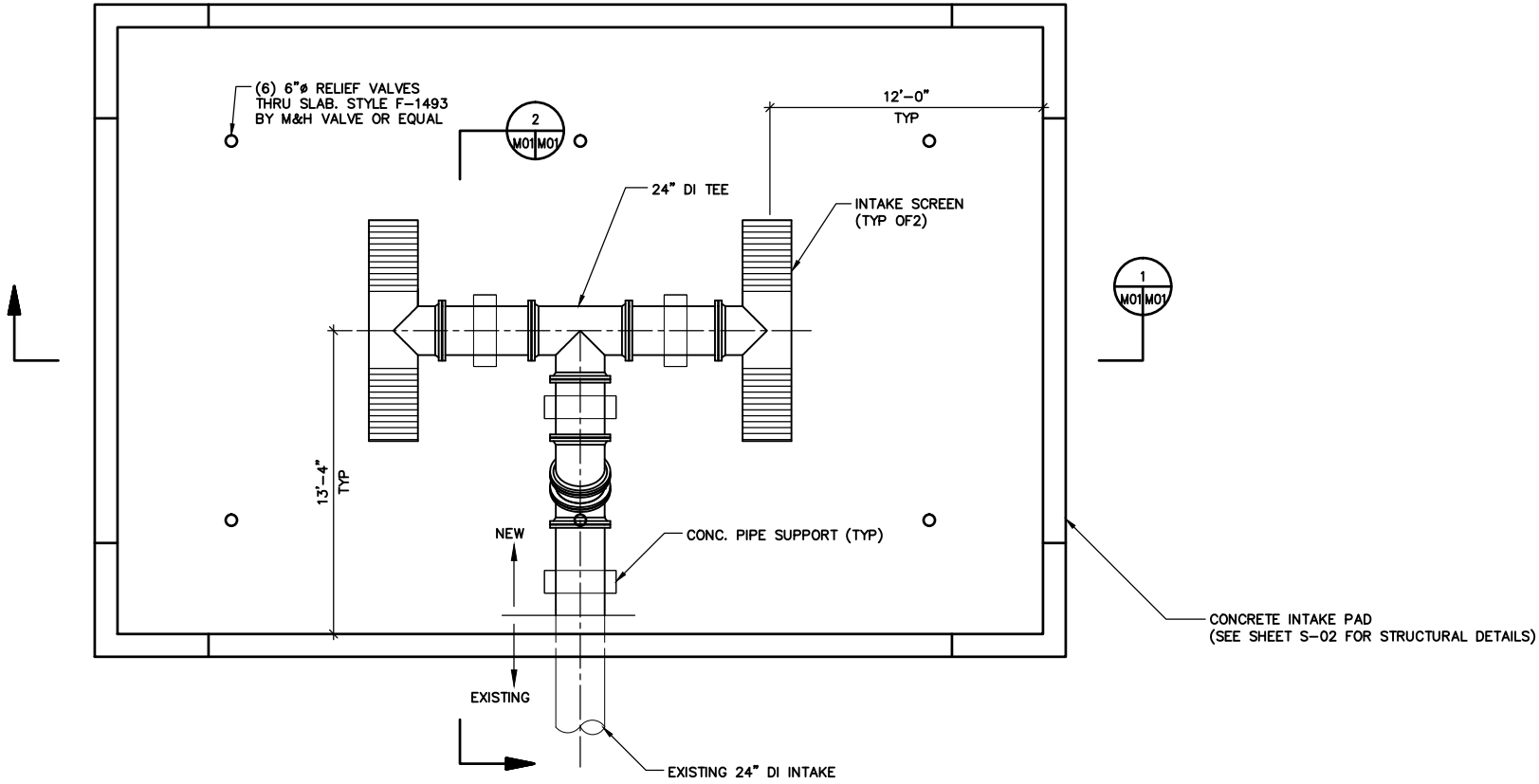
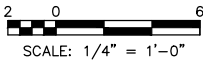
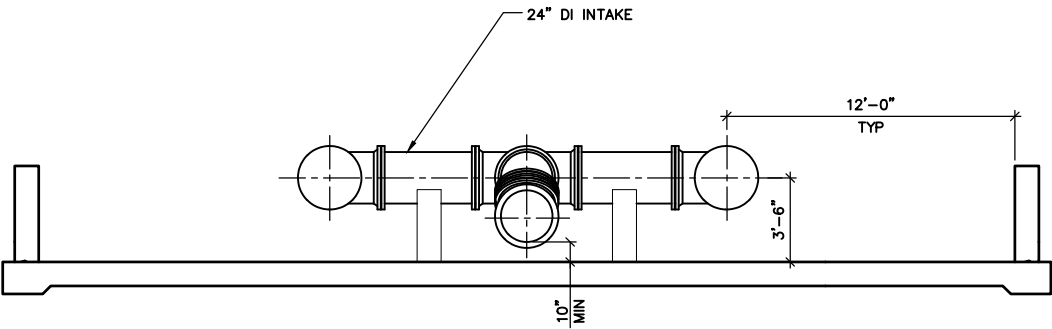


XREFS: \\Xref\0132_34422TB.dwg - \Struct\0132008_S02.dwg IMAGES: None
User: dfreeman Spec: PIRNIE STANDARD File: \ACAD\PROJ\0132 - MANATEE\008\Mech\0132008_M01.DWG Scale: 1:1 Date: 04/17/2012 Time: 11:49 Layout: 0132008_M01

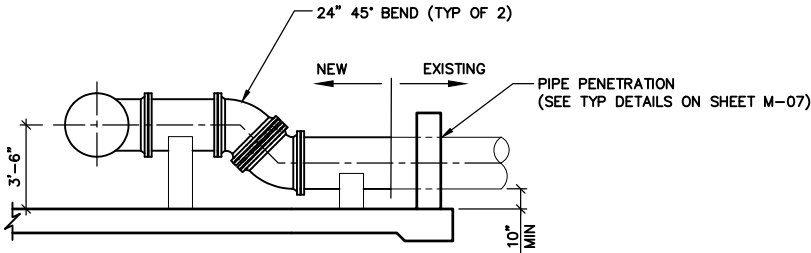
LAKE NAME	EX. PIPE INV. EL.	NORTH ARROW
SOUTH LAKE NO. 1	30.00	
SOUTH LAKE NO. 2	14.50	
EAST LAKE	24.00	



INTAKE STRUCTURE
SCALE: 1/4"=1'-0"



SECTION 
SCALE: 1/4"=1'-0"



SECTION 
SCALE: 1/4"=1'-0"

REVISIONS			
NO.	BY	DATE	REMARKS

DES	MC
DWN	MC
CKD	JP



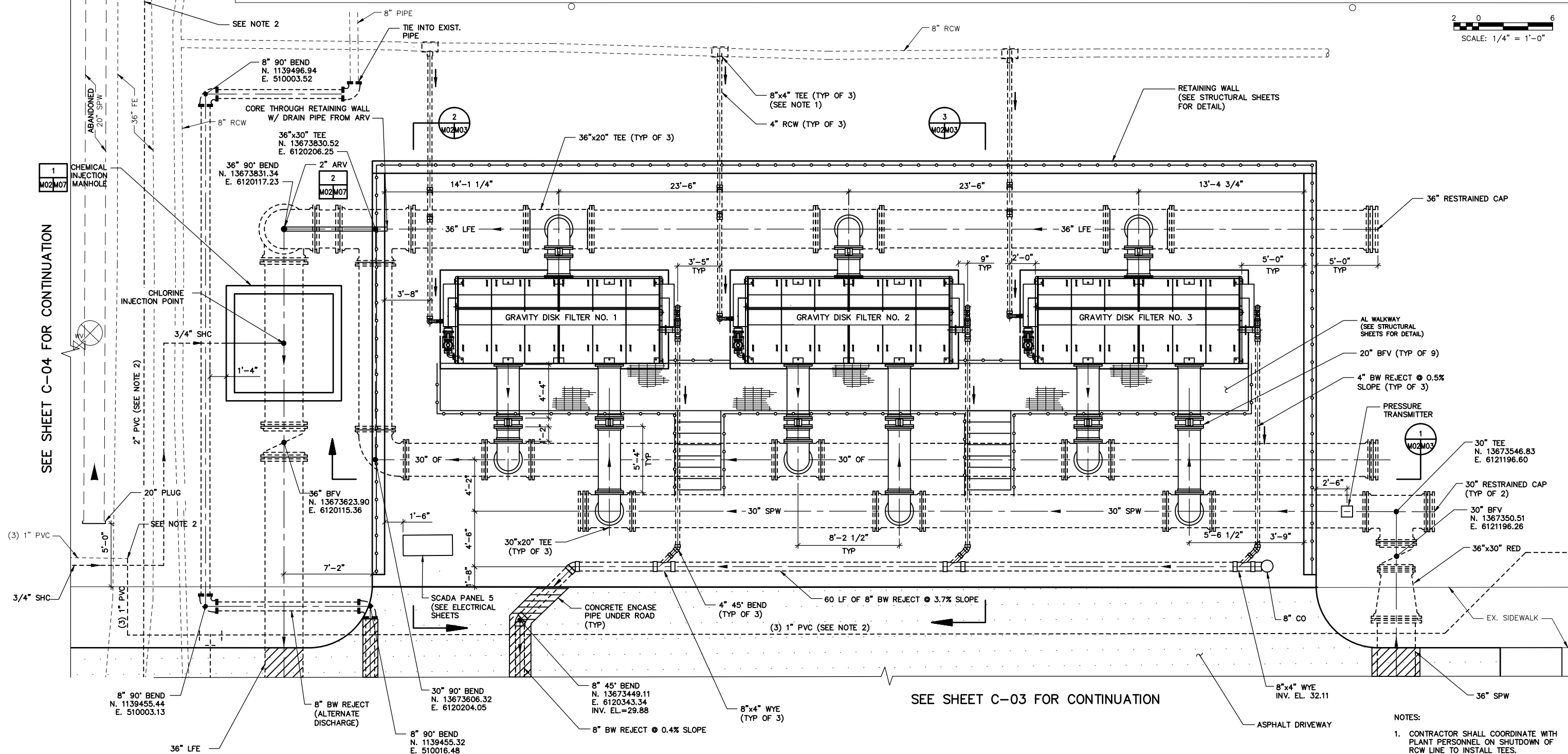
**MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM**

**LAKE INTAKE STRUCTURES
PLANS AND SECTIONS**

AUTOMATIC
BACKWASH FILTERS
NO. 1 & NO. 2



2 0 6
SCALE: 1/4" = 1'-0"



NOTES:

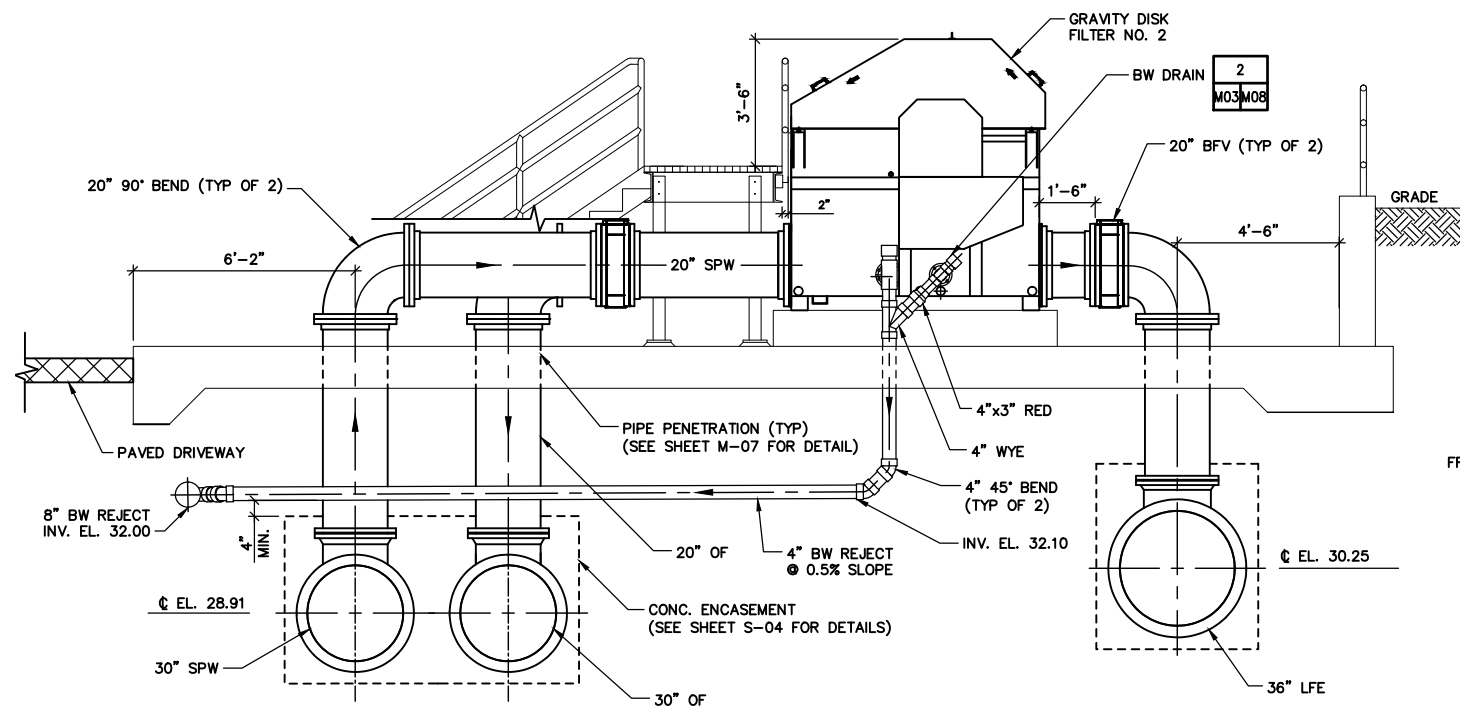
1. CONTRACTOR SHALL COORDINATE WITH PLANT PERSONNEL ON SHUTDOWN OF RCW LINE TO INSTALL TEES.
2. CONTRACTOR SHALL REROUTE EXISTING LINES TO AVOID ANY CONFLICTS WITH PROPOSED WORK. MATERIALS USED SHALL MATCH EXISTING.

REVISIONS				DES	AC
NO.	BY	DATE	REMARKS		
				DWN	MC
				CKD	JP

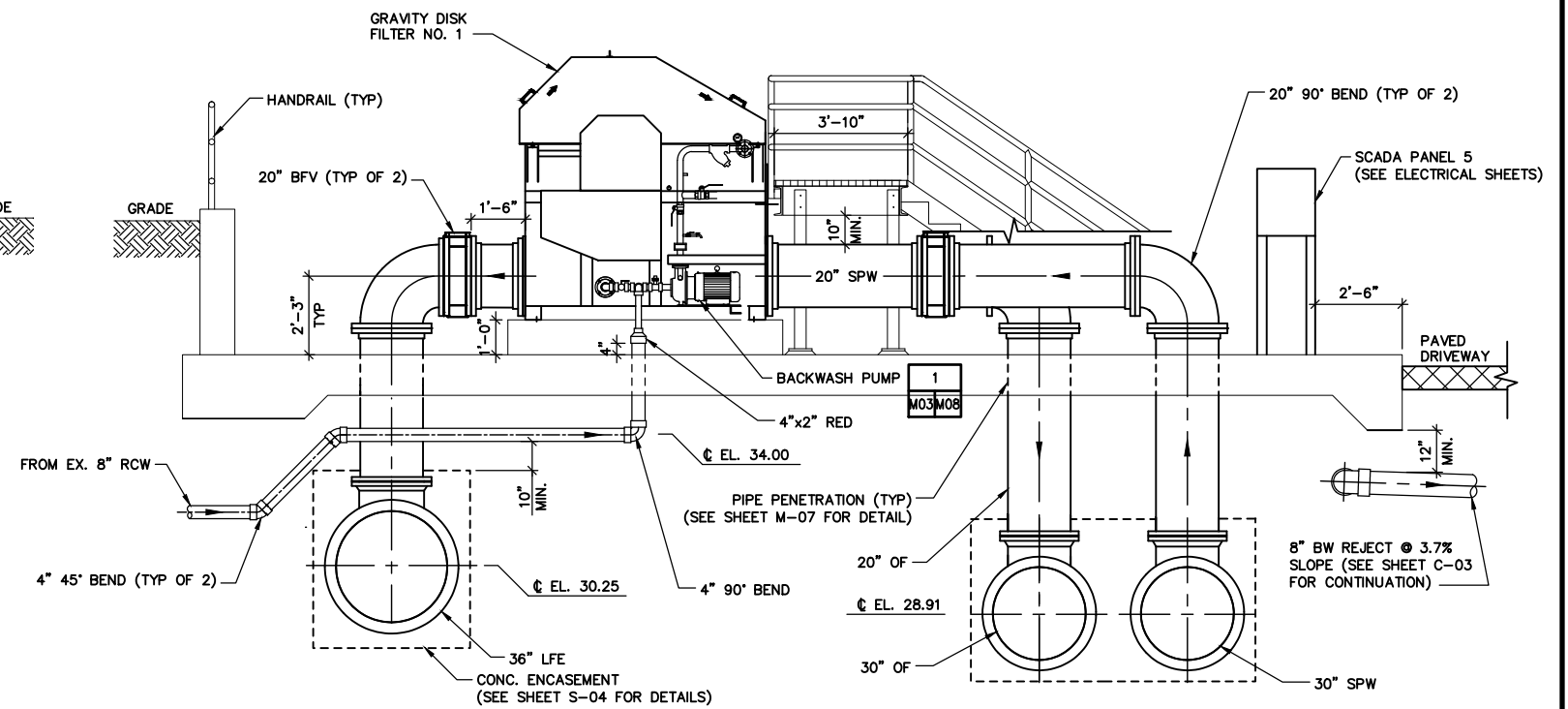


**MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM**

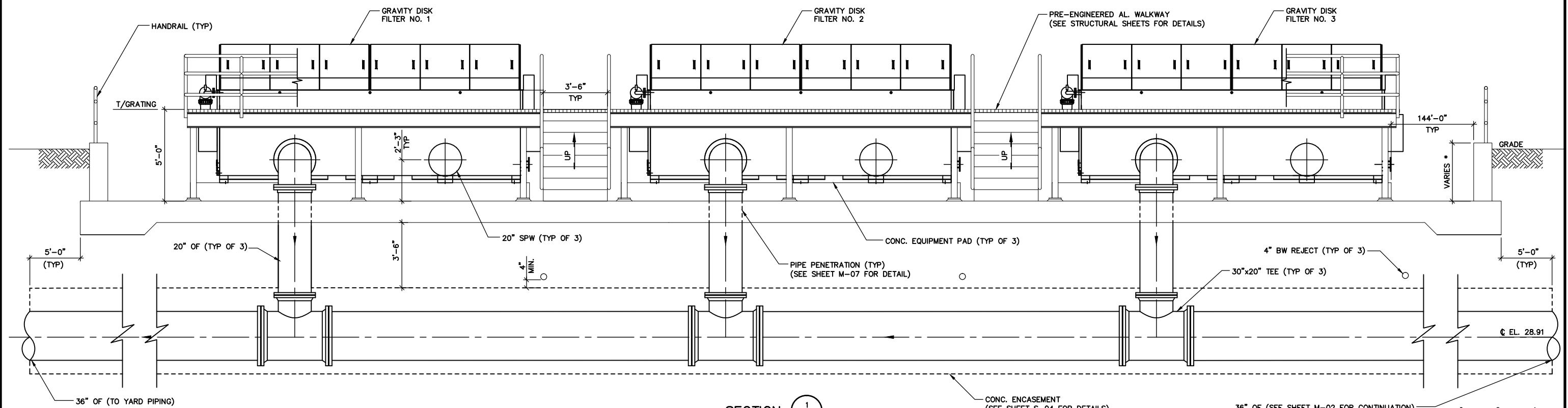
LAKE GRAVITY DISK FILTERS PLAN



SECTION  3
SCALE: 3/8"=1'-0"



