G] GROUND
  - [UL] UPS 120VAC
  - [+] 24VDC (+)
  - [-] 24VDC (-)



IS008 **PCM-2100**

REV	DATE	BY	DESCRIPTION

DESIGNED  
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MARCH 2019



**SV South Valley**  
WATER RECLAMATION FACILITY  
7495 South 1300 West  
West Jordan, Utah 84084

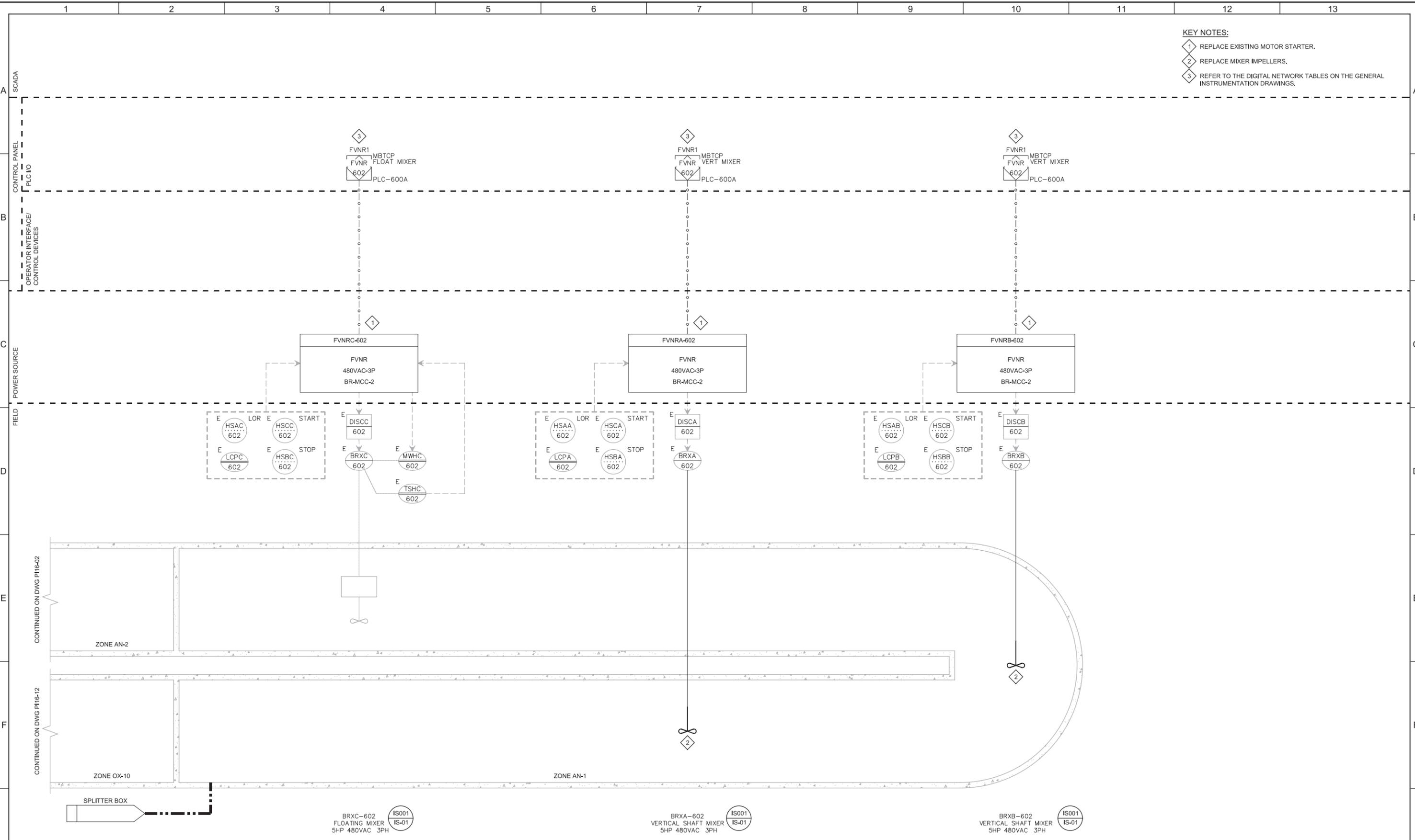
SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
**CONTROL SCHEMATICS - V**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10  
DRAWING NO.  
**IS-05**  
SHEET NO.  
100 OF 159

Plot Date: 28-FEB-2019 10:27:51 AM  
 User: svcPW  
 Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1  
 LAST SAVED BY: CYoung

- KEY NOTES:**
- 1 REPLACE EXISTING MOTOR STARTER.
  - 2 REPLACE MIXER IMPELLERS.
  - 3 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



REV	DATE	BY	DESCRIPTION
1			
2			

DESIGNED MGH  
 DRAWN CEY  
 CHECKED DJC  
 DATE MARCH 2019



**SV South Valley**  
 WATER RECLAMATION FACILITY  
 7495 South 1300 West  
 West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE AN-1 P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10  
 DRAWING NO. **PI16-01**  
 SHEET NO. 101 OF 159

Plot Date: 28-FEB-2019 10:48:37 AM

User: svcPW

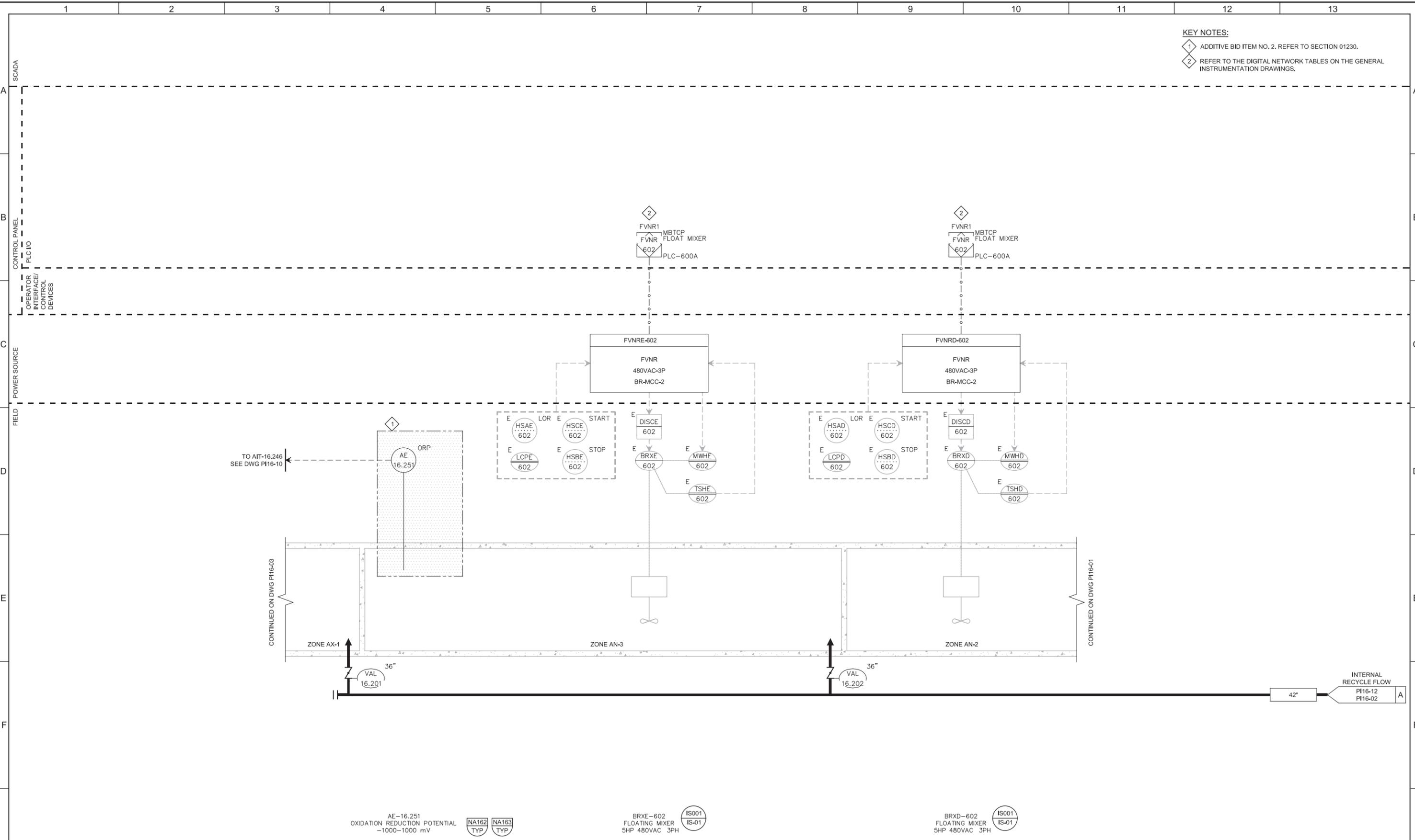
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

**KEY NOTES:**

1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



AE-16.251  
OXIDATION REDUCTION POTENTIAL  
-1000-1000 mV

BRXE-602  
FLOATING MIXER  
5HP 480VAC 3PH

BRXD-602  
FLOATING MIXER  
5HP 480VAC 3PH

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH  
DRAWN  
CEY  
CHECKED  
DJC  
DATE  
MARCH 2019



**SV South Valley**  
WATER RECLAMATION FACILITY  
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West Jordan, Utah 84084

**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE AN-2 & AN-3 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10  
DRAWING NO.  
**PI16-02**  
SHEET NO.  
102 OF 159

Plot Date: 28-FEB-2019 10:48:45 AM

User: svcPW

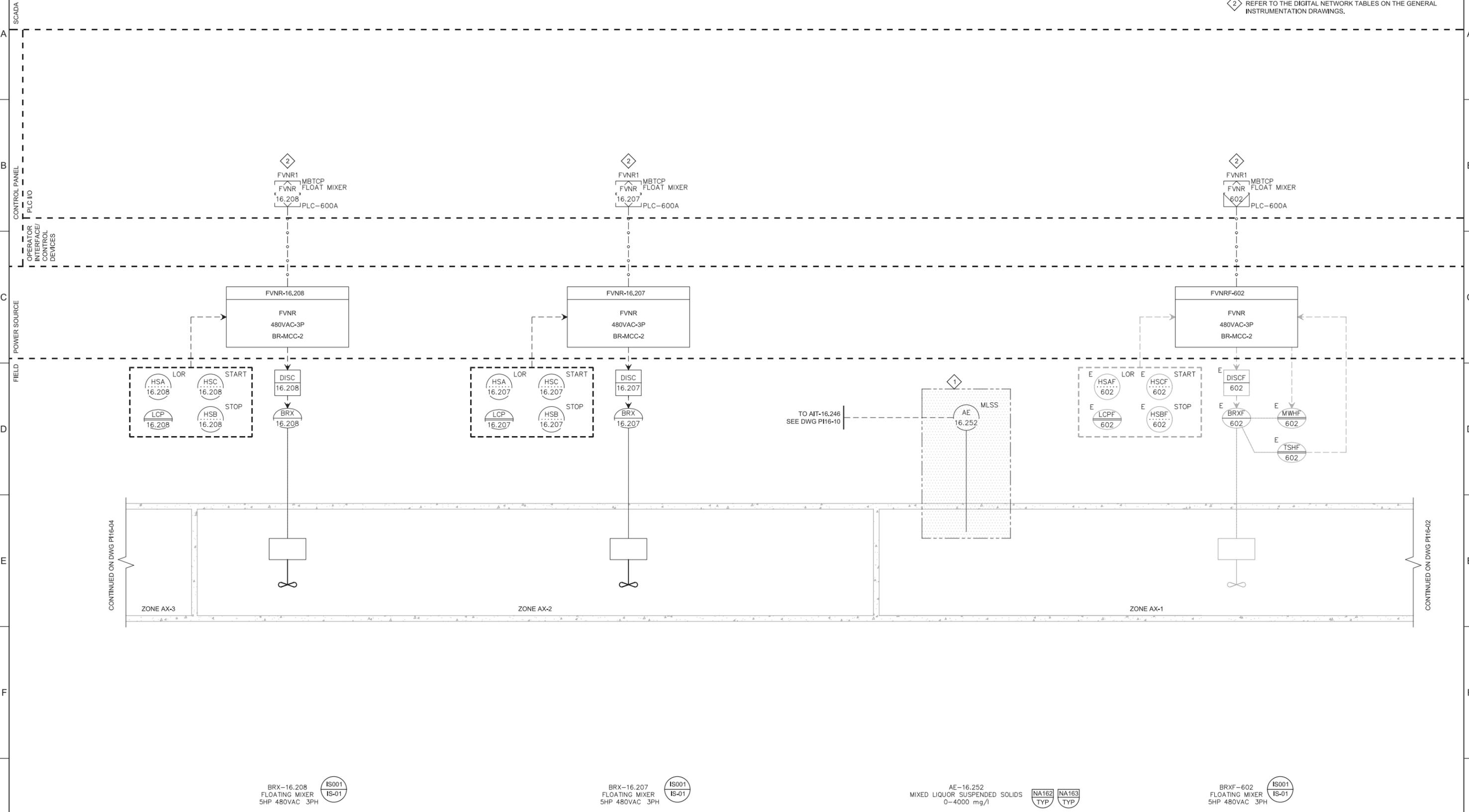
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

1 2 3 4 5 6 7 8 9 10 11 12 13

KEY NOTES:

- 1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.
- 2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



CONTINUED ON DWG PI16-04

CONTINUED ON DWG PI16-02

BRX-16.208  
FLOATING MIXER  
5HP 480VAC 3PH



BRX-16.207  
FLOATING MIXER  
5HP 480VAC 3PH



AE-16.252  
MIXED LIQUOR SUSPENDED SOLIDS  
0-4000 mg/l

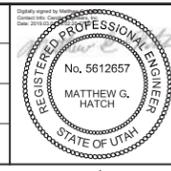


BRXF-602  
FLOATING MIXER  
5HP 480VAC 3PH



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH  
DRAWN  
CEY  
CHECKED  
DJC  
DATE  
MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
PROJECT 5  
INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE AX-1 & AX-2 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

