

Plot Date: 06-DEC-2018 11:49:03 AM

User: svcPW

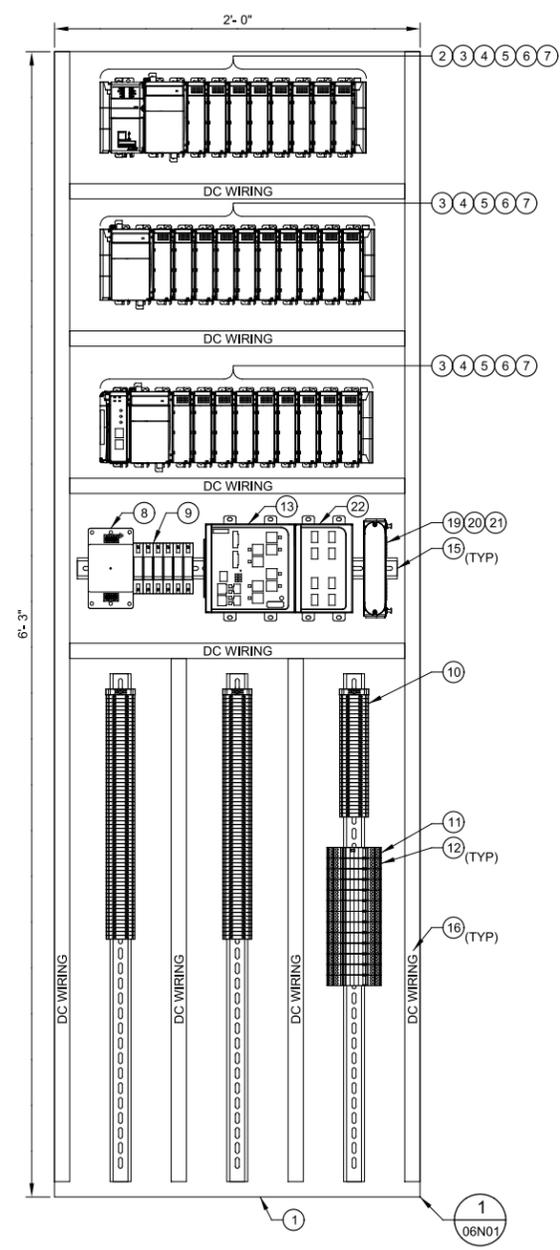
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

LAST SAVED BY: AWillard



EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

GENERAL NOTES:

1. UTILIZE EXISTING ENCLOSURE FOR NEW PLC BACKPANEL. AS DETAILED ON DEMOLITION DRAWINGS, REMOVE EXISTING HSO EQUIPMENT AND INSTALL NEW ALLEN BRADLEY PLC EQUIPMENT. REPLACE EXISTING WIRING AS REQUIRED. ENSURE ALL WIRE AND TERMINAL NUMBERS ARE APPLIED.
2. DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
3. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
4. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
5. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.
6. REPLACE ALL CONTROL RELAYS. RELAYS TO HAVE LED INDICATOR AND TEST PUSHBUTTON.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PLC AO MODULE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	ETHERNET SWITCH
14	NOT USED
15	DIN RAIL
16	WHITE WIRE DUCT
17	GRAY WIRE DUCT
18	INDUSTRIAL PC
19	FIBER CONNECTOR HOUSING
20	CLOSET CONNECTOR ASSEMBLY
21	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING
22	ETHERNET SWITCH FIBER EXPANSION MODULE

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED: JH
DRAWN: ANW
CHECKED: NEA
DATE: DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
RTU NO. 1 ELEVATION

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

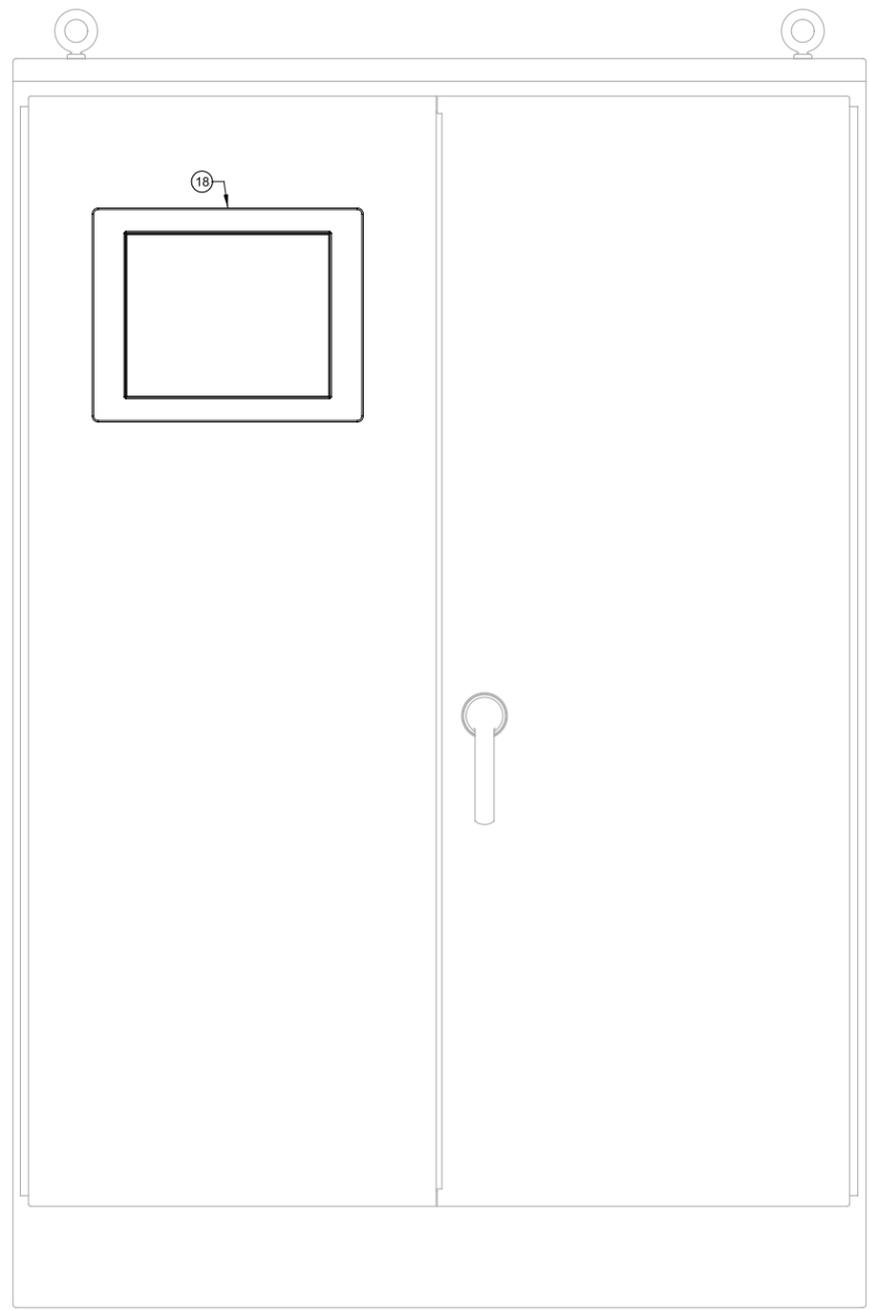
JOB NO. 107161.10
DRAWING NO. 02N01
SHEET NO. 60 OF 84

Plot Date: 06-DEC-2018 11:49:47 AM

User: svcPW

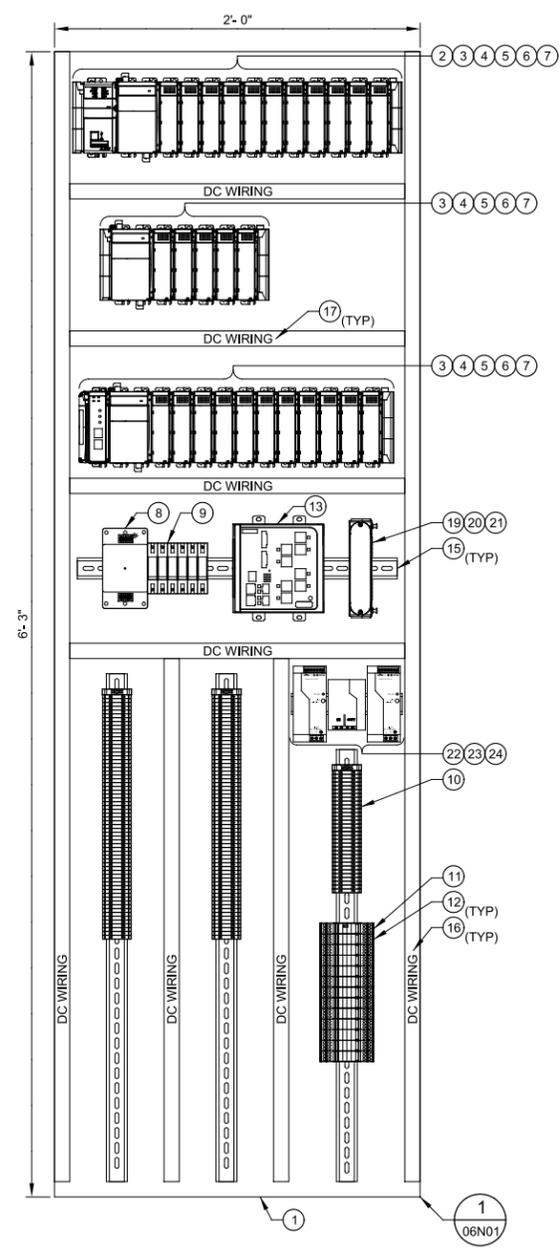
Plot Scale: 1:1

LAST SAVED BY: AWillard



EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

GENERAL NOTES:

- UTILIZE EXISTING ENCLOSURE FOR NEW PLC BACKPANEL. AS DETAILED ON DEMOLITION DRAWINGS, REMOVE EXISTING HSO EQUIPMENT AND INSTALL NEW ALLEN BRADLEY PLC EQUIPMENT. REPLACE EXISTING WIRING AS REQUIRED. ENSURE ALL WIRE AND TERMINAL NUMBERS ARE APPLIED.
- MOUNT NEW INDUSTRIAL PC TO EXTERIOR OF EXISTING ENCLOSURE AT EYE LEVEL.
- DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS
- DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
- SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
- DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.
- REPLACE ALL CONTROL RELAYS. RELAYS TO HAVE LED INDICATOR AND TEST PUSHBUTTON.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PLC AO MODULE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	ETHERNET SWITCH
14	NOT USED
15	DIN RAIL
16	WHITE WIRE DUCT
17	GRAY WIRE DUCT
18	INDUSTRIAL PC
19	FIBER CONNECTOR HOUSING
20	CLOSET CONNECTOR ASSEMBLY
21	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING
22	24VDC POWER SUPPLIES
23	24VDC POWER SUPPLY REDUNDANCY MODULE
24	DIODE BRIDGE

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED: JHJ
DRAWN: ANW
CHECKED: NEA
DATE: DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
RTU NO. 2 ELEVATION

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

JOB NO. 107161.10
DRAWING NO. 02N02
SHEET NO. 61 OF 84

Plot Date: 06-DEC-2018 11:50:13 AM

User: svcPW

PlotScale: 1:1

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

LAST SAVED BY: AWillard

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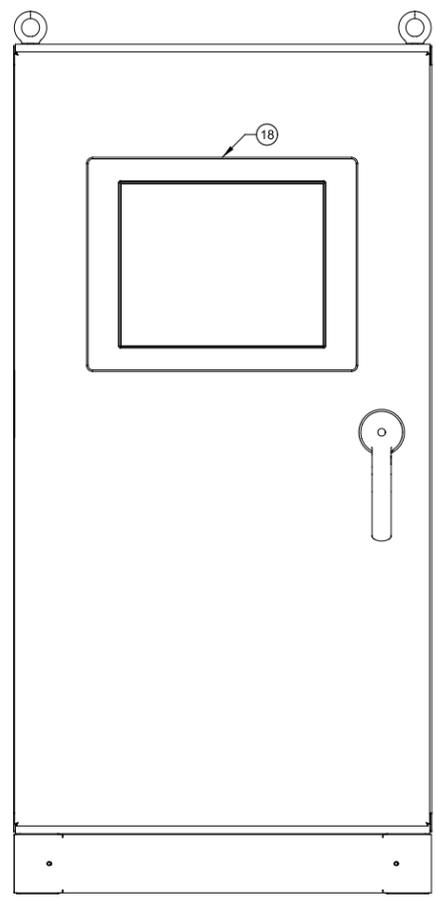
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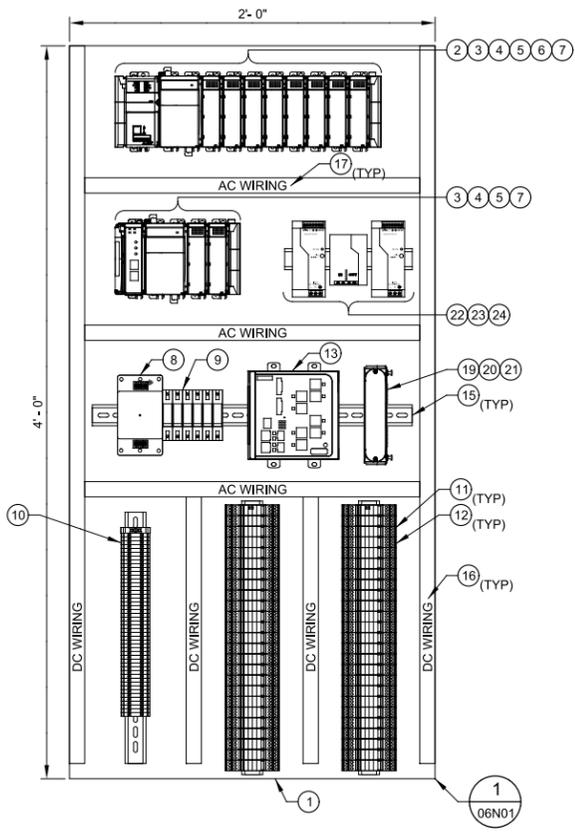
GENERAL NOTES:

- UTILIZE EXISTING ENCLOSURE FOR NEW PLC BACKPANEL. AS DETAILED ON DEMOLITION DRAWINGS, REMOVE EXISTING HSO EQUIPMENT AND INSTALL NEW ALLEN BRADLEY PLC EQUIPMENT. REPLACE EXISTING WIRING AS REQUIRED. ENSURE ALL WIRE AND TERMINAL NUMBERS ARE APPLIED.
- PROVIDE NEW EXTERIOR DOOR FOR EXISTING HOFFMAN ENCLOSURE.
- MOUNT NEW INDUSTRIAL PC TO EXTERIOR OF ENCLOSURE AT EYE LEVEL, MOUNT NEW PC IN THE NEW DOOR.
- DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
- DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
- SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
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- REPLACE ALL CONTROL RELAYS, RELAYS TO HAVE LED INDICATOR AND TEST PUSHBUTTON.



EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PLC AO MODULE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	ETHERNET SWITCH
14	NOT USED
15	DIN RAIL
16	WHITE WIRE DUCT
17	GRAY WIRE DUCT
18	INDUSTRIAL PC
19	FIBER CONNECTOR HOUSING
20	CLOSET CONNECTOR ASSEMBLY
21	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING
22	24VDC POWER SUPPLIES
23	24VDC POWER SUPPLY REDUNDANCY MODULE
24	DIODE BRIDGE

REV	DATE	BY	DESCRIPTION

DESIGNED
JHJ

DRAWN
ANW

CHECKED
NEA

DATE
DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
RTU NO. 3 ELEVATION

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

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
107161.10

DRAWING NO.
02N03

SHEET NO.
62 OF 84

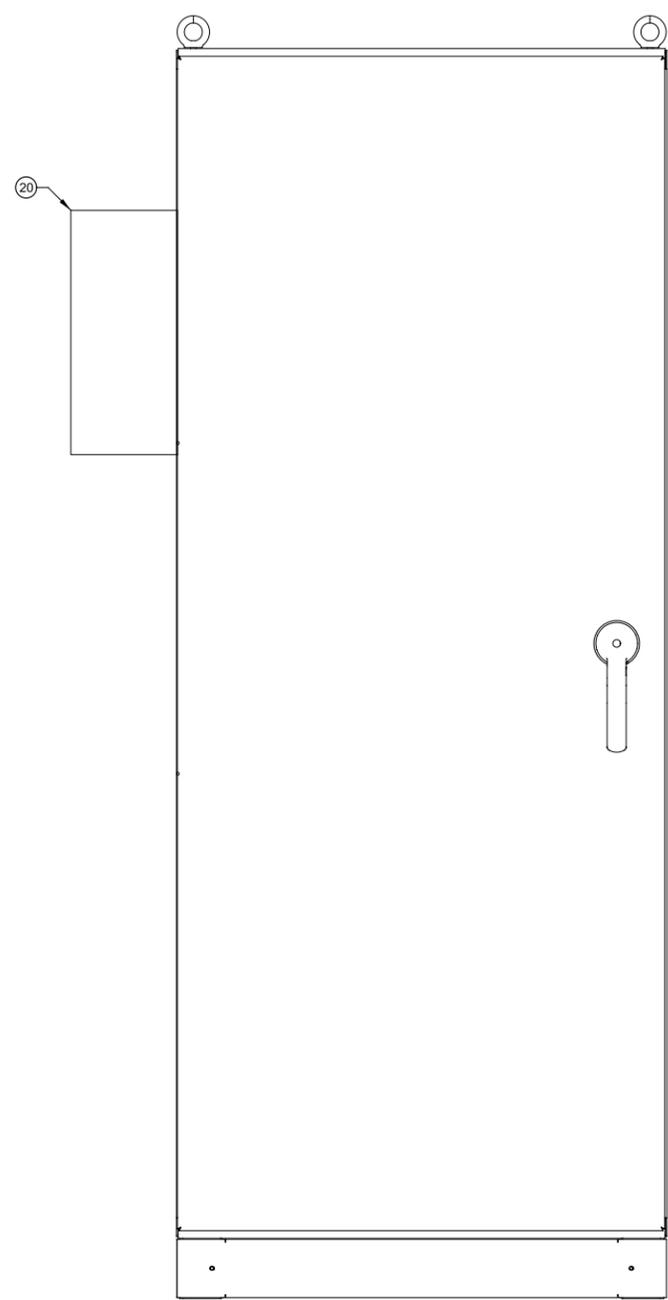
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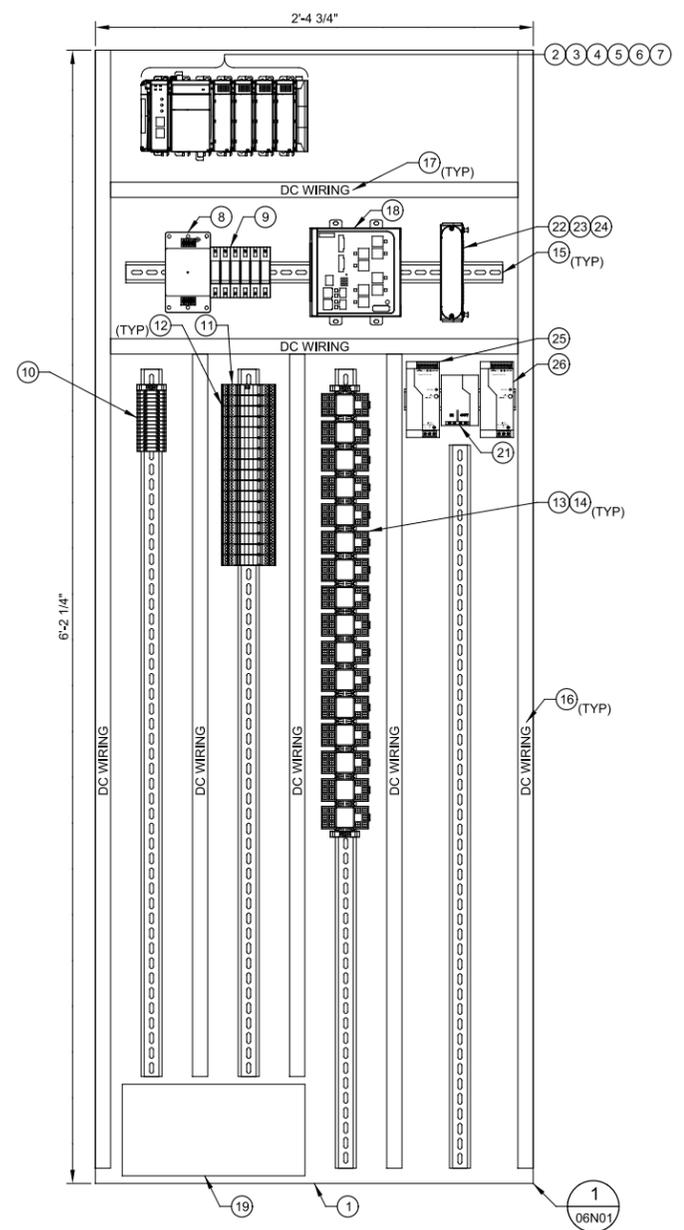
Model: Layout1

ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen



EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

GENERAL NOTES:

1. MOUNT NEW INDUSTRIAL PC TO EXTERIOR OF ENCLOSURE AT EYE LEVEL.
2. DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
3. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
4. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
5. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PLC AO MODULE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	TIMER / CONTROL RELAYS
14	INTERPOSING RELAYS
15	DIN RAIL
16	WHITE WIRE DUCT
17	GRAY WIRE DUCT
18	ETHERNET SWITCH
19	UPS
20	AIR CONDITIONING UNIT
21	DIODE BRIDGE
22	FIBER CONNECTOR HOUSING
23	CLOSET CONNECTOR ASSEMBLY
24	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING
25	24VDC POWER SUPPLIES
26	24VDC POWER SUPPLY REDUNDANCY MODULE

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED
JHH

DRAWN
ANW

CHECKED
NEA

DATE
DECEMBER 2018

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MANATEE COUNTY

LAKE MANATEE WTP SCADA UPGRADE

INSTRUMENTATION

RTU NO. 4 ELEVATION

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 107161.10

DRAWING NO. 02N04

SHEET NO. 63 OF 84

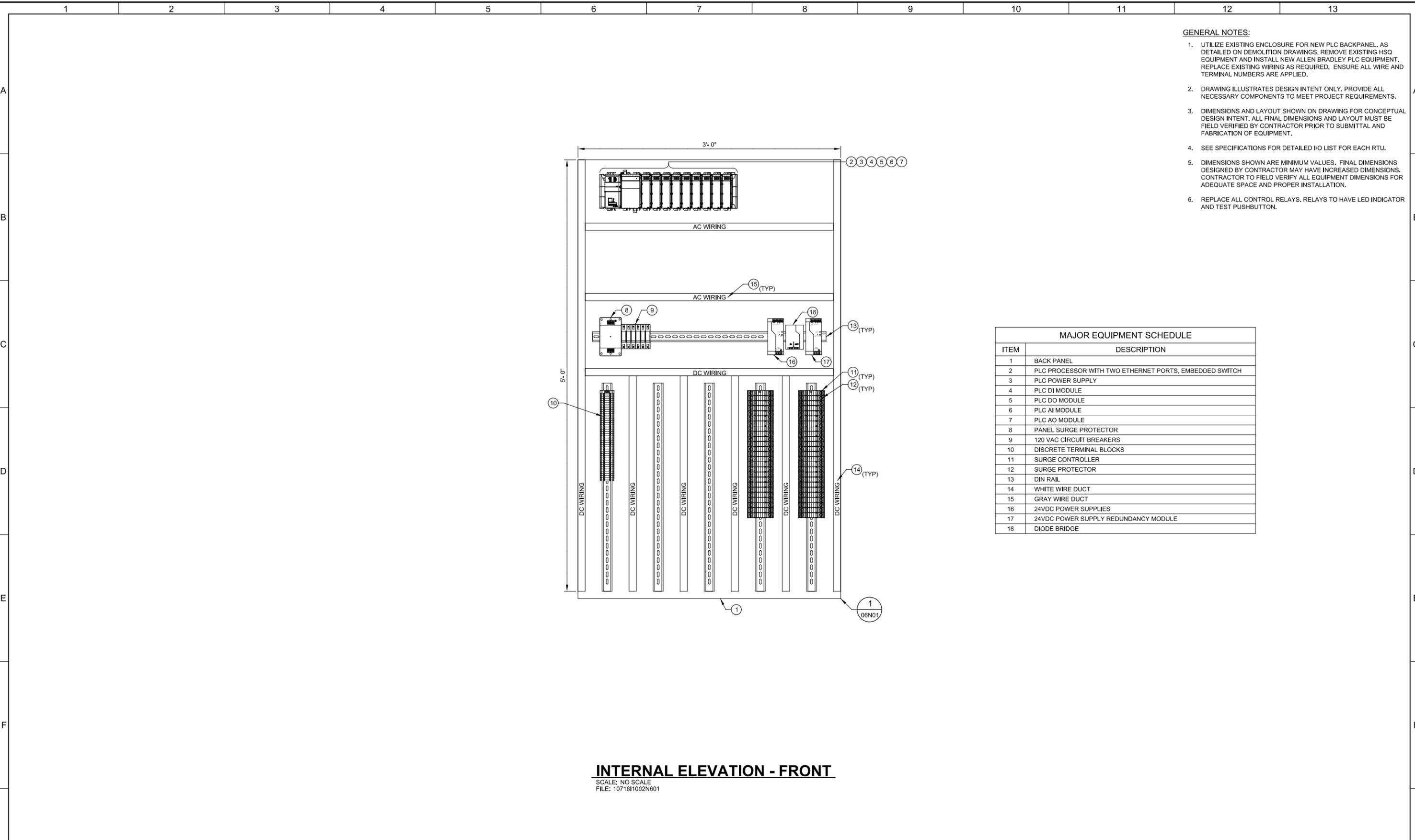
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User: svcPW

Plot Scale: 1:1

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

LAST SAVED BY: AWillard



- GENERAL NOTES:**
1. UTILIZE EXISTING ENCLOSURE FOR NEW PLC BACKPANEL. AS DETAILED ON DEMOLITION DRAWINGS, REMOVE EXISTING HSO EQUIPMENT AND INSTALL NEW ALLEN BRADLEY PLC EQUIPMENT. REPLACE EXISTING WIRING AS REQUIRED. ENSURE ALL WIRE AND TERMINAL NUMBERS ARE APPLIED.
 2. DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
 3. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
 4. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
 5. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.
 6. REPLACE ALL CONTROL RELAYS. RELAYS TO HAVE LED INDICATOR AND TEST PUSHBUTTON.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR WITH TWO ETHERNET PORTS, EMBEDDED SWITCH
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PLC AO MODULE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	DIN RAIL
14	WHITE WIRE DUCT
15	GRAY WIRE DUCT
16	24VDC POWER SUPPLIES
17	24VDC POWER SUPPLY REDUNDANCY MODULE
18	DIODE BRIDGE

INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 107161002N601

REV	DATE	BY	DESCRIPTION
1			
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DESIGNED: JH
DRAWN: ANW
CHECKED: NEA
DATE: DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
RTU NO. 5 ELEVATION

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

JOB NO. 107161.10
DRAWING NO. 02N05
SHEET NO. 64 OF 84

Plot Date: 06-DEC-2018 11:49:52 AM

User: svcPW

Plot Scale: 1:1

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

Last Saved By: AWillard

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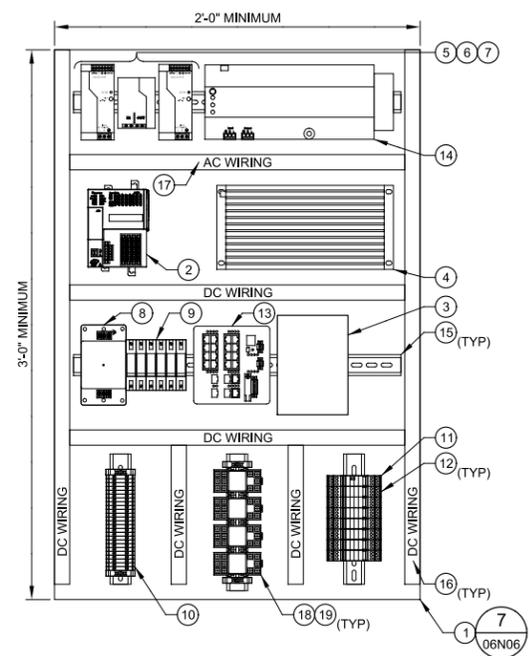
F

G

GENERAL NOTES:

- 1. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
- 2. FOR PORT MANATEE ELEVATED TANK RTU, I/O IS WIRED IN SERIES FROM FIELD, TO RTU TO PUMP PLC.
- 3. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.
- 4. PREVENT AC AND DC WIRING FROM RUNNING IN PARALLEL IN WIRE DUCTS.

RTU LIST	
RTU	DESCRIPTION
11	59TH STREET ELEVATED TANK
12	NORTH WEST ELEVATED TANK
13	PALMETTO ELEVATED TANK
16	NORTH COUNTY ELEVATED TANK
19	PORT MANATEE ELEVATED TANK
21	RAIN GAUGE NO. 1
22	RAIN GAUGE NO. 2
23	RAIN GAUGE NO. 3
24	RAIN GAUGE NO. 4
25	RAIN GAUGE NO. 5 (ECW NO. 1)
26	RAIN GAUGE NO. 6
27	RAIN GAUGE NO. 7
28	RAIN GAUGE NO. 8
29	RAIN GAUGE NO. 9
30	ELWOOD PARK NO. 1
40	MONITORING WELLS
41	EAST COUNTY WELL NO. 1 (RG NO. 5)
42	EAST COUNTY WELL NO. 2
43	EAST COUNTY WELL NO. 3
44	EAST COUNTY WELL NO. 4
45	EAST COUNTY WELL NO. 5
52	RYE BRIDGE - CONDUCTIVITY MON
53	ASR WELLS
54	64 STATE ROAD MONITORING WELL
56	EAST COUNTY WELL NO. 6
57	EAST COUNTY WELL NO. 7
61	EQUALIZATION BACKWASH



MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	MDS RADIO
4	RADIO AMPLIFIER
5	24VDC POWER SUPPLIES
6	24VDC POWER SUPPLY REDUNDANCY MODULE
7	DIODE BRIDGE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	ETHERNET SWITCH
14	UPS WITH RELAY CARD
15	DIN RAIL
16	WHITE WIRE DUCT
17	GRAY WIRE DUCT
18	TIMER / CONTROL RELAYS
19	INTERPOSING RELAYS

INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

REV	DATE	BY	DESCRIPTION

DESIGNED: JHH
DRAWN: BPR
CHECKED: NEA
DATE: DECEMBER 2018

Digitally signed by Joseph J. Hanlon
Contact info: Carollo Engineers Inc.
Date: 2018.12.28 14:49:52 -0500

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
TYPICAL RTU BACK PANEL ELEVATION

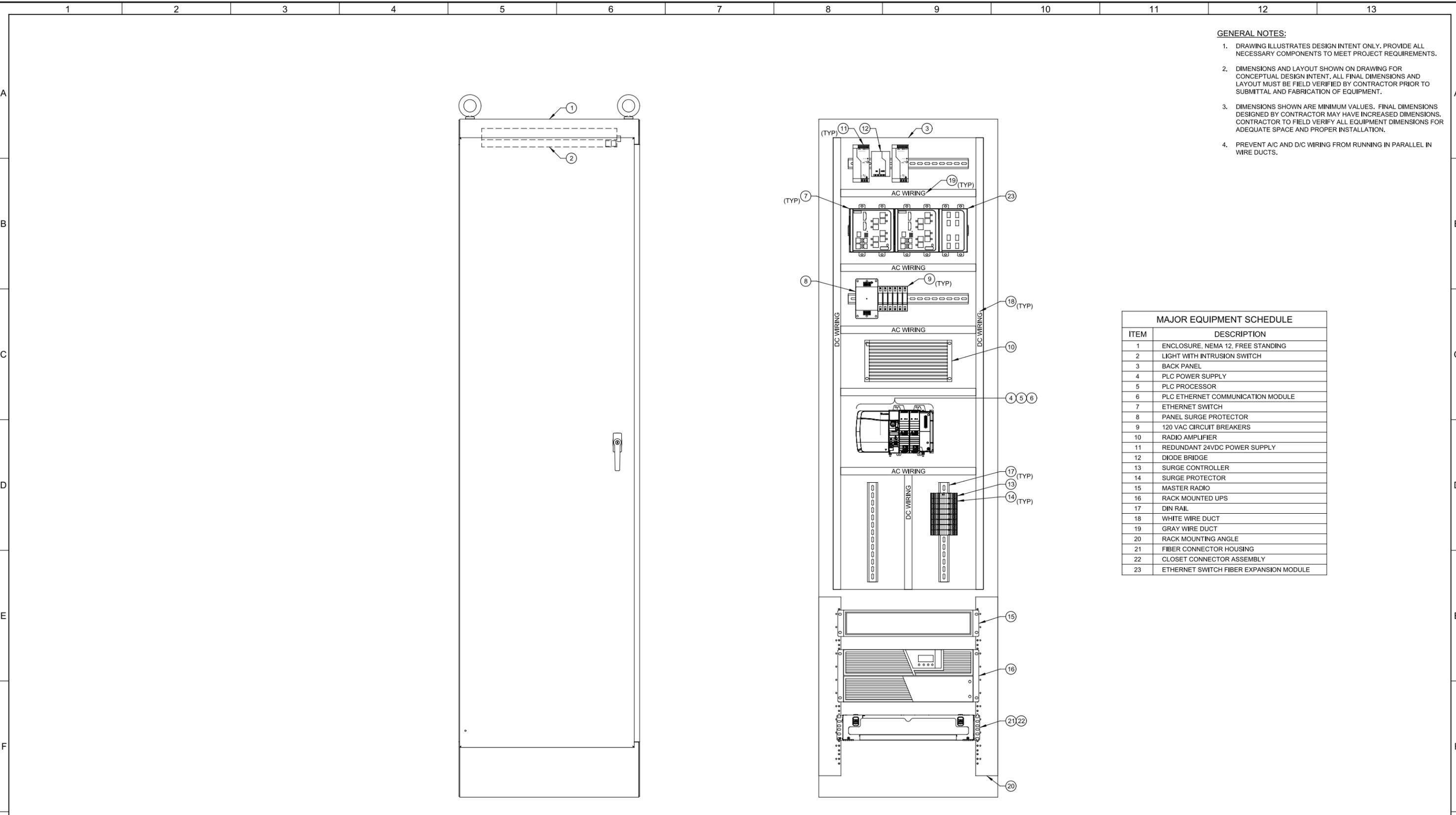
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 107161.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. 02N06
	SHEET NO. 65 OF 84