SECTION  2
SCALE: 3/8"=1'-0"



SECTION 
SCALE: 3/8"=1'-0"



BID DOCUMENTS

[illegible]

DES	AC
DWN	MC
CKD	JP

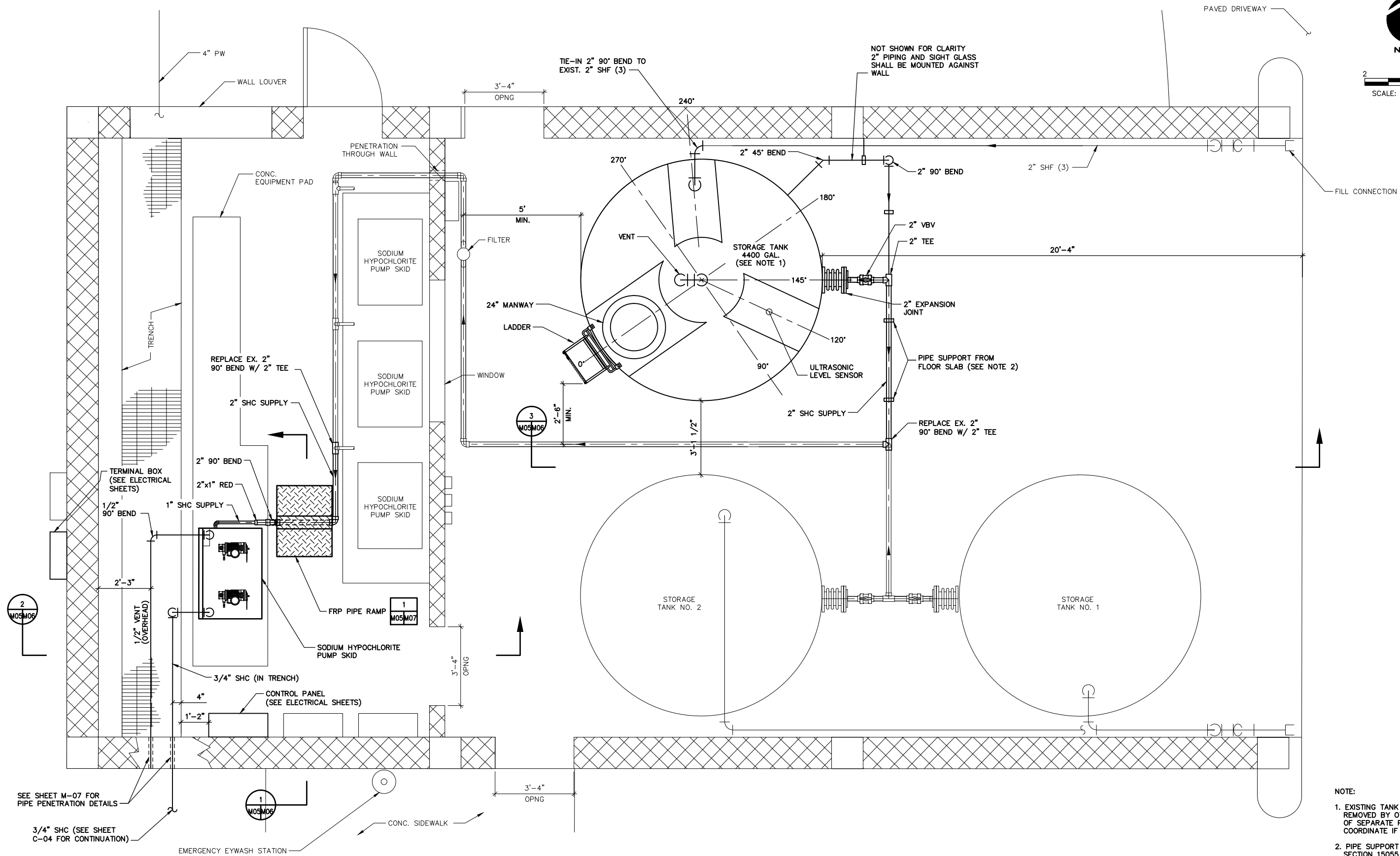
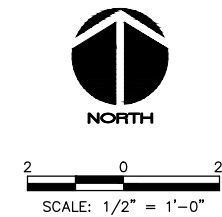


**MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM**

LAKE GRAVITY DISK FILTERS

COPYRIGHT © 2011
 MALCOLM PIRNIE, INC.
 THE WATER DIVISION OF ARCADIS
 JULY 2012
 SHEET **M-03**
 CAD REF. NO. **0132008_M03**





BID DOCUMENTS

CERTIFICATE OF AUTHORIZATION NO. 67
14025 RIVEREDGE DR. SUITE 600
TAMPA, FLORIDA 33637

REVISIONS				DES	AC
NO.	BY	DATE	REMARKS		
				DWN	MC
				CXD	JP

CARLTON SERRETTE
P.E. #63640



**MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM**

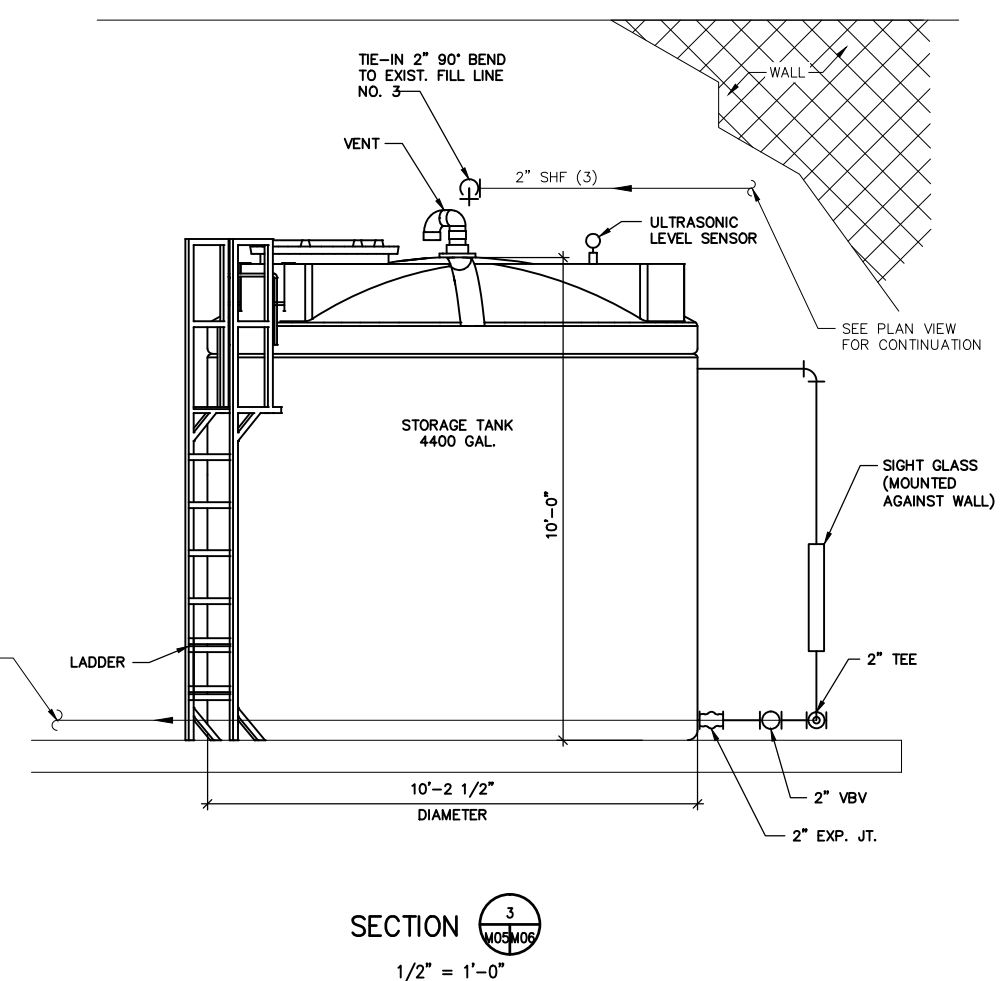
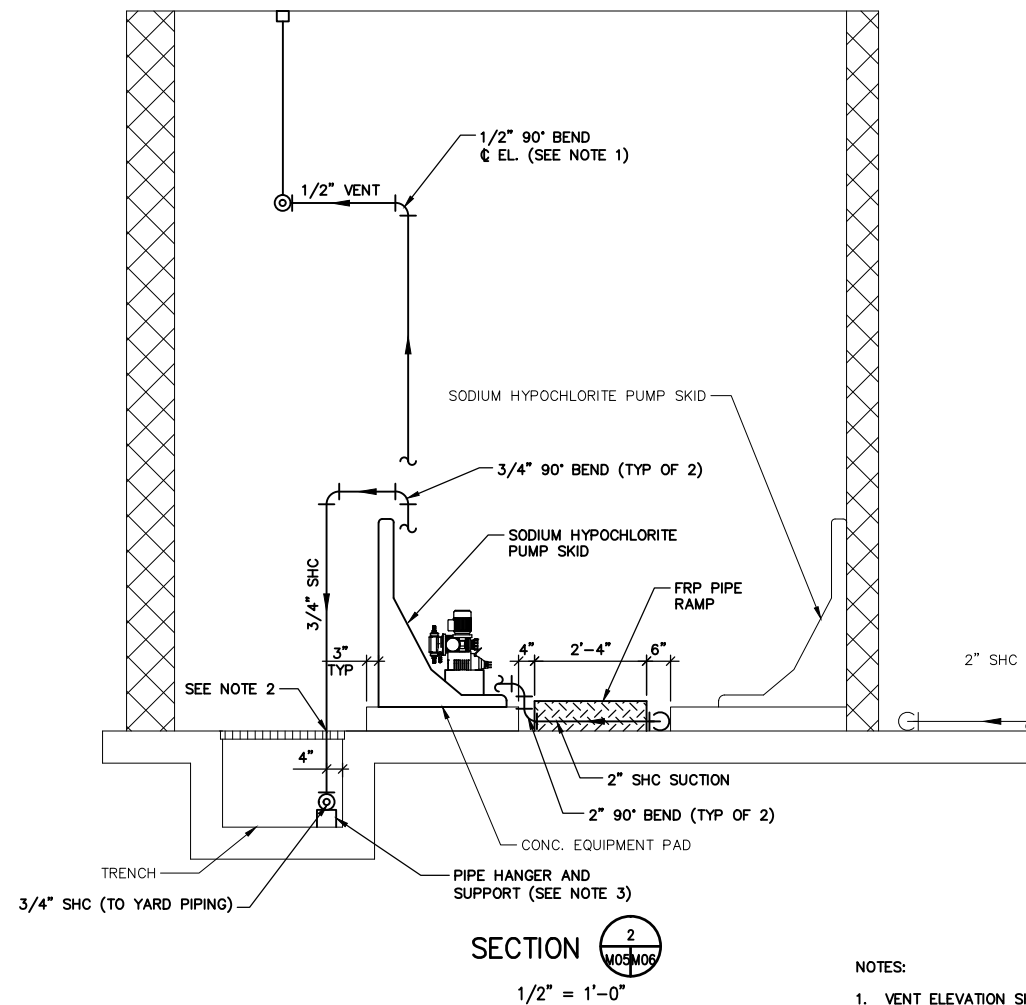
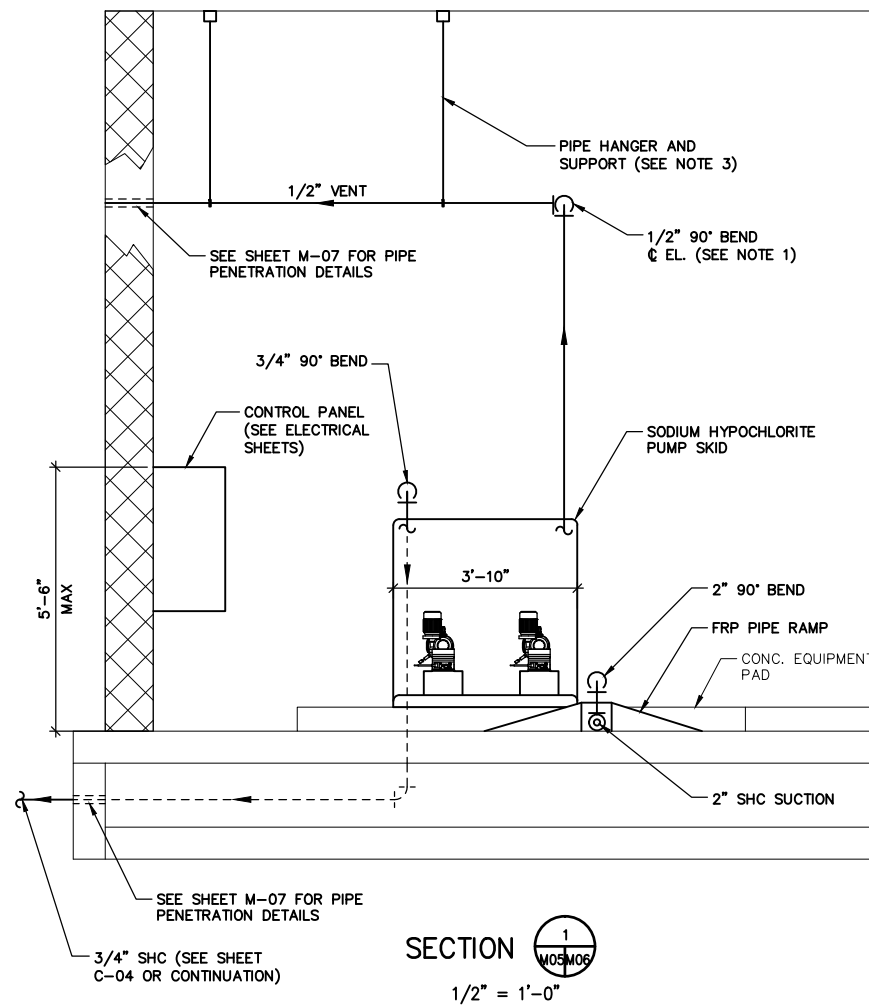
SODIUM HYPOCHLORITE SYSTEM PLAN

CAD REF. NO. 0132008_M05

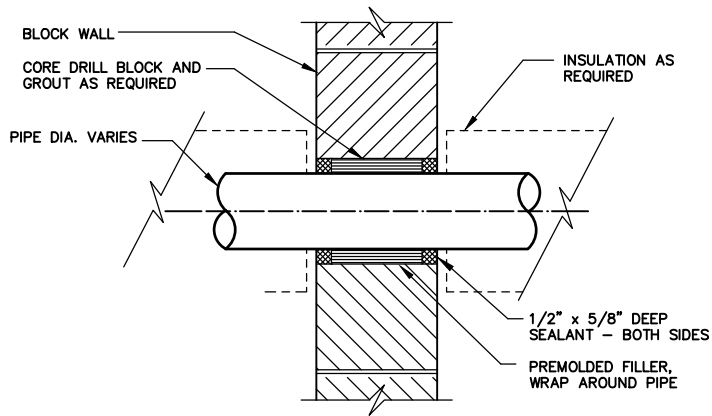
COPYRIGHT © 2011
MALCOLM PIRNIE, INC.
THE WATER DIVISION OF ARCADIS

DATE JULY 2012

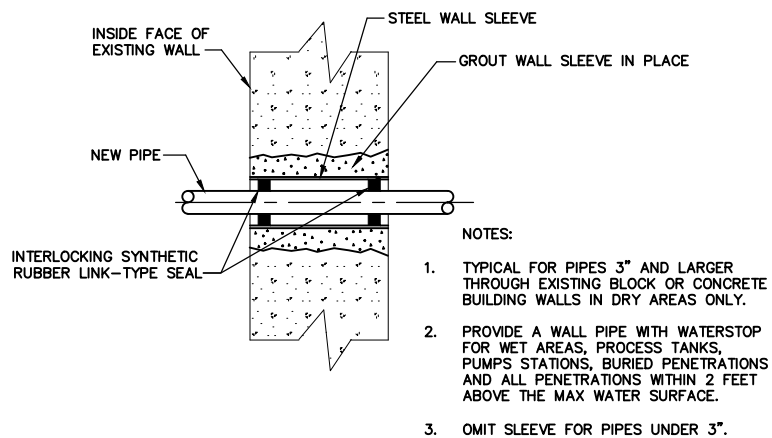
SHEET **M-05**



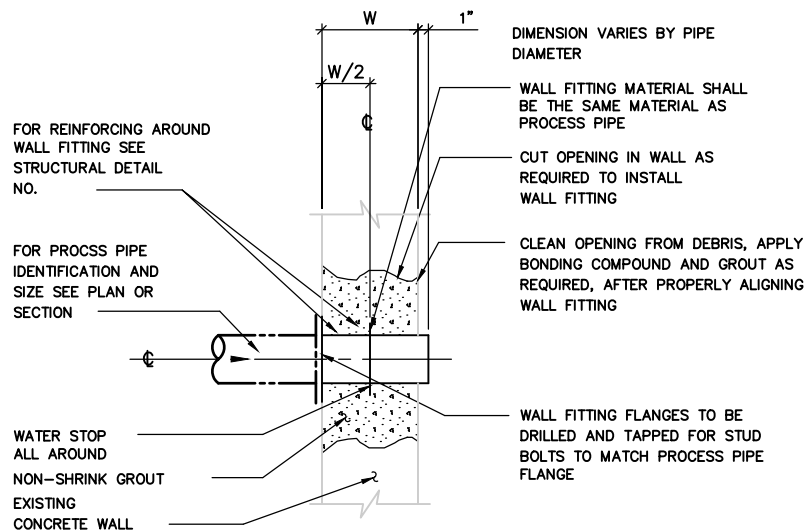
- NOTES:
1. VENT ELEVATION SHALL BE AS RECOMMENDED BY SKID MANUFACTURER'S REQUIREMENTS.
 2. CONTRACTOR SHALL CUT HOLE IN EXISTING GRATING TO ALLOW PROPOSED 2" PIPING TO FREELY PASS THROUGH.
 3. PIPE HANGER AND SUPPORT SHALL BE PER SECTION 15055.