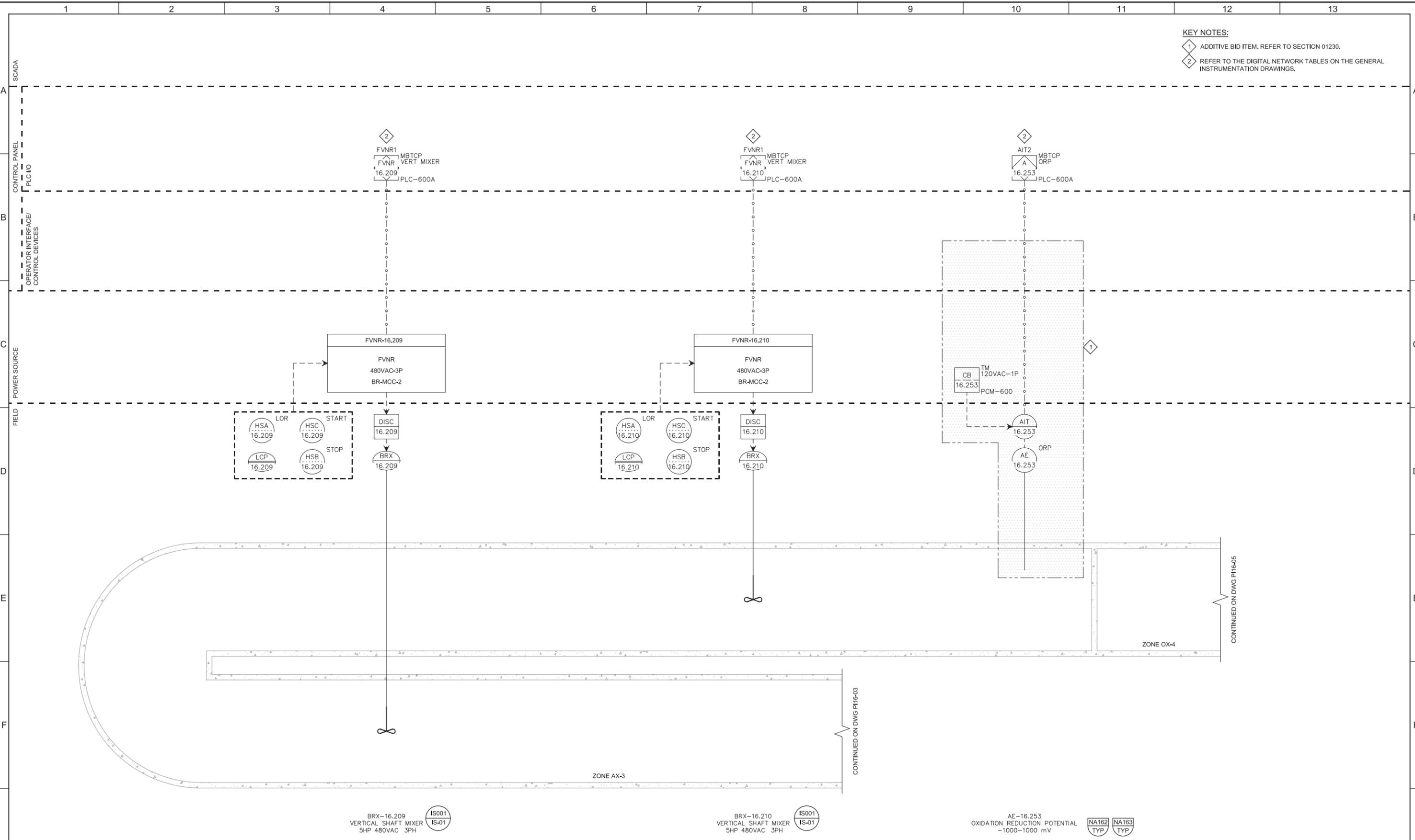
JOB NO.  
10548A.10  
DRAWING NO.  
**PI16-03**  
SHEET NO.  
103 OF 159

Plot Date: 28-FEB-2019 10:48:42 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**

1 ADDITIVE BID ITEM. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

BRX-16.209  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH

BRX-16.210  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH

AE-16.253  
OXIDATION REDUCTION POTENTIAL  
-1000-1000 mV

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
CEY

CHECKED  
DJC

DATE  
MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 2**

**ZONE AX-3 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-04**

SHEET NO.  
104 OF 159

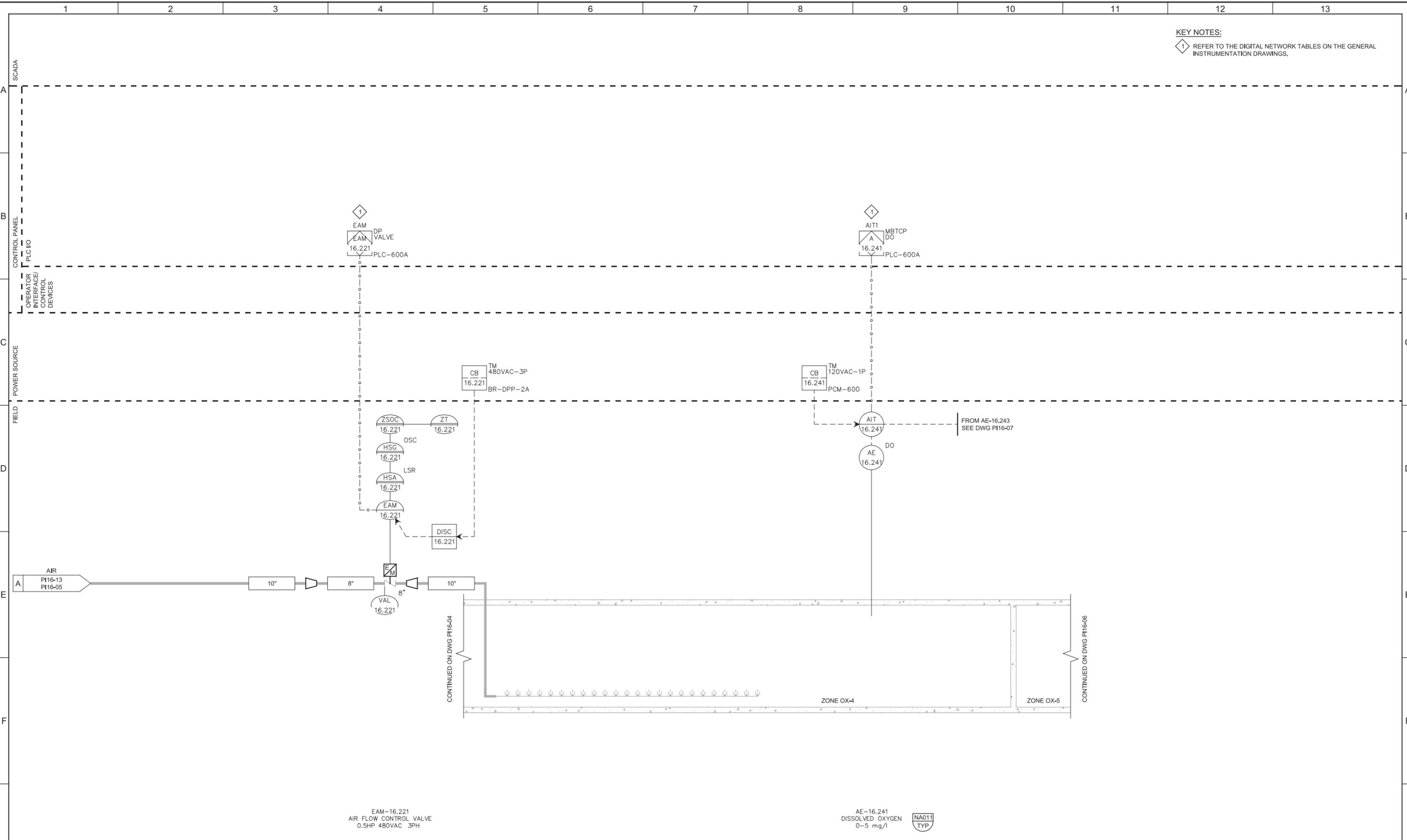
Plot Date: 28-FEB-2019 10:48:51 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

KEY NOTES:  
1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



EAM-16.221  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

AE-16.241  
DISSOLVED OXYGEN  
0-5 mg/l



CONTINUED ON DWG P116-04

CONTINUED ON DWG P116-06

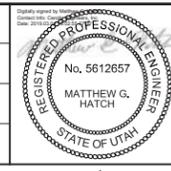
REV	DATE	BY	DESCRIPTION
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DESIGNED  
MGH

DRAWN  
CEY

CHECKED  
DJC

DATE  
MARCH 2019



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SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5  
INSTRUMENTATION

**BIOREACTOR NO. 2  
ZONE OX-4 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-05**

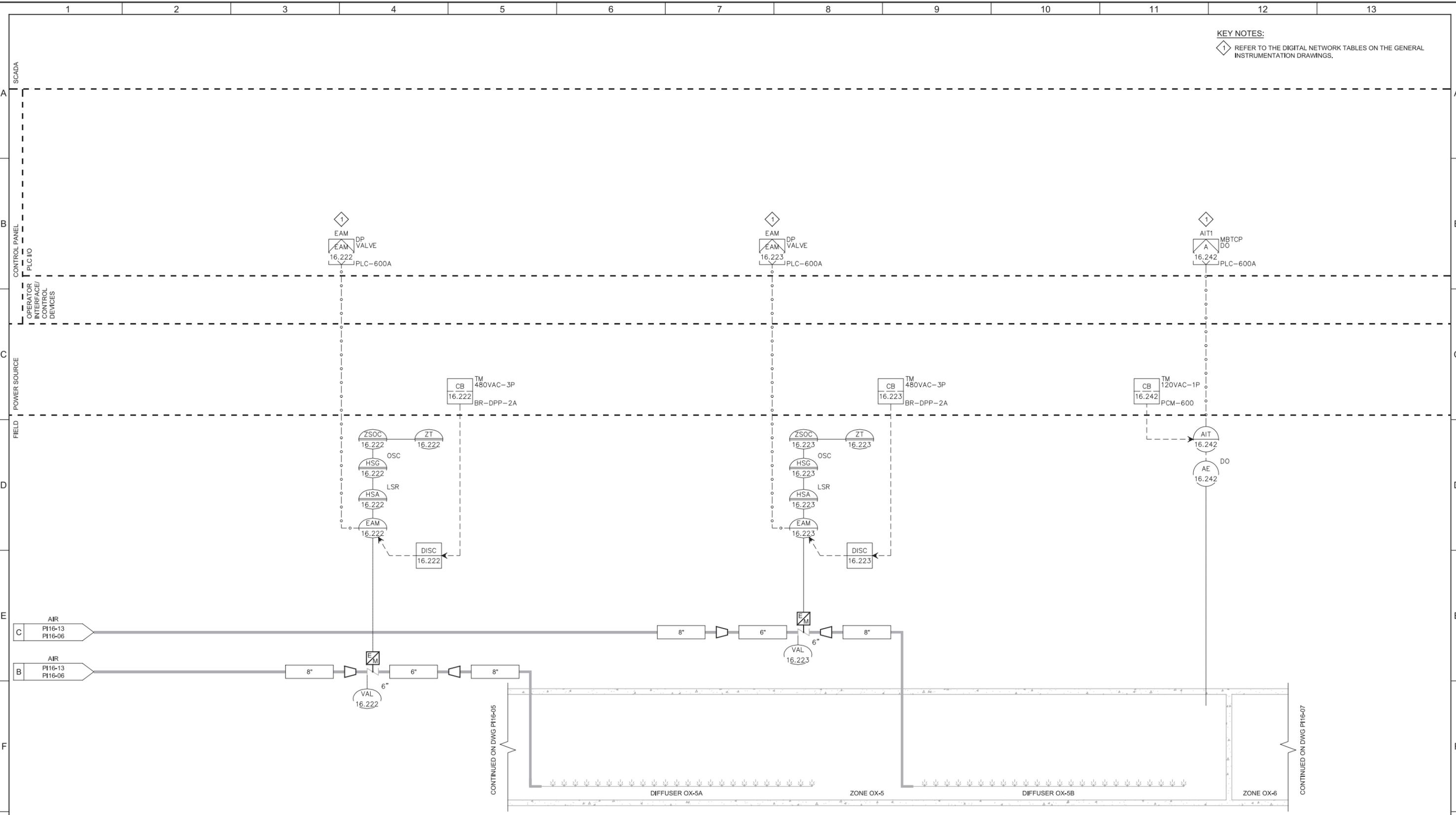
SHEET NO.  
105 OF 159

Plot Date: 28-FEB-2019 10:48:47 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**  
 1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

EAM-16.222  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

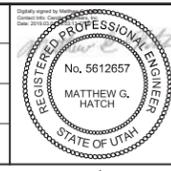
EAM-16.223  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

AE-16.242  
 DISSOLVED OXYGEN  
 0-5 mg/l



REV	DATE	BY	DESCRIPTION
1			
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3			

DESIGNED  
 MGH  
 DRAWN  
 CEY  
 CHECKED  
 DJC  
 DATE  
 MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
 PROJECT 5  
 INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE OX-5 P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

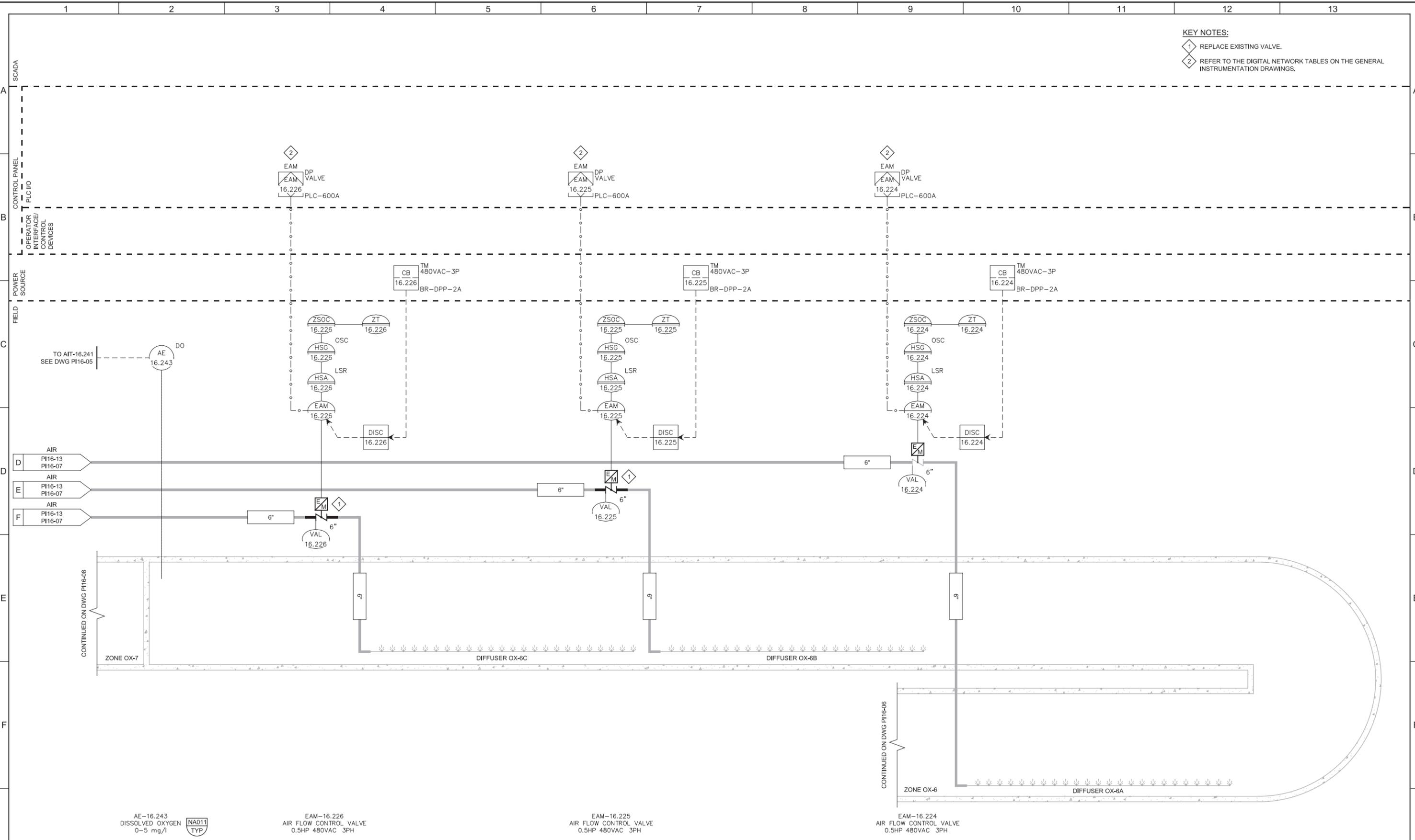
JOB NO.  
 10548A.10  
 DRAWING NO.  
**PI16-06**  
 SHEET NO.  
 106 OF 159