Plot Date: 06-DEC-2018 11:50:10 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

LAST SAVED BY: AWI/ward



- GENERAL NOTES:**
1. DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
 2. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
 3. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.
 4. PREVENT A/C AND D/C WIRING FROM RUNNING IN PARALLEL IN WIRE DUCTS.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	ENCLOSURE, NEMA 12, FREE STANDING
2	LIGHT WITH INTRUSION SWITCH
3	BACK PANEL
4	PLC POWER SUPPLY
5	PLC PROCESSOR
6	PLC ETHERNET COMMUNICATION MODULE
7	ETHERNET SWITCH
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	RADIO AMPLIFIER
11	REDUNDANT 24VDC POWER SUPPLY
12	DIODE BRIDGE
13	SURGE CONTROLLER
14	SURGE PROTECTOR
15	MASTER RADIO
16	RACK MOUNTED UPS
17	DIN RAIL
18	WHITE WIRE DUCT
19	GRAY WIRE DUCT
20	RACK MOUNTING ANGLE
21	FIBER CONNECTOR HOUSING
22	CLOSET CONNECTOR ASSEMBLY
23	ETHERNET SWITCH FIBER EXPANSION MODULE

EXTERNAL ELEVATION
SCALE: NO SCALE
FILE: 1071611002N601

INTERNAL ELEVATION
SCALE: NO SCALE
FILE: 1071611002N601

REV	DATE	BY	DESCRIPTION
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DESIGNED
AMA

DRAWN
ANW

CHECKED
NEA

DATE
DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
MASTER RADIO PANEL ELEVATION

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 107161.10 DRAWING NO. 02N07 SHEET NO. 66 OF 84
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Plot Date: 06-DEC-2018 11:50:01 AM

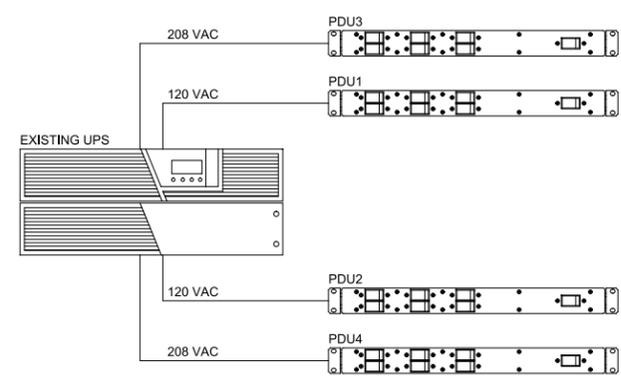
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Plot Scale: 1:1

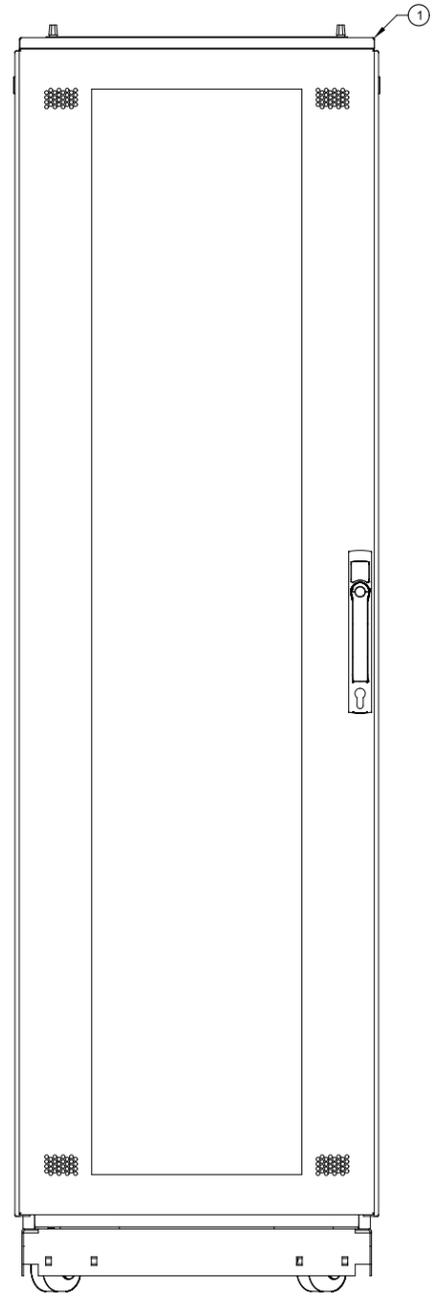
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

LAST SAVED BY: AWB/ward

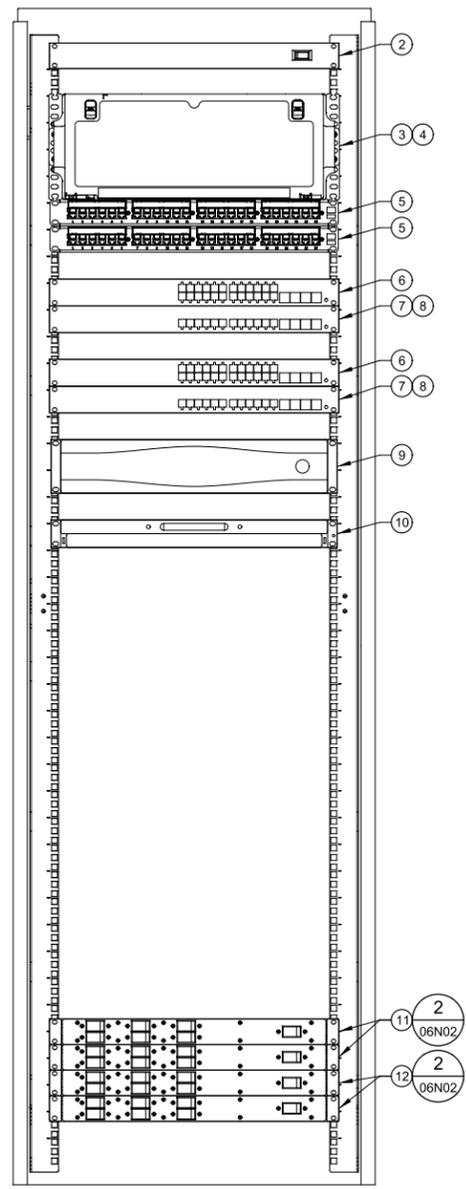
- GENERAL NOTES:**
- DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
 - DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
 - DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.



PDU CONNECTIONS	
PDU PORT	DEVICE
PDU1-1	NETWORK COPPER SWITCH A POWER SUPPLY NO. 1
PDU1-2	NETWORK FIBER SWITCH A POWER SUPPLY NO. 1
PDU1-3	NETWORK COPPER SWITCH B POWER SUPPLY NO. 1
PDU1-4	NETWORK FIBER SWITCH B POWER SUPPLY NO. 1
PDU1-5	19" RACK FAN TRAY
PDU1-6	NOT USED
PDU1-7	NOT USED
PDU1-8	NOT USED
PDU2-1	NETWORK COPPER SWITCH A POWER SUPPLY NO. 2
PDU2-2	NETWORK FIBER SWITCH A POWER SUPPLY NO. 2
PDU2-3	NETWORK COPPER SWITCH B POWER SUPPLY NO. 2
PDU2-4	NETWORK FIBER SWITCH B POWER SUPPLY NO. 2
PDU2-5	KVM CONSOLE/SWITCH
PDU2-6	NOT USED
PDU2-7	NOT USED
PDU2-8	NOT USED
PDU3-1	NUTANIX HARDWARE PLATFORM POWER SUPPLY NO. 1
PDU4-1	NUTANIX HARDWARE PLATFORM POWER SUPPLY NO. 2



EXTERNAL ELEVATION
SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION
SCALE: NO SCALE
FILE: 1071611002N601

MAJOR EQUIPMENT SCHEDULE				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	QUANTITY
1	42U PROLINE SERVER CABINET	HOFFMAN	PSC2069B	1
2	RACKMOUNT FAN TRAY	HOFFMAN	A19FT3B	1
3	FIBER CONNECTOR HOUSING	CORNING	CCH-04U	1
4	CLOSET CONNECTOR ASSEMBLY	CORNING	CCH-CP12-91	12
5	24 PORT COPPER PATCH PANEL	HUBBEL	HP624	2
6	COPPER SWITCH	CISCO	WS-C3850-24P-E	2
7	FIBER SWITCH	CISCO	WS-C3850-24S-E	2
8	SFP	CISCO	GLC-GE-100FX	48
9	NUTANIX HARDWARE PLATFORM	NUTANIX	NX-1365-G6	1
10	KVM SWITCH/CONSOLE 19"	AVOCENT	LRA185KMM8-001	1
11	PDU	UNIPOWER	PDUAC1US-N	2
12	PDU	UNIPOWER	PDUAC1US-E	2

REV	DATE	BY	DESCRIPTION

DESIGNED: JH
DRAWN: ANW
CHECKED: NEA
DATE: DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
SERVER RACK ELEVATION

VERIFY SCALES
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JOB NO. 107161.10
DRAWING NO. 02N08
SHEET NO. 67 OF 84

Plot Date: 06-DEC-2018 11:50:29 AM

User: svcPW

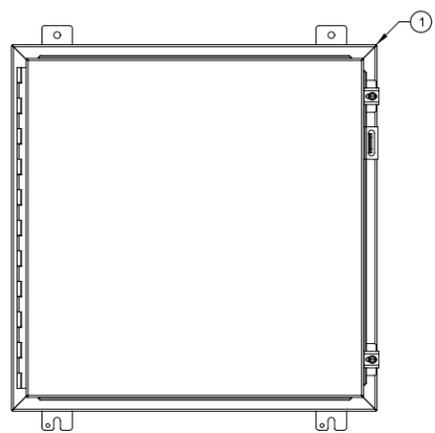
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Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

LAST SAVED BY: AWillard

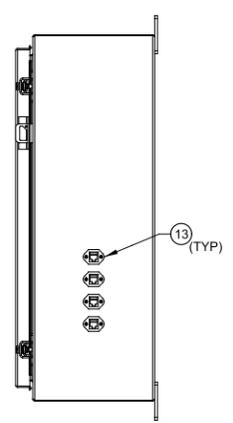
GENERAL NOTES:

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2. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
3. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.



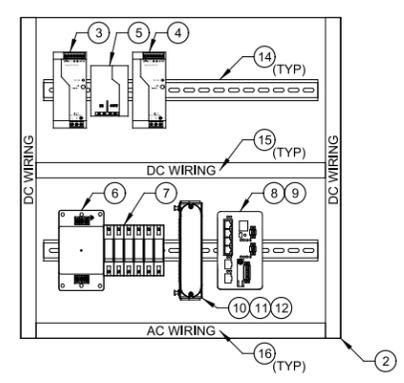
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SCALE: NO SCALE
FILE: 1071611002N601



EXTERNAL ELEVATION - SIDE

SCALE: NO SCALE
FILE: 1071611002N601



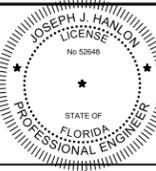
INTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601

MAJOR EQUIPMENT SCHEDULE				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	QUANTITY
1	ENCLOSURE, NEMA 12, WALL MOUNTED	HOFFMAN	A242408LP	1
2	BACK PANEL	HOFFMAN	A24P24G	1
3	24VDC POWER SUPPLIES			1
4	24VDC POWER SUPPLY REDUNDANCY MODULE			1
5	DIODE BRIDGE			1
6	PANEL SURGE PROTECTOR	EDCO	HSP121BT1RU	1
7	120 VAC CIRCUIT BREAKERS			6
8	ETHERNET SWITCH	ROCKWELL	1783-BMS06SA	1
9	SFP	CISCO	GLC-GE-100FX	2
10	FIBER CONNECTOR HOUSING	CORNING	SPH-01P	1
11	CLOSET CONNECTOR ASSEMBLY	CORNING	CCH-CP12-91	1
12	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING	CORNING	SPH-DIN-KIT	1
13	PANEL MOUNT ETHERNET RJ45 CAT-6			4
14	DIN RAIL			2
15	WHITE WIRE DUCT			
16	GRAY WIRE DUCT			

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED
AMA
DRAWN
ANW
CHECKED
NEA
DATE
DECEMBER 2018



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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
WORKSTATIONS NO. 1 AND NO. 5
PANEL ELEVATION

VERIFY SCALES
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JOB NO.
107161.10
DRAWING NO.
02N09
SHEET NO.
68 OF 84

Plot Date: 06-DEC-2018 11:50:24 AM

User: svcPW

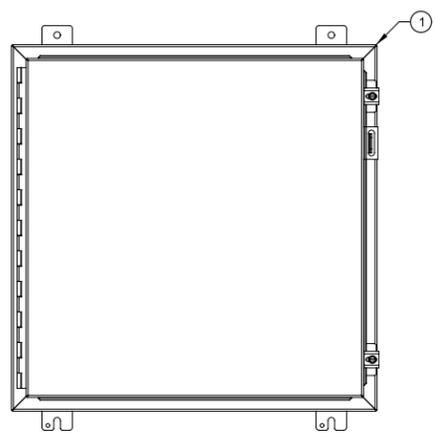
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LAST SAVED BY: AWillard

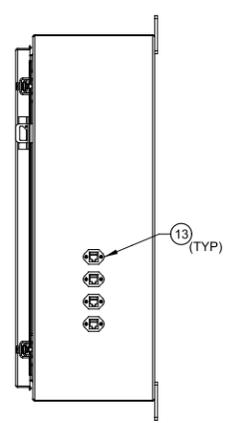
GENERAL NOTES:

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2. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.