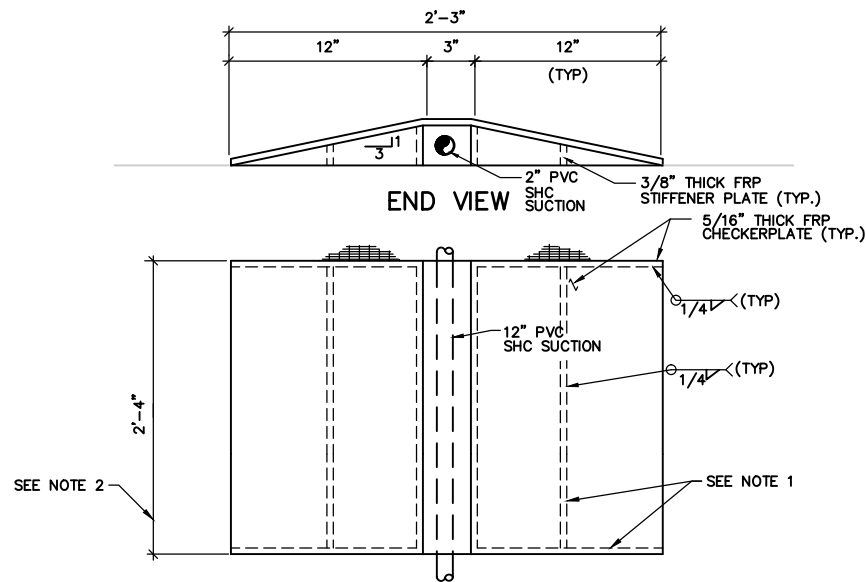
TYPICAL INSTALLATION OF PIPE
THRU BLOCK WALL
NOT TO SCALE



TYPICAL WALL SLEEVE PENETRATION
THROUGH EXISTING CONCRETE WALL DETAIL
NOT TO SCALE



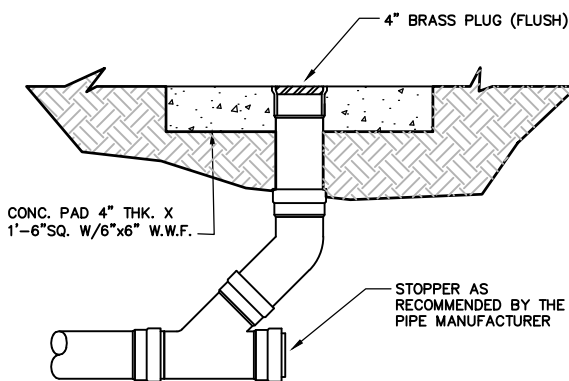
TYPICAL FLG-PE PENETRATION
THROUGH EXISTING WALL DETAIL
NOT TO SCALE



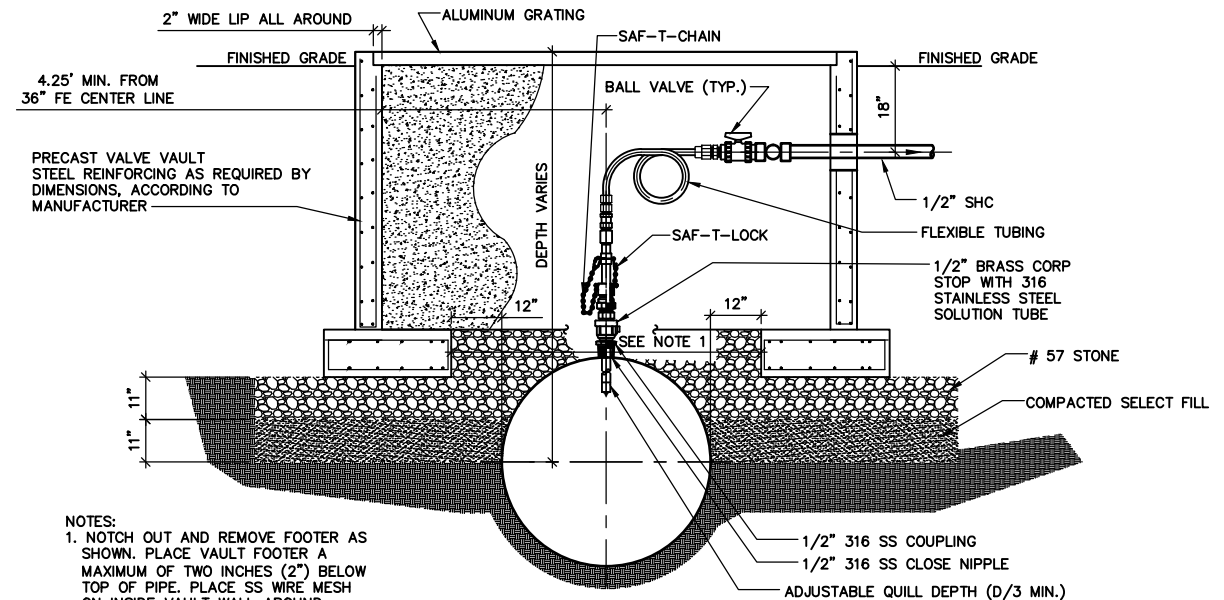
FRP PIPE RAMP DETAIL
NOT TO SCALE

- NOTES:
1. FABRICATE PIPE RAMP OF 5/16\"/>

3
M05/M07

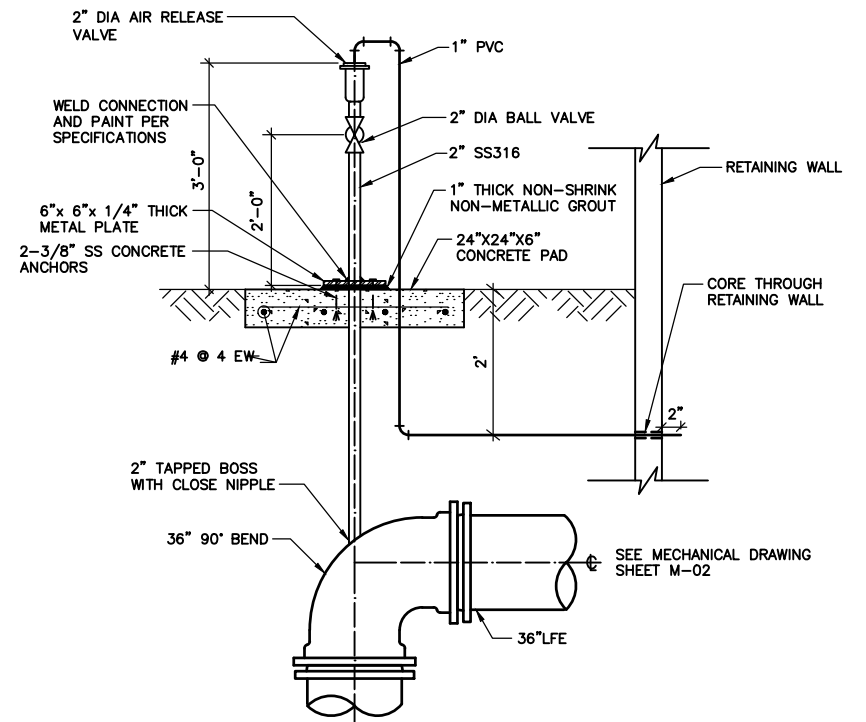


TYPICAL CLEAN-OUT DETAIL
NOT TO SCALE



CHEMICAL INJECTION MANHOLE
DETAIL 1
NOT TO SCALE

- NOTES:
1. NOTCH OUT AND REMOVE FOOTER AS SHOWN. PLACE VAULT FOOTER A MAXIMUM OF TWO INCHES (2\")



AIR RELEASE VALVE DETAIL
DETAIL 2
NOT TO SCALE

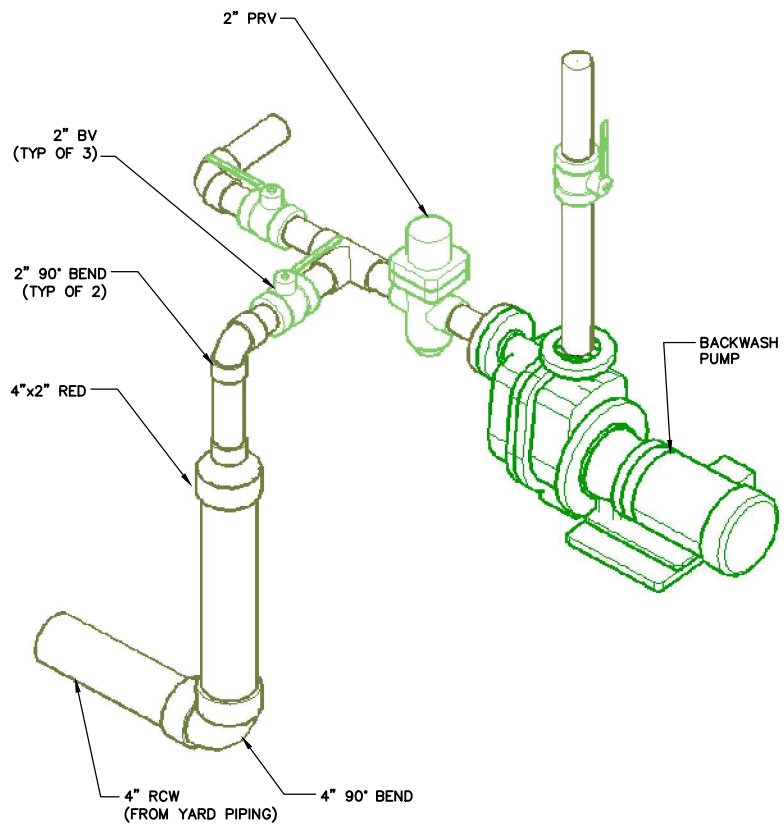
REVISIONS				
NO.	BY	DATE	REMARKS	

DES MC
DWN MC
CKD JP



MANATEE COUNTY SOUTHEAST WRF LAKE FILTRATION SYSTEM

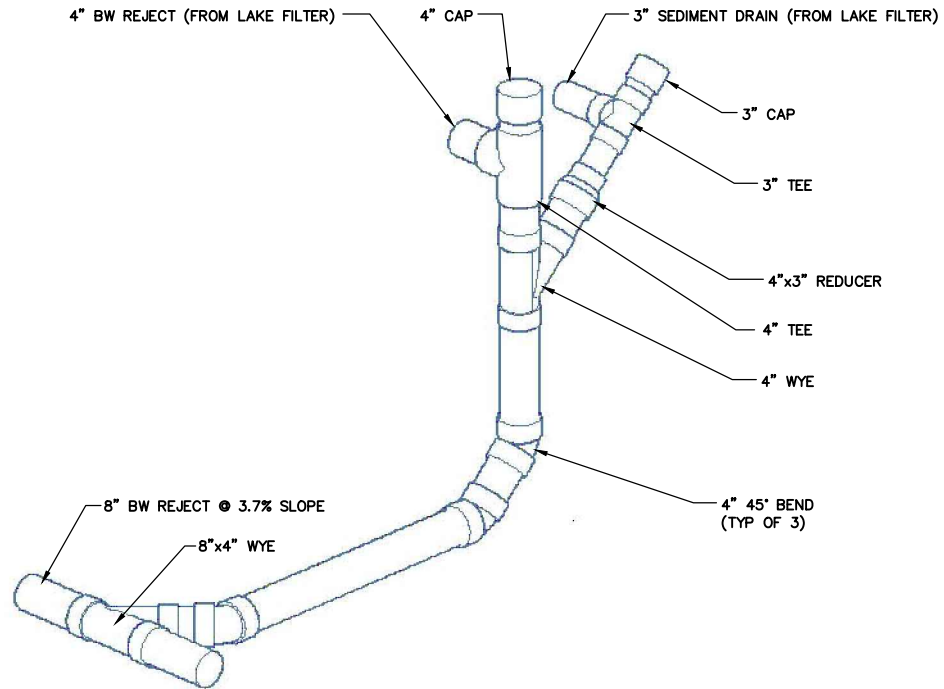
MECHANICAL DETAILS I



BACKWASH PUMP DETAIL

1
M03M08

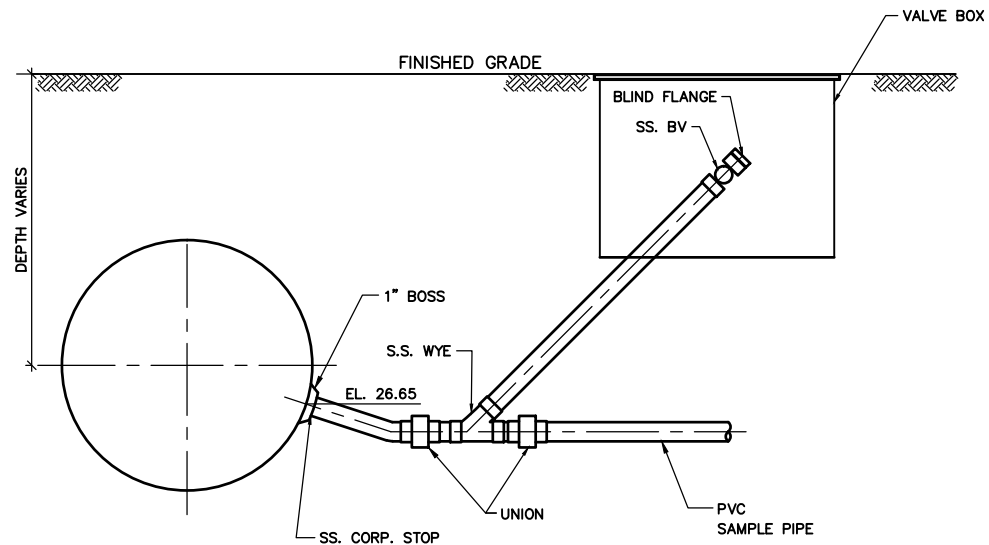
N.T.S.



BW DRAIN DETAIL

2
M03M08

N.T.S.

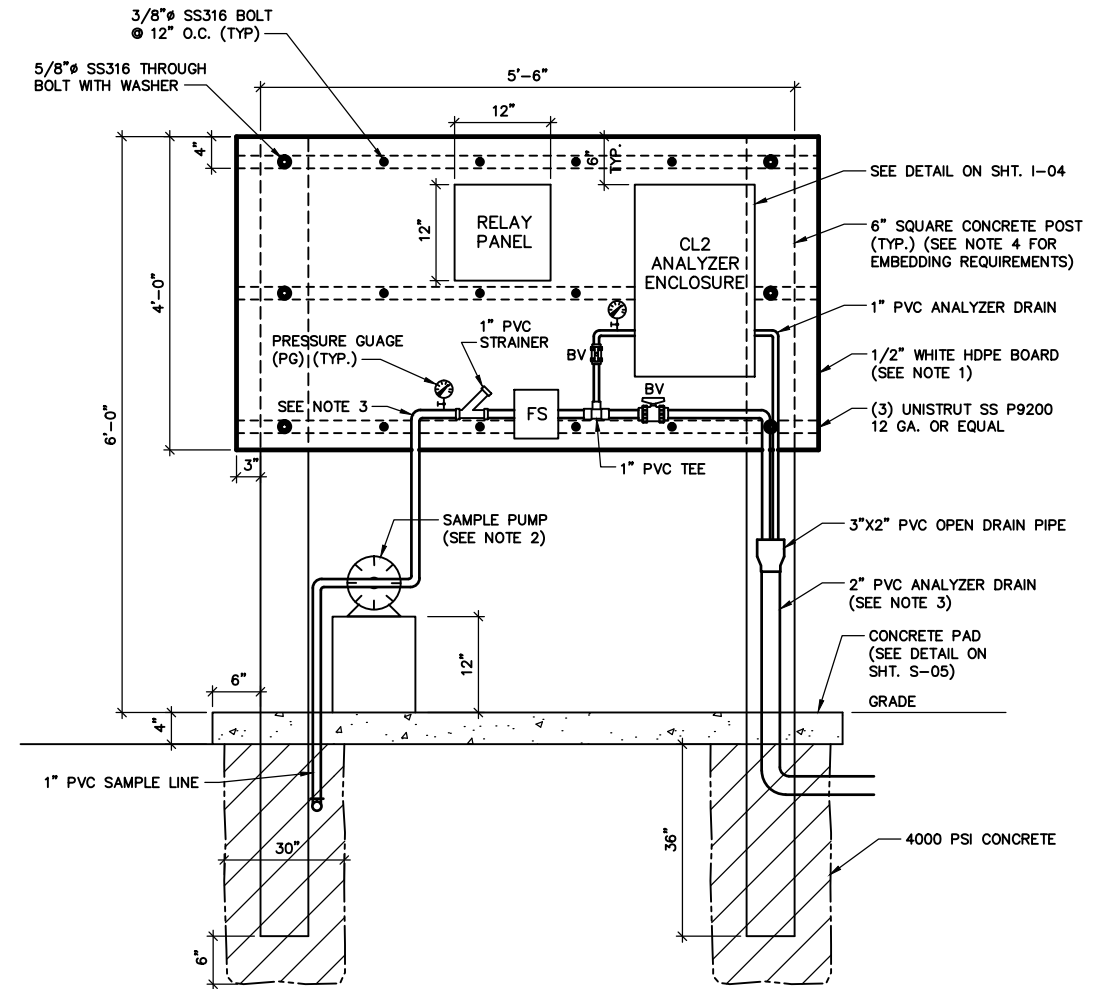


BELOW GRADE SAMPLE TAP DETAIL

DETAIL

3
C03M08

N.T.S.