Plot Date: 28-FEB-2019 10:48:52 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**

- 1 REPLACE EXISTING VALVE.
- 2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

AE-16.243  
DISSOLVED OXYGEN  
0-5 mg/l



EAM-16.226  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.225  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.224  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

REV	DATE	BY	DESCRIPTION
1			
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DESIGNED  
MGH  
DRAWN  
CEY  
CHECKED  
DJC  
DATE  
MARCH 2019



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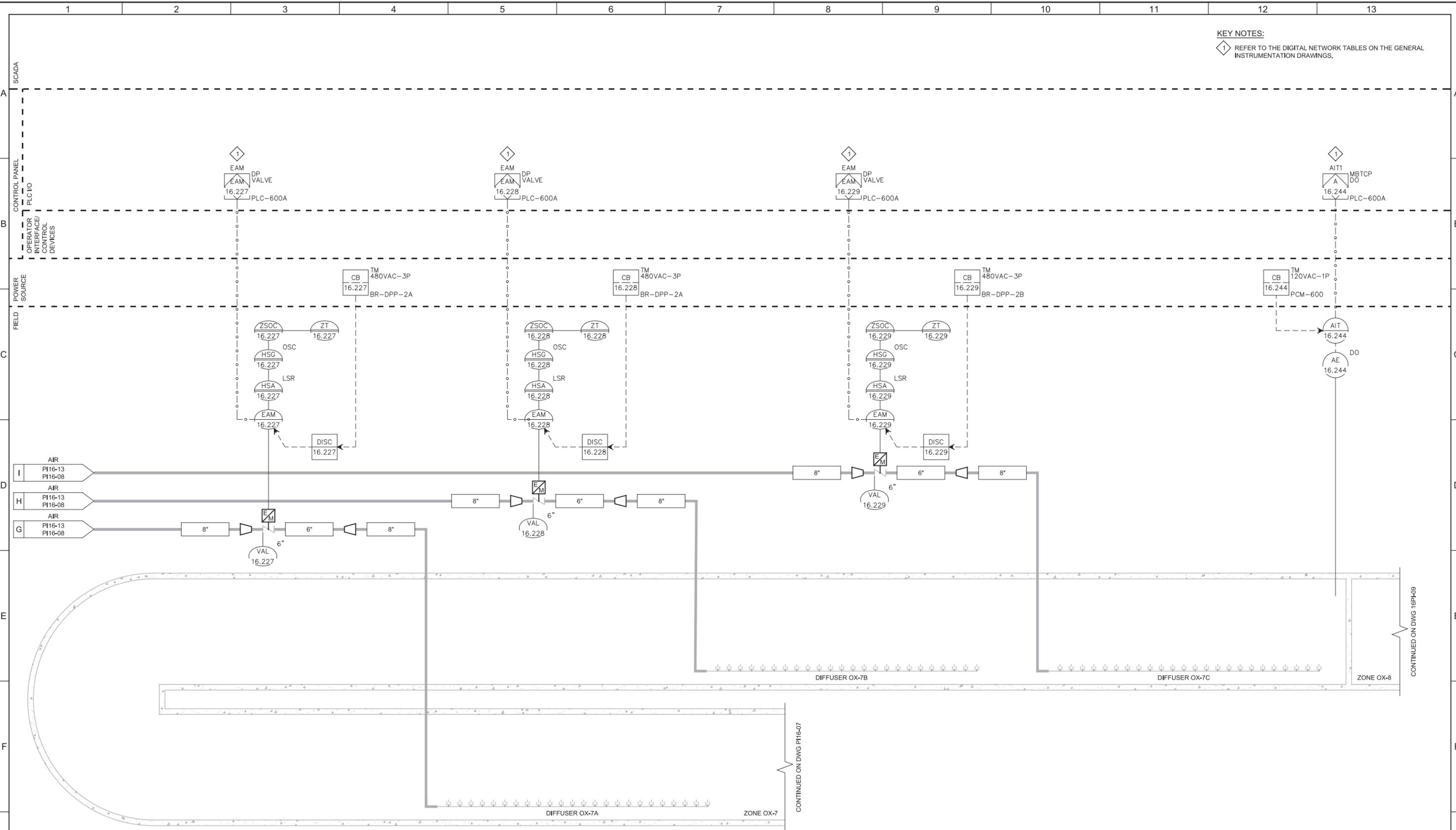
**SOUTH VALLEY WATER RECLAMATION FACILITY**  
PROJECT 5  
INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE OX-6 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10  
DRAWING NO.  
**PI16-07**  
SHEET NO.  
107 OF 159

Pict Date: 28-FEB-2019 10:48:48 AM  
 User: svcPW  
 Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PictScale: 2:1  
 LAST SAVED BY: CYoung

**KEY NOTES:**  
 1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



EAM-16.227  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

EAM-16.228  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

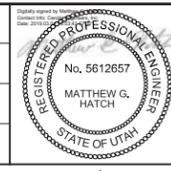
EAM-16.229  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

AE-16.244  
 DISSOLVED OXYGEN  
 0-5 mg/l



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
 MGH  
 DRAWN  
 CEY  
 CHECKED  
 DJC  
 DATE  
 MARCH 2019



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 West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE OX-7 P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
 10548A.10  
 DRAWING NO.  
**PI16-08**  
 SHEET NO.  
 108 OF 159

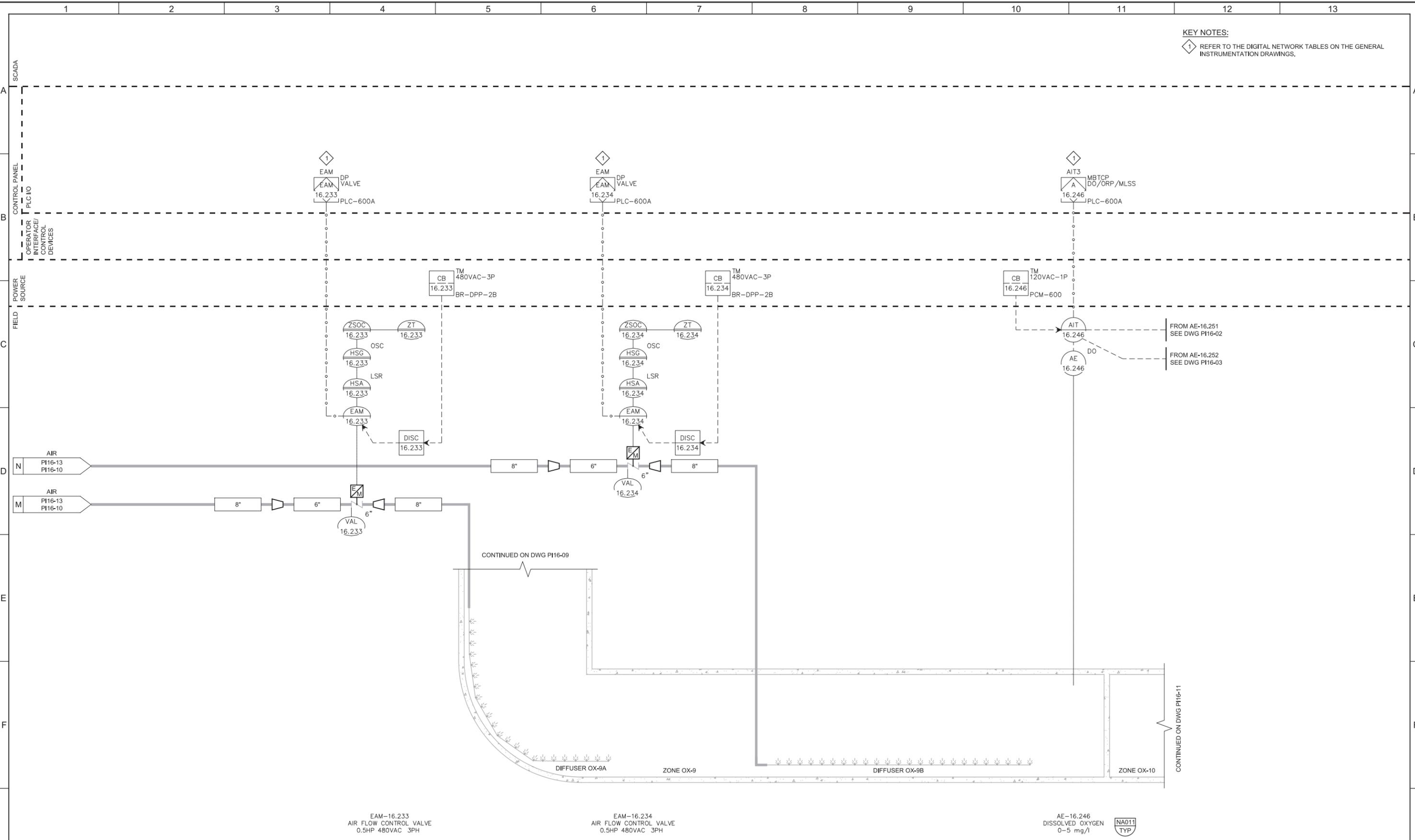


Plot Date: 28-FEB-2019 10:48:54 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**  
 1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

EAM-16.233  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

EAM-16.234  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

AE-16.246  
 DISSOLVED OXYGEN  
 0-5 mg/l



REV	DATE	BY	DESCRIPTION
1			

DESIGNED MGH	
DRAWN CEY	
CHECKED DJC	
DATE MARCH 2019	



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
 INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**ZONE OX-9 P&ID**

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10548A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. <b>PI16-10</b>
	SHEET NO. 110 OF 159

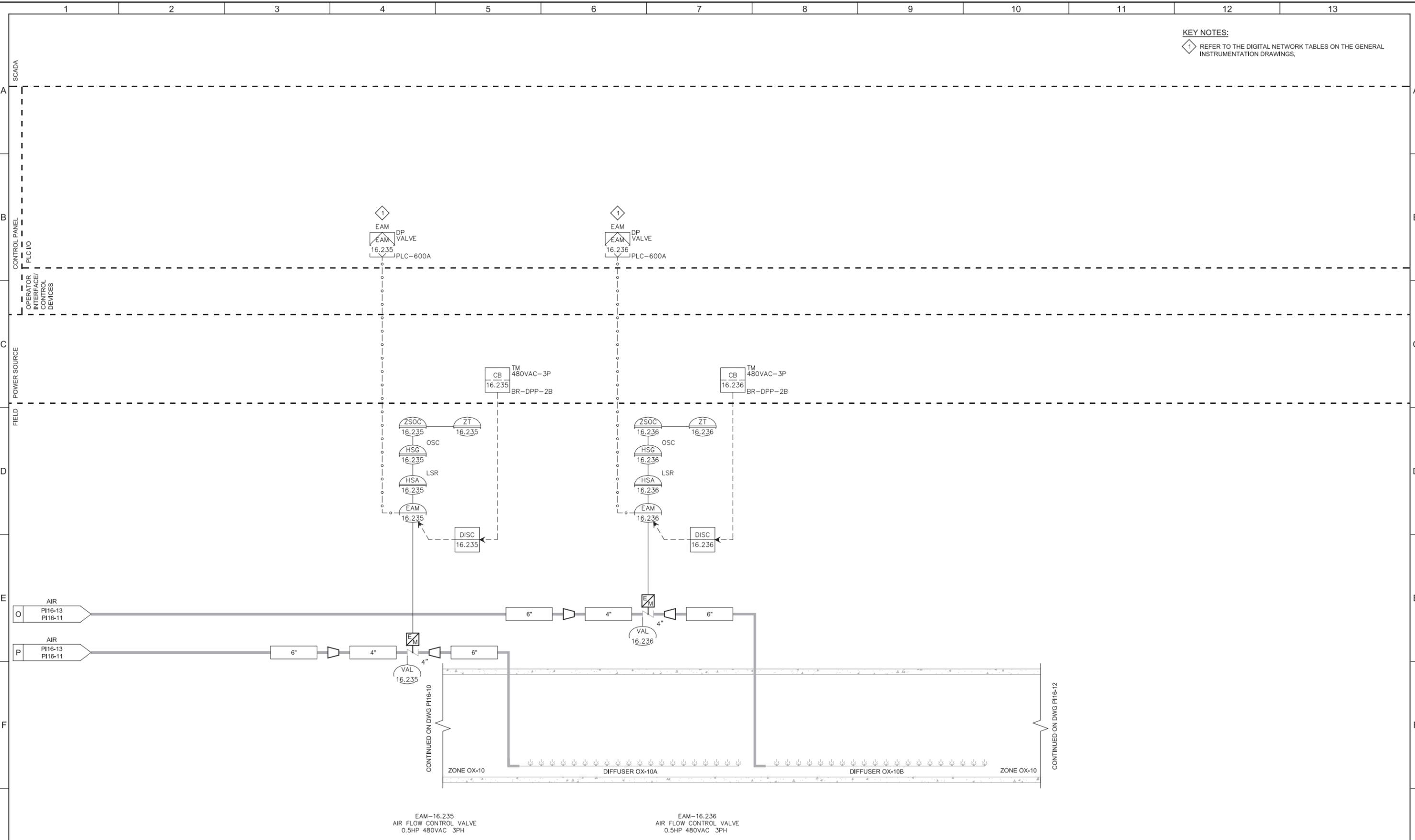
Plot Date: 28-FEB-2019 10:49:03 AM

User: svcpw

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

KEY NOTES:  
1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



CONTINUED ON DWG PI16-10

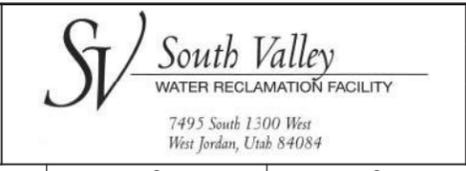
CONTINUED ON DWG PI16-12

EAM-16.235  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.236  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED MGH	
DRAWN CEY	
CHECKED DJC	
DATE MARCH 2019	



SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
BIOREACTOR NO. 2  
ZONE OX-10 PART 1 P&ID