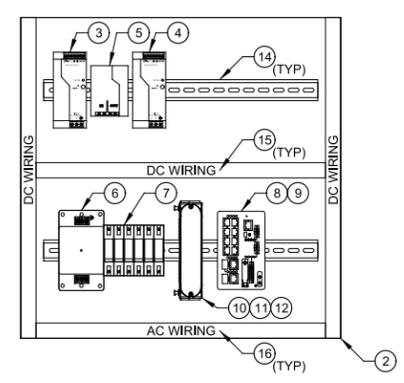
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SCALE: NO SCALE
FILE: 1071611002N601



EXTERNAL ELEVATION - SIDE

SCALE: NO SCALE
FILE: 1071611002N601



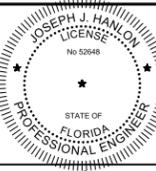
INTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601

MAJOR EQUIPMENT SCHEDULE				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	QUANTITY
1	ENCLOSURE, NEMA 12, WALL MOUNTED	HOFFMAN	A242408LP	1
2	BACK PANEL	HOFFMAN	A24P24G	1
3	24VDC POWER SUPPLIES			1
4	24VDC POWER SUPPLY REDUNDANCY MODULE			1
5	DIODE BRIDGE			1
6	PANEL SURGE PROTECTOR	EDCO	HSP121BT1RU	1
7	120 VAC CIRCUIT BREAKERS			6
8	ETHERNET SWITCH	ROCKWELL	1783-BMS10CGA	1
9	SFP	CISCO	GLC-GE-100FX	4
10	FIBER CONNECTOR HOUSING	CORNING	SPH-01P	1
11	CLOSET CONNECTOR ASSEMBLY	CORNING	CCH-CP12-91	1
12	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING	CORNING	SPH-DIN-KIT	1
13	PANEL MOUNT ETHERNET RJ45 CAT-6			4
14	DIN RAIL			2
15	WHITE WIRE DUCT			
16	GRAY WIRE DUCT			

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED
AMA
DRAWN
ANW
CHECKED
NEA
DATE
DECEMBER 2018



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Date: 2018.12.18 14:46:05-0500
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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
WORKSTATION NO. 4
PANEL ELEVATION

VERIFY SCALES
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JOB NO.
107161.10
DRAWING NO.
02N10
SHEET NO.
69 OF 84

Plot Date: 06-DEC-2018 11:45:14 AM

User: svcPW

Plot Scale: 1:1

Model: Layout1

ColorTable: gshade.ctb

DesignScript: Carollo_Sld_Pen_v0905.pen

ColorTable: gshade.ctb

Model: Layout1

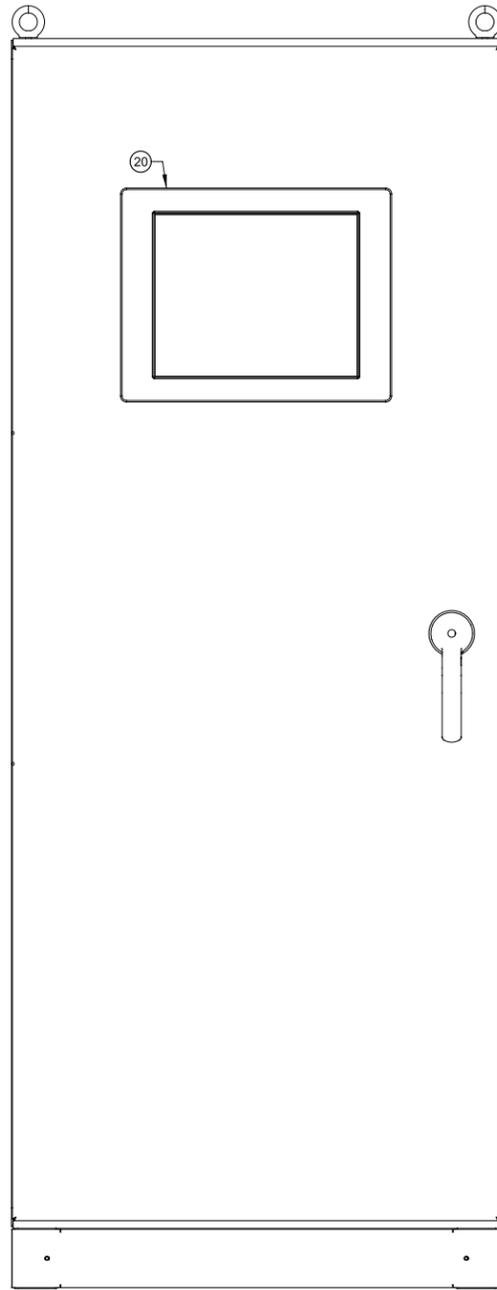
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Model: Layout1

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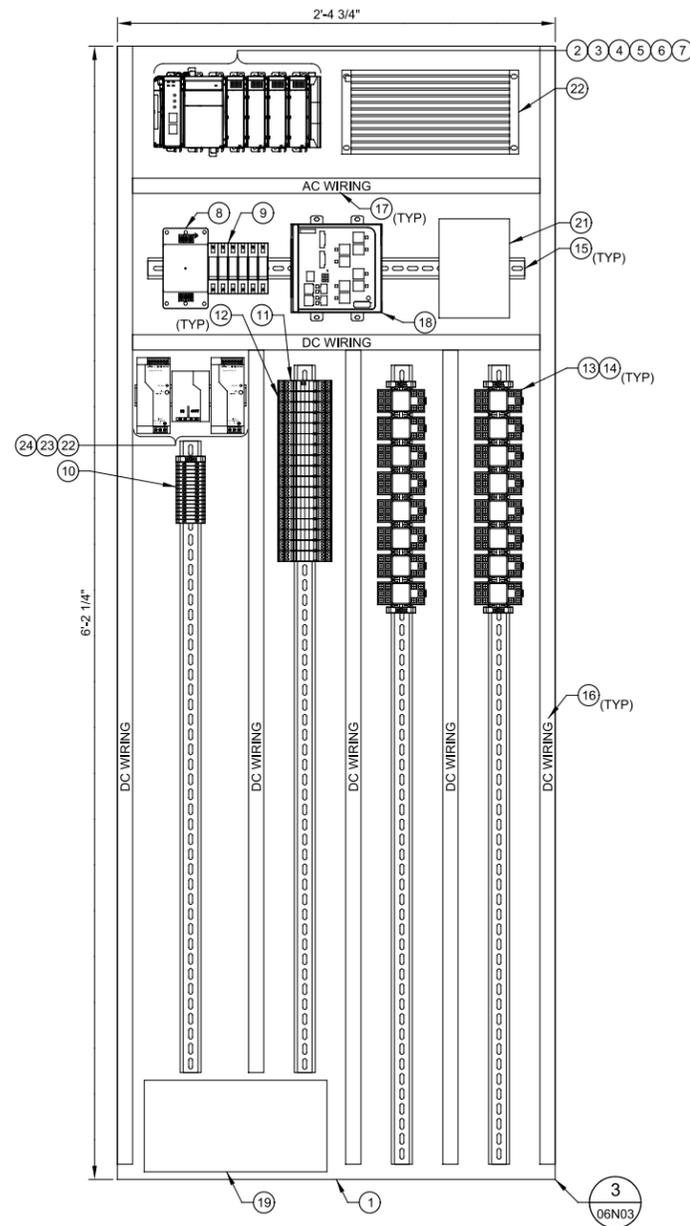
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ColorTable: gshade.ctb



EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PLC AO MODULE
8	PANEL SURGE PROTECTOR
9	120 VAC CIRCUIT BREAKERS
10	DISCRETE TERMINAL BLOCKS
11	SURGE CONTROLLER
12	SURGE PROTECTOR
13	TIMER / CONTROL RELAYS
14	INTERPOSING RELAYS
15	DIN RAIL
16	WHITE WIRE DUCT
17	GRAY WIRE DUCT
18	ETHERNET SWITCH
19	UPS
20	LOCAL OPERATOR INTERFACE
21	MDS RADIO
22	RADIO AMPLIFIER
23	24VDC POWER SUPPLIES
24	24VDC POWER SUPPLY REDUNDANCY MODULE
25	DIODE BRIDGE

GENERAL NOTES:

1. MOUNT NEW LOCAL OPERATOR INTERFACE TO EXTERIOR OF ENCLOSURE AT EYE LEVEL.
2. DRAWING ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
3. DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
4. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
5. CONTRACTOR TO VISIT EACH SITE PRIOR TO BID TO REVIEW SITE CONDITIONS. CONTRACTOR TO INCLUDE ALL NECESSARY MATERIALS, EQUIPMENT, AND SOFTWARE/PROGRAMMING FOR A FULLY FUNCTIONAL SYSTEM.
6. UNLESS OTHERWISE NOTED, ENCLOSURE SHALL BE 316 STAINLESS STEEL NEMA 4X.
7. TYPICAL LAYOUT FOR:
 - A. RTU-46: NW GST & BOOSTER STATION
 - B. RTU-30: ELWOOD PARK #1
 - C. RTU-17: ELWOOD PARK #2
 - D. RTU-31: CORTEZ GROUND STORAGE AND BOOSTER STATION
 - E. RTU-15: HOSPITAL BOOSTER STATION (CONTRACTOR TO CONFIRM FLOOR SPACE FOR FREE STANDING ENCLOSURE. OTHERWISE A WALL MOUNT ENCLOSURE WILL BE REQUIRED.
8. FOR NW GST AND BOOSTER STATION AND CORTEZ GST AND BOOSTER STATION PROVIDE BACK HAUL CONNECTION USING UNLICENSED SPREAD SPECTRUM RADIOS TO STATIONS WITH GOOD COMMS TO MASTER STATION (USING LICENSED FREQUENCY), E.G., NORTH WEST ELEVATED TANK OR 59TH STREET ELEVATED TANK. THIS SOLUTION IS ONLY ACCEPTABLE IN CASE A GOOD CONNECTION (RSSI), FROM THESE GST BOOSTER STATIONS IS NOT ESTABLISHED/ACHIEVED TO THE MASTER STATION. PROVIDE UNLICENSED RADIO PAIRS, ALL HARDWARE, RADIO CABLE, SURGE SUPPRESSION, POWER, ANTENNA, PROGRAMMING AND CONFIGURATION REQUIRED FOR A COMPLETE SOLUTION.

REV	DATE	BY	DESCRIPTION

DESIGNED JH		<small>Digitally signed by Joseph J. Hanlon Contact info: Carollo Engineers Inc. Date: 2018.12.06 14:46:05-0500</small>
DRAWN ANW		
CHECKED NEA		
DATE DECEMBER 2018		

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MANATEE COUNTY	
LAKE MANATEE WTP SCADA UPGRADE	
INSTRUMENTATION	
TYPICAL BOOSTER STATION CONTROL PANEL ELEVATION	

VERIFY SCALES	JOB NO. 107161.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. 02N11
0 1"	SHEET NO. 70 OF 84
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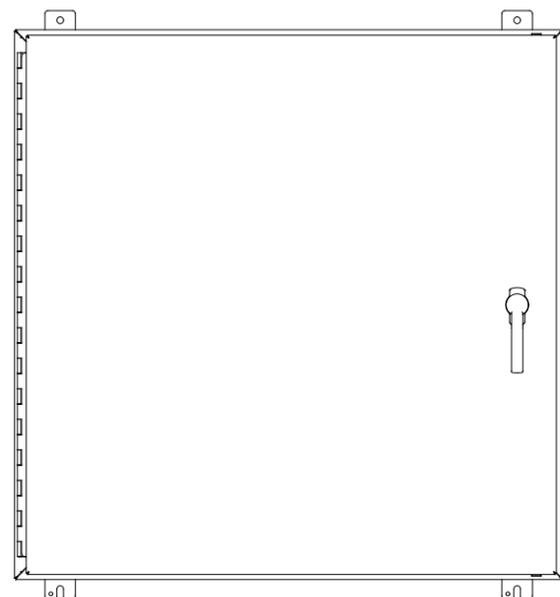
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Plot Scale: 1:1

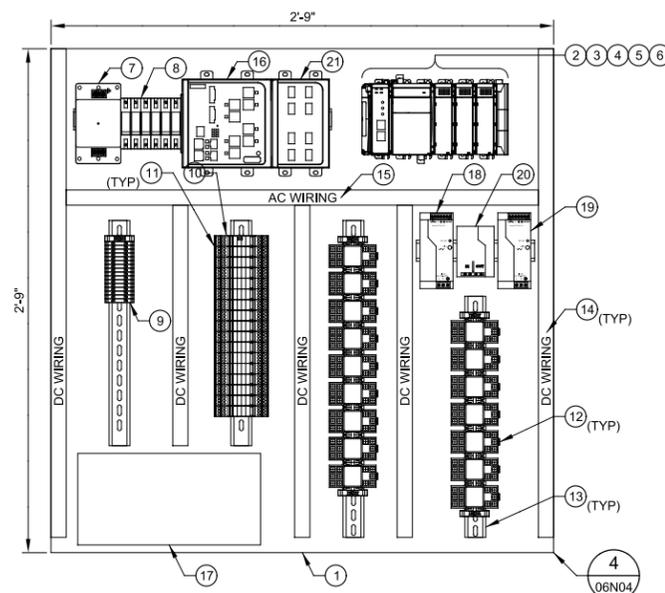
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

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EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601



INTERNAL ELEVATION

SCALE: NO SCALE
FILE: 1071611002N601

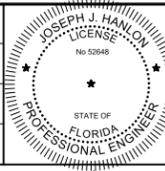
GENERAL NOTES:

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- DIMENSIONS AND LAYOUT SHOWN ON DRAWING FOR CONCEPTUAL DESIGN INTENT. ALL FINAL DIMENSIONS AND LAYOUT MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO SUBMITTAL AND FABRICATION OF EQUIPMENT.
- SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
- CONTRACTOR TO VISIT EACH SITE PRIOR TO BID TO REVIEW SITE CONDITIONS. CONTRACTOR TO INCLUDE ALL NECESSARY MATERIALS, EQUIPMENT, & SOFTWARE/PROGRAMMING FOR A FULLY FUNCTIONAL SYSTEM.
- UNLESS OTHERWISE NOTED, ENCLOSURE SHALL BE 316 STAINLESS STEEL NEMA 4X.
- DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.
- PREVENT A/C AND D/C WIRING FROM RUNNING IN PARALLEL IN WIRE DUCTS.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR
3	PLC POWER SUPPLY
4	PLC DI MODULE
5	PLC DO MODULE
6	PLC AI MODULE
7	PANEL SURGE PROTECTOR
8	120 VAC CIRCUIT BREAKERS
9	DISCRETE TERMINAL BLOCKS
10	SURGE CONTROLLER
11	SURGE PROTECTOR
12	INTERPOSING RELAYS
13	DIN RAIL
14	WHITE WIRE DUCT
15	GRAY WIRE DUCT
16	ETHERNET SWITCH
17	UPS
18	24VDC POWER SUPPLIES
19	24VDC POWER SUPPLY REDUNDANCY MODULE
20	DIODE BRIDGE
21	ETHERNET SWITCH FIBER EXPANSION MODULE

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED
JHJ
DRAWN
ANW
CHECKED
NEA
DATE
DECEMBER 2018



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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
TAINTER GATES
CONTROL PANEL ELEVATION

VERIFY SCALES
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JOB NO.
107161.10
DRAWING NO.
02N12
SHEET NO.
71 OF 84

Plot Date: 06-DEC-2018 11:50:51 AM

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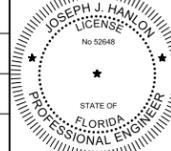
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