NOTES:

- 1/2" HDPE BOARD SHALL BE MARINE GRADE HIGH DENSITY POLYETHYLENE. PRODUCT SHALL BE KING STARBOARD BY KING PLASTIC CORPORATION OR APPROVED EQUAL.
- SAMPLE PUMP SHALL BE SELF PRIMING TURBINE PUMP CAPABLE OF MINIMUM 12 FOOT SUCTION LIFT AND PRODUCING 65 FEET TDH AT 1 GPM. SAMPLE PUMP SHALL INCLUDE SS SHAFT, IRON IMPELLER AND IRON CASING. PUMP SHALL BE COATED PER SPECIFICATIONS. PUMP SHALL BE AURORA 130 SERIES OR APPROVED EQUAL.
- PIPE SHALL BE SUPPORTED WITH SS PIPE CLAMPS AGAINST HDPE AND CONCRETE. PROVIDE CLAMPS ON EITHER SIDE OF BENDS AND FOR EVERY 1 FOOT RUN.
- CONCRETE POST SHALL BE A MIN. 4500 PSI CONCRETE REINFORCED WITH (9) #4 BARS SPACED IN A 4"x4" SQUARE CENTERED IN POST.

ANALYZER DETAIL

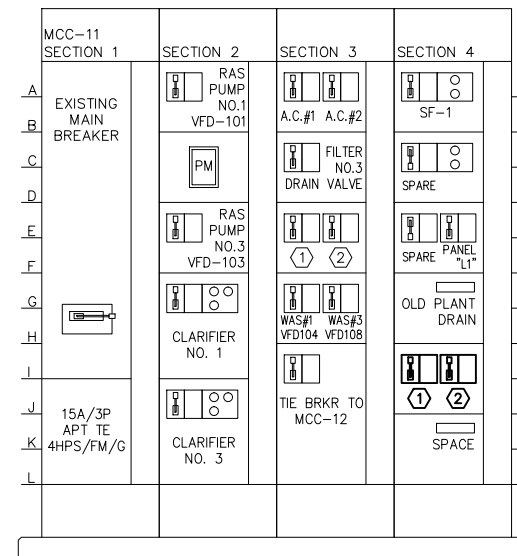
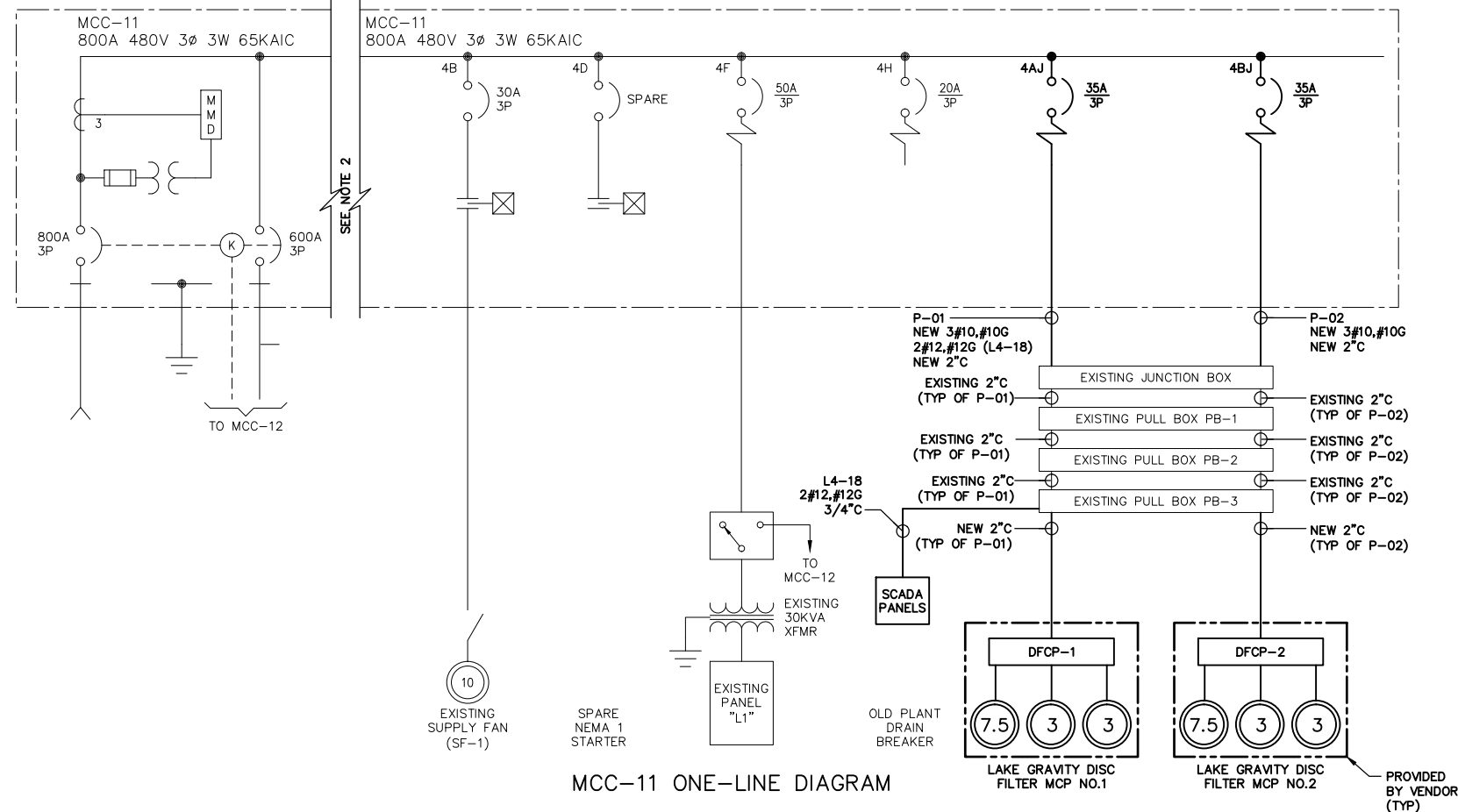
DETAIL

4
C03M08

N.T.S.

REVISIONS			
NO.	BY	DATE	REMARKS

DIAGRAMS		PLANS		CONTROLS		ABBREVIATIONS																							
800 600 (FRAME SIZE) (TRIP SIZE) FIXED MOUNTED POWER OR MOLDED CASE CIRCUIT BREAKER VFD VARIABLE FREQUENCY DRIVE 100 30 (FRAME SIZE) (TRIP SIZE) 3 POLE THERMAL-MAGNETIC MOLDED CASE CIRCUIT BREAKER M 5 ELECTRIC MOTOR (NUMBER INDICATES HORSEPOWER). THS THERMOSTATIC SWITCH AUTOMATIC TRANSFER SWITCH SPD SURGE PROTECTION DEVICE TRANSFORMER- SIZE AS NOTED ON THE THE DRAWINGS JB JUNCTION BOX; SIZE AS REQUIRED BY N.E.C. PB PULL BOX; SIZE AS REQUIRED BY N.E.C. NF 30/30 DISCONNECT SWITCH - 480V 3POLE UNFUSED OR FUSED F DENOTES FUSING, NF DENOTES NONFUSED ONLY WHERE INDICATED FIRST NUMBER DENOTES SWITCH AMP RATING SECOND NUMBER DENOTES FUSE SIZE WHEN PROVIDED. SP SAMPLE PUMP MOTOR STARTER/CONTROLLER (NON-COMBINATION - COMBINATION - MANUAL) RV DENOTES REDUCED VOLTAGE	I-2 GF/SS DUPLEX CONVENIENCE RECEPTACLE, 2 POLE, 3 WIRE, 120 VOLTS A.C. 20 AMP RECEPTACLE DESIGNATIONS, FIRST NUMBER DENOTES PANEL, SECOND NUMBER DENOTES CIRCUIT NUMBER. GFI-DENOTES GROUND FAULT TYPE. SS-DENOTES SURGE SUPPRESSION TYPE WP-DENOTES WEATHERPROOF ENCLOSURE, WPU-DENOTES WEATHERPROOF IN-USE COVER SV OR SV SOLENOID VALVE PS 100 INSTRUMENT DEVICE: LETTERS IDENTIFY DEVICE FUNCTION, NUMBERS WHERE INDICATED DENOTE LOOP NUMBER HS HAND SWITCH LS LEVEL SWITCH PS PRESSURE SWITCH (PSH DENOTES PRESSURE SWITCH HIGH AND PSL DENOTES PRESSURE LOW) AT ANALYSIS TRANSMITTER (NO INDICATION) LT LEVEL TRANSMITTER (NO INDICATION) PIT PRESSURE TRANSMITTER (I DENOTES INDICATING TYPE & PE DENOTES PRESSURE ELEMENT) LIT LEVEL TRANSMITTER (I DENOTES INDICATING TYPE & LE DENOTES LEVEL ELEMENT) FIT FLOW TRANSMITTER (I DENOTES INDICATING TYPE & FE DENOTES FLOW ELEMENT) AIT ANALYSIS TRANSMITTER (I DENOTES INDICATING TYPE & AE DENOTES ANALYSIS ELEMENT) TIT TEMPERATURE TRANSMITTER (I DENOTES INDIACTING TYPE & TE DENOTES TEMPERATURE ELEMENT) VT VAPOR TRANSMITTER (I DENOTES INDIACTING TYPE & TE DENOTES TEMPERATURE ELEMENT)	H 0 A SELECTOR SWITCH, 3 POSITION MAINTAINED CONTACT CRI NORMALLY OPEN CONTACT, NUMBER INDICATES RELAY. NORMALLY CLOSED CONTACT DEVICE LOCATED IN FIELD AT OR NEAR MOTOR DEVICE LOCATED IN CONTROL PANEL IL PT INDICATING LIGHT, PT-DENOTES PUSH TO TEST TYPE LETTER INDICATES LENS COLOR W-WHITE G-GREEN A-AMBER R-RED B-BLUE C-CLEAR SWITCH - TOGGLE OPEN MOMENTARY CONTACT PUSH BUTTON NORMALLY OPEN MOMENTARY CONTACT PUSH BUTTON NORMALLY CLOSED ELECTRIC SPACE HEATER ELEMENT M MOTOR STARTER CONTACTOR COIL COIL DESIGNATION: M-COIL RUN MOTOR STARTER CONTACTOR COIL COIL DESIGNATION: R-RUN CR CONTROL RELAY COIL DESIGNATION: CR-CONTROL RELAY MX-AUXILIARY RELAY TR-TIMING RELAY AR-ALARM RELAY RR-READY RELAY	3W A ATS BPCP C OR CND CBV GFI GND HS JB DFCP LS LT KVA KCMIL M MCC MCP PB PS SHTB SP SV TYP V W.P. XFMR THREE WIRE AMPERES AUTO TRANSFER SWITCH BACKWASH PUMP STATION CONTROL PANEL CONDUIT OR CONTROL CONDUIT CABLE BY VENDOR GROUND FAULT INTERRUPTOR GROUND HAND SWITCH JUNCTION BOX DISK FILTER CONTROL PANEL LEVEL SWITCH LEVEL TRANSMITTER KILOVOLT AMPERES THOUSAND CIRCULAR MILS MOTOR MOTOR CONTROL CENTER MOTOR CIRCUIT PROTECTOR, MOTOR CONTROL PANEL PULL BOX PRESSURE SWITCH SODIUM HYPOCHLORITE TERMINAL BOX SCADA PANEL SOLENOID VALVE TYPICAL VOLTS WEATHERPROOF TRANSFORMER																										
CERTIFICATE OF AUTHORIZATION NO. 67 14025 RIVEREDGE DR. SUITE 600 TAMPA, FLORIDA 33637 AUBREY A. HAUDRICOURT P.E. #66861 <table><tr><th colspan="4">REVSIONS</th><th rowspan="2">REMARKS</th></tr><tr><th>NO.</th><th>BY</th><th>DATE</th><th></th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> DES WEH DWN KAK CKD AAH MANATEE COUNTY SOUTHEAST WRF LAKE FILTRATION SYSTEM LEGEND AND ABBREVIATIONS COPYRIGHT © 2011 MALCOLM PIRNIE, INC. THE WATER DIVISION OF ARCADIS DATE JULY 2012 SHEET E-01 CAD REF. NO. 0132008_E01	REVSIONS				REMARKS	NO.	BY	DATE																					
REVSIONS				REMARKS																									
NO.	BY	DATE																											

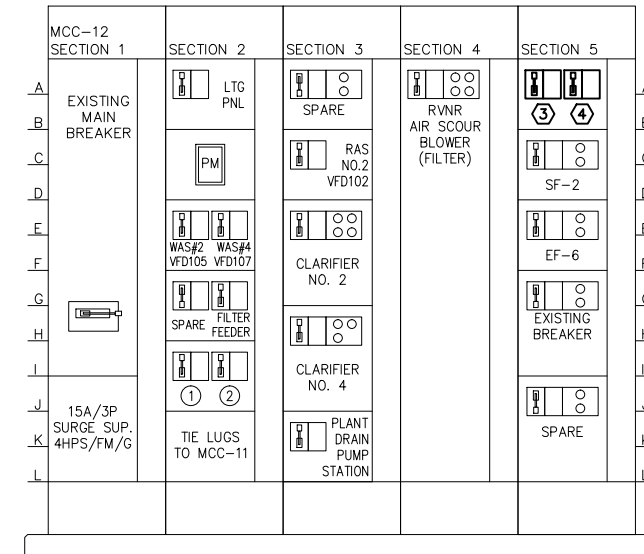
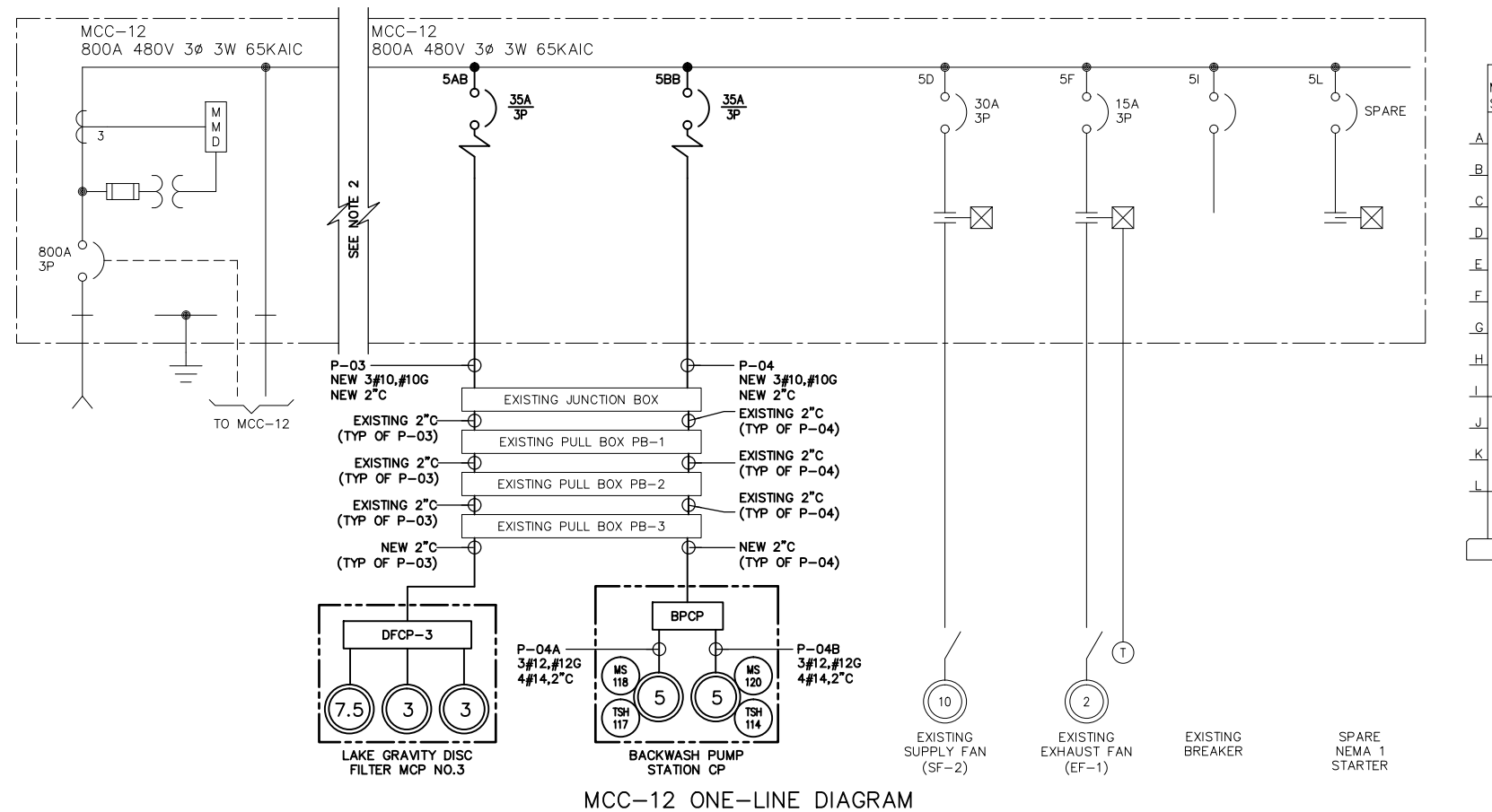