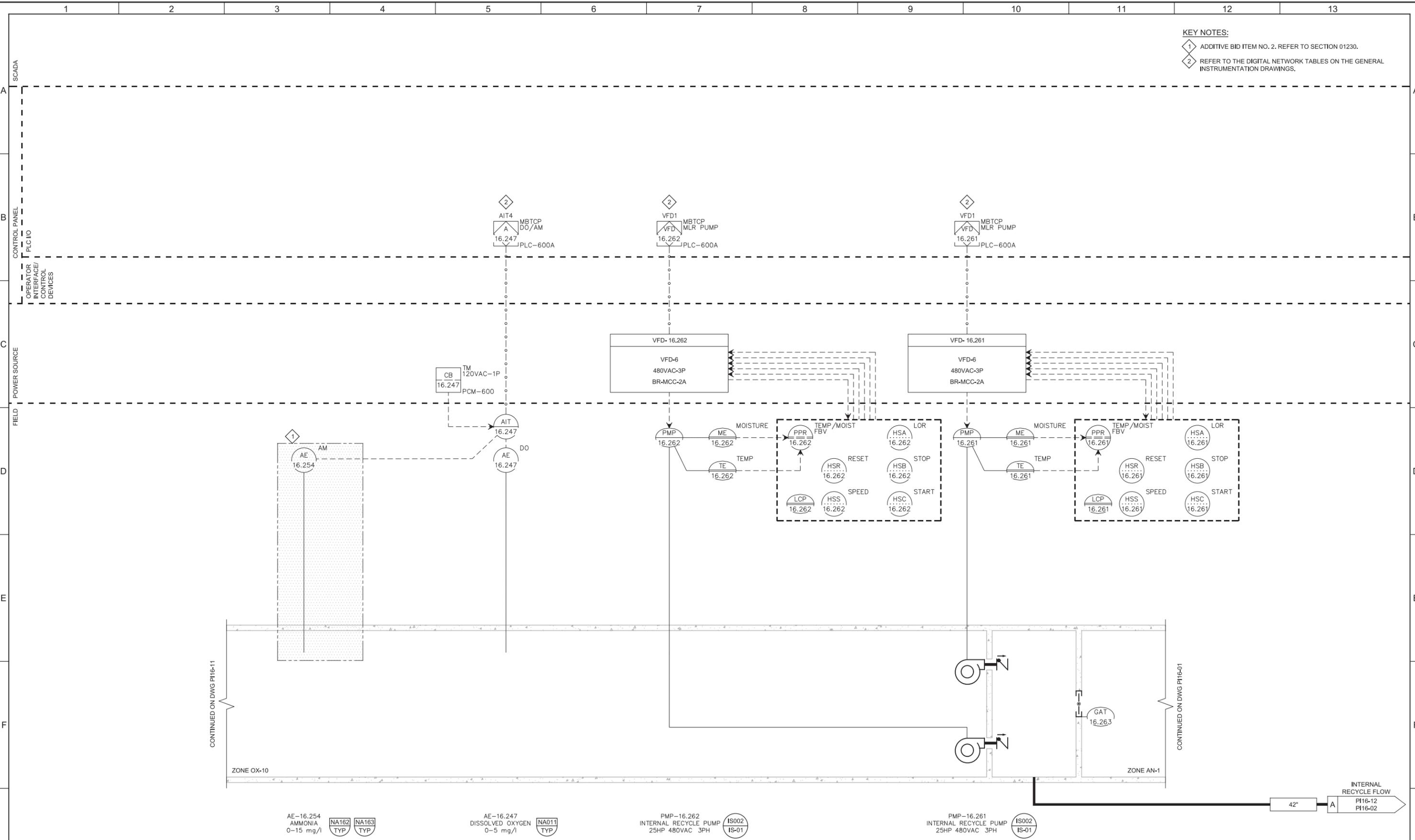
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 10548A.10 DRAWING NO. <b>PI16-11</b> SHEET NO. 111 OF 159
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Plot Date: 28-FEB-2019 10:48:58 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**

1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

CONTINUED ON DWG PI16-11

CONTINUED ON DWG PI16-01

AE-16.254  
AMMONIA  
0-15 mg/l



AE-16.247  
DISSOLVED OXYGEN  
0-5 mg/l



PMP-16.262  
INTERNAL RECYCLE PUMP  
25HP 480VAC 3PH



PMP-16.261  
INTERNAL RECYCLE PUMP  
25HP 480VAC 3PH



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
CEY

CHECKED  
DJC

DATE  
MARCH 2019

REGISTERED PROFESSIONAL ENGINEER  
No. 5612657  
MATTHEW G. HATCH  
STATE OF UTAH



**SV South Valley**  
WATER RECLAMATION FACILITY

7495 South 1300 West  
West Jordan, Utah 84084

**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 2**

**ZONE OX-10 PART 2 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-12**

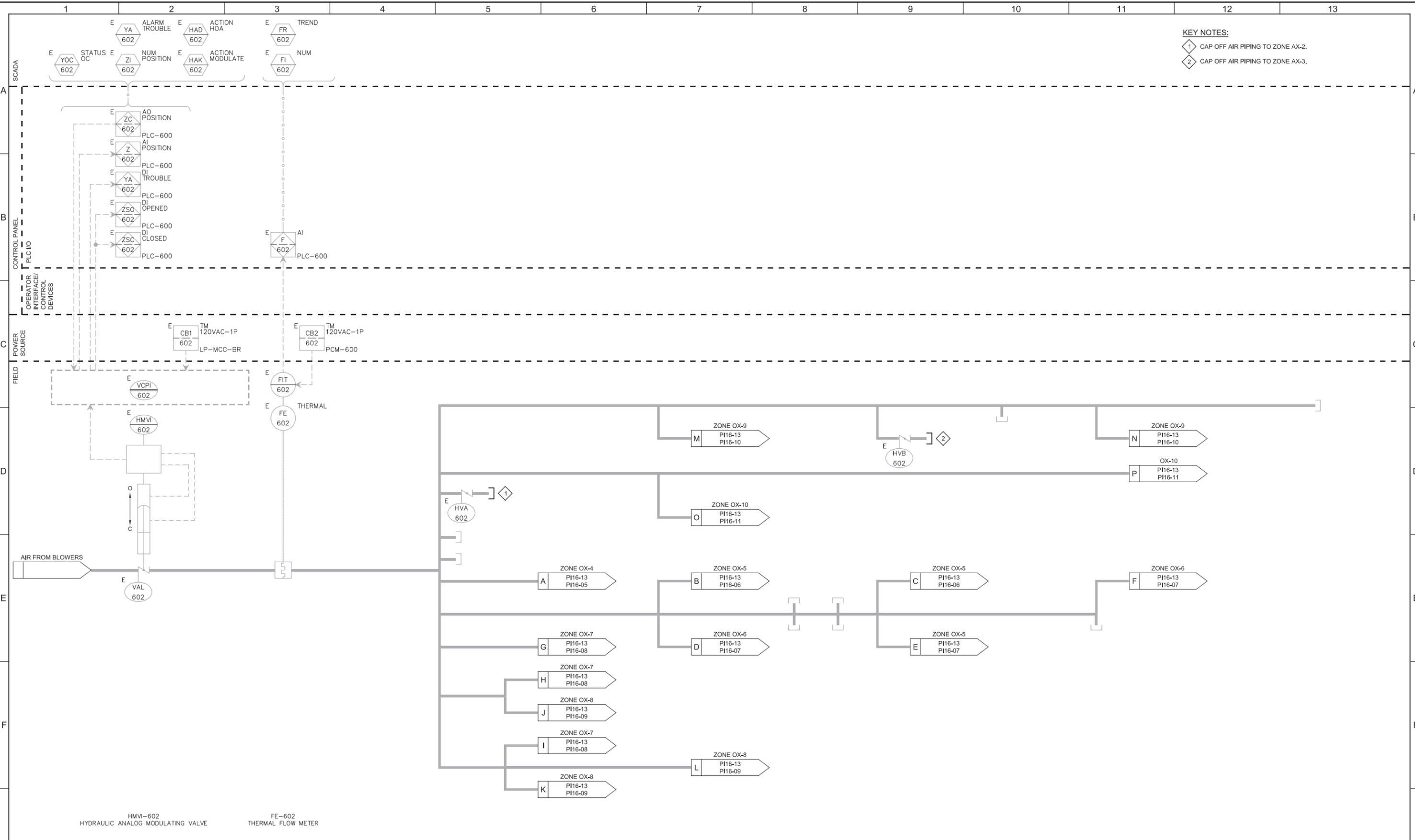
SHEET NO.  
112 OF 159

Plot Date: 28-FEB-2019 10:49:04 AM

User: svcpw

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**  
 1 CAP OFF AIR PIPING TO ZONE AX-2.  
 2 CAP OFF AIR PIPING TO ZONE AX-3.

HMVI-602 HYDRAULIC ANALOG MODULATING VALVE  
 FE-602 THERMAL FLOW METER

REV	DATE	BY	DESCRIPTION

DESIGNED MGH  
 DRAWN CEY  
 CHECKED DJC  
 DATE MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
 INSTRUMENTATION  
**BIOREACTOR NO. 2**  
**AIR DISTRIBUTION P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10  
 DRAWING NO. **PI16-13**  
 SHEET NO. 113 OF 159

Plot Date: 28-FEB-2019 10:50:09 AM

User: svcPW

Model: Layout1

ColorTable: gshade.ctb

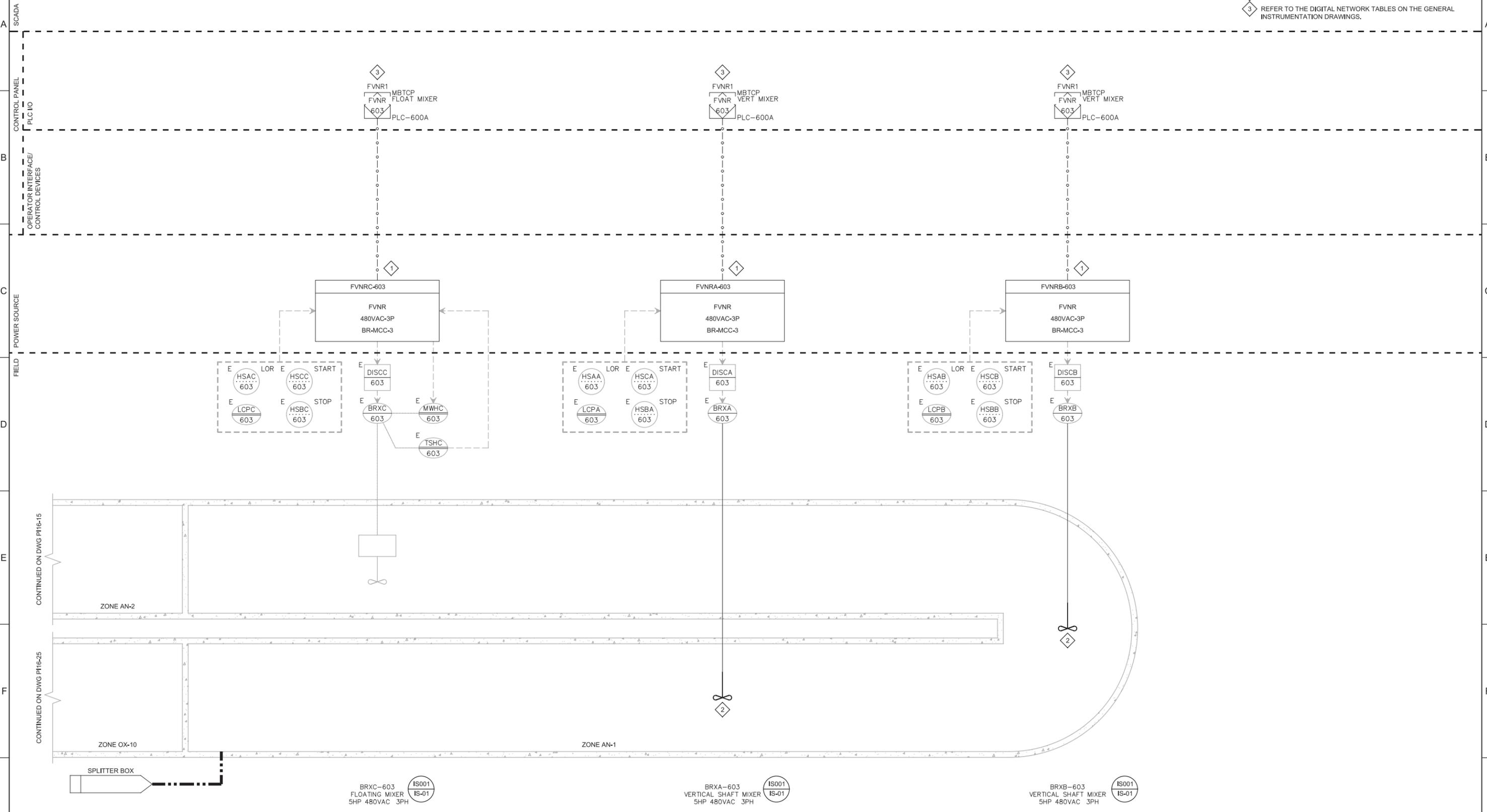
DesignScript: Carollo\_Std\_Pen\_v0905.pen

PlotScale: 2:1

LAST SAVED BY: CYoung

1 2 3 4 5 6 7 8 9 10 11 12 13

- KEY NOTES:**
- 1 REPLACE EXISTING MOTOR STARTER.
  - 2 REPLACE MIXER IMPELLERS.
  - 3 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



BRXC-603  
FLOATING MIXER  
5HP 480VAC 3PH

BRXA-603  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH

BRXB-603  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
INSTRUMENTATION  
**BIOREACTOR NO. 3**  
**ZONE AN-1 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10  
DRAWING NO. **PI16-14**  
SHEET NO. 114 OF 159

Plot Date: 28-FEB-2019 10:50:29 AM

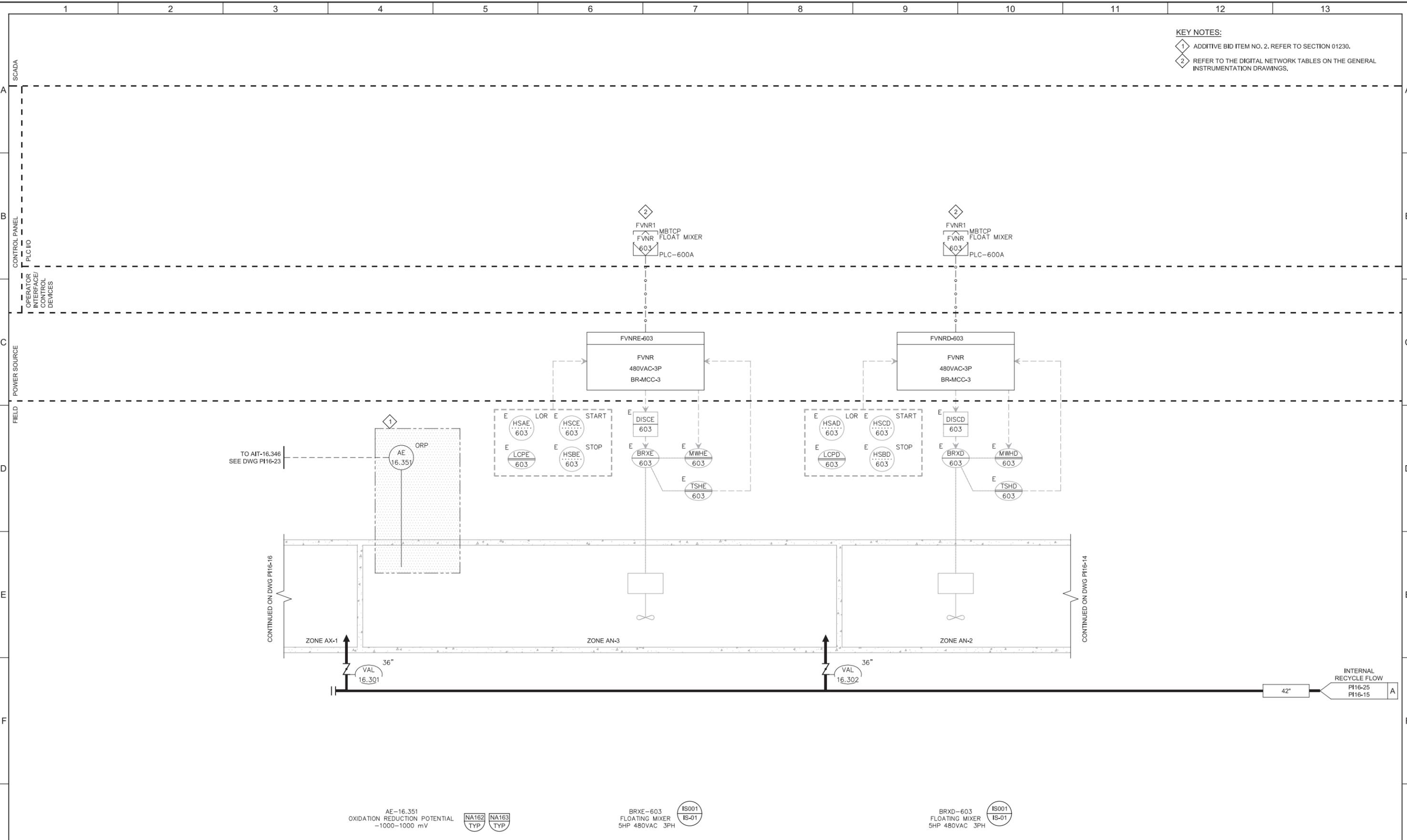
User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