LAST SAVED BY: AWillard

RTU #	LOCATION	REPLACE ENCLOSURE	REPLACE TOWER	INSTALLATION	ELECTRICAL	ADDITIONAL NOTES
1	C-BASIN RAPID MIX	NO	NA	SEE DETAILS ON DRAWING 02N01.	REPLACE TERMINATION CABINETS.	
2	WTP-ELECTRICAL ROOM	NO	NA	SEE DETAILS ON DRAWING 02N02.	NONE	
3	A/B CHEMICAL	NO	NA	SEE DETAILS ON DRAWING 02N03.	REPLACE TERMINATION CABINETS.	
4	WTP-GROUND STORAGE	YES	NA	REMOVE EXISTING RTU ENCLOSURE, INSTALL NEW RTU/PLC.	NONE	
5	MAIN CONTROL ROOM	NO	NA	SEE DETAILS ON DRAWING 02N04.	NONE	
11	59TH ST. ELEVATED TANK	YES	NA	REMOVE EXISTING RTU, BATTERY CABINET, MODEM CABINET, RTU MOUNTING STRUCTURE, ANTENNA CABLE AND ANTENNA. CONSTRUCT NEW RTU MOUNTING STRUCTURE, PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER FEED AND GROUND TO RTU, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
12	NW ELEVATED TANK	YES	NA	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. RADIO SURVEY SHALL DETERMINE IF EXISTING RADIO EQUIPMENT IS REQUIRED. IF SO, EQUIPMENT SHOULD BE PLACED WITHIN AN ENCLOSURE, IF NOT, EQUIPMENT SHOULD BE REMOVED.	CONFIRM POWER AND GROUND TO RTU, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
13	PAMETTO ELEVATED TANK	YES	NA	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT. CONFIRM POWER AND GROUND TO RTU.	CONFIRM POWER AND GROUND TO RTU, PROVIDE CONDUIT, WIRE AND CABLE AS REQUIRED.	
14	SARASOTA METER STATION	NO	NO	REMOVE EXISTING RTU, ANTENNA, AND ANTENNA CABLE. PROVIDE AND INSTALL NEW RTU, ANTENNA, ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	SARASOTA COUNTY READS FLOW TOTALIZER SIGNAL FROM THIS RTU.
15	HOSPITAL BOOSTER STATION	YES	YES	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. REMOVE EXISTING TOWER. PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT. PROVIDE AND INSTALL NEW TOWER. TOWER HEIGHT SHALL BE DETERMINED BY RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
16	NORTH COUNTY ELEVATED TANK	YES	NA	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT. CONFIRM POWER AND GROUND TO RTU.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
17	ELWOOD PARK #2	YES	YES	REMOVE EXISTING RTU, TURBITROL ENCLOSURE, EXTERNAL RADIO PANEL, TOWER, ANTENNA AND ANTENNA CABLE. PROVIDE AND INSTALL NEW RTU, ANTENNA TOWER, ANTENNA AND ANTENNA CABLE IN CONDUIT. TOWER HEIGHT SHALL BE DETERMINED BY RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
18	WTP-RAW WATER #2	NO	NA	PROVIDE NEW FIBER OPTIC CONDUIT AND CABLE FROM CONTROL ROOM. REMOVE EXISTING RTU ANTENNA AND ANTENNA CABLE	PROVIDE CONDUIT, WIRE AND CABLES AS REQUIRED.	
19	PORT MANATEE ELEVATED TANK	YES	NA	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA CABLE AND ANTENNA. PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT.	PROVIDE CONDUIT AND WIRE FOR 120VAC POWER TO RTU, PROVIDE CONDUIT, WIRE AND CABLES AS REQUIRED.	
20	WTP-RAW WATER #1	YES	NA	REMOVE EXISTING RTU, FIBER OPTIC PATCH PANEL AND MISC. J-BOXES. PROVIDE AND INSTALL NEW RTU.	CONFIRM POWER AND GROUND TO RTU, PROVIDE CONDUIT, WIRE AND CABLE AS REQUIRED.	
21	RAIN GAUGE #1	YES	YES	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA, ANTENNA CABLE AND TOWER. PROVIDE AND INSTALL NEW RTU, ENCLOSURE, ANTENNA, ANTENNA CABLE IN CONDUIT AND TOWER. TOWER HEIGHT SHALL BE BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
23	RAIN GAUGE #3	YES	YES	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA, ANTENNA CABLE AND TOWER. PROVIDE AND INSTALL NEW RTU, ENCLOSURE, ANTENNA, ANTENNA CABLE IN CONDUIT AND TOWER. TOWER HEIGHT SHALL BE BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
24	RAIN GAUGE #4	YES	YES	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA, ANTENNA CABLE AND TOWER. PROVIDE AND INSTALL NEW RTU, ENCLOSURE, ANTENNA, ANTENNA CABLE IN CONDUIT AND TOWER. TOWER HEIGHT SHALL BE BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
26	RAIN GAUGE #6	YES	YES	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA, ANTENNA CABLE AND TOWER. PROVIDE AND INSTALL NEW RTU, ENCLOSURE, ANTENNA, ANTENNA CABLE IN CONDUIT AND TOWER. TOWER HEIGHT SHALL BE BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
27	RAIN GAUGE #7	YES	YES	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA, ANTENNA CABLE AND TOWER. PROVIDE AND INSTALL NEW RTU, ENCLOSURE, ANTENNA, ANTENNA CABLE IN CONDUIT AND TOWER. TOWER HEIGHT SHALL BE BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
28	RAIN GAUGE #8	YES	YES	REMOVE EXISTING RTU, BATTERY CABINET, ANTENNA, ANTENNA CABLE AND TOWER. PROVIDE AND INSTALL NEW RTU, ENCLOSURE, ANTENNA, ANTENNA CABLE IN CONDUIT AND TOWER. TOWER HEIGHT SHALL BE BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
30	ELWOOD PARK #1	NO	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
31	CORTEZ GROUND STORAGE & BOOSTER	YES	YES	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE AND INSTALL NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT. PROVIDE NEW TOWER IF REQUIRED, TOWER HEIGHT SHALL BE DETERMINED BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
32	WTP-CARBON SILO	NO	NA	REMOVE EXISTING RTU SUB-PANEL. REMOVE SLC PLC IN VENDOR CONTROL PANEL. PROVIDE AND INSTALL NEW TERMINAL BLOCKS & SURGE PROTECTION. PROVIDE NEW COMPACT LOGIX PLC IN VENDOR CONTROL PANEL.	CONFIRM POWER AND GROUND TO RTU, PROVIDE CONDUIT AND WIRE AS REQUIRED.	
40	MONITORING WELLS	YES	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
41	EAST COUNTY WELL #1	YES	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
42	EAST COUNTY WELL #2	YES	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
43	EAST COUNTY WELL #3	YES	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
44	EAST COUNTY WELL #4	YES	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
45	EAST COUNTY WELL #5	YES	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
46	NORTH WEST GROUND STORAGE TANK/BOOSTER STATION	YES	YES	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE AND INSTALL NEW PLC CONTROL PANEL. PROVIDE NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
47	LONG BOAT KEY METER STATION	NO	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU, TOWER, ANTENNA AND ANTENNA CABLE IN CONDUIT. TOWER HEIGHT TO BE DETERMINED BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
50	WTP-TRAIN A FILTER GALLERY	NO	N/A	REMOVE EXISTING HSQ EQUIPMENT. PROVIDE AND INSTALL NEW ALLEN BRADLEY PLC EQUIPMENT. PROVIDE NEW FIBER OPTIC CONDUIT AND CABLE FROM CONTROL ROOM.	CONFIRM POWER AND GROUND TO RTU, PROVIDE NEW CONDUIT, WIRE AND CABLES AS REQUIRED.	
51	WTP-TRAIN B FILTER GALLERY	NO	N/A	REMOVE EXISTING HSQ EQUIPMENT. PROVIDE AND INSTALL NEW ALLEN BRADLEY PLC EQUIPMENT. PROVIDE NEW FIBER OPTIC CONDUIT AND CABLE FROM CONTROL ROOM.	CONFIRM POWER AND GROUND TO RTU, PROVIDE NEW CONDUIT, WIRE AND CABLES AS REQUIRED.	
52	RYE BRIDGE - CONDUCTIVITY MON	YES	YES	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU & ENCLOSURE, TOWER, ANTENNA AND ANTENNA CABLE IN CONDUIT. TOWER HEIGHT TO BE DETERMINED BASED ON RADIO SURVEY.	CONFIRM POWER AND GROUND TO RTU AND TOWER, PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.	
53	AQUIFER STORAGE & RECOVERY WELLS	NO	NO	REMOVE EXISTING RTU SUB-PANEL, ANTENNA, ANTENNA CABLE. TOWER MAY REQUIRE REPLACEMENT BASED ON RADIO SURVEY. PROVIDE AND INSTALL NEW RTU SUB-PANEL, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU AND ANTENNA TOWER IF REPLACED, PROVIDE CONDUIT, WIRE AND CABLE AS REQUIRED.	
54	SR 64 MONITORING WELL	NO	NO	REMOVE EXISTING RTU SUB-PANEL, ANTENNA, ANTENNA CABLE. TOWER MAY REQUIRE REPLACEMENT BASED ON RADIO SURVEY. PROVIDE AND INSTALL NEW RTU SUB-PANEL, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU, PROVIDE NEW CONDUIT, WIRE AND CABLES AS REQUIRED.	
55	FUTURE					
56	EAST COUNTY WELL #6	NO	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU, PROVIDE NEW CONDUIT, WIRE AND CABLES AS REQUIRED.	
57	EAST COUNTY WELL #7	NO	NO	REMOVE EXISTING RTU, ANTENNA AND ANTENNA CABLE. PROVIDE NEW RTU, ANTENNA AND ANTENNA CABLE IN CONDUIT.	CONFIRM POWER AND GROUND TO RTU, PROVIDE NEW CONDUIT, WIRE AND CABLES AS REQUIRED.	
60	FLUORIDE	YES	N/A	PROVIDE NEW PLC CONTROL PANEL.		
61	EQUALIZATION BACKWASH	NO	N/A	REMOVE EXISTING PLC, POWER SUPPLY, I/O MODULES, AND ETHERNET SWITCH. PROVIDE AND INSTALL NEW PLC, POWER SUPPLY, I/O MODULES, AND ETHERNET SWITCH.		
62	TANTER GATES	YES	N/A	PROVIDE AND INSTALL NEW RTU ENCLOSURE.		

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED JHH
DRAWN ANW
CHECKED NEA
DATE DECEMBER 2018



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Contact info: Carollo Engineers Inc.
Date: 2018.12.18 14:05:05-0500

JOSEPH J. HANLON
LICENSE
No. 52848
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
RTU DETAILS

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

JOB NO. 10716L10
DRAWING NO. 02N13
SHEET NO. 72 OF 84

Plot Date: 06-DEC-2018 11:45:58 AM

User: svcPW

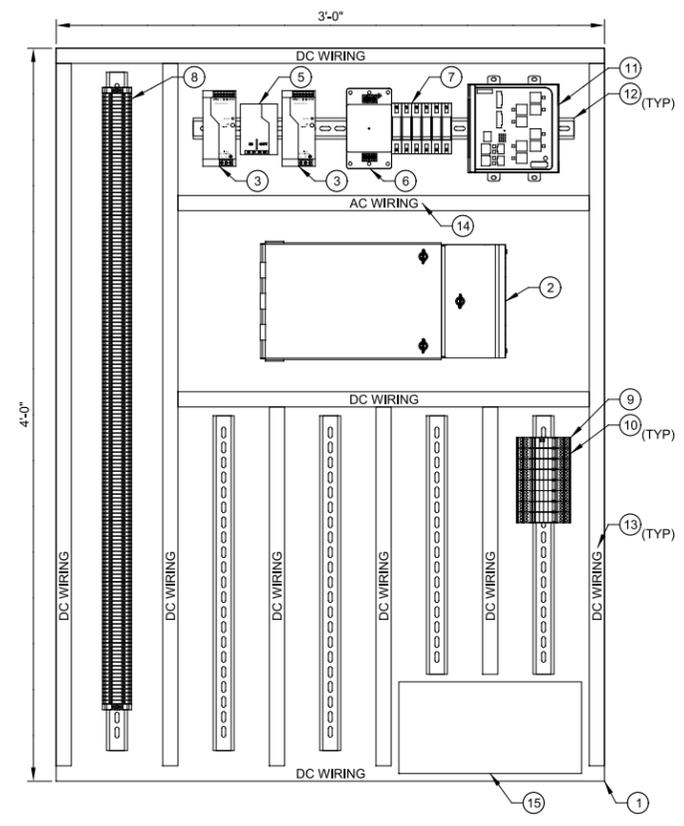
PlotScale: 1:1

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen

LAST SAVED BY: AWillard

GENERAL NOTES:

1. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
2. DIMENSIONS SHOWN ARE MINIMUM VALUES. FINAL DIMENSIONS DESIGNED BY CONTRACTOR MAY HAVE INCREASED DIMENSIONS. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT DIMENSIONS FOR ADEQUATE SPACE AND PROPER INSTALLATION.



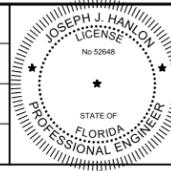
MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	FIBER OPTIC PATCH PANEL
3	24VDC POWER SUPPLIES
4	24VDC POWER SUPPLY REDUNDANCY MODULE
5	DIODE BRIDGE
6	PANEL SURGE PROTECTOR
7	120 VAC CIRCUIT BREAKERS
8	DISCRETE TERMINAL BLOCKS
9	SURGE CONTROLLER
10	SURGE PROTECTOR
11	ETHERNET SWITCH
12	DIN RAIL
13	WHITE WIRE DUCT
14	GRAY WIRE DUCT
15	UPS

INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 107161002N601

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

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JHJ
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DECEMBER 2018



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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
CARBON SILO TERMINATION CABINET ELEVATION

VERIFY SCALES
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0 1"
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JOB NO.
107161.10
DRAWING NO.
02N14
SHEET NO.
73 OF 84

Plot Date: 06-DEC-2018 11:45:45 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

LAST SAVED BY: AWillard

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

A

B

C

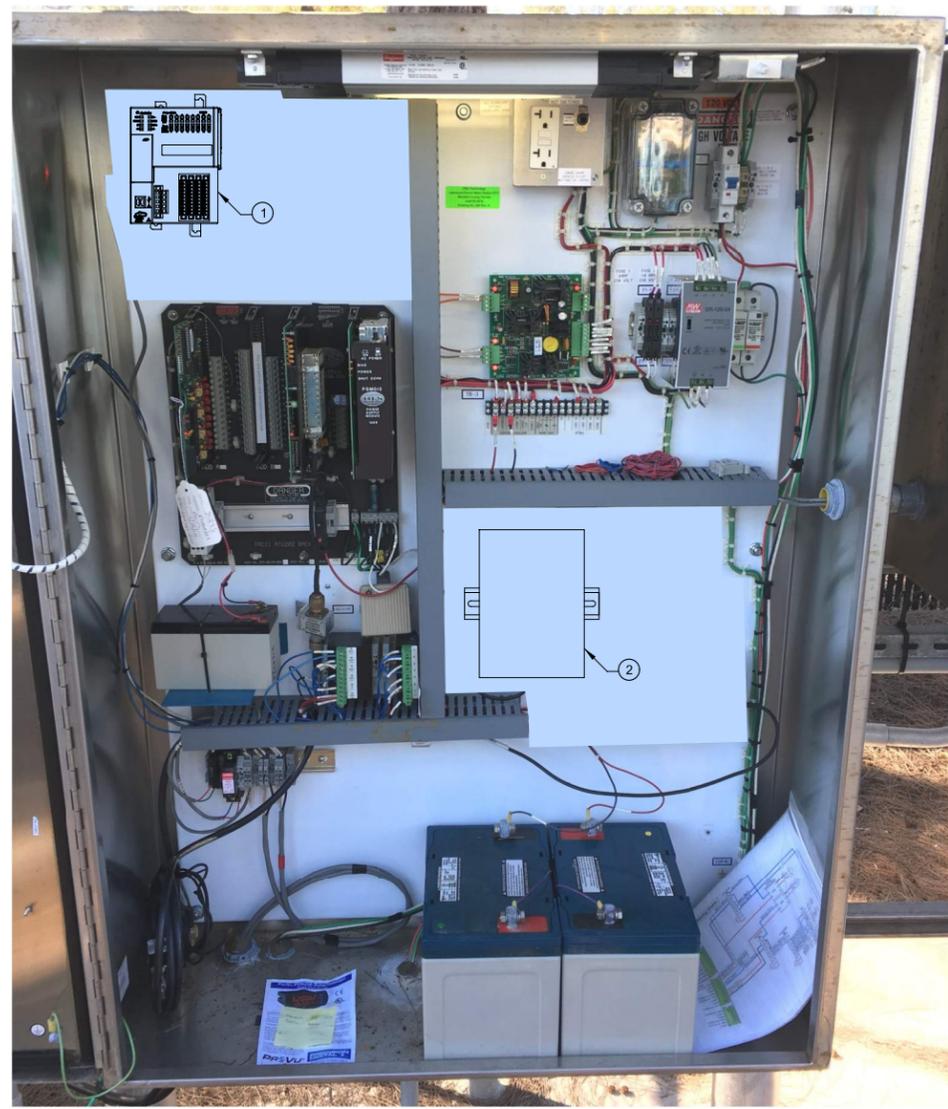
D

E

F

G

GENERAL NOTES:
1. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.



MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	PLC PROCESSOR AND I/O CARDS
2	MDS RADIO AND AMPLIFIER
3	PANEL SURGE PROTECTOR
4	120 VAC CIRCUIT BREAKERS
5	SURGE CONTROLLER
6	SURGE PROTECTOR
7	DIN RAIL

1 FRONT
FILE: 1071611002N014A

REV	DATE	BY	DESCRIPTION
1			
2			
3			

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DECEMBER 2018



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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
LONG BOAT KEY PANEL ELEVATION

VERIFY SCALES
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0 1"
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JOB NO.
107161.10
DRAWING NO.
02N15
SHEET NO.
74 OF 84

Plot Date: 06-DEC-2018 11:45:19 AM

User: svcPW

Plot Scale: 1:1

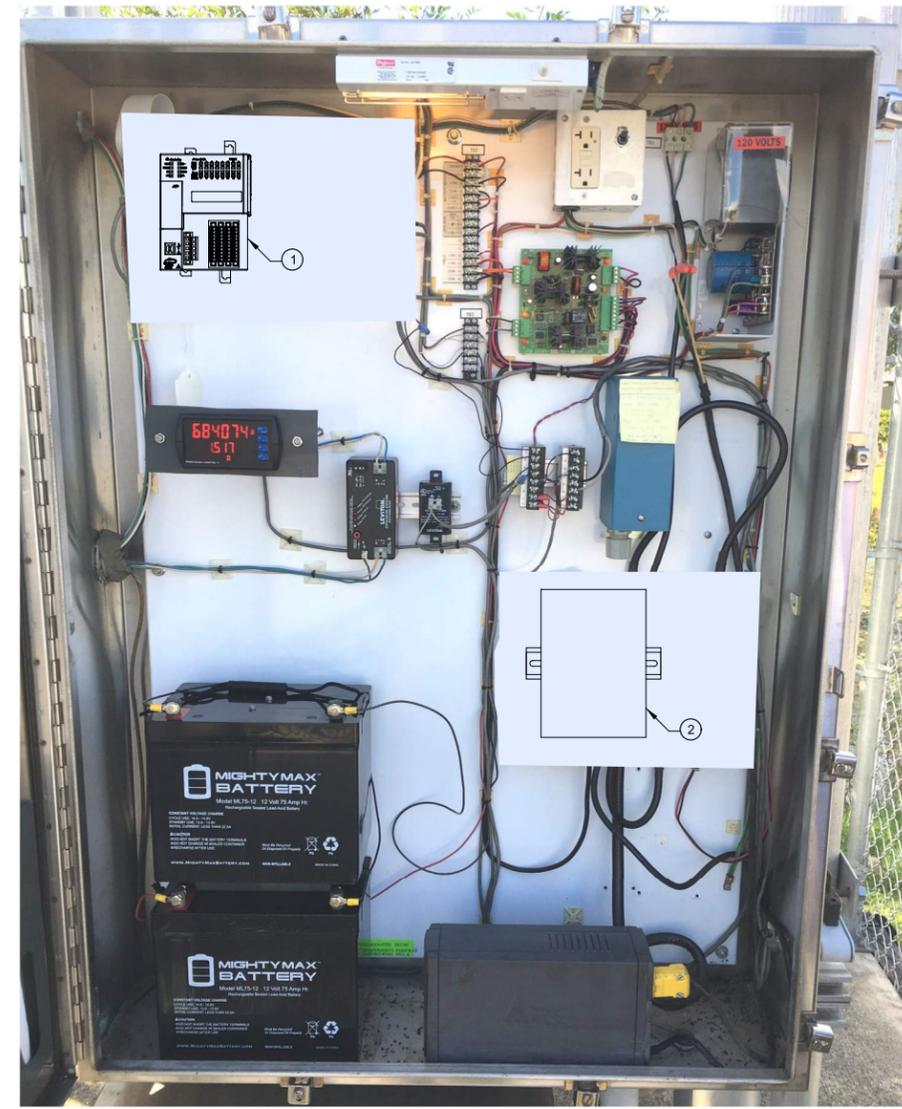
Model: Layout1

ColorTable: gshade.ctb

LAST SAVED BY: AWillard

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GENERAL NOTES:
1. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.