Electrical Load Calculation				
MCC11				
Equipment Name	HP/KVA	Voltage	Connected AMPS	Connected KVA
Clarifier No. 1 Motor (Existing)	1	480	2.1	1.0
Clarifier No. 2 Motor (Existing)	1	480	2.1	1.0
RAS Pumps No. 1 Pump (Existing)	75	480	96.0	75.0
RAS Pumps No. 2 Pump (Existing)	75	480	96.0	75.0
WAS Pumps No. 1 Pump (Existing)	7.5	480	11.0	7.5
WAS Pumps No. 2 Pump (Existing)	7.5	480	11.0	7.5
Air Compressor No. 1 (Existing)	10	480	14.0	10.0
Air Compressor No. 2 (Existing)	10	480	14.0	10.0
30kVA Transformer (Existing)	30	480	36.0	30.0
Filter No 3 Drain Valve (Existing)	1	480	2.1	1.0
Filter No 3 Air Scour Valve (Existing)	1	480	2.1	1.0
Supply Fan (SF-1) (Existing)	10	480	14.0	10.0
Lake Gravity Disc Filter No 1 CP	7.5	480	11.0	7.5
Lake Gravity Disc Filter No 2 CP	7.5	480	11.0	7.5
			Total Connected KVA =	244.00
			Connected Amperance =	322.40

MCC-11 LOAD CALCULATIONS
(SEE NOTE 2)

KEY NOTES:

- ① LAKE GRAVITY DISC FILTER CP NO.1 (DFCP NO. 1)
- ② LAKE GRAVITY DISC FILTER CP NO.2 (DFCP NO. 2)
- ③ LAKE GRAVITY DISC FILTER CP NO.3 (DFCP NO. 3)
- ④ BACKWASH PUMP STATION CP (BPCP)



Electrical Load Calculation				
MCC12				
Equipment Name	HP/KVA	Voltage	Connected AMPS	Connected KVA
Clarifier No 2 Motor (Existing)	1	480	2.1	1.0
Clarifier No 4 Motor (Existing)	1	480	2.1	1.0
RAS Pump No 2 (Existing)	75	480	96.0	75.0
WAS Pump No 2 (Existing)	7.5	480	11.0	7.5
WAS Pump No 4 (Existing)	7.5	480	11.0	7.5
Filter No 1/2 LCP (Existing)	15	480	21.0	15.0
Plant Drain Pump Station (Existing)	40	480	52.0	40.0
Filter No. 4 Drain Valve (Existing)	1	480	2.1	1.0
Filter No. 4 Air Scour Valve (Existing)	1	480	2.1	1.0
Supply Fan (SF-2) (Existing)	10	480	14.0	10.0
Exhaust Fan (EF-2) (Existing)	2	480	3.4	2.0
Lake Gravity Disc Filter CP No 3	7.5	480	11.0	7.5
Backwash Pump Station CP	10	480	14.0	10.0
			Total Connected KVA =	178.5
			Connected Amperage =	241.8

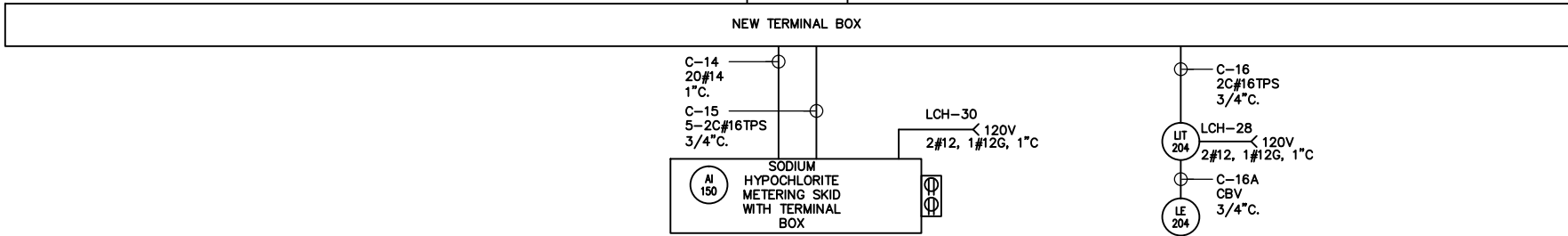
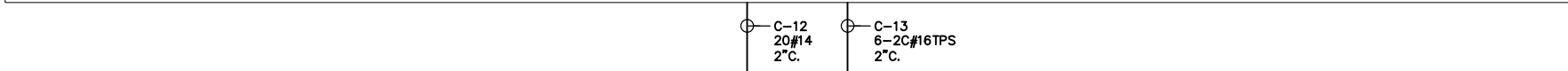
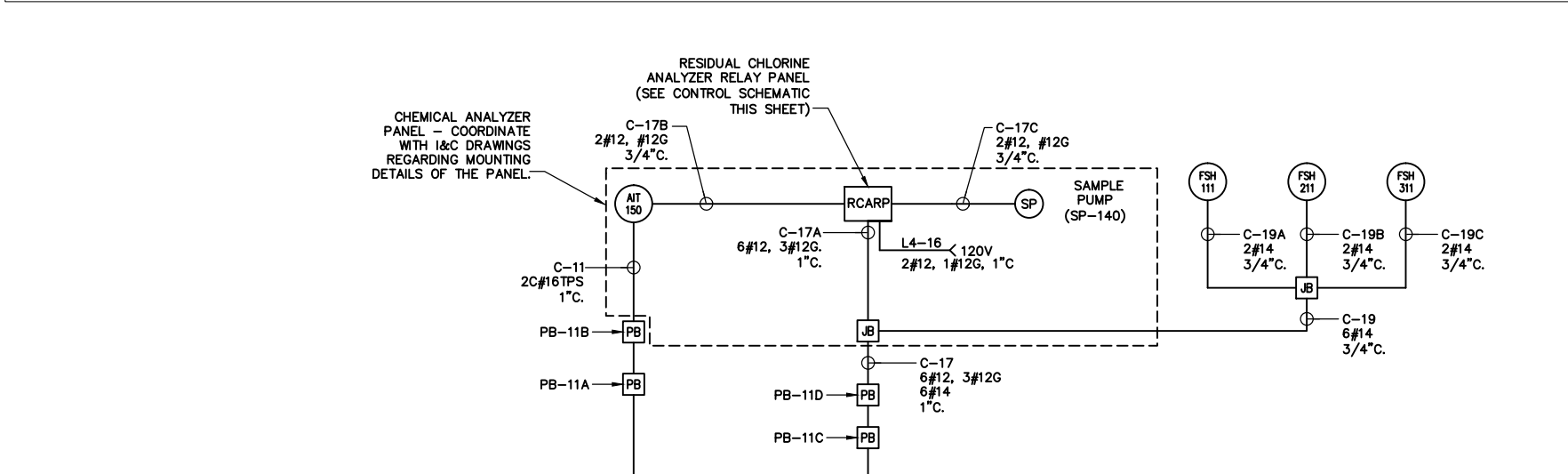
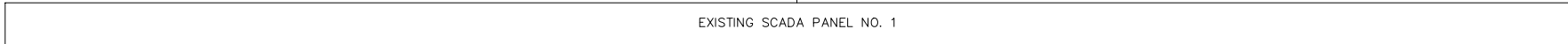
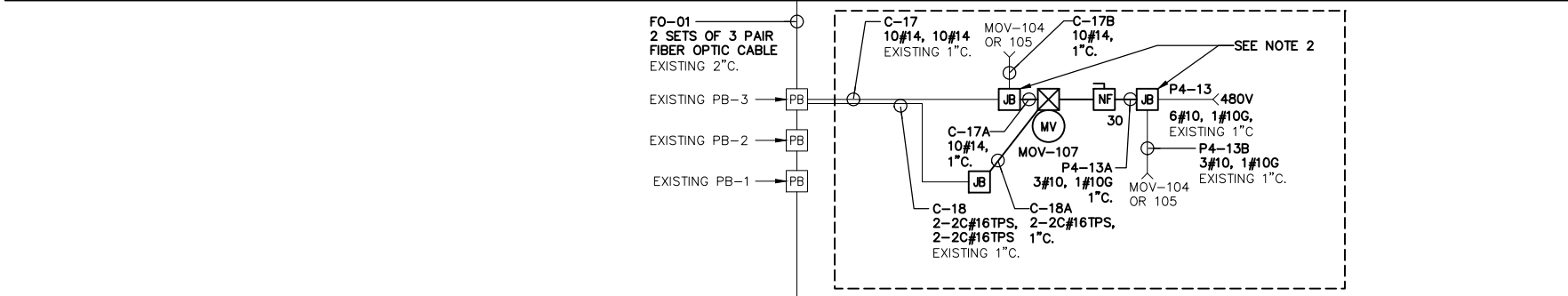
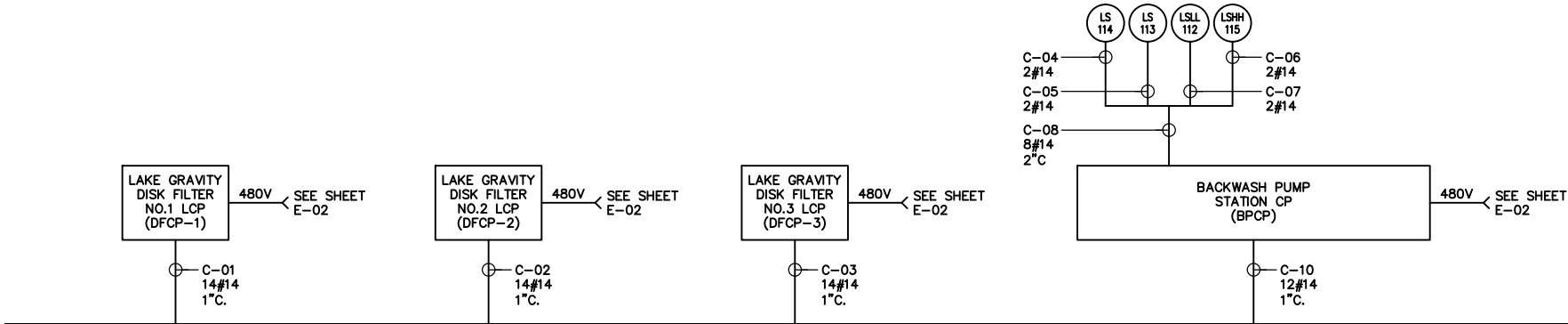
MCC-12 LOAD CALCULATIONS
(SEE NOTE 2)

NOTES:

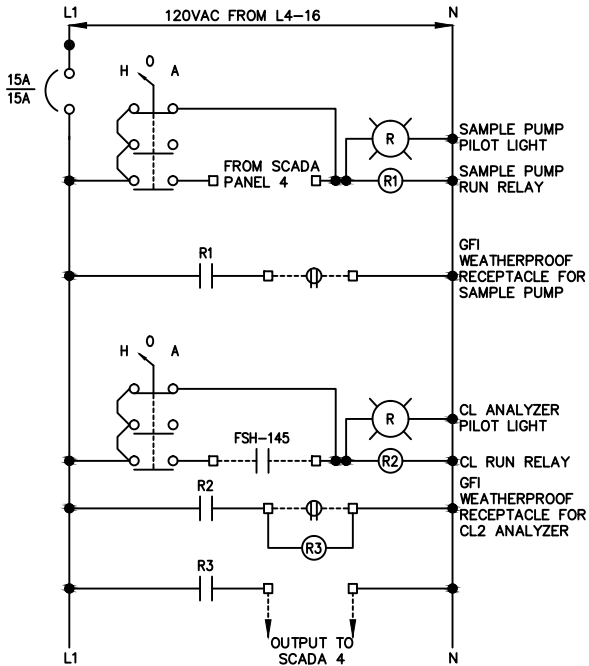
1. CONDUIT SIZES INDICATED SHALL BE THE MINIMUM SIZE ALLOWED FOR THE LISTED CONDUCTORS. WHEN CONDUITS ARE RUN IN DUCTBANK, THE SIZES INDICATED IN DUCTBANK SECTIONS SHALL TAKE PREFERENCE.
2. ONE LINE DIAGRAM IS SIMPLIFIED FOR DESIGN PURPOSES. LOAD CALCULATIONS PROVIDE ALL LOADS CONNECTED ON MCCs.