KEY NOTES:

- 1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.
- 2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



TO AIT-16.346  
SEE DWG PI16-23

CONTINUED ON DWG PI16-16

CONTINUED ON DWG PI16-14

AE-16.351  
OXIDATION REDUCTION POTENTIAL  
-1000-1000 mV



BRXE-603  
FLOATING MIXER  
5HP 480VAC 3PH



BRXD-603  
FLOATING MIXER  
5HP 480VAC 3PH



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
SGS

CHECKED  
DJC

DATE  
MARCH 2019

REGISTERED PROFESSIONAL ENGINEER  
No. 5612657  
MATTHEW G. HATCH  
STATE OF UTAH



**SV South Valley**  
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SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5  
INSTRUMENTATION

**BIOREACTOR NO. 3  
ZONE AN-2 & AN-3 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-15**

SHEET NO.  
115 OF 159

Plot Date: 28-FEB-2019 10:49:49 AM

User: svcPW

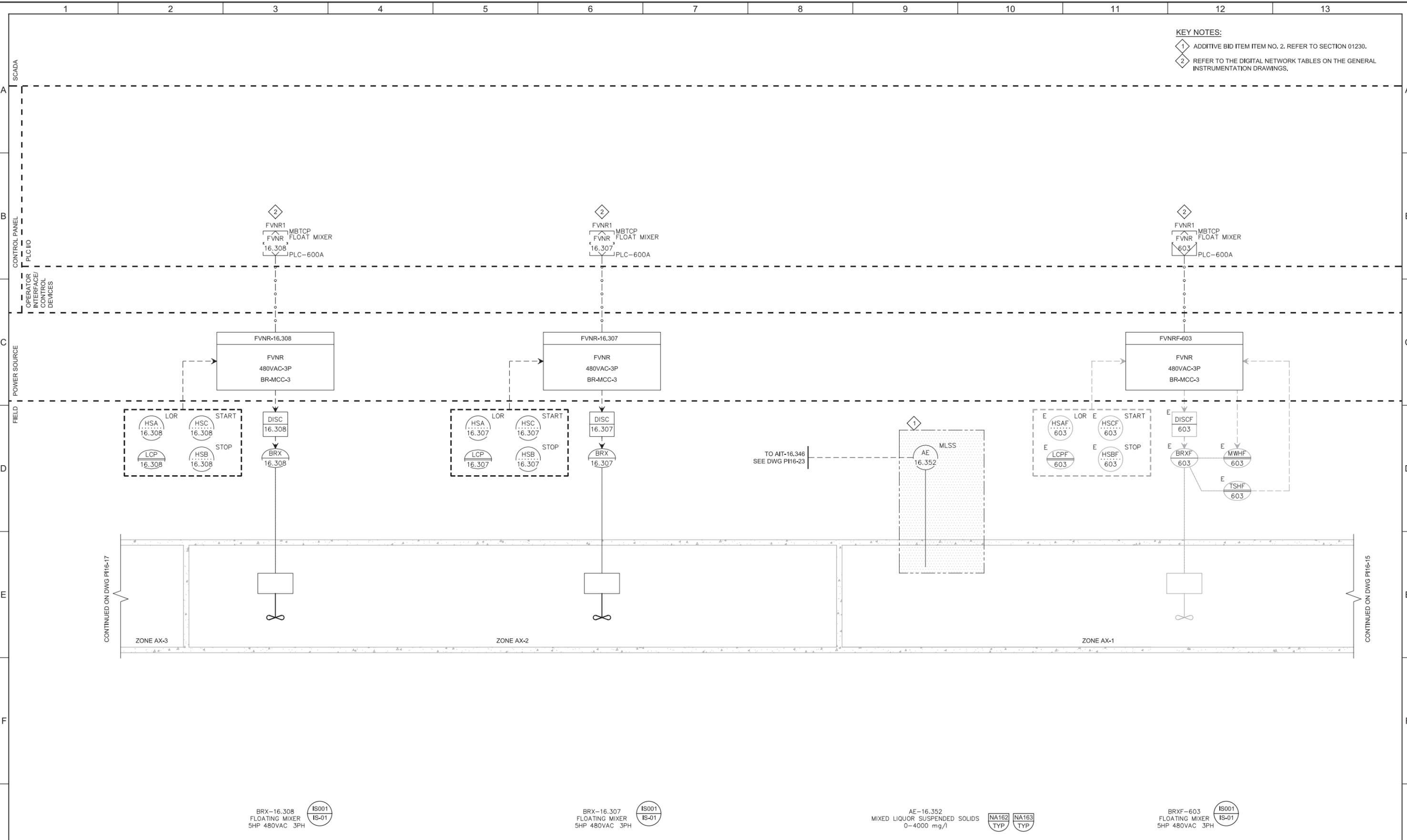
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

**KEY NOTES:**

1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



CONTINUED ON DWG PI16-17

CONTINUED ON DWG PI16-15

BRX-16.308  
FLOATING MIXER  
5HP 480VAC 3PH



BRX-16.307  
FLOATING MIXER  
5HP 480VAC 3PH



AE-16.352  
MIXED LIQUOR SUSPENDED SOLIDS  
0-4000 mg/l



BRXF-603  
FLOATING MIXER  
5HP 480VAC 3PH



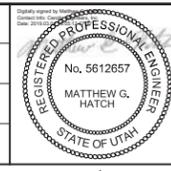
REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
SGS

CHECKED  
DJC

DATE  
MARCH 2019



**SV South Valley**  
WATER RECLAMATION FACILITY

7495 South 1300 West  
West Jordan, Utah 84084

**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 3**

**ZONE AX-1 & AX-2 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-16**

SHEET NO.  
116 OF 159

Plot Date: 28-FEB-2019 10:50:20 AM

User: svcPW

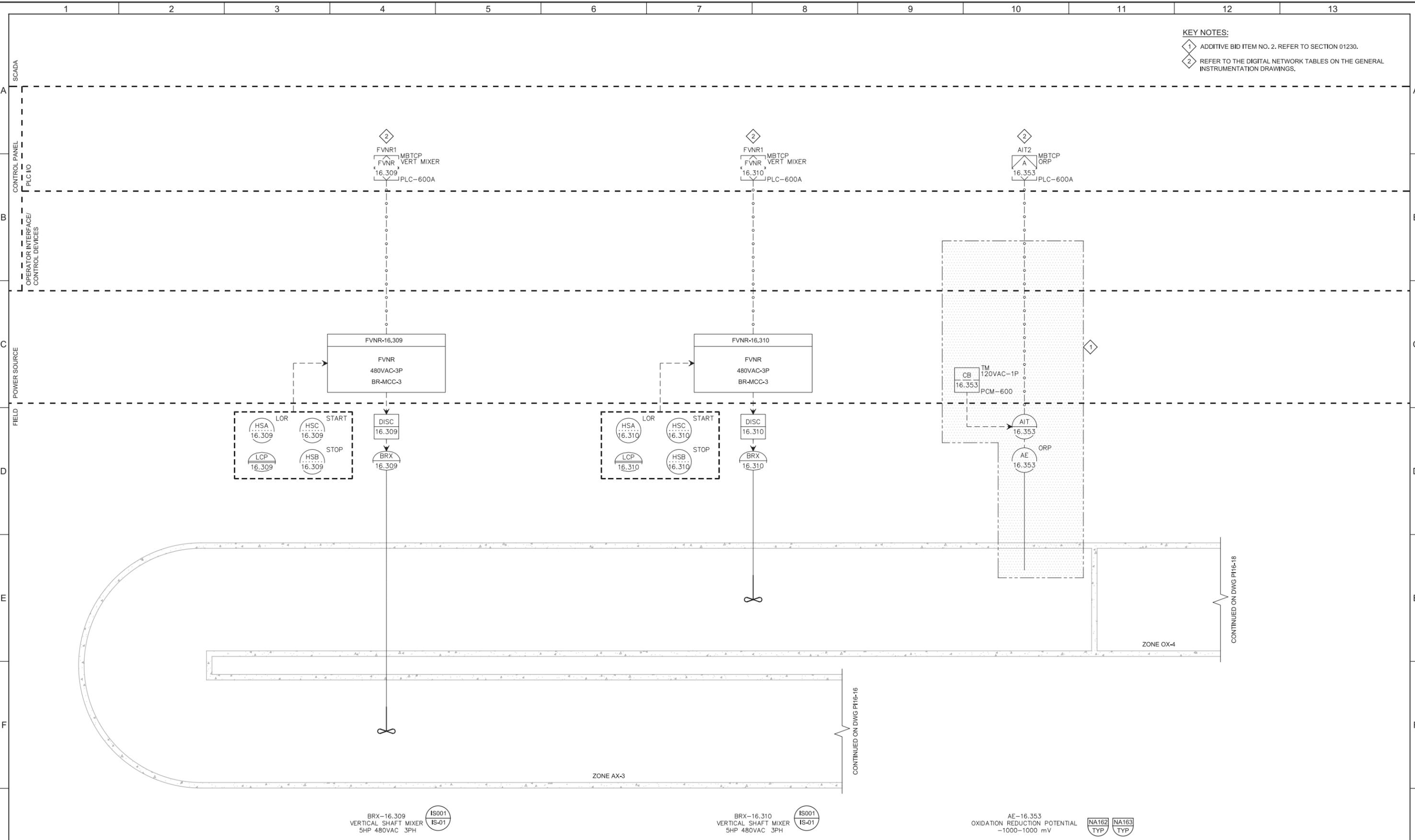
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

**KEY NOTES:**

1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



BRX-16.309  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH

BRX-16.310  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH

AE-16.353  
OXIDATION REDUCTION POTENTIAL  
-1000-1000 mV

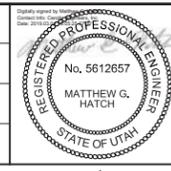
REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
SGS

CHECKED  
DJC

DATE  
MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 3**

**ZONE AX-3 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-17**

SHEET NO.  
117 OF 159

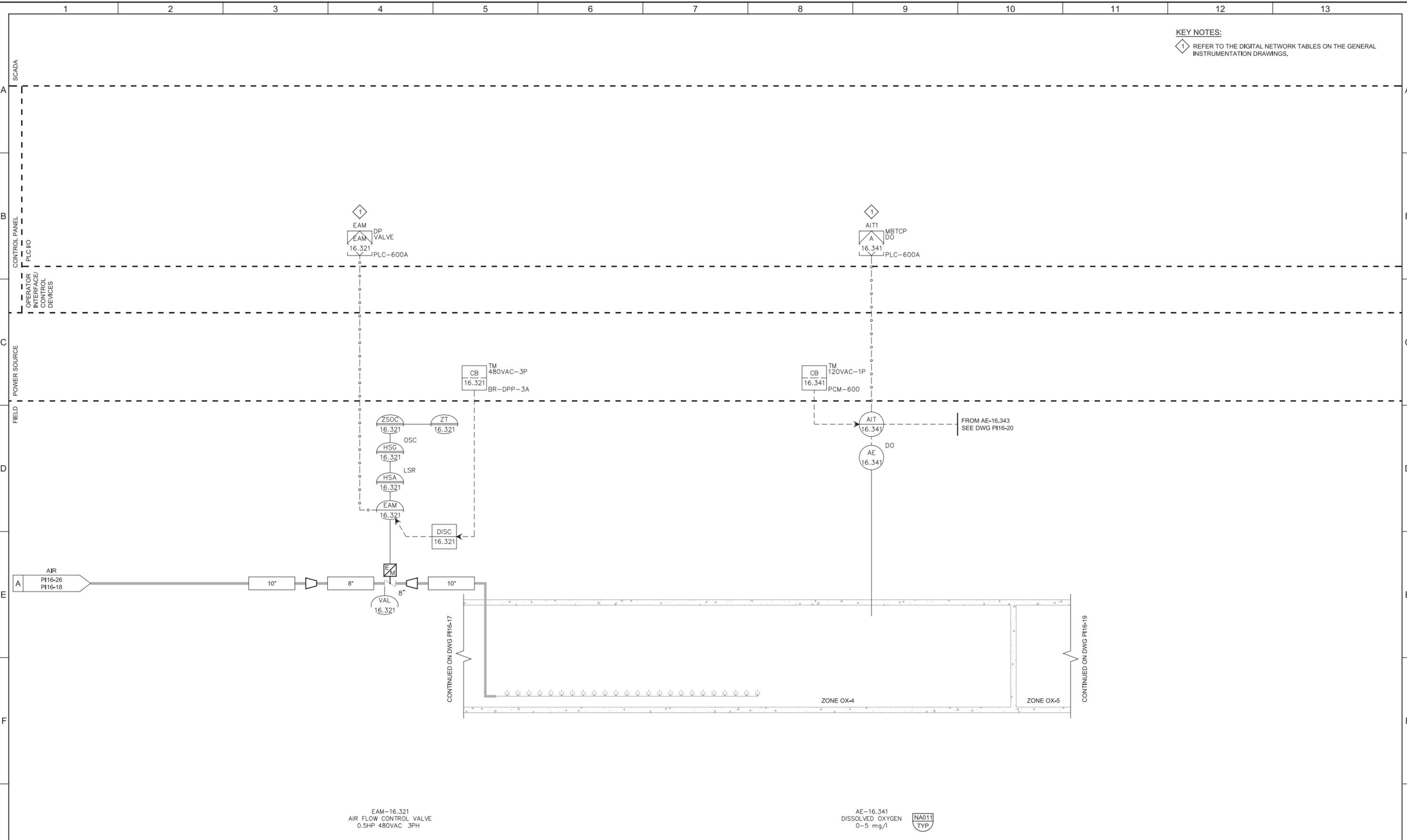
Plot Date: 28-FEB-2019 10:50:11 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

KEY NOTES:  
1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



EAM-16.321  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

AE-16.341  
DISSOLVED OXYGEN  
0-5 mg/l



CONTINUED ON DWG P116-17

CONTINUED ON DWG P116-19

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
SGS

CHECKED  
DJC

DATE  
MARCH 2019



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PROJECT 5  
INSTRUMENTATION  
BIOREACTOR NO. 3  
ZONE OX-4 P&ID

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**P116-18**

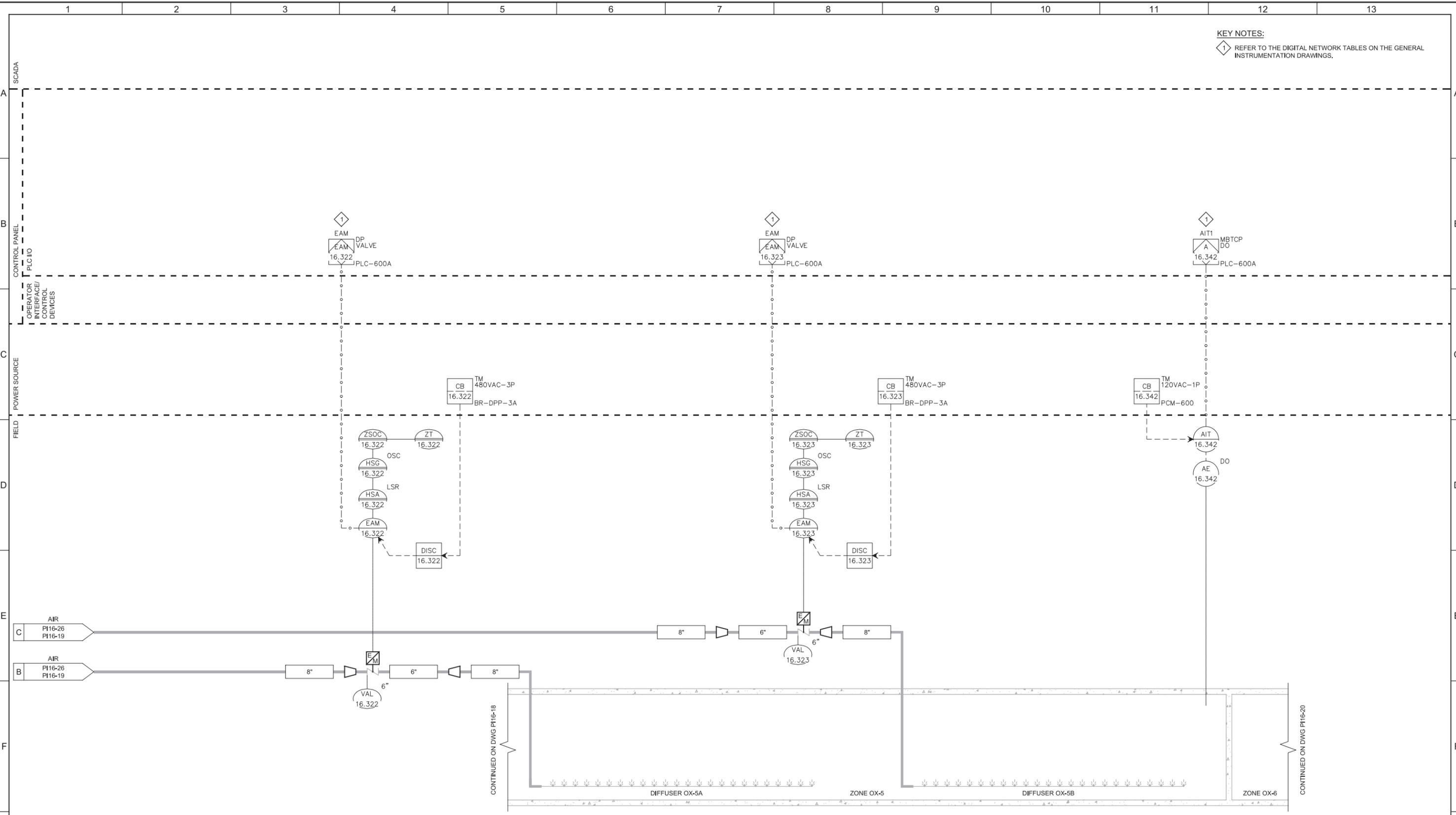
SHEET NO.  
118 OF 159

Plot Date: 28-FEB-2019 10:50:17 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**  
 1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

EAM-16.322  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

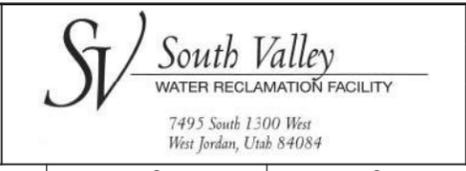
EAM-16.323  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

AE-16.342  
 DISSOLVED OXYGEN  
 0-5 mg/l



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED MGH	
DRAWN SGS	
CHECKED DJC	
DATE MARCH 2019	



**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
 INSTRUMENTATION  
**BIOREACTOR NO. 3**  
**ZONE OX-5 P&ID**

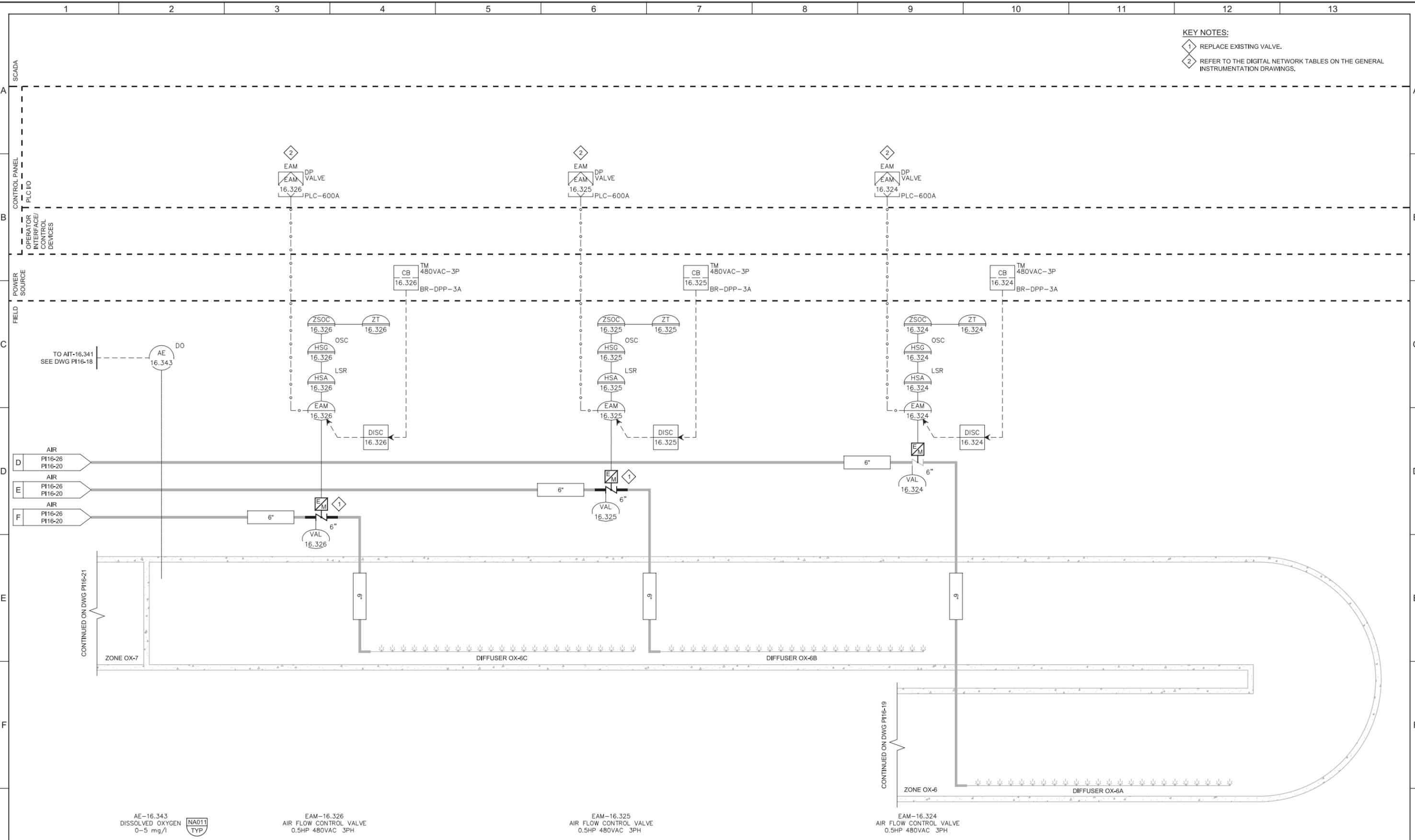
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10548A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. <b>PI16-19</b>
	SHEET NO. 119 OF 159

Plot Date: 28-FEB-2019 10:49:46 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**

1 REPLACE EXISTING VALVE.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

AE-16.343  
DISSOLVED OXYGEN  
0-5 mg/l



EAM-16.326  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.325  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.324  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

DRAWN  
SGS

CHECKED  
DJC

DATE  
MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 3**

**ZONE OX-6 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-20**

SHEET NO.  
120 OF 159

Plot Date: 28-FEB-2019 10:50:03 AM

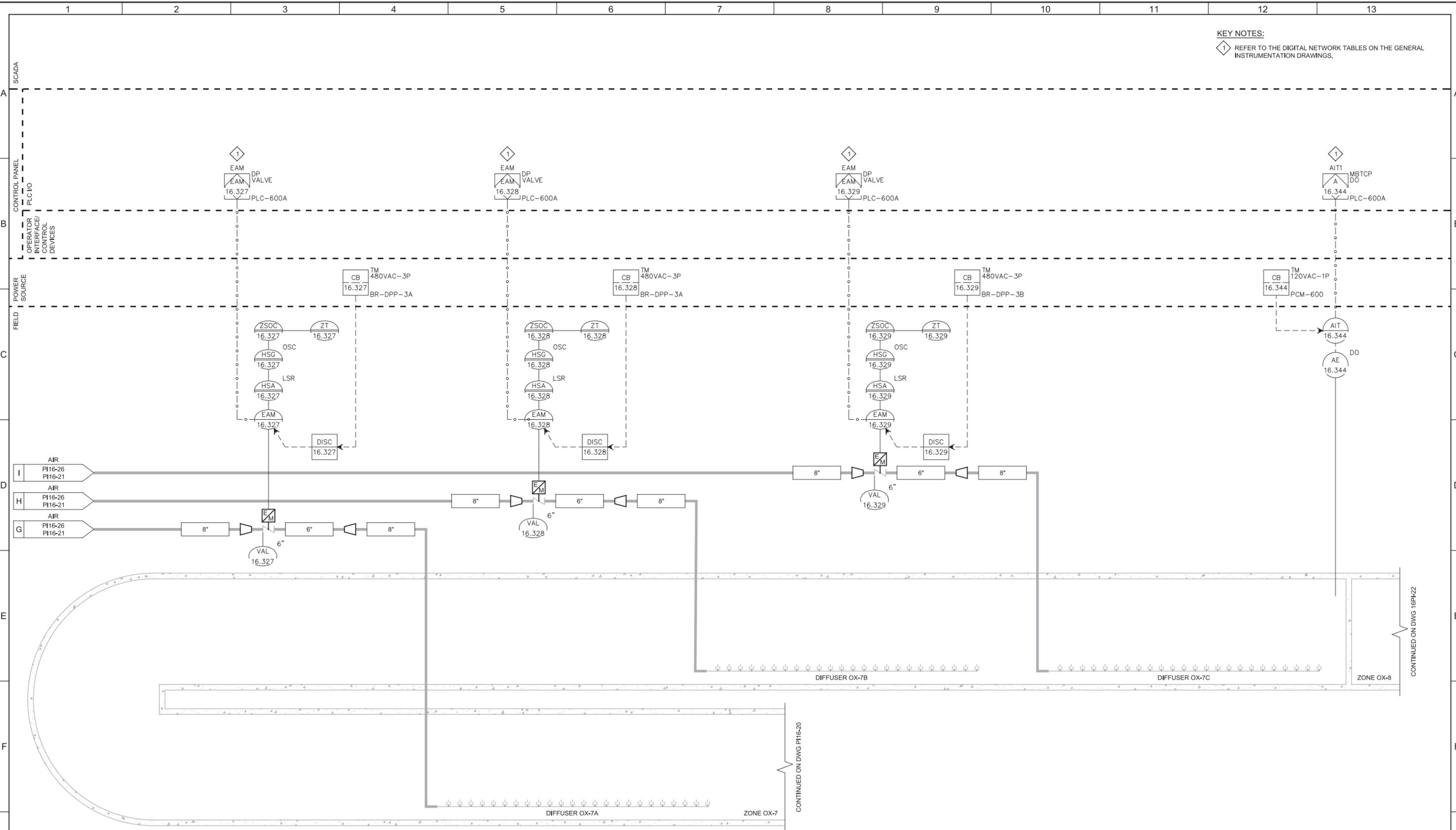
User: svcPW

Plot Scale: 2:1

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen

LAST SAVED BY: CYoung

KEY NOTES:  
1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



EAM-16.327  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

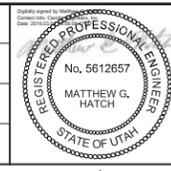
EAM-16.328  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.329  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

AE-16.344  
DISSOLVED OXYGEN  
0-5 mg/l

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH  
DRAWN  
SGS  
CHECKED  
DJC  
DATE  
MARCH 2019



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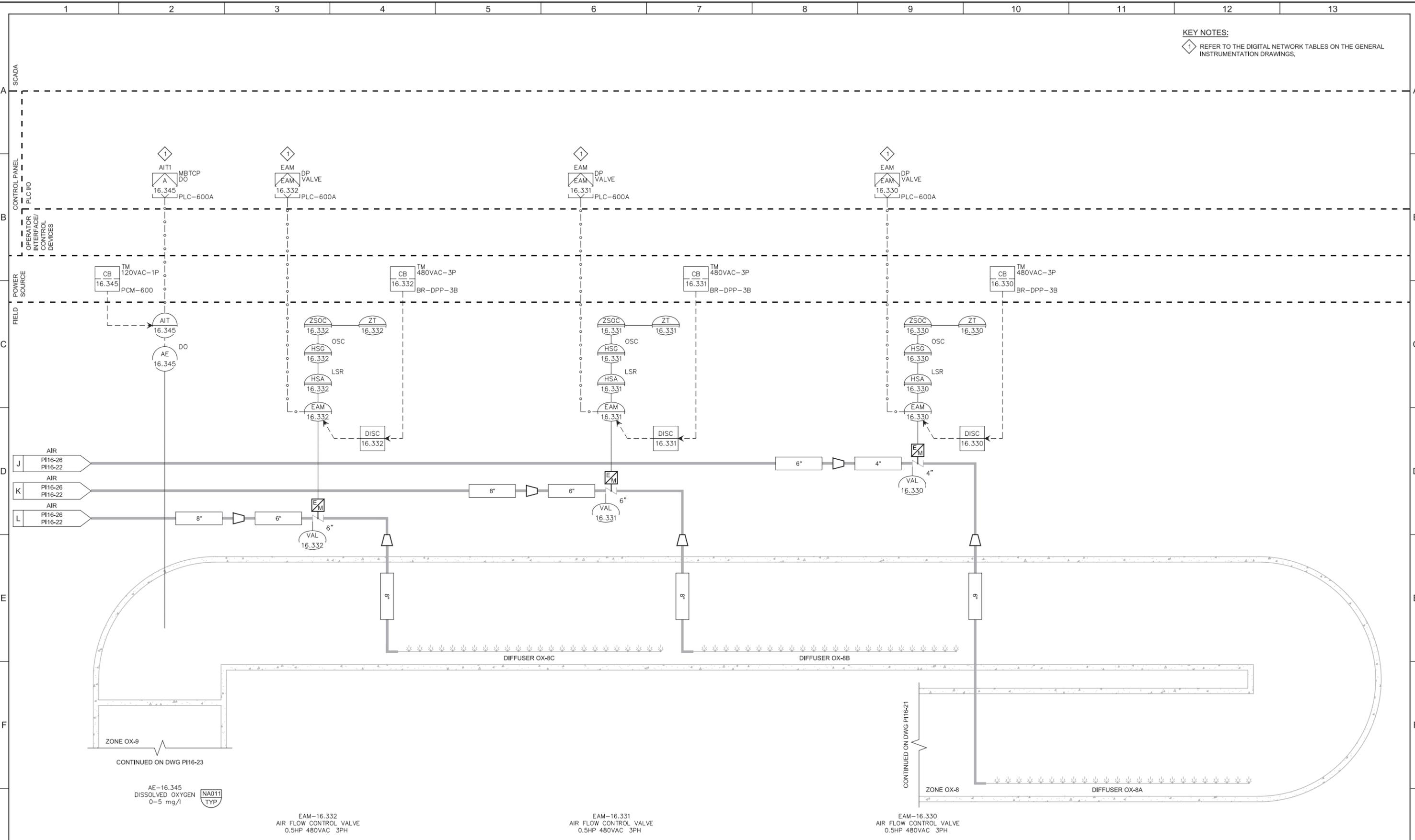
SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
BIOREACTOR NO. 3  
ZONE OX-7 P&ID