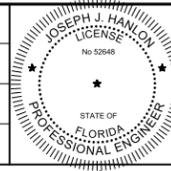


MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	PLC PROCESSOR AND I/O CARDS
2	MDS RADIO AND AMPLIFIER
3	PANEL SURGE PROTECTOR
4	120 VAC CIRCUIT BREAKERS
5	SURGE CONTROLLER
6	SURGE PROTECTOR
7	DIN RAIL

1 FRONT
FILE: 1071611002N015A

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
SARASOTA METER STATION PANEL ELEVATION

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JOB NO.
107161.10
DRAWING NO.
02N16
SHEET NO.
75 OF 84

Plot Date: 06-DEC-2018 11:48:53 AM

User: svcPW

PlotScale: 1:1

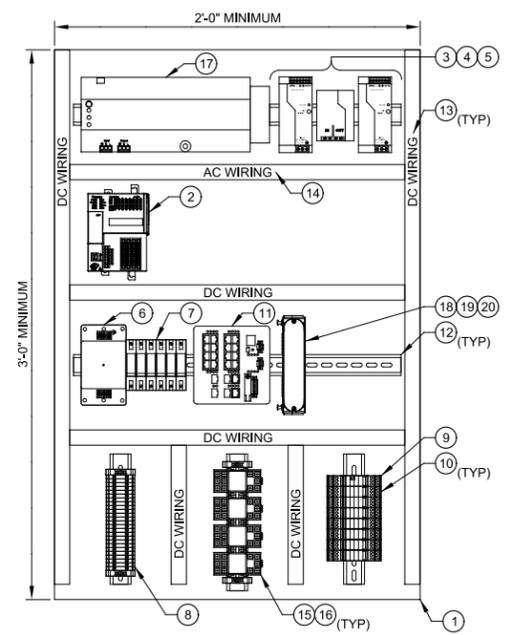
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sig_Pen_v0905.pen

LAST_SAVED BY: AWillard

GENERAL NOTES:

1. SEE SPECIFICATIONS FOR DETAILED I/O LIST FOR EACH RTU.
2. PREVENT A/C AND D/C WIRING FROM RUNNING IN PARALLEL IN WIRE DUCTS.

RTU LIST	
RTU	DESCRIPTION
20	WTP - RAW WATER NO. 1
60	FLUORIDE



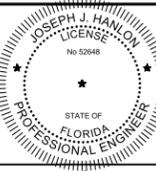
MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	BACK PANEL
2	PLC PROCESSOR/REMOTE I/O
3	24VDC POWER SUPPLIES
4	24VDC POWER SUPPLY REDUNDANCY MODULE
5	DIODE BRIDGE
6	PANEL SURGE PROTECTOR
7	120 VAC CIRCUIT BREAKERS
8	DISCRETE TERMINAL BLOCKS
9	SURGE CONTROLLER
10	SURGE PROTECTOR
11	ETHERNET SWITCH
12	DIN RAIL
13	WHITE WIRE DUCT
14	GRAY WIRE DUCT
15	TIMER / CONTROL RELAYS
16	INTERPOSING RELAYS
17	UPS WITH RELAY CARD
18	FIBER CONNECTOR HOUSING
19	CLOSET CONNECTOR ASSEMBLY
20	DIN RAIL BRACKET FOR SINGLE-PANEL HOUSING

INTERNAL ELEVATION - FRONT

SCALE: NO SCALE
FILE: 1071611002N601

REV	DATE	BY	DESCRIPTION
1			
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DECEMBER 2018



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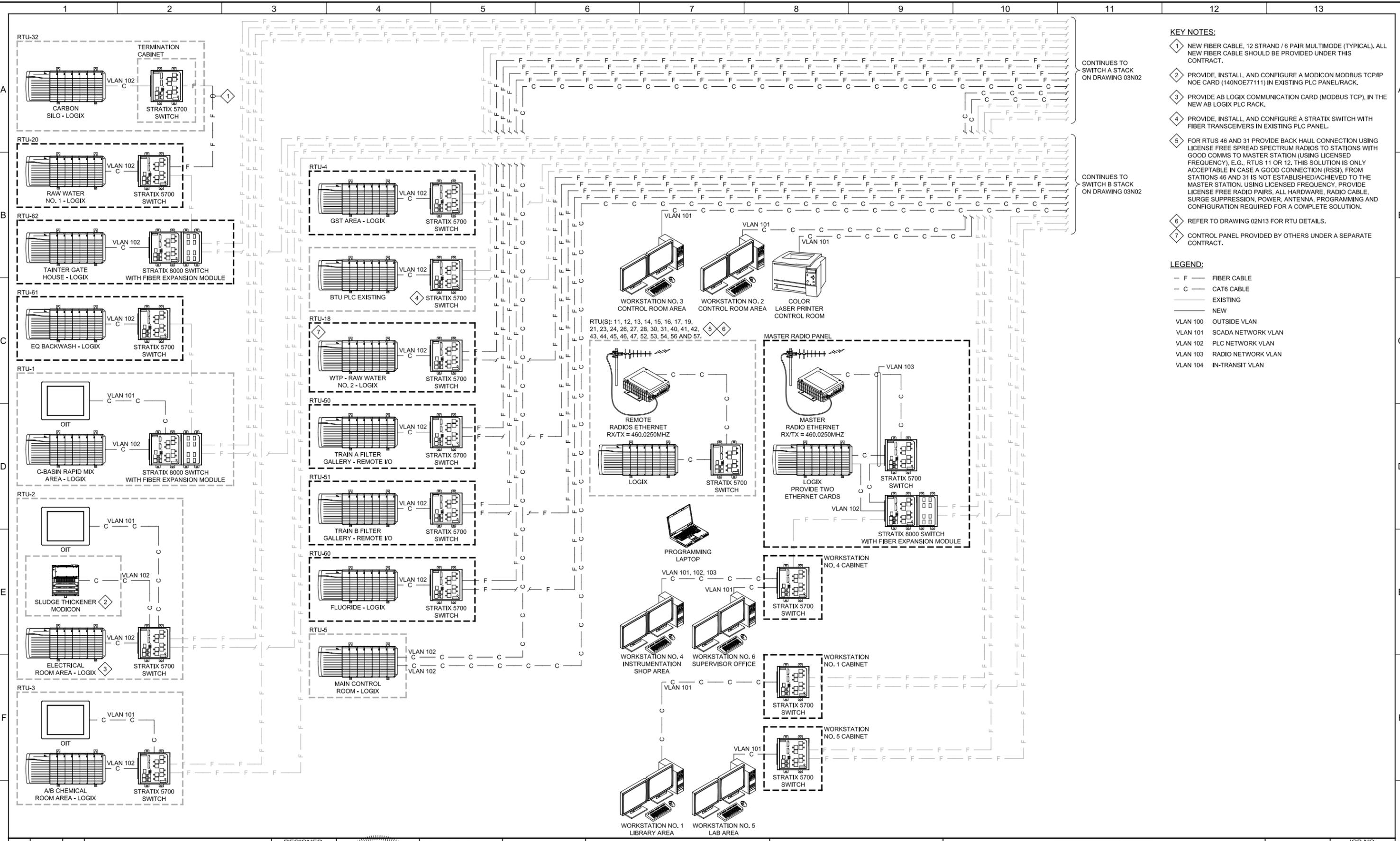


MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
RAW WATER 1 AND FLUORIDE
BACK PANEL ELEVATION

VERIFY SCALES
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0 1"
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JOB NO.
107161.10
DRAWING NO.
02N17
SHEET NO.
76 OF 84

Plot Date: 06-DEC-2018 11:51:10 AM
 User: svcPW
 Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1
 LAST SAVED BY: AWI/ward



- KEY NOTES:**
- NEW FIBER CABLE, 12 STRAND / 6 PAIR MULTIMODE (TYPICAL). ALL NEW FIBER CABLE SHOULD BE PROVIDED UNDER THIS CONTRACT.
 - PROVIDE, INSTALL, AND CONFIGURE A MODICON MODBUS TCP/IP NOE CARD (146NOE7111) IN EXISTING PLC PANEL/RACK.
 - PROVIDE AB LOGIX COMMUNICATION CARD (MODBUS TCP), IN THE NEW AB LOGIX PLC RACK.
 - PROVIDE, INSTALL, AND CONFIGURE A STRATIX SWITCH WITH FIBER TRANSCEIVERS IN EXISTING PLC PANEL.
 - FOR RTUS 46 AND 31 PROVIDE BACK HAUL CONNECTION USING LICENSE FREE SPREAD SPECTRUM RADIOS TO STATIONS WITH GOOD COMMS TO MASTER STATION (USING LICENSED FREQUENCY), E.G., RTUS 11 OR 12. THIS SOLUTION IS ONLY ACCEPTABLE IN CASE A GOOD CONNECTION (RSSI), FROM STATIONS 46 AND 31 IS NOT ESTABLISHED/ACHIEVED TO THE MASTER STATION. USING LICENSED FREQUENCY, PROVIDE LICENSE FREE RADIO PAIRS, ALL HARDWARE, RADIO CABLE, SURGE SUPPRESSION, POWER, ANTENNA, PROGRAMMING AND CONFIGURATION REQUIRED FOR A COMPLETE SOLUTION.
 - REFER TO DRAWING 02N13 FOR RTU DETAILS.
 - CONTROL PANEL PROVIDED BY OTHERS UNDER A SEPARATE CONTRACT.

- LEGEND:**
- F — FIBER CABLE
 - C — CAT6 CABLE
 - EXISTING
 - NEW
 - VLAN 100 OUTSIDE VLAN
 - VLAN 101 SCADA NETWORK VLAN
 - VLAN 102 PLC NETWORK VLAN
 - VLAN 103 RADIO NETWORK VLAN
 - VLAN 104 IN-TRANSIT VLAN

REV	DATE	BY	DESCRIPTION
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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
SCADA ARCHITECTURE - I

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JOB NO.
10716L10

DRAWING NO.
03N01

SHEET NO.
77 OF 84

Plot Date: 06-DEC-2018 11:49:55 AM

User: svcPW

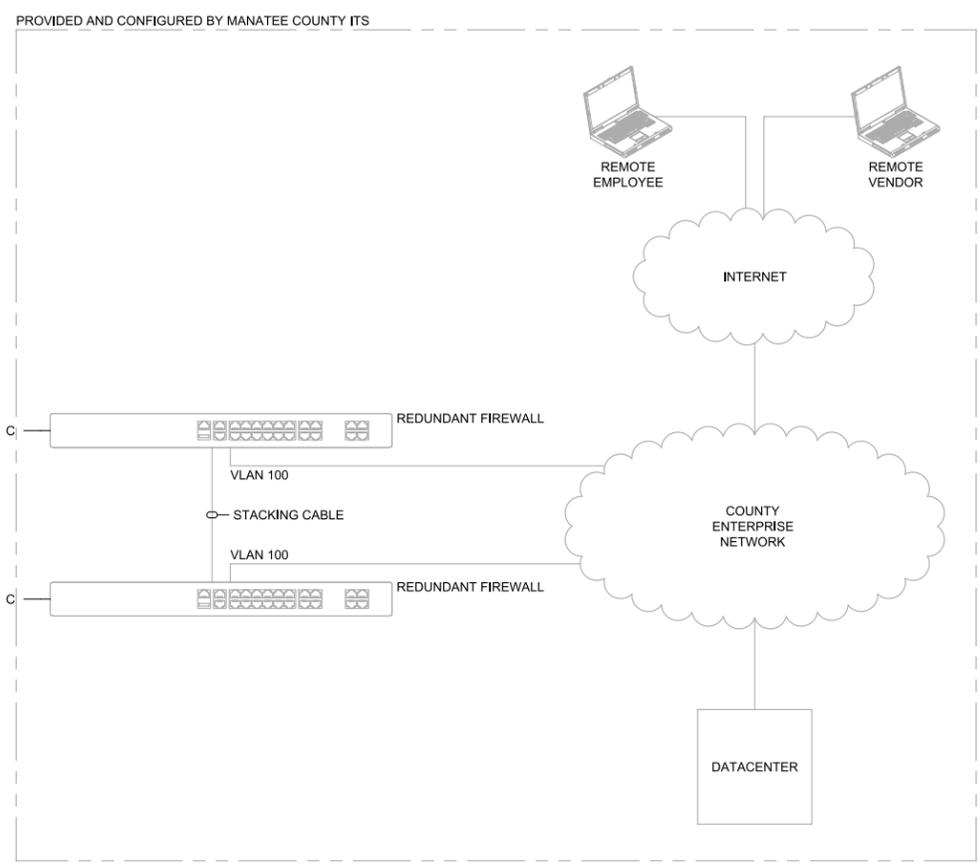
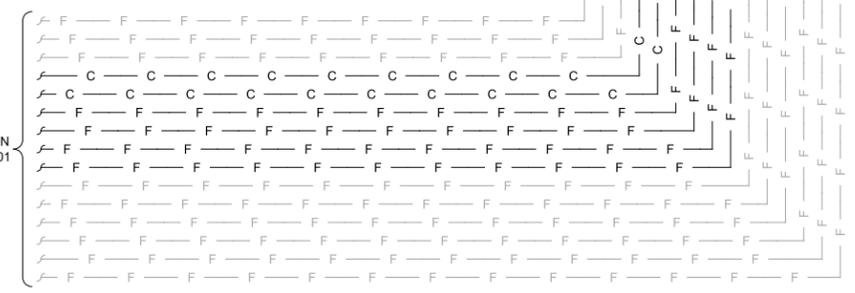
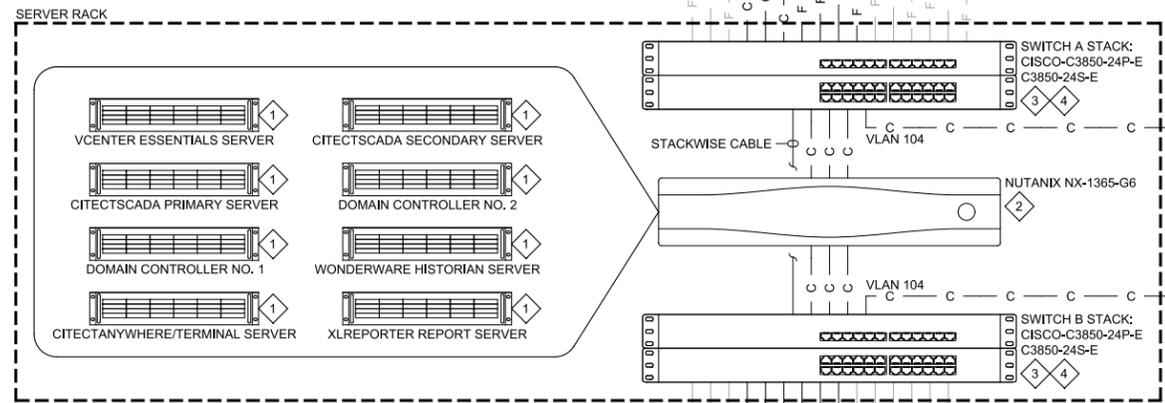
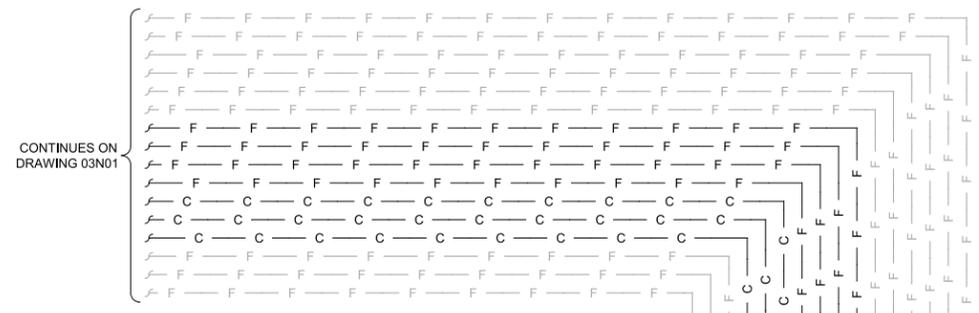
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DesignScript: Carollo_Sld_Pen_v0905.pen