2. ONE LINE DIAGRAM IS SIMPLIFIED FOR DESIGN PURPOSES. LOAD CALCULATIONS PROVIDE ALL LOADS CONNECTED ON MCCs.

2. ONE LINE DIAGRAM IS SIMPLIFIED FOR DESIGN PURPOSES. LOAD CALCULATIONS PROVIDE ALL LOADS CONNECTED ON MCCs.

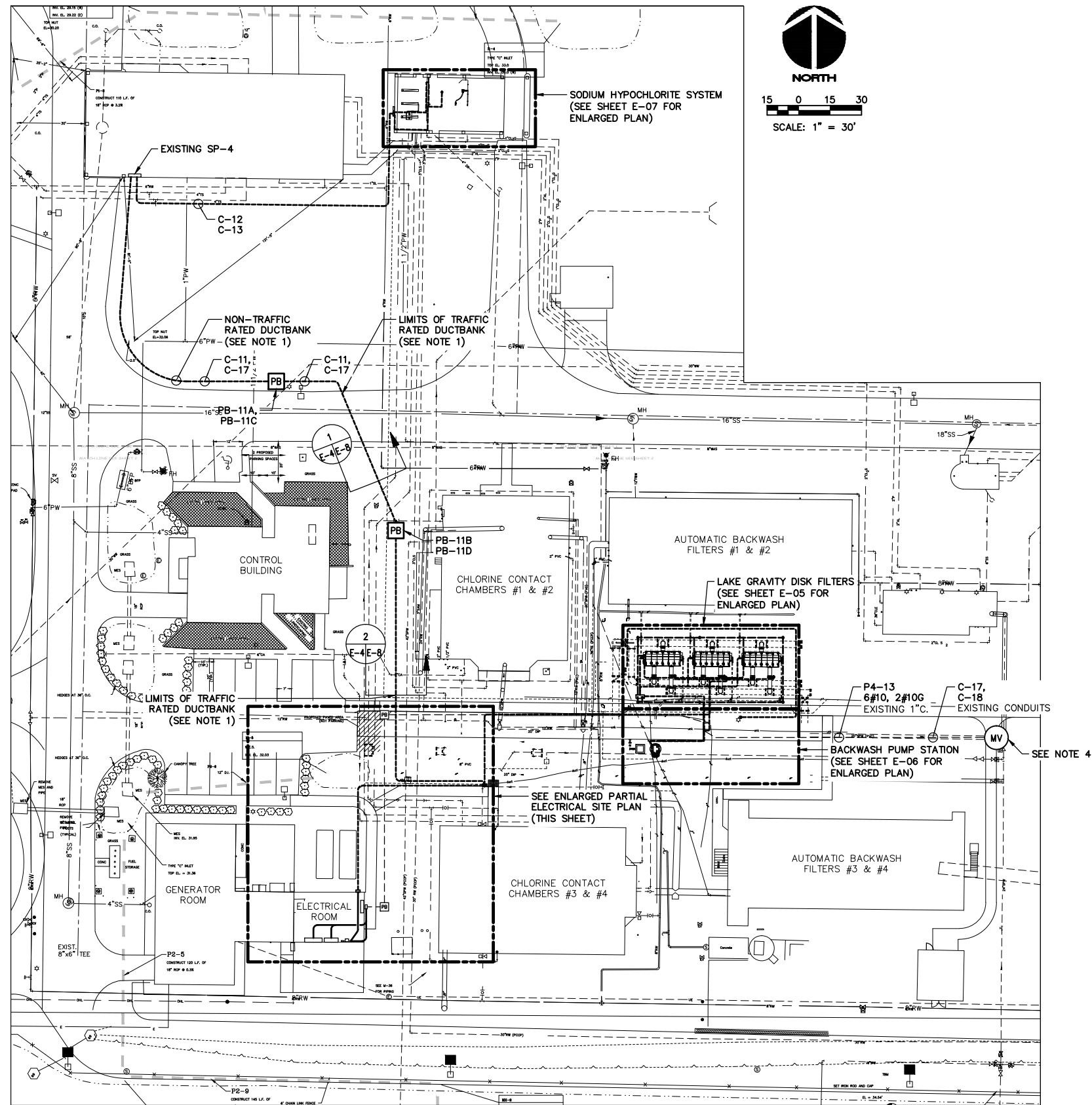


INTERCONNECT DIAGRAM

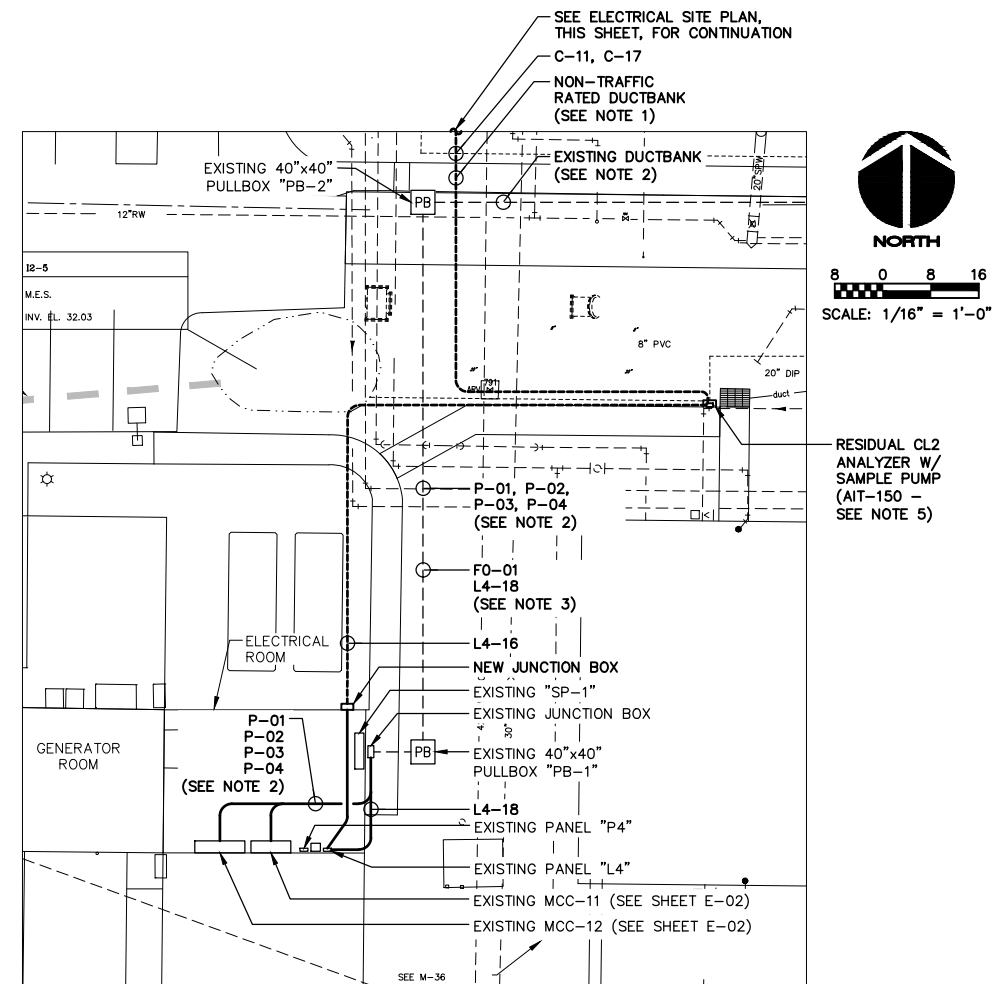


RESIDUAL CHLORINE ANALYZER RELAY PANEL (RCARP) CONTROL SCHEMATIC

- NOTES:
1. CONDUIT SIZES INDICATED SHALL BE THE MINIMUM SIZE ALLOWED FOR THE LISTED CONDUCTORS. WHEN CONDUITS ARE RUN IN DUCTBANK, THE SIZES INDICATED IN DUCTBANK SECTIONS SHALL TAKE PREFERENCE.
 2. CONTRACTOR SHALL INSTALL JUNCTION BOXES AT THE NEAREST MOTOR OPERATED VALVE(MOV) 104 OR 105, REPUll MOV-104 OR 105 POWER AND CONTROL WIRING WITH MOV-107 WIRING IN EXISTING TWO 1" CONDUIT BACK TO EXISTING PANELBOARD P4 AND SCADA PANEL 1 (SP1) LOCATED IN ELECTRICAL ROOM. CONTRACTOR SHALL CONNECT POWER AND CONTROL WIRE OF EXISTING MOV-104 OR 105 AND MOV-107.
 3. CONTRACTOR SHALL REFER TO SECTION 13430 - PROCESS CONTROL PANELS AND ENCLOSURES SPECIFICAITON FOR REQUIREMENTS FOR RELAY PANEL.



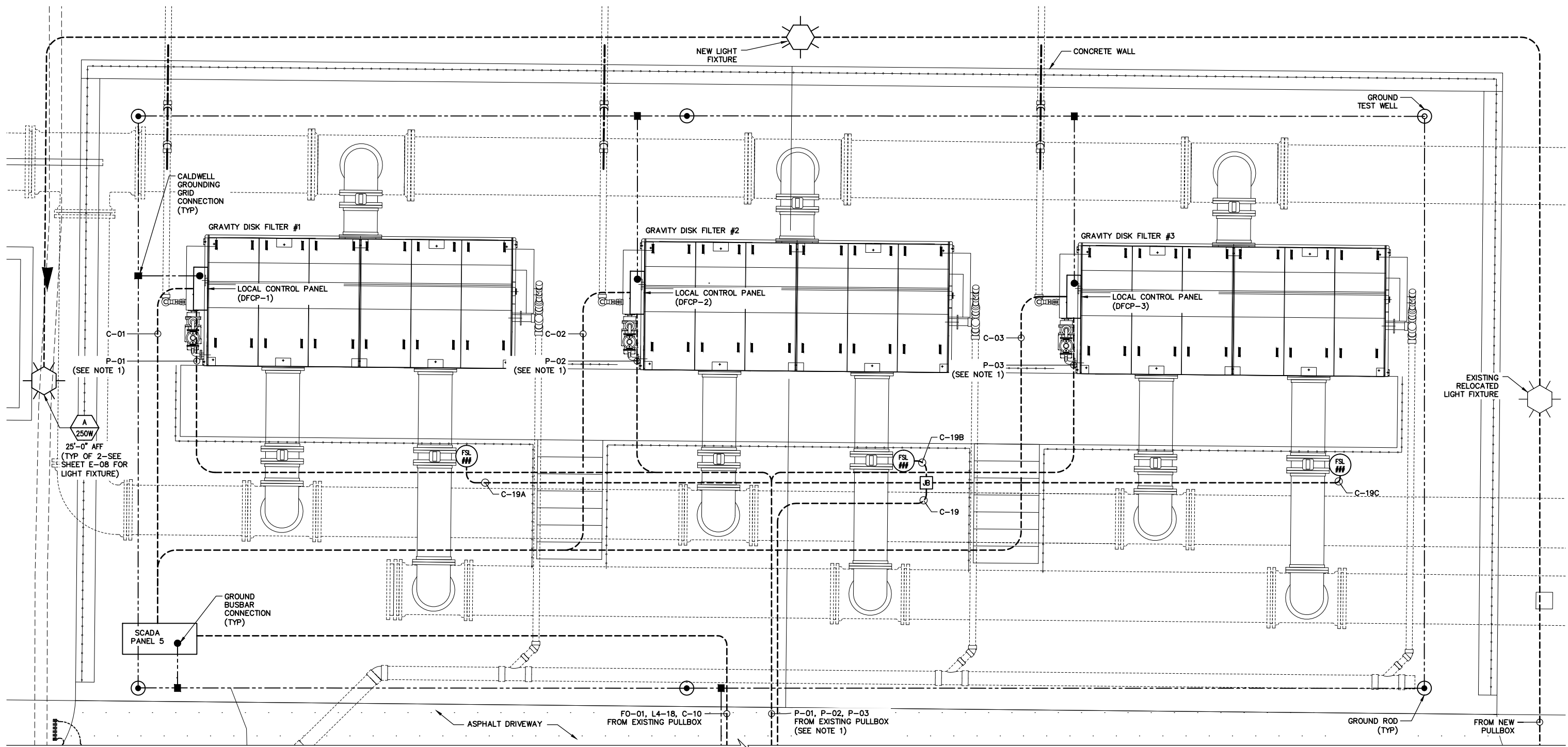
ELECTRICAL SITE PLAN



ENLARGED PARTIAL ELECTRICAL SITE PLAN

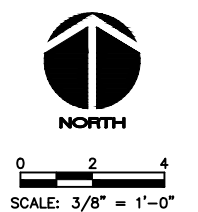
NOTES:

- CONTRACTOR SHALL UTILIZE TRAFFIC RATED DUCTBANKS UNDER ROADS AND DRIVEWAYS. ALL OTHER SHALL BE NON-TRAFFIC RATED DUCTBANKS.
- CONTRACTOR SHALL UTILIZE EXISTING DUCTBANK CONDUIT AS SHOWN ON SHEET E-02.
- LIGHTING CIRCUIT FOR SCADA PANEL NO 5 SHALL BE RUN IN EXISTING 2 INCH CONDUIT WITH FIBER OPTIC CABLE (FO-01).
- CONTRACTOR SHALL REPULL POWER AND CONTROL WIRE FOR EXISTING MOV IN VALVE VAULT WITH NEW POWER AND CONTROL WIRING TO PANELBOARD P-4 AND SP-1. SEE SHEET E-03, INTERCONNECT DIAGRAM FOR DETAILS.
- CONTRACTOR SHALL PROVIDE AND INSTALL WEATHERPROOF DUPLEX RECEPTACLE WITH IN USE COVER FOR RESIDUAL CL2 ANALYZER W/ SAMPLE PUMP.



SEE SHEET E-06 FOR CONTINUATION

- NOTES:
1. CONTRACTOR SHALL INSTALL NEW CONDUIT AS SHOWN ON SHEET E-02.



MALCOLM PIRNIE
The Water Division of ARCADIS

CERTIFICATE OF
AUTHORIZATION NO. 67
14025 RIVEREDGE DR. SUITE 600
TAMPA, FLORIDA 33637

BID DOCUMENTS

AUBREY A. HAUDRICOURT
P.E. #66861

REVISIONS			
NO.	BY	DATE	REMARKS

DES WEH
DWN KAK
CKD AAH



**MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM**

**LAKE GRAVITY DISK FILTER
POWER PLAN**

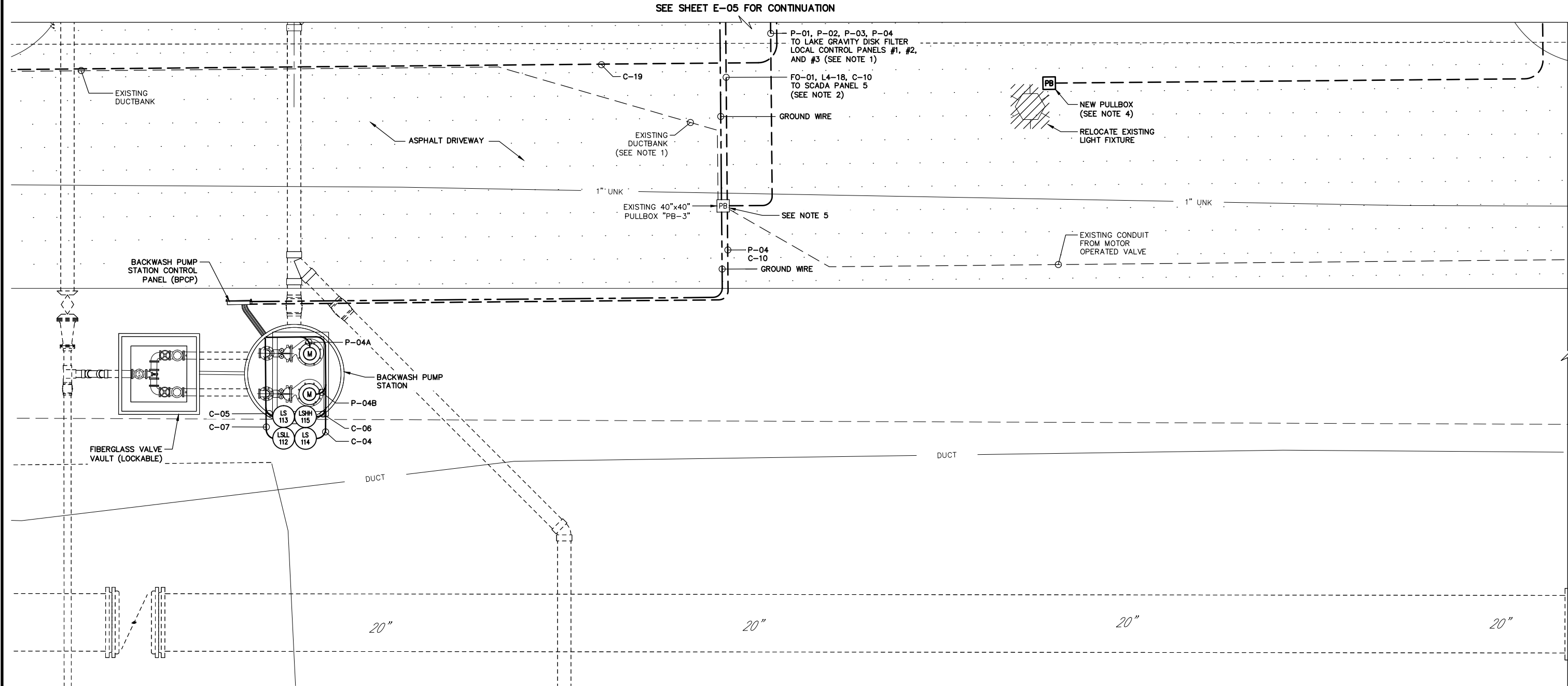
COPYRIGHT © 2011
MALCOLM PIRNIE, INC.
THE WATER DIVISION OF ARCADIS

DATE JULY 2012

SHEET **E-05**

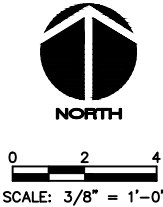
CAD REF. NO. 0132008_E05

XREFS: \\Xref\\S-GP-FLT-P-FI.dwg, \\Xref\\C-GP-FLT-P-FI.dwg, \\Xref\\E-SR-PWR.dwg, \\Xref\\W-GP-FLT-P-FI.dwg, \\Xref\\Base_Survey.dwg, \\Xref\\0132_34x22TB.dwg
User: KKaparek Spec: PIRNIE STANDARD File: \\ACAD\\PROJ\\0132 - MANATEE\\006\\E06.DWG Scale: 1:1 Date: 06/29/2012 Time: 13:44 Layout: 0132008_E06 IMAGES: None



NOTES:

1. CONTRACTOR SHALL UTILIZE EXISTING CONDUIT AND INSTALL NEW CONDUIT AS SHOWN ON SHEET E-02.
2. LIGHTING CIRCUIT FOR SCADA PANEL NO 5 (LGDF PLC) SHALL BE RUN IN EXISTING 2" CONDUIT WITH FIBER OPTIC CABLE (FO-01).
3. CONTRACTOR SHALL REROUTE EXISTING LINES TO AVOID ANY CONFLICTS WITH PROPOSED WORK. MATERIALS USED SHALL MATCH EXISTING.
4. EXISTING LIGHT FIXTURE SHALL BE RELOCATED, AND NEW PULL BOX INSTALLED (H-20 POLYCONCRETE) AT LIGHT POLE OF CURRENT LOCATION. WATERPROOF SPLICED NEW CONDUCTORS IN PULLBOX TO EXTEND TO RELOCATED AND NEW LIGHT FIXTURES.
5. CONTRACTOR SHALL CONNECT BACKWASH PUMP STATION AND DISC FILTER GROUND TO EXISTING PLANT GROUND AT PULLBOX. IF NO GROUND EXIST THEN CONTRACTOR SHALL GROUND BACKWASH PUMP STATION AND DISC FILTER GROUND TO NEAREST DUCTILE PIPES.



MALCOLM PIRNIE | **ARCADIS**
The Water Division of ARCADIS
CERTIFICATE OF
AUTHORIZATION NO. 67
14025 RIVEREDGE DR. SUITE 600
TAMPA, FLORIDA 33637

BID DOCUMENTS

AUBREY A. HAUDRICOURT
P.E. #66861

REVISIONS				NO.	BY	DATE	REMARKS
DES	DWN	CKD					
WEH	KAK	AAH					



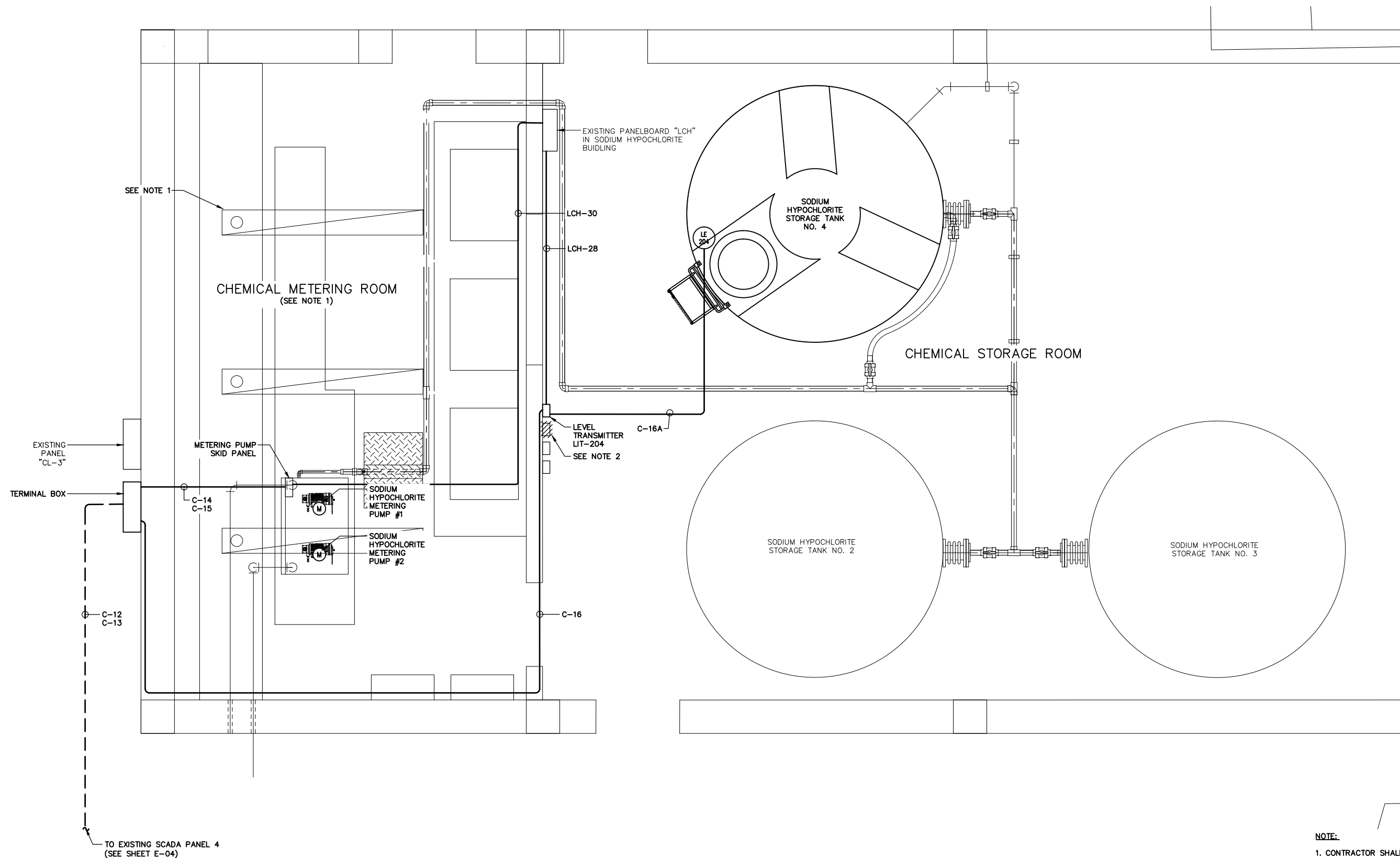
MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM

BACKWASH PUMP STATION
POWER PLAN

COPYRIGHT © 2011
MALCOLM PIRNIE, INC.
THE WATER DIVISION OF ARCADIS
DATE JULY 2012
SHEET **E-06**
CAD REF. NO. 0132008_E06



2 0 2
SCALE: 1/2" = 1'-0"



NOTE:

1. CONTRACTOR SHALL REMOVE EXISTING UNUSED LIGHT FIXTURES AND PIPE HANGERS/SUPPORTS AND PATCH HOLES IN CEILINGS.
2. CONTRACTOR SHALL REMOVE EXISTING LEVEL TRANSMITTER, CONDUIT AND WIRING FOR LEVEL ELEMENT. REINSTALL NEW CONDUIT AND WIRE FOR NEW LEVEL TRANSMITTER.