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10  
DRAWING NO.  
**PI16-21**  
SHEET NO.  
121 OF 159

Plot Date: 28-FEB-2019 10:50:36 AM  
 User: svcPW  
 Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1  
 LAST SAVED BY: CYoung

**KEY NOTES:**  
 1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



AE-16.345  
 DISSOLVED OXYGEN  
 0-5 mg/l  
 NAO11 TYP

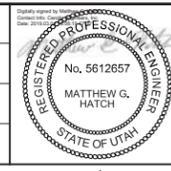
EAM-16.332  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

EAM-16.331  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

EAM-16.330  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

REV	DATE	BY	DESCRIPTION

DESIGNED MGH  
 DRAWN SGS  
 CHECKED DJC  
 DATE MARCH 2019



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SOUTH VALLEY WATER RECLAMATION FACILITY  
 PROJECT 5  
 INSTRUMENTATION  
**BIOREACTOR NO. 3**  
**ZONE OX-8 P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

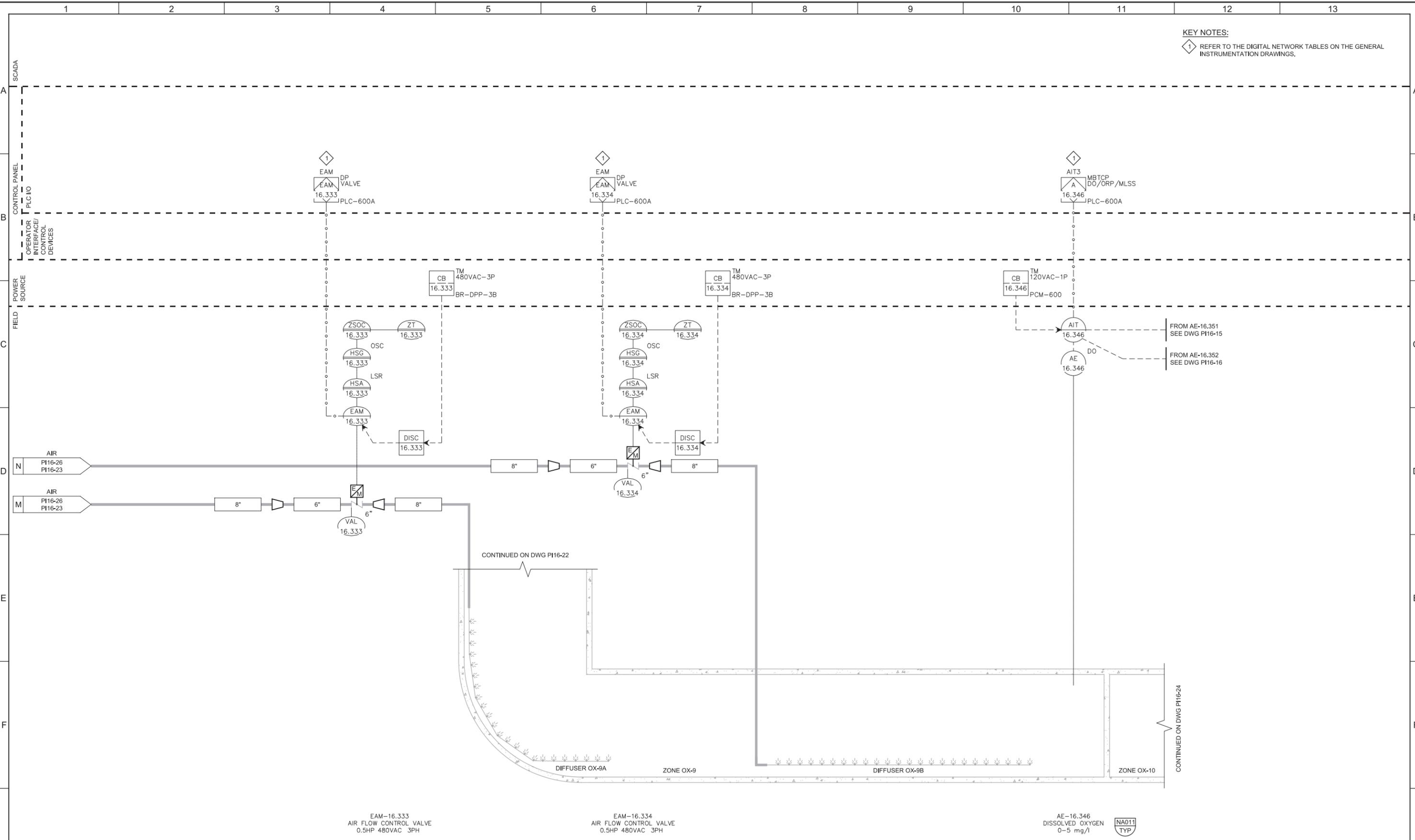
JOB NO. 10548A.10  
 DRAWING NO. **PI16-22**  
 SHEET NO. 122 OF 159

Plot Date: 28-FEB-2019 10:50:22 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



KEY NOTES:  
 1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

EAM-16.333  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

EAM-16.334  
 AIR FLOW CONTROL VALVE  
 0.5HP 480VAC 3PH

AE-16.346  
 DISSOLVED OXYGEN  
 0-5 mg/l



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
 MGH  
 DRAWN  
 SGS  
 CHECKED  
 DJC  
 DATE  
 MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
 INSTRUMENTATION  
**BIOREACTOR NO. 3**  
**ZONE OX-9 P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
 10548A.10  
 DRAWING NO.  
**PI16-23**  
 SHEET NO.  
 123 OF 159

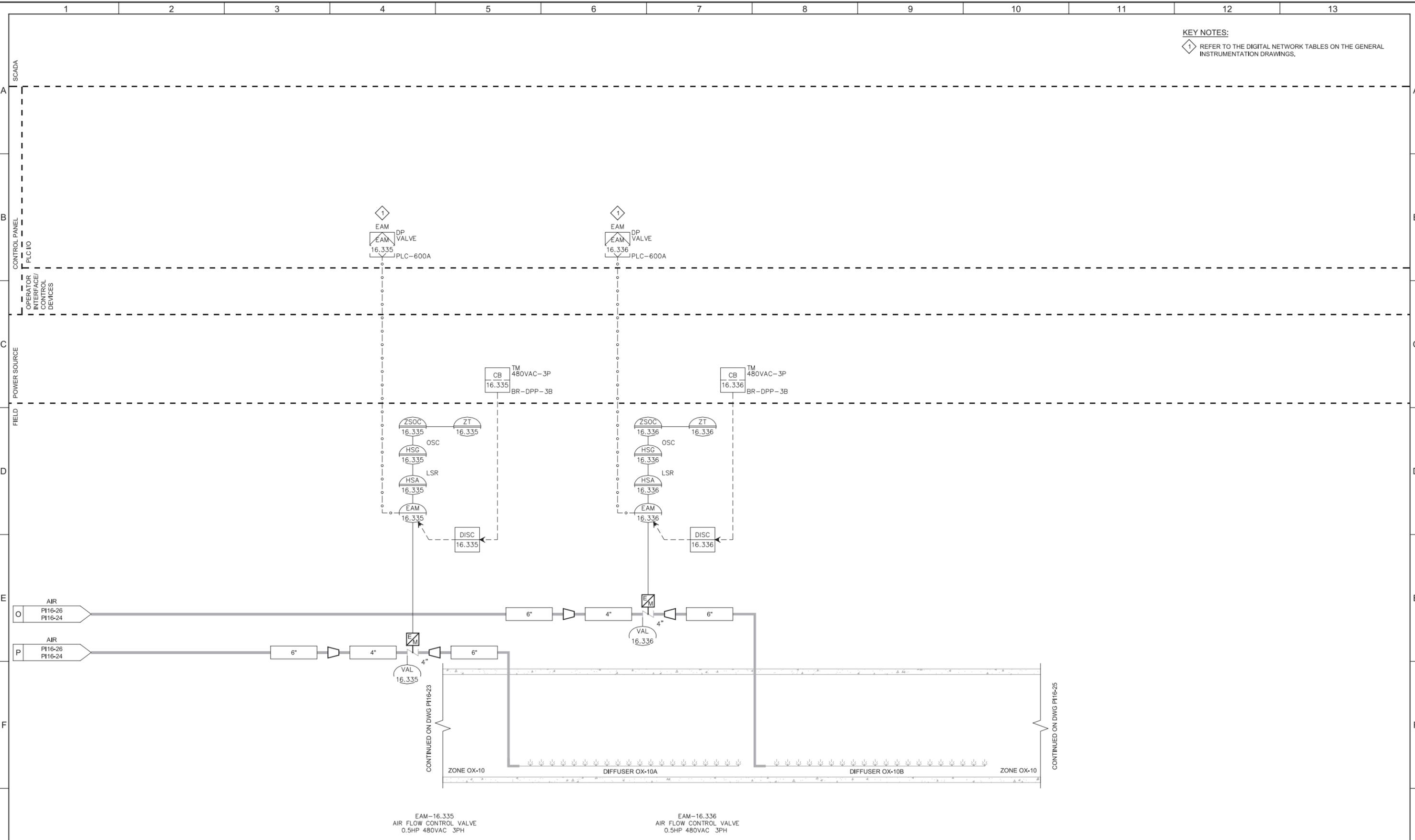
Plot Date: 28-FEB-2019 10:48:09 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

KEY NOTES:  
1 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



CONTINUED ON DWG P16-23

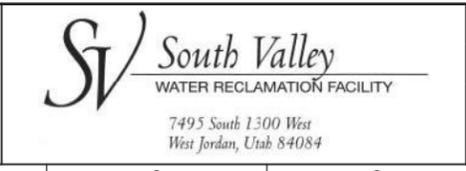
CONTINUED ON DWG P16-25

EAM-16.335  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

EAM-16.336  
AIR FLOW CONTROL VALVE  
0.5HP 480VAC 3PH

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED MGH	
DRAWN SGS	
CHECKED DJC	
DATE MARCH 2019	



SOUTH VALLEY WATER RECLAMATION FACILITY  
PROJECT 5  
INSTRUMENTATION  
BIOREACTOR NO. 3  
ZONE OX-10 PART 1 P&ID

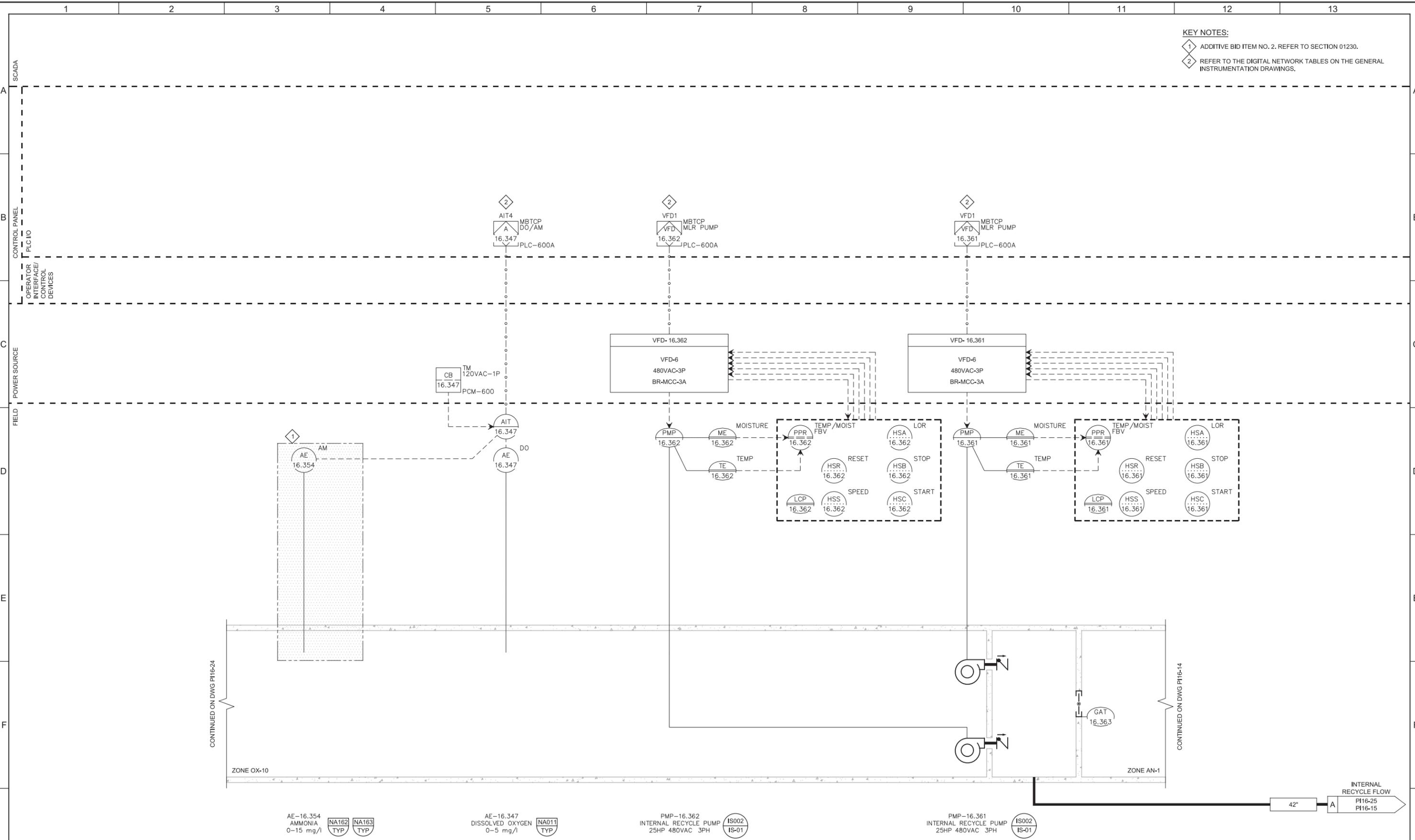
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10548A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. P16-24
	SHEET NO. 124 OF 159