ColorTable: gshade.ctb

Model: Layout1 ColorTable: gshade.ctb

- KEY NOTES:**
- 1 VIRTUALIZED SERVERS HOSTED ON NUTANIX SERVER.
 - 2 REFER TO TABLE ON LOWER RIGHT FOR SOFTWARE REQUIREMENTS. REFER TO SPECIFICATION 11730 FOR NUTANIX SOFTWARE REQUIREMENTS.
 - 3 PROVIDE 24 PORT COPPER PATCH PANEL, ONE EACH FOR SWITCH A AND SWITCH B.
 - 4 PROVIDE 96 PORT FIBER PATCH PANEL, TERMINATE ALL SCADA AND PLC NETWORK FIBER CABLES.
- LEGEND:**
- F - FIBER CABLE
 - C - CAT6 CABLE
 - - - - EXISTING
 - - - - NEW
 - VLAN 100 OUTSIDE VLAN
 - VLAN 101 SCADA NETWORK VLAN
 - VLAN 102 PLC NETWORK VLAN
 - VLAN 103 RADIO NETWORK VLAN
 - VLAN 104 IN-TRANSIT VLAN



NUTANIX NX-1365-G6	VIRTUALIZED SERVER	SOFTWARE	LICENSE	NUMBER OF LICENSES
VMWARE VSPHERE ESSENTIALS PLUS KIT ESXI	VCENTER ESSENTIALS SERVER	VCENTER ESSENTIALS SERVER RUNNING ON WINDOWS 2016 SERVER	WINDOWS 2016 STANDARD (MINIMUM FOR SPECIFIED 3 NODE NUTANIX HARDWARE) (1) ONE WINDOWS 2016 STANDARD (16 CORE) LICENSE, (17) SEVENTEEN WINDOWS 2016 STANDARD ADDITIONAL APOS (16 CORE) LICENSES, AND (3) THREE WINDOWS 2016 STANDARD ADDITIONAL APOS (4 CORE) LICENSES.	
	PRIMARY SCADA SERVER	CITECTSCADA 2016 SERVER RUNNING ON WINDOWS 2016 SERVER	5000 POINT SERVER, 10 CONTROL CLIENTS, WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	1 SERVER AND 10 CLIENTS
	DOMAIN CONTROLLER 1	WINDOWS 2016 SERVER	WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	
	CITECTANYWHERE SERVER	CITECTANYWHERE, WINDOWS 2016 SERVER	CITECTANYWHERE SERVER (5 USER PACK), WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	5 CITECTANYWHERE USER PACKS
	SECONDARY SCADA SERVER	CITECTSCADA 2016 SERVER RUNNING ON WINDOWS 2016 SERVER	5000 POINT REDUNDANT SERVER, 10 REDUNDANT CONTROL CLIENTS, WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	1 SERVER AND 10 CLIENTS
	DOMAIN CONTROLLER 2	WINDOWS 2016 SERVER	WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	
	HISTORIAN SERVER	WONDERWARE HISTORIAN 2017, WINDOWS 2016 SERVER	WONDERWARE HISTORIAN 2017, 5000 POINTS, 10 CLIENTS, WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	5000 POINTS AND 10 CLIENTS
	REPORT SERVER	XLREPORTER, WINDOWS 2016 SERVER	SYTECH XLREPORTER TEAM EDITION, 10 CLIENTS, WINDOWS 2016 (STANDARD, 10 CALS MINIMUM)	10 CLIENTS

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
SCADA ARCHITECTURE - II

VERIFY SCALES
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JOB NO.
10716L10

DRAWING NO.
03N02

SHEET NO.
78 OF 84

Plot Date: 06-DEC-2018 11:50:16 AM

User: svcPW

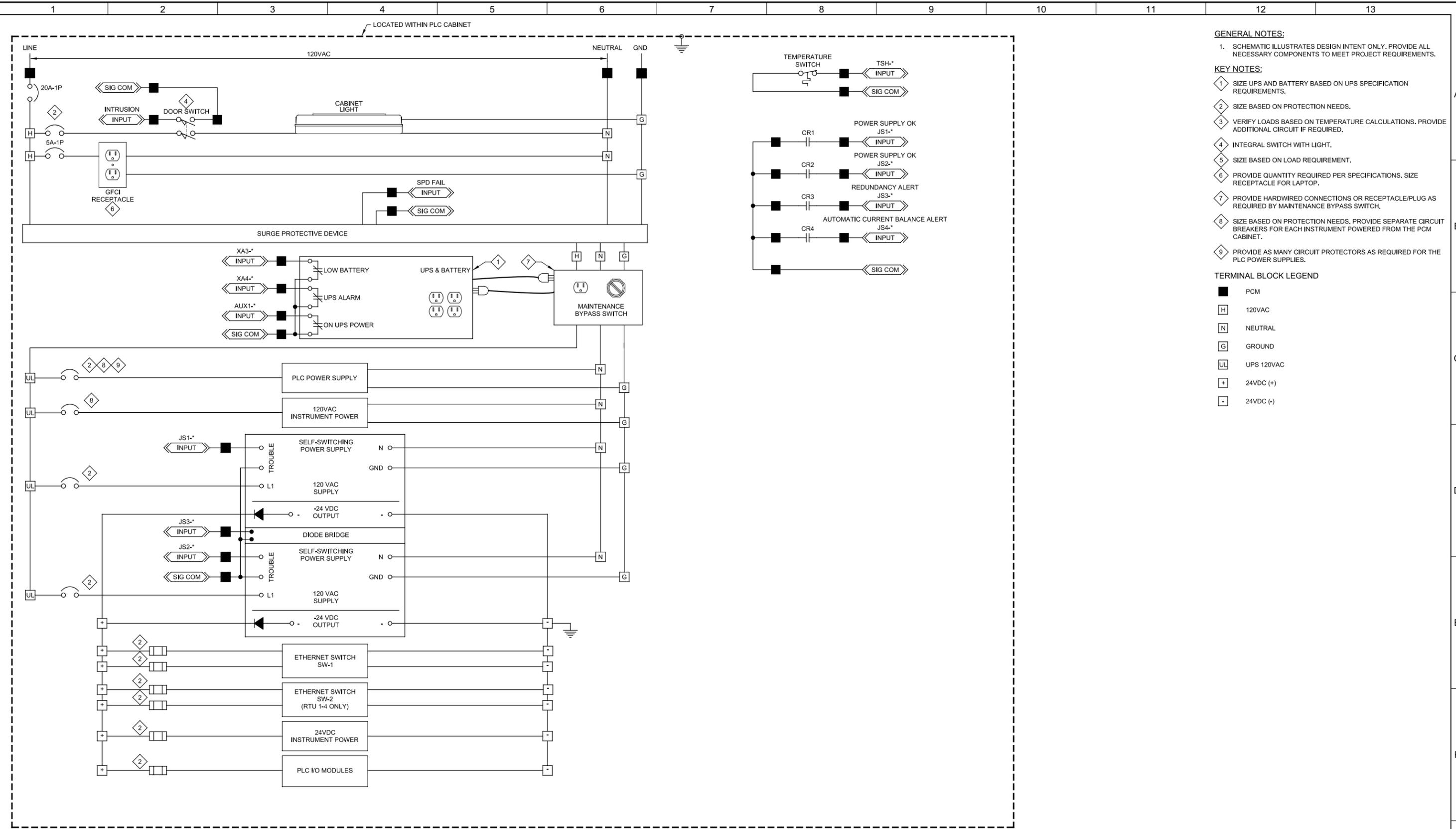
Model: Layout1

ColorTable: gshade.ctb

DesignScript: Carollo_Sld_Pen_v0905.pen

PlotScale: 1:1

LAST SAVED BY: AWillard



- 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.
 - 9 PROVIDE AS MANY CIRCUIT PROTECTORS AS REQUIRED FOR THE PLC POWER SUPPLIES.
- TERMINAL BLOCK LEGEND**
- PCM
 - [H] 120VAC
 - [N] NEUTRAL
 - [G] GROUND
 - [UL] UPS 120VAC
 - [+] 24VDC (+)
 - [-] 24VDC (-)

1 CABINET POWER DISTRIBUTION PANEL
 02N01, 02N02, 02N03, 02N04, 02N05

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED: JHJ
 DRAWN: ANW
 CHECKED: NEA
 DATE: DECEMBER 2018

JOSEPH J. HANON
 LICENSE NO. 52848
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER

Digitally signed by Joseph J. Hanon
 Contact info: Carollo Engineers Inc.
 Date: 2018.12.18 14:59:46 -0500

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MANATEE COUNTY
 LAKE MANATEE WTP SCADA UPGRADE
 INSTRUMENTATION
 RTU NO. 1-5 CONTROL SCHEMATIC

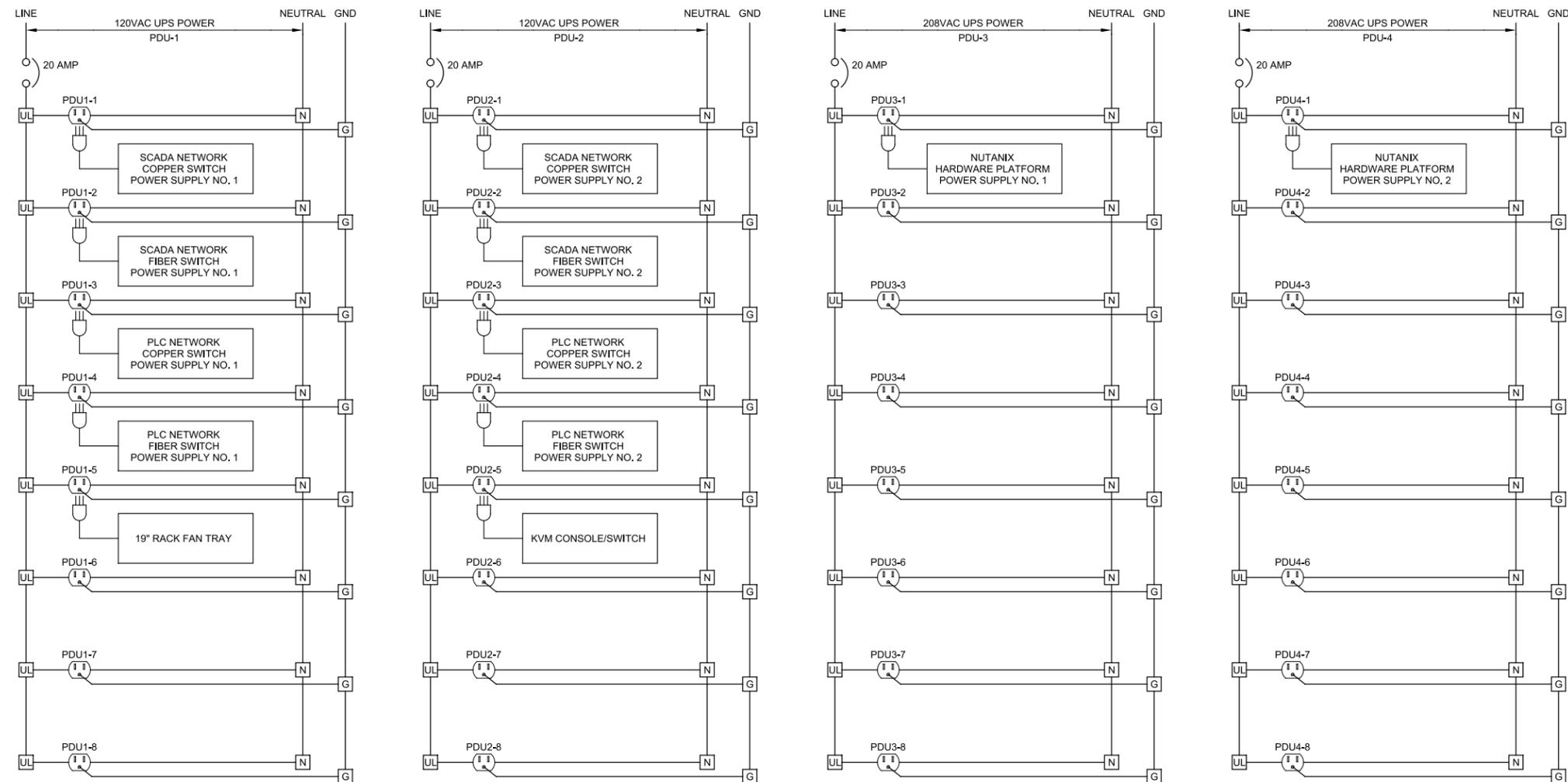
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10716L10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. 06N01
	SHEET NO. 79 OF 84

Pldt Date: 06-DEC-2018 11:49:41 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PldtScale: 1:1

LAST SAVED BY: AWillard



TERMINAL BLOCK LEGEND

- N NEUTRAL
- G GROUND
- UL UPS 120/208VAC

2 PDU-1 AND PDU-2 POWER
02N08

REV	DATE	BY	DESCRIPTION
1			
2			

DESIGNED
AMA

DRAWN
ANW

CHECKED
NEA

DATE
DECEMBER 2018

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
SERVER RACK CONTROL SCHEMATIC

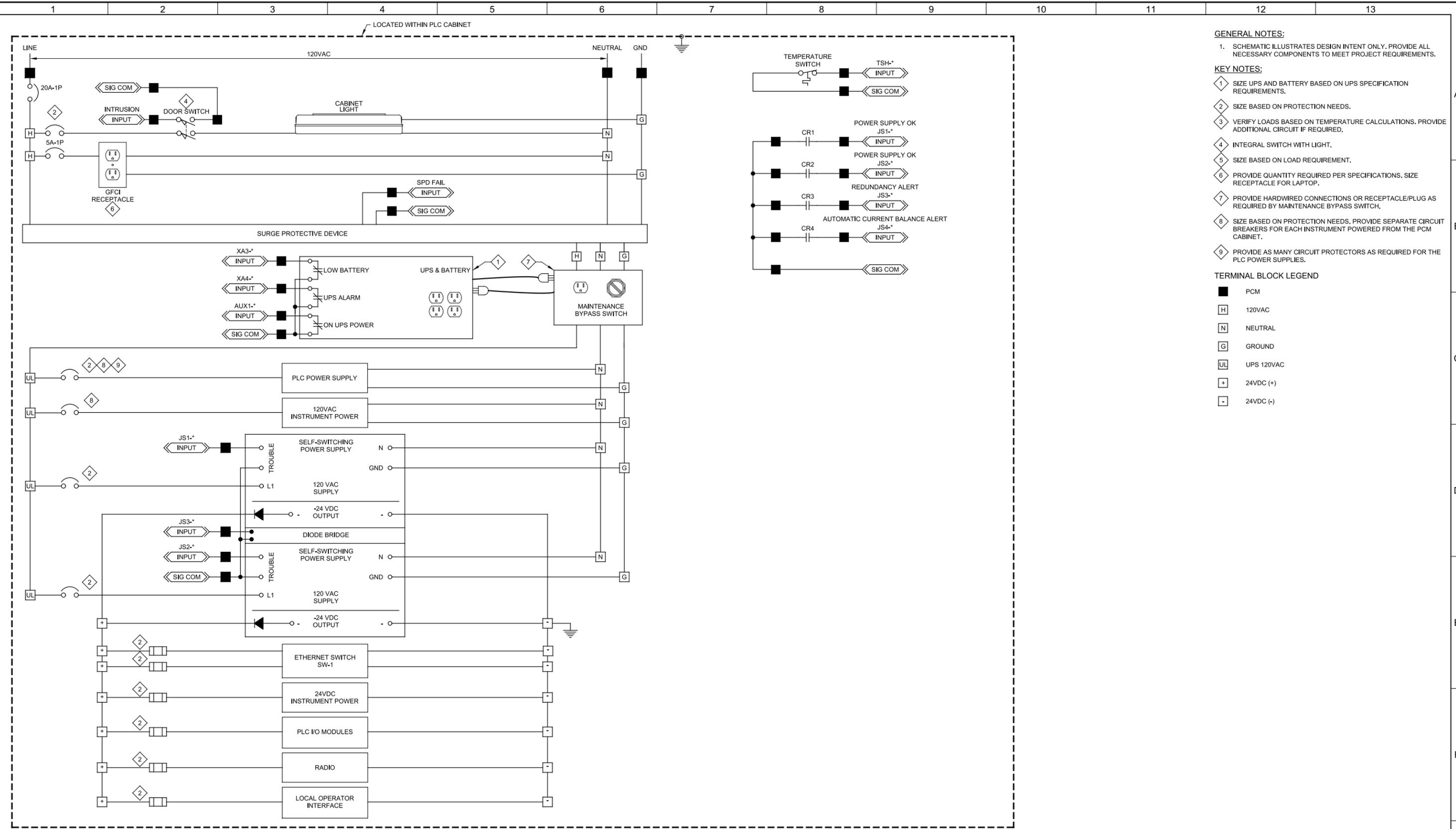
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10716L10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. 06N02
	SHEET NO. 80 OF 84