REVISIONS			
NO.	BY	DATE	REMARKS

DES WEH
DWN KAK
CKD AAH



**MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM**

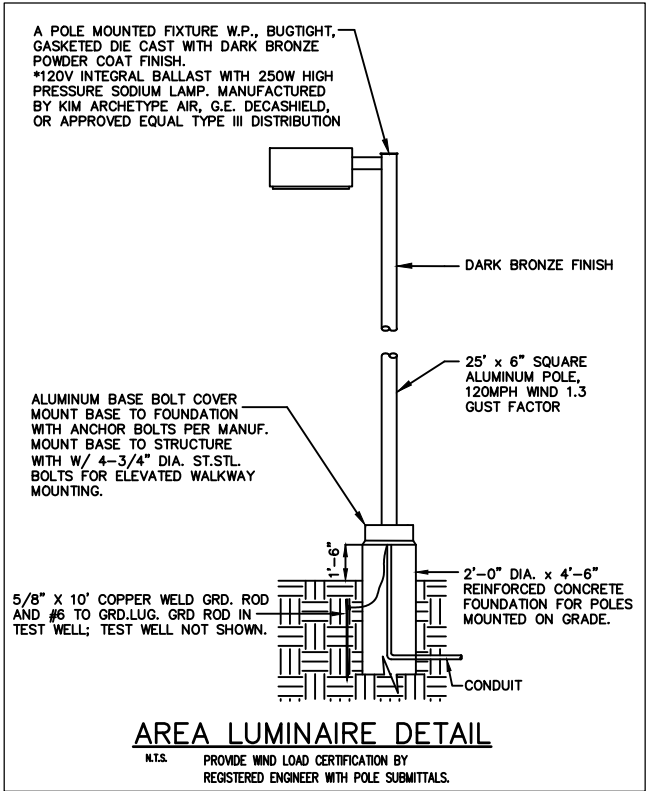
**SODIUM HYPOCHLORITE SYSTEM
POWER PLAN**

XREF:..\\Xref\\0132_34422TB.dwg IMAGES:None
User:KKasparek Spec:PIRNE STANDARD File:1: \\ACAD\\PRG\\0132 - MANATEE\\006\\Ela\\0132008_E08.DWG Scale:1:1 Date:06/29/2012 Time:13:46 Layout:0132008_E-08

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE			POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	CHLORINE BUILDING LIGHTS			1	0.0			1			CHLORINE BUILDING LIGHTS	20	2
3	20	SPARE			1		0.0		1			CHLORINE BUILDING RECEP.TS	20	4
5	20	HACHCL17			1			0.0	1			CHLORINE BUILDING RECEP.TS	20	6
7	20	CCC#1 CONTROL PANEL			3	0.0			1			SPARE	20	8
							0.0		1			CL 3	20	10
								0.0	1			EXHAUST FAN	20	12
13	20	CCC#2 CONTROL PANEL			3	0.0			1			EMERGENCY EYE WASH	20	14
							0.0		1			EXISTING BREAKER	20	16
								0.0	1			TSS & AIR COMP	20	18
19	20	EXISTING BREAKER			1	0.0			1			COMP . METERS	20	20
21	20	LEVEL TRANSMITTER (LT-204)	0.1	0.8	1		0.1		1			LEVEL INDICATORS	20	22
23	20	EXISTING BREAKER			1			0.0	1			SKID 3 AUX FEED	20	24
25	40	EXISTING BREAKER			3	0.3			3	2.4	0.86	SODIUM HYPO METERSKID 3	20	26
							0.3							
								0.3						
PANEL PANELBOARD LCH LOCATION SODIUM HYPOCHLORITE BUILDING BUILDING SODIUM HYPOCHLORITE BUILDING NOTES: EXISTING PANELBOARD			TOTAL KVA			0.3	0.4	0.3	SERVICE CHARACTERISTICS VOLTS: 208/120 PHASE: 3 WIRE: 4 10k MIN AIC SYMM, FULLY RATED ASSEMBLY					
			GRAND CONNECTED TOTAL KVA			1.0								
A MLO 100 A MCB														

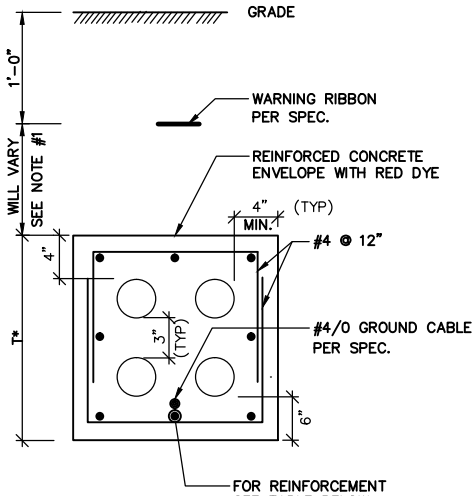
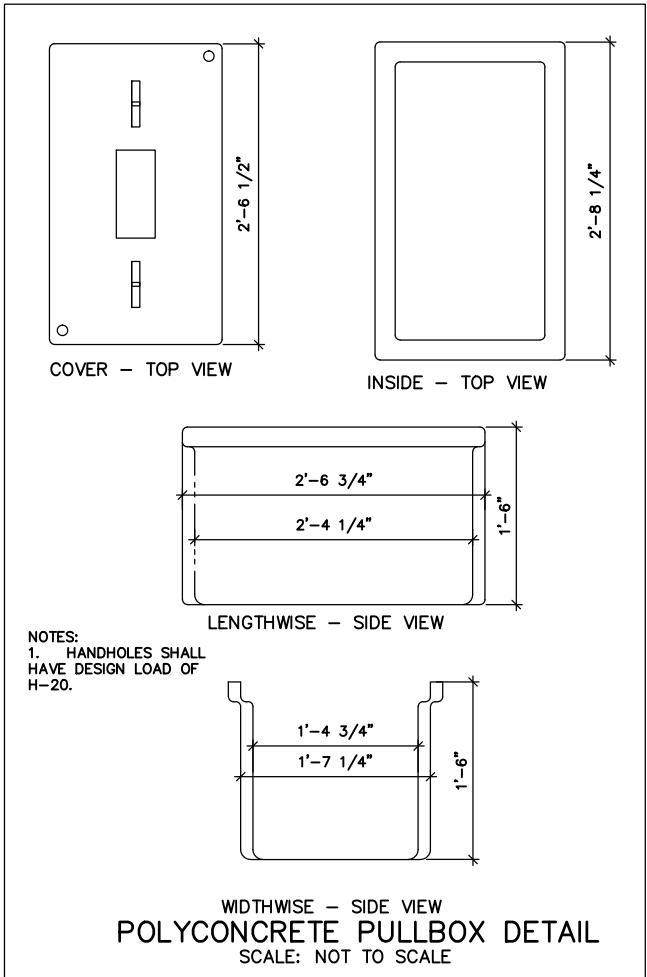
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE			POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	30	SURGE SUPPRESSION			3	0.0			2			FLOW 106	15	2
							0.0							
								0.0	1			<SPACE>		6
7		<SPACE>			1	0.0			1			<SPACE>		8
9		<SPACE>			1		0.0		1			<SPACE>		10
11		<SPACE>			1			0.0	1			<SPACE>		12
13	100	MAIN			3	0.0			1			<SPACE>		14
15	20						0.2		1	1.2	0.15	CHLORINE ANALYZER (AIT-125)	15	16
17	20							1.0	1	8.3	1	SCADA PANEL 5 (LGDF PLC)	20	18
PANEL PANELBOARD L-4 LOCATION: ELECTRICAL ROOM BUILDING: MAIN ELECTRICAL BUILDING NOTES: EXISTING PANELBOARD			TOTAL KVA		0.0		0.2	1.0	SERVICE CHARACTERISTICS VOLTS: 208/120 PHASE: 3 WIRE: 4 10k MIN AIC SYMM, FULLY RATED ASSEMBLY					
			GRAND CONNECTED TOTAL KVA		1.2									
												A MLO		
												100 A MCB		

① LIGHTING CIRCUIT FOR SCADA PANEL 5 (LGDF PLC) SHALL BE RUN IN EXISTING 2" CONDUIT WITH FIBER OPTIC CABLE (FO-01).



NOTES:

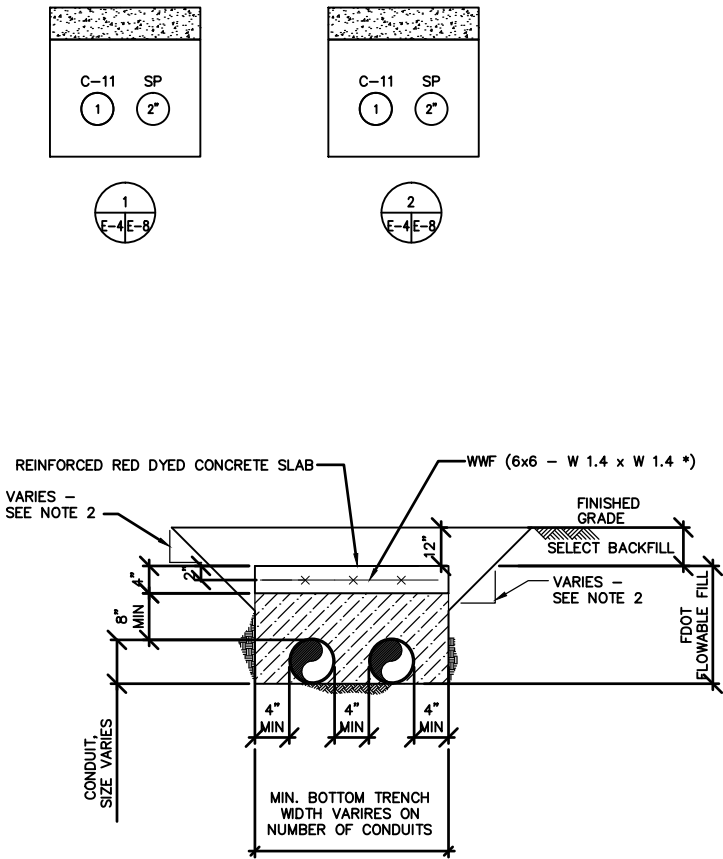
- CONDUIT SIZES INDICATED SHALL BE THE MINIMUM SIZE ALLOWED FOR THE LISTED CONDUCTORS. WHEN CONDUITS ARE RUN IN DUCTBANK, THE SIZES INDICATED IN DUCTBANK SECTIONS SHALL TAKE PREFERENCE.



REINFORCEMENT TABLE		
DUCT BANK THICKNESS SEE NOTE #2	UNDER ROADWAY*	AT NON-TRAFFIC AREA
T < 18"	#8 @ 12" (MIN) ALL AROUND	#6 @ 12" ALL AROUND
T ≥ 18"	#7 @ 12" (MIN) ALL AROUND	#5 @ 12" ALL AROUND

- NOTES:
- DUCT BANK DIMENSION (1'-0" MINIMUM) VARIES TO CLEAR OTHER UNDERGROUND SYSTEMS AND TO MAINTAIN SLOPE AS REQUIRED.
 - DUCT BANK DEPTH AND WIDTH VARIES, REFER TO PLAN DRAWINGS FOR SIZES.

TRAFFIC RATED DUCT BANK SECTION



TRENCH AND BACKFILL DETAIL FOR DUCTBANK, NON-TRAFFIC AREAS

NOT TO SCALE

- NOTES:
- DETAIL APPLIES FOR CONDUIT SIZES IN NON-TRAFFIC AREAS.
 - TRENCH SLOPE VARIES DUE TO VARYING SOIL CONDITIONS. CONTRACTOR SHALL USE WHATEVER MEANS NECESSARY TO ENSURE SLOPE STABILITY IN STRICT ACCORDANCE WITH OSHA STANDARDS.

BID DOCUMENTS

AUBREY A. HAUDRICOURT
P.E. #66861

REVISIONS			
NO.	BY	DATE	REMARKS

DES

DWN

CKD

KAK

AAH



MANATEE COUNTY
SOUTHEAST WRF
LAKE FILTRATION SYSTEM

PANEL SCHEDULE AND DETAILS

X:\P\0132_34422TB.dwg User:K\Kasaperek Spec:PIRNE STANDARD File:1: \ACAD\PROJ\0132 - MANATEE\006\Ins\0132008_01.DWG Scale:1:1 Date:06/29/2012 Time:13:47 Layout:Blank

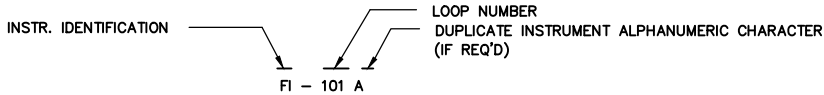
INSTRUMENT IDENTIFICATION LEGEND				
FIRST LETTER		SUCCEEDING LETTERS,		
MEASURED OR INITIATING VARIABLE,	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYSIS,		ALARM		
B BURNER FLAME		NOT USED	NOT USED	NOT USED
C CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED
D DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E VOLTAGE (EMF)		PRIMARY ELEMENT		
F FLOW RATE	RATIO (FACTION)			
G GAGING (DIMENSIONAL)		GLASS GAGE (UNCALIBRATED)		
H HAND (MANUALLY INITIATED)				HIGH
I CURRENT (ELECTRICAL)		INDICATE		
J POWER	SCAN			
K TIME OR TIME SCHEDULE			CONTROL STATION	
L LEVEL		LIGHT (PILOT)		LOW
M MOISTURE OR HUMIDITY				MIDDLE OR INTER-MEDIATE
N NOT USED		NOT USED	NOT USED	NOT USED
O NOT USED		ORIFICE (RESTRICTION)		OPEN
P PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q QUANTITY	INTEGRATE OR TOTALIZE			
R RADIOACTIVITY		RECORD OR PRINT		
S SPEED, FREQUENCY	SAFETY		SWITCH	
T TEMPERATURE			TRANSMIT	
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V VIBRATION			VALVE, DAMPER OR LOUVER	
W WEIGHT OR FORCE		WELL		
X UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y EVENT STATUS	Y AXIS		RELAY OR COMPUTE	
Z POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

PANEL SCHEDULE		
ABBREV.	PANEL IDENTIFICATION	SPEC. REF.
SP5	SCADA PANEL 5	13430
DFCP-1	LAKE GRAVITY DISK FILTER NO. 1 LCP	11312
DFCP-2	LAKE GRAVITY DISK FILTER NO. 2 LCP	11312
DFCP-3	LAKE GRAVITY DISK FILTER NO. 3 LCP	11312
BPCP	BACKWASH PUMP STATION LCP	11322
SHTB	SODIUM HYPOCHLORITE TERMINAL BOX	11402
RCARP	RESIDUAL CHLORINE ANALYZER RELAY PANEL	13430

NOTE: THE SYMBOLS SHOWN ON THIS SHEET ARE STANDARD DESIGNATIONS; NOT ALL SYMBOLS ARE APPLICABLE TO THE INCLUDED DIAGRAMS.

INSTRUMENT TAG NUMBERING SYSTEM

SYMBOLS AND TAG NUMBERS UTILIZE ISA (INSTRUMENT SOCIETY OF AMERICA) STANDARD INSTRUMENT TAG NUMBER DETAILS.



- NOTES: 1. TAG NUMBER DOES NOT CHANGE IF SIGNAL IS BROUGHT TO ANOTHER CONTRACT AREA.
2. FINAL ALPHA CHARACTER IN TAG (E.G. FI-301A) INDICATES DUPLICATE DEVICE EXISTS. FI-301B MAY BE IN A PANEL.