Plot Date: 28-FEB-2019 10:48:07 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**

1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

CONTINUED ON DWG PI16-24

CONTINUED ON DWG PI16-14

ZONE OX-10

ZONE AN-1

AE-16.354  
AMMONIA  
0-15 mg/l



AE-16.347  
DISSOLVED OXYGEN  
0-5 mg/l



PMP-16.362  
INTERNAL RECYCLE PUMP  
25HP 480VAC 3PH



PMP-16.361  
INTERNAL RECYCLE PUMP  
25HP 480VAC 3PH



REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
MGH

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SGS

CHECKED  
DJC

DATE  
MARCH 2019



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**SOUTH VALLEY WATER RECLAMATION FACILITY**

**PROJECT 5**

INSTRUMENTATION

**BIOREACTOR NO. 3**

**ZONE OX-10 PART 2 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-25**

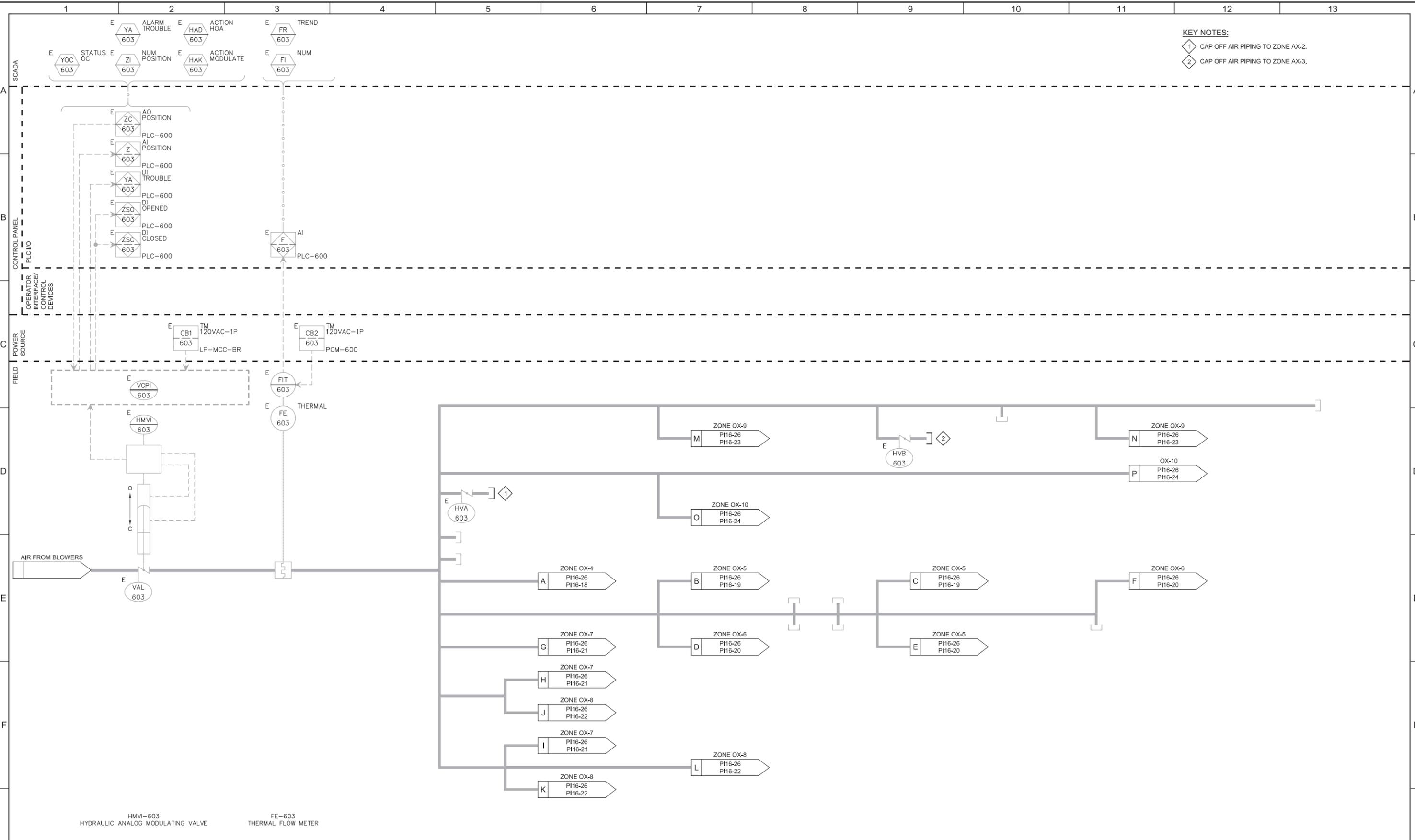
SHEET NO.  
125 OF 159

Plot Date: 28-FEB-2019 10:48:11 AM

User: svcpw

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Sld\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



**KEY NOTES:**  
 1 CAP OFF AIR PIPING TO ZONE AX-2.  
 2 CAP OFF AIR PIPING TO ZONE AX-3.

HMVI-603  
HYDRAULIC ANALOG MODULATING VALVE

FE-603  
THERMAL FLOW METER

REV	DATE	BY	DESCRIPTION

DESIGNED  
MGH

DRAWN  
SGS

CHECKED  
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DATE  
MARCH 2019



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SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5  
 INSTRUMENTATION

**BIOREACTOR NO. 3  
 AIR DISTRIBUTION P&ID**

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-26**

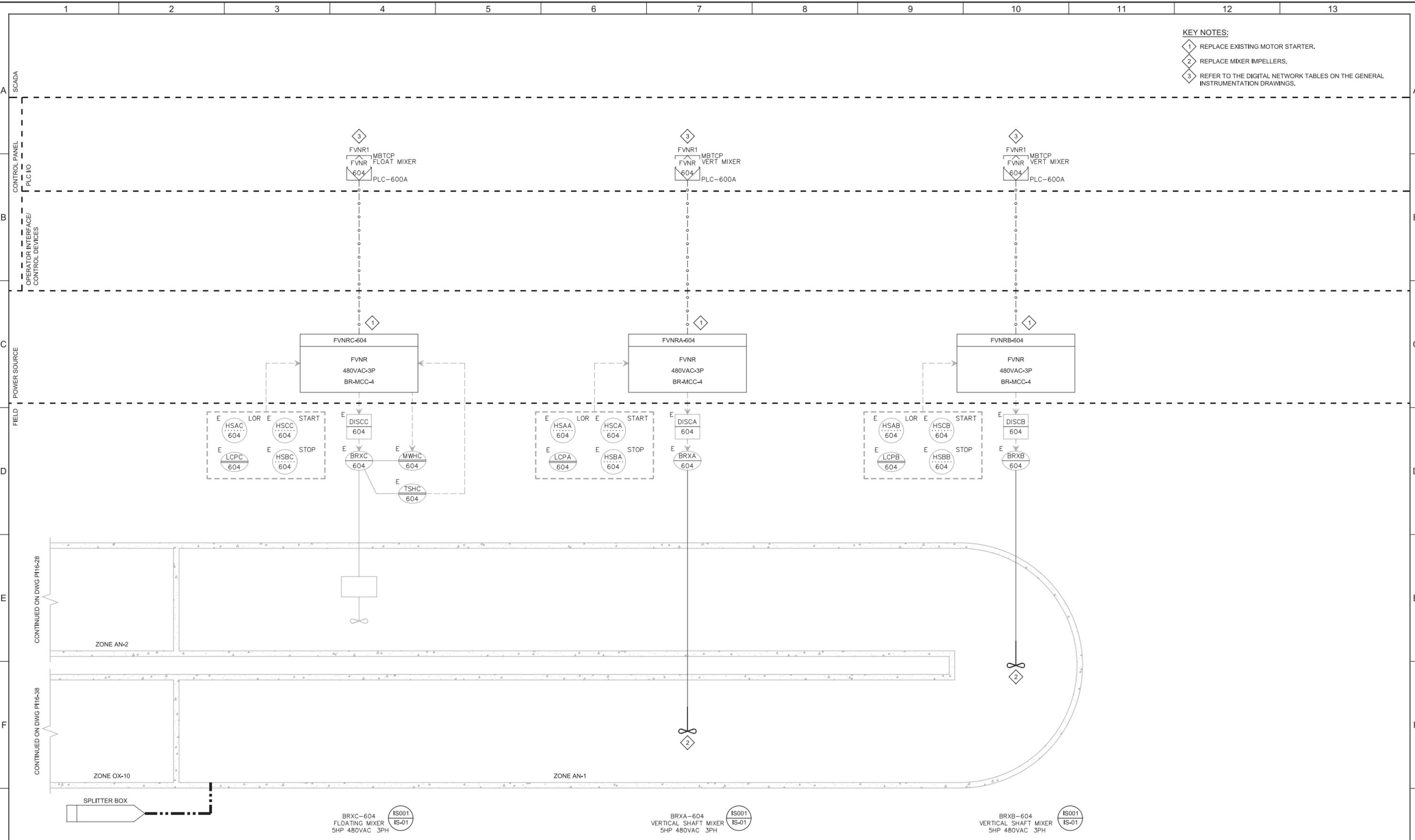
SHEET NO.  
126 OF 159

Plot Date: 28-FEB-2019 10:48:09 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung



- KEY NOTES:**
- 1 REPLACE EXISTING MOTOR STARTER.
  - 2 REPLACE MIXER IMPELLERS.
  - 3 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.

CONTINUED ON DWG P16-28

CONTINUED ON DWG P16-38

BRXC-604  
FLOATING MIXER  
5HP 480VAC 3PH

BRXA-604  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH

BRXB-604  
VERTICAL SHAFT MIXER  
5HP 480VAC 3PH



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**SOUTH VALLEY WATER RECLAMATION FACILITY**  
**PROJECT 5**  
INSTRUMENTATION  
**BIOREACTOR NO. 4**  
**ZONE AN-1 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10548A.10  
DRAWING NO. **PI16-27**  
SHEET NO. 127 OF 159

Plot Date: 28-FEB-2019 10:48:19 AM

User: svcPW

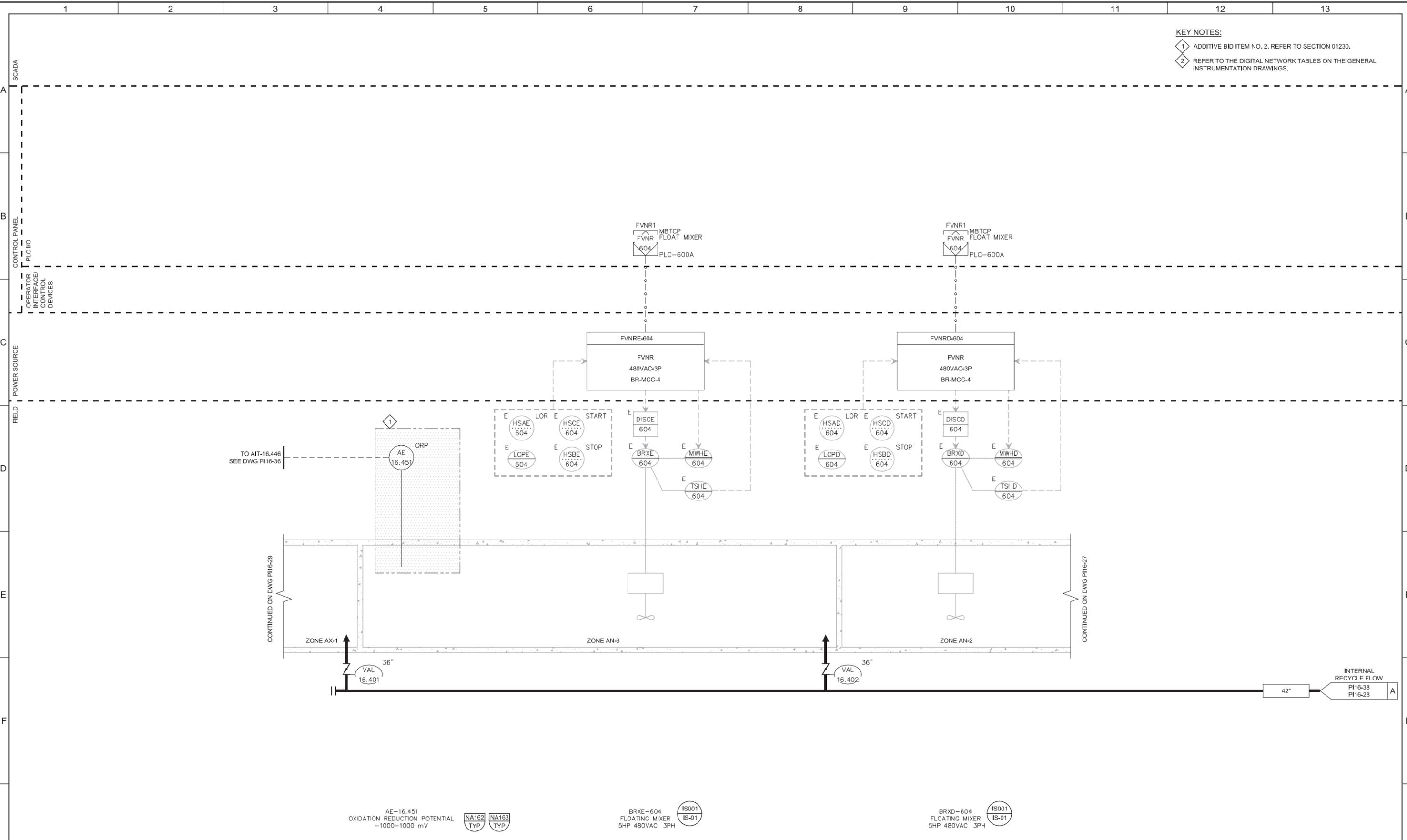
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo\_Std\_Pen\_v0905.pen PlotScale: 2:1

LAST SAVED BY: CYoung

**KEY NOTES:**

1 ADDITIVE BID ITEM NO. 2. REFER TO SECTION 01230.

2 REFER TO THE DIGITAL NETWORK TABLES ON THE GENERAL INSTRUMENTATION DRAWINGS.



AE-16.451  
OXIDATION REDUCTION POTENTIAL  
-1000-1000 mV

BRXE-604  
FLOATING MIXER  
5HP 480VAC 3PH

BRXD-604  
FLOATING MIXER  
5HP 480VAC 3PH

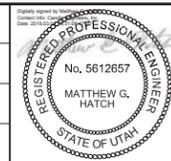
REV	DATE	BY	DESCRIPTION
1			
2			
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DESIGNED  
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SGS

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DATE  
MARCH 2019



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SOUTH VALLEY WATER RECLAMATION FACILITY

PROJECT 5  
INSTRUMENTATION

**BIOREACTOR NO. 4  
ZONE AN-2 & AN-3 P&ID**

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.  
10548A.10

DRAWING NO.  
**PI16-28**

SHEET NO.  
128 OF 159