Plot Date: 06-DEC-2018 11:47:49 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

LAST SAVED BY: AWillard



- 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.
 - 9 PROVIDE AS MANY CIRCUIT PROTECTORS AS REQUIRED FOR THE PLC POWER SUPPLIES.
- TERMINAL BLOCK LEGEND**
- PCM
 - [H] 120VAC
 - [N] NEUTRAL
 - [G] GROUND
 - [UL] UPS 120VAC
 - [+] 24VDC (+)
 - [-] 24VDC (-)

3 CABINET POWER DISTRIBUTION PANEL
02N11

REV	DATE	BY	DESCRIPTION

DESIGNED JHJ
DRAWN ANW
CHECKED NEA
DATE DECEMBER 2018

JOSEPH J. HANON
LICENSE
No. 52848
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Digitally signed by Joseph J. Hanon
Contact info: Carollo Engineers Inc.
Date: 2018.12.08 14:52:06 -0500

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
TYPICAL BOOSTER STATION RTU CONTROL SCHEMATIC

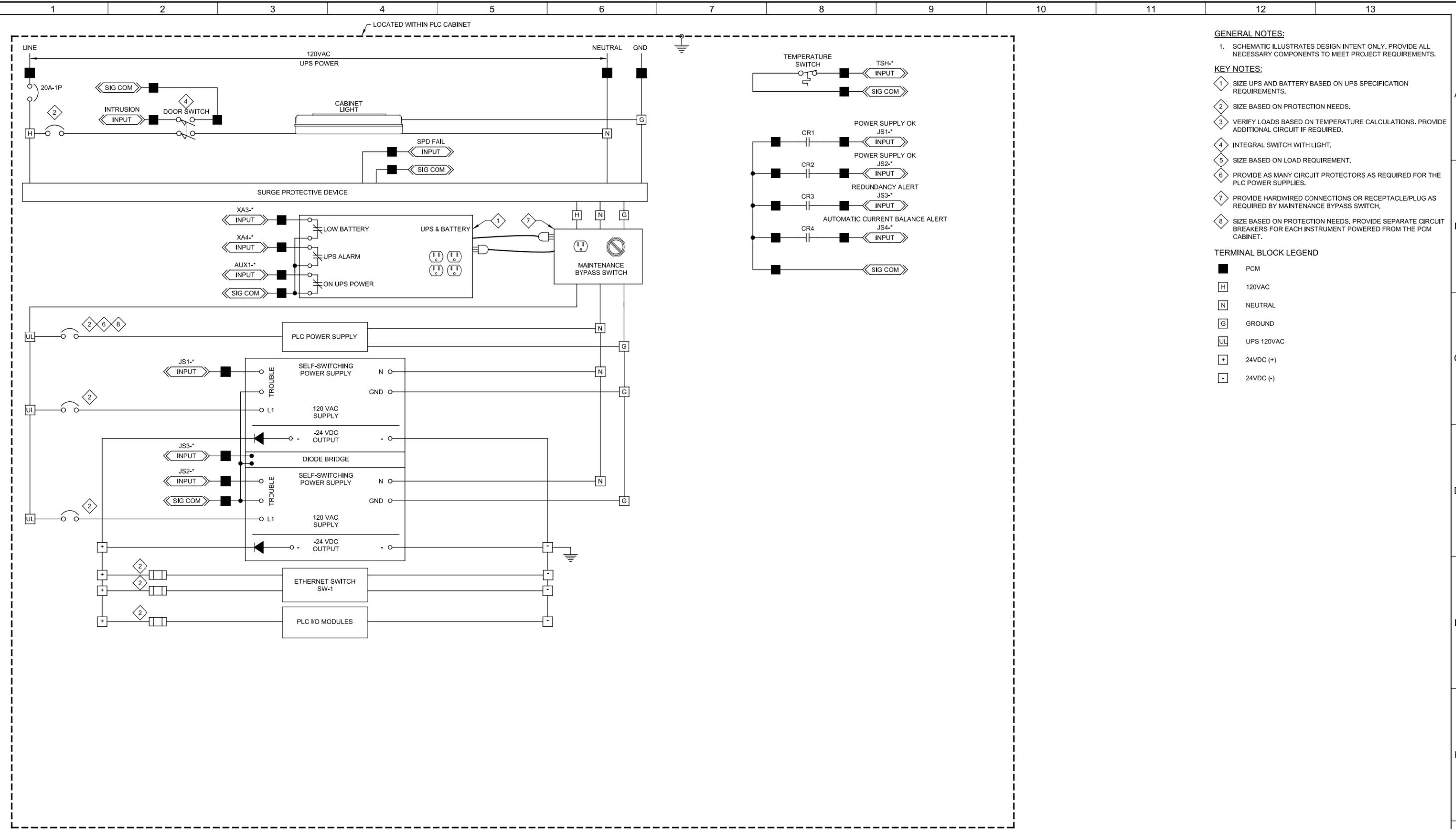
VERIFY SCALES	JOB NO. 10716L10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. 06N03
0 1"	SHEET NO. 81 OF 84
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	

Plot Date: 06-DEC-2018 11:49:11 AM

User: svcPW

Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

LAST SAVED BY: AWillard



- 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 AS MANY CIRCUIT PROTECTORS AS REQUIRED FOR THE PLC POWER SUPPLIES.
 - 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 (-)

4 CABINET POWER DISTRIBUTION PANEL
02N12

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED JHJ
DRAWN ANW
CHECKED NEA
DATE DECEMBER 2018

JOSEPH J. HANLON
LICENSE
No. 52848
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Digitally signed by Joseph J. Hanlon
Contact info: Carollo Engineers Inc.
Date: 2018.12.08 14:56:05-0500

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
TANTER GATES CONTROL PANEL
CONTROL SCHEMATIC

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10716L10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. 06N04
	SHEET NO. 82 OF 84

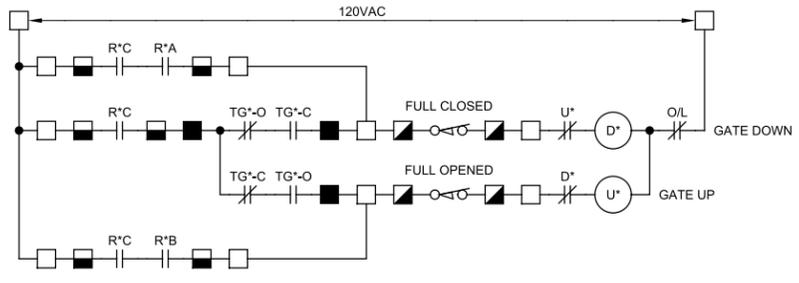
Plot Date: 06-DEC-2018 11:45:48 AM

User: svcPW

Model: Layout1

ColorTable: gshade.ctb DesignScript: Carollo_Sld_Pen_v0905.pen PlotScale: 1:1

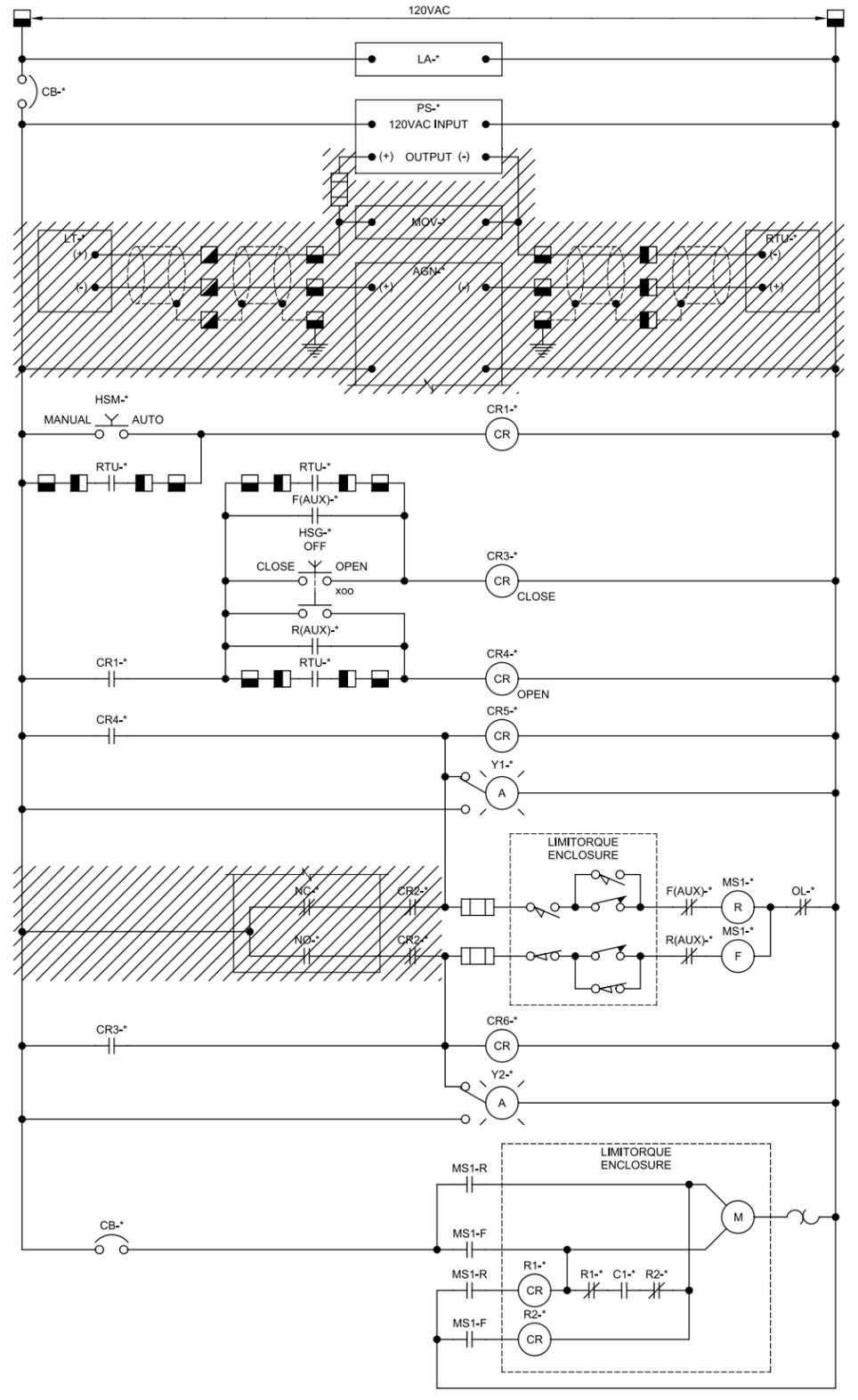
LAST SAVED BY: AWillard



GENERAL NOTES:

1. SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.
2. R*A, B, C LOCATED IN RELAY PANEL ON OPPOSITE WALL OF NEW PLC/RTU.
3. TG*-O AND TG*-C LOCATED IN NEW PLC/RTU PANEL IN GATE CONTROL/MCC BUILDING.
4. * = GATE 1, 2, AND 3 RESPECTIVELY.
5. R*1, R*2, AND R*3 ARE EXISTING RELAYS.

5 TAITNER GATES



GENERAL NOTES:

1. REMOVE EXISTING AGM AND ASSOCIATED WIRING.
2. RTU CONTACTS SHOWN BELOW FOR OPEN AND CLOSE WILL BE FROM THE NEW RTU INSTALLED IN AN ADJACENT ENCLOSURE.

6 ELEVATED TANK VALVE CONTROL

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED: JH
 DRAWN: ANW
 CHECKED: NEA
 DATE: DECEMBER 2018

JOSEPH J. HANLON
 LICENSE No. 52848
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER

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MANATEE COUNTY
 LAKE MANATEE WTP SCADA UPGRADE
 INSTRUMENTATION
 CONTROL SCHEMATICS

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

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 10716L10
 DRAWING NO. 06N05
 SHEET NO. 83 OF 84

Plot Date: 06-DEC-2018 11:49:26 AM

User: svcPW

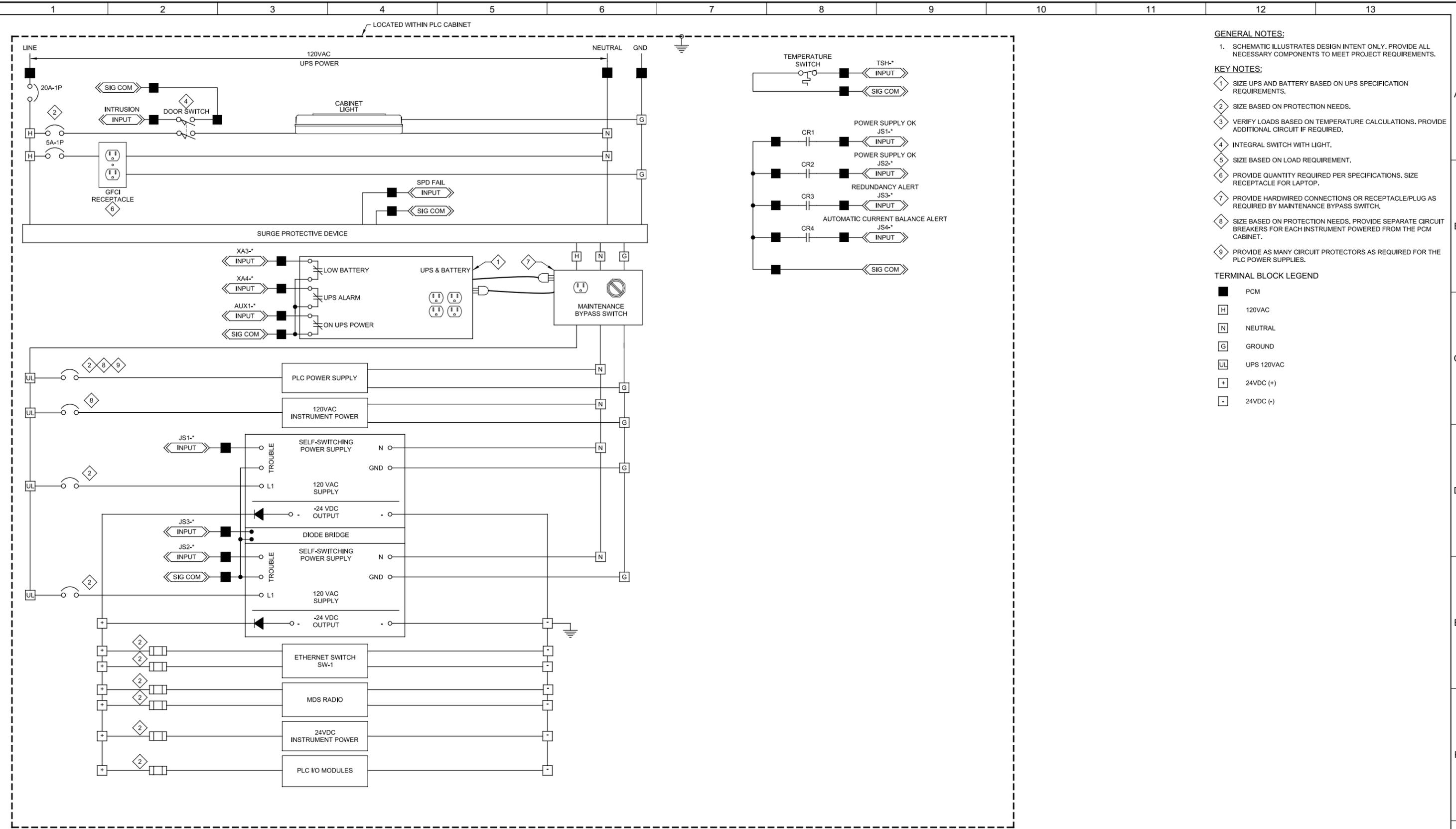
Model: Layout1

ColorTable: gshade.ctb

DesignScript: Carollo_Sld_Pen_v0905.pen

PlotScale: 1:1

LAST SAVED BY: AWillard



- GENERAL NOTES:**
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 - 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.
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 - 9 PROVIDE AS MANY CIRCUIT PROTECTORS AS REQUIRED FOR THE PLC POWER SUPPLIES.
- TERMINAL BLOCK LEGEND**
- PCM
 - [H] 120VAC
 - [N] NEUTRAL
 - [G] GROUND
 - [UL] UPS 120VAC
 - [+] 24VDC (+)
 - [-] 24VDC (-)

7 CABINET POWER DISTRIBUTION PANEL
02N06

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED: JHJ
DRAWN: ANW
CHECKED: NEA
DATE: DECEMBER 2018

JOSEPH J. HANON
LICENSE
No. 52848
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Digitally signed by Joseph J. Hanon
Contact info: Carollo Engineers Inc.
Date: 2018.12.18 14:54:40-0500

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MANATEE COUNTY
LAKE MANATEE WTP SCADA UPGRADE
INSTRUMENTATION
TYPICAL RTU CONTROL SCHEMATIC

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 10716L10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. 06N06
	SHEET NO. 84 OF 84