BASE INSTRUMENTATION SYMBOLS

	POINT FOR SHARED VIDEO DISPLAY (FUNCTIONS IN LOGIC CONTROLLER)		INPUT (DISCRETE)
	AS ABOVE WITH LIMITED ACCESS		OUTPUT (DISCRETE)
	INTELLIGENT MICROPROCESSOR BASED CONTROLLER.		INPUT (ANALOG)
	INSTRUMENT RELAY MOUNTED IN REAR OF PANEL (BROKEN LINE). ACTIVATES AND DEACTIVATES CONTROL AND/OR ALARM SWITCHES AT PRESET SIGNAL VALUES. SEE BELOW FOR FUNCTIONS (X).		OUTPUT (ANALOG)
	INTERLOCK (SEE NOTE) 1-INTERLOCK DESCRIPTION		SEAL WATER INTERLOCK, LOSS OF PRESSURE OR FLOW SHALL CAUSE RESPECTIVE PUMP TO SHUT DOWN AFTER TIME DELAY OF 0-10 SEC. ADJUSTABLE TIME DELAY SHALL BE INCORPORATED DURING PUMP START-UP (0-10 SEC. ADJUSTABLE). ALL PUMPS DESIGNATED SW SHALL HAVE ABOVE INTERLOCK.
	DIFFERENCE HIGH SELECTOR LOW SELECTOR PNEUMATIC/CURRENT CONVERTER CURRENT/CURRENT CONVERTER (REPEATER) SUMMATION AVERAGE RATIO		INSTRUMENTATION CONTINUATION BUBBLE
	INSTRUMENT AIR SUPPLY		120V AC POWER SUPPLY
	FR & AR ARE TWO FUNCTIONS AS PART OF ONE UNIT. (CIRCLES TOUCH) SYMBOLS FOR ANALYTICAL DEVICES: CH ₄ - METHANE Cl ₂ - CHLORINE COMB - COMBUSTIBLES DO - DISSOLVED OXYGEN FeCl ₃ - FERRIC CHLORIDE H ₂ S - HYDROGEN SULFIDE H ₃ PO ₄ - PHOSPHORIC ACID H ₂ SO ₄ - SULFURIC ACID Na ₂ S ₂ O ₅ - SODIUM METHA-BISULFITE NH ₃ - AMMONIA O ₂ - OXYGEN ORP - OXIDATION REDUCTION POTENTIAL pH - HYDROGEN ION CONCENTRATION (10G) PO ₄ - PHOSPHATE TURB - TURBIDITY		

EQUIPMENT SYMBOLS	PIPING SYMBOLS	PANEL DEVICE SYMBOLS	LINE TYPES
TURBINE	REDUCER	FLOW INDICATING TRANSMITTER FIELD MOUNTED. POWER SUPPLY REQUIRED LOCALLY WHERE SHOWN. SEE THIS SHEET FOR DETAILS OF INSTRUMENT TAG NUMBERING SYSTEM.	INTERCONNECTING LINES WITH DOT INDICATE ROUTING OF THE SAME SIGNAL.
DOUBLE WALLED PIPE	MOTOR ACTUATOR VALVE	ROTAMETER (FLOW INDICATOR)	INTERCONNECTING LINES WITHOUT DOT INDICATE ROUTING OF MORE THAN ONE SIGNAL
VERTICAL TURBINE PUMP	MOTOR	MASS FLOW ELEMENT (THERMAL INSERTION TYPE)	DIGITAL COMMUNICATION LINK
CENTRIFUGAL PUMP	MIXER	VENTURI (FLOW ELEMENT)	COMMUNICATION LINK DIRECTION
PROGRESSIVE CAVITY PUMP	IN-LINE MIXER	MAGNETIC FLOW ELEMENT	ANALOG DISCRETE
CHEMICAL METERING PUMP	PULSATION DAMPENER	ORIFICE PLATE	SOFTWARE LINK, SYSTEM FUNCTION CONNECTION OR COMMUNICATION LINK
SUBMERSIBLE PUMP	STRAINER	DIAPHRAGM SEAL WITH ISOLATION VALVE	MAIN PROCESS LINE
BLOWER	GATE VALVE (GV)	EXPANSION TANK (WITH RUPTURE DISC)	AUXILIARY SYSTEMS
PERISTALTIC HOSE PUMP	GLOBE VALVE (GL)	CALIBRATION COLUMN	EQUIPMENT PACKAGE LIMIT
GEAR DRIVE	PLUG VALVE (PV)	AIR RELEASE VALVE	ELECTRIC (ELECTRONIC) SIGNAL
SOLENOID VALVE	DIAPHRAGM VALVE (DV)	TORQUE SWITCH (WS)	DIGITAL COMMUNICATION PROTOCOL (FIBER OPTIC CONDUCTOR)
	BUTTERFLY VALVE (BFV)	REMOVABLE SPOOL PIECE	ETHERNET IP PROTOCOL
	BALL VALVE (BV)	EXPANSION JOINTS	DIGITAL COMMUNICATION PROTOCOL (COPPER CONDUCTOR)
	BALL VALVE (BV)		PNEUMATIC SIGNAL
	PINCH VALVE (PI)		CAPILLARY LINE
	NEEDLE VALVE (NV)		HYDRAULIC SIGNAL
	CHECK VALVE (CV)		SONIC SIGNAL
	3-WAY VALVE (TW)		HEAT TRACED AND INSULATED
	RELIEF VALVE (RV)		RADAR SIGNAL
	PRESSURE SELF REGULATING VALVE		PROCESS FLOW LINE CONTINUED: ON ANOTHER DRAWING * (NUMBER); ON SAME DRAWING * (LETTER).
	BACK PRESSURE SELF REGULATING VALVE		PROCESS FLOW LINE CONTINUED OUTSIDE SCOPE OF DRAWINGS
	DRAIN		AUXILIARY SYSTEM FLOW
	FLEXIBLE CONNECTION		
	TRUE UNION		

MANATEE COUNTY SOUTHEAST WRF LAKE FILTRATION SYSTEM

SYMBOLS AND LEGEND

COPYRIGHT © 2011
MALCOLM PIRNIE, INC.
THE WATER DIVISION OF ARCADIS
DATE JULY 2012
SHEET I-01
CAD REF. NO. 0132008_01

MALCOLM PIRNIE
The Water Division of ARCADIS
CERTIFICATE OF
AUTHORIZATION NO. 67
14025 RIVEREDGE DR. SUITE 600
TAMPA, FLORIDA 33637

BID DOCUMENTS

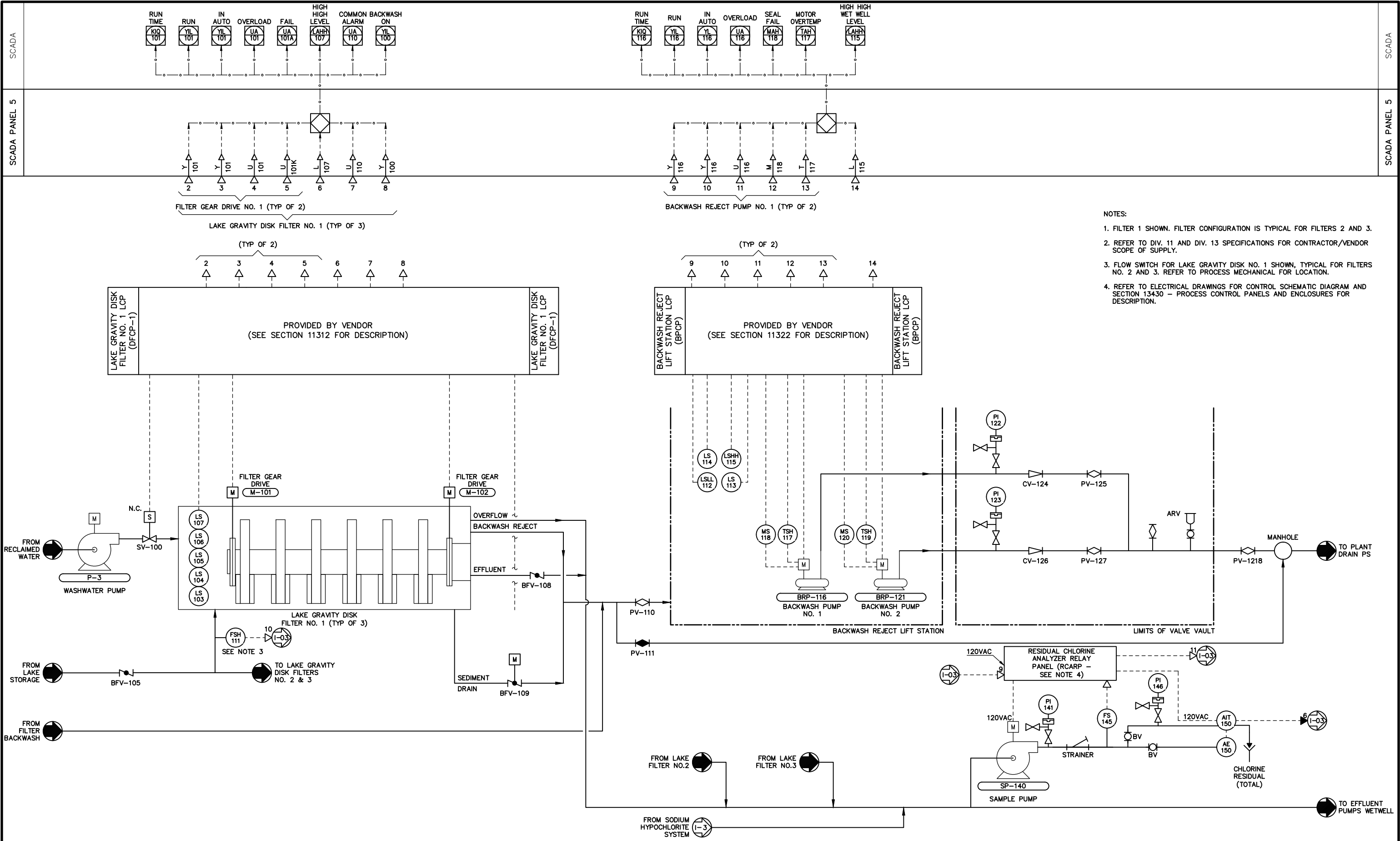
AUBREY A. HAUDRICOURT
P.E. #66861

REVISIONS			
NO.	BY	DATE	REMARKS

DES AAY
DWN KAK
CKD WMS

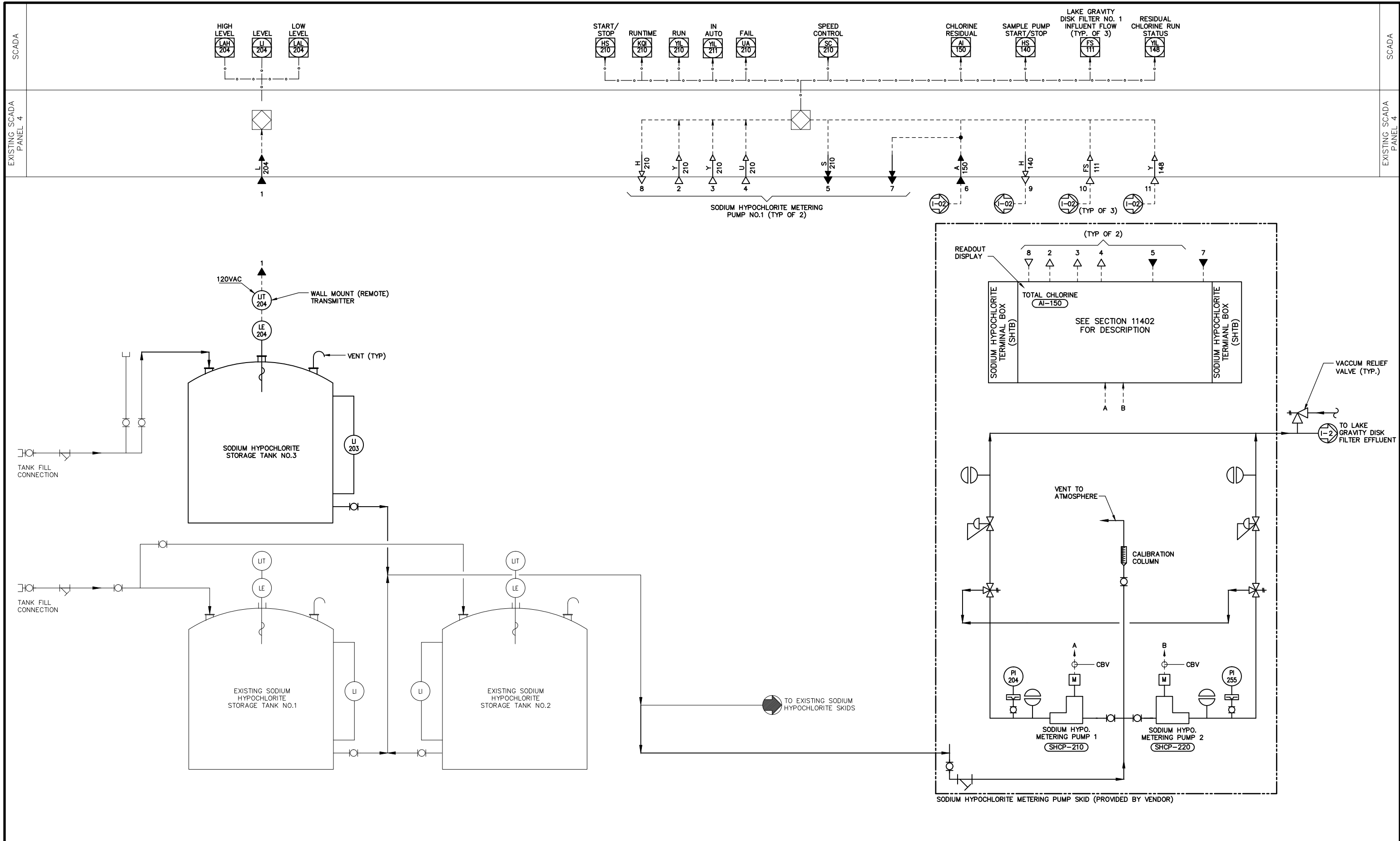


XREFS: \\Xref\0132_34422TB.dwg IMAGES: None
User: KKGaneprek Spec: PIRNIE STANDARD File: I:\ACAD\PROJ\0132 - MANATEE\006\Ins\0132008_02.DWG Scale: 1:1 Date: 06/29/2012 Time: 13:48 Layout: Blank



 ARCADIS The Water Division of ARCADIS CERTIFICATE OF AUTHORIZATION NO. 67 14025 RIVEREDGE DR. SUITE 600 TAMPA, FLORIDA 33637	BID DOCUMENTS AUBREY A. HAUDRICOURT P.E. #66861	REVISIONS				DES AAY DWN KAK CKD WMS		MANATEE COUNTY SOUTHEAST WRF LAKE FILTRATION SYSTEM	LAKE GRAVITY DISK FILTER AND BACKWASH PUMP STATION P&ID	COPYRIGHT © 2011 MALCOLM PIRNIE, INC. THE WATER DIVISION OF ARCADIS DATE JULY 2012 SHEET I-02 CAD REF. NO. 0132008_02
		NO.	BY	DATE	REMARKS					

XREFS: \\net\0132_34\22TB.dwg IMAGES:None
User:Kkasparek Spec:Pirnie STANDARD File: \\ACAD\PROJ\0132 - MANATEE\008\ins\0132008_03.DWG Scale:1:1 Date:06/29/2012 Time:13:49 Layout:Blank



REVISIONS				REMARKS
NO.	BY	DATE		





1. PROVIDE SUNSHIELD AS PER DIV 13 SPECIFICATIONS.
FACE PANEL STAND NORTH WHEREVER POSSIBLE.



1. PROVIDE BALL VALVES FOR ALL PRESSURE SWITCHES, GAUGES AND TRANSMITTERS SHOWN ON I DRAWINGS. PROVIDE DIAPHRAGM SEALS FOR APPLICATIONS AS SHOWN ON DRAWINGS.



NTS

1. SAMPLE DRAIN AND "Y" STRAINER TO DRAIN
2. SAMPLE LINE - 1" PVC PIPE, KEEP SAMPLE INLET TUBING TO MINIMAL LENGTH. REFER TO MECHANICAL DETAILS FOR SAMPLE PUMP.
3. VALVE, BALL PVC 1/2" NPT, PVC
4. VALVE, BALL PVC 1/4" NPT, PVC
5. SAMPLE INLET - 1/4" NPT
6. SAMPLE DRAIN - 1/2" NPT
7. THE DETAIL INDICATES PIPING LAYOUT NECESSARY FOR THE ANALYZERS. REFER TO DIV 15 FOR ANALYZER PIPING & VALVE REQUIREMENTS.
8. MOUNT TO HDPE BACK-PANEL WITH 1/4" 316 SST EXPANSION ANCHORS, SEE ANALYZER PANEL DETAIL ON SHT. M-08.
9. SUN SHIELD TO BE INSTALLED AS PER DIV 13 SPECIFICATIONS. FACE PANEL STAND NORTH WHEREVER POSSIBLE.
10. ENCLOSURE, 24"H x 24"W x 8"D, NEMA 4X, 316 SS W/ WINDOW.
11. PADLOCKING HANDLE.



NTS



NTS

1. THE DETAIL REFERS TO TRANSMITTERS LOCATED OUTSIDE AND IS TYPICAL FOR ALL PANELS INCLUDING CONTROL PANELS.
2. SUN SHIELD SHALL BE AS PER DIV 13 SPECIFICATIONS. WELD, DRILL HOLES.
3. ALL EXPOSED EDGES TO BE GROUND SMOOTH AND BURR FREE.
4. PAINT ALL ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.



NTS

NOTES:

1. PROVIDE 3 INCHES OF CABLE BETWEEN FLOAT AND STRAP.
2. ALL BRACKETS, NUTS, BOLTS, ANCHOR RODS, AND POLES SHALL BE 316L STAINLESS STEEL,

