THE CITY OF NAPLES
NAPLES WWTRF
BLOWER IMPROVEMENTS

10600 CHEVROLET WAY, SUITE 300
ESTERO, FLORIDA 33928
Ph: 239-390-1467 Fax: 239-390-1769
www.tetratech.com

TETRA TECH

TECHNICAL DATA – EXHIBIT A

100% DESIGN
REVISED IN OCTOBER 2013

PREPARED FOR

THE CITY OF NAPLES

735 EIGHT ST. S
NAPLES, FLORIDA 34102

JOHN SOREY III	MAYOR
GARY PRICE	VICE MAYOR
BILL MOSS	CITY MANAGER
BOB MIDDLETON	UTILITIES DIRECTOR

CITY COUNCIL

TERESA HEITMANN
MARGARET "DEE" SULIK
BILL BARNETT
DOUG FINLAY
SAM SAAD III

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11 October 2013

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Daniel M. Nelson, P.E.
Florida Registration 56152
Tetra Tech Inc.
10600 Chevrolet Way, Ste. 300
Estero, Florida 33928
Engineering Business No. 2429

DATE _____

PROJECT LOCATION:
380 RIVERSIDE CIRCLE
NAPLES, FLORIDA 34102

CLIENT INFORMATION:
CITY OF NAPLES
735 EIGHT ST. S
NAPLES, FLORIDA 34102

Tt PROJECT No.:
200-08516-12001

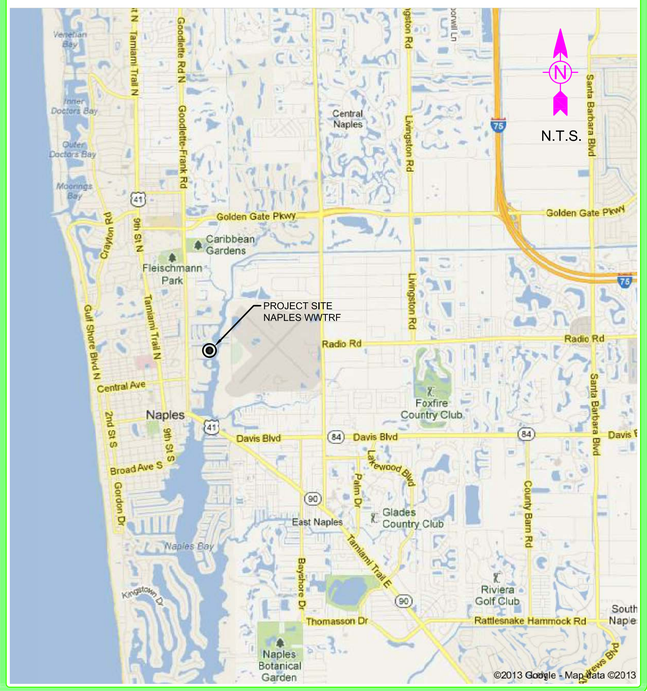
CLIENT PROJECT No.:

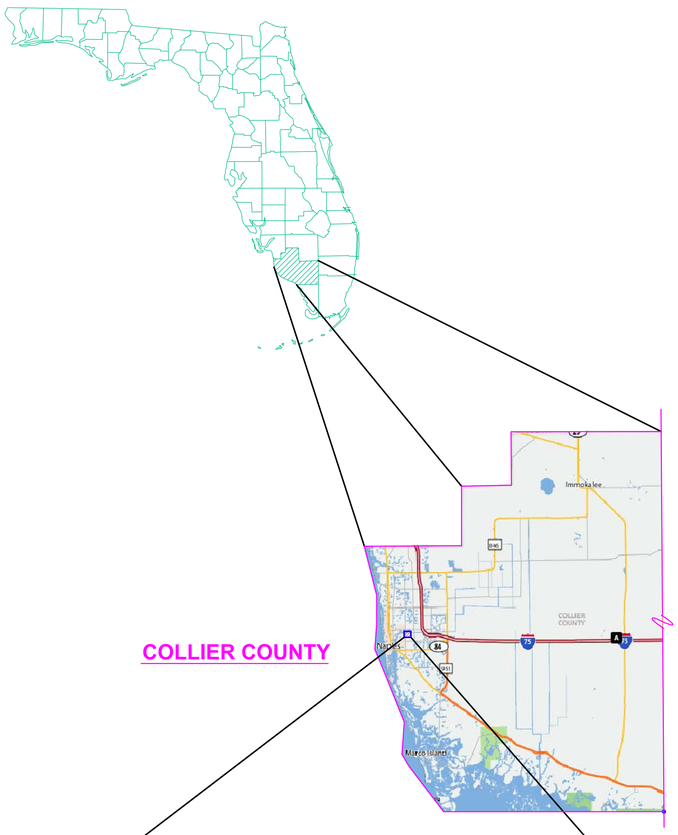
PROJECT DESCRIPTION / NOTES:
Installation of all Monitoring Dissolved Oxygen (DO) Devices, PLC, power, communications, junctions, conduits, conductors, flushing systems, integration, and all related and required hardware, materials, and assemblies necessary for compete and operational systems for the Aeration Basins to improve treatment throughout various stages of the Treatment Plant.

ISSUED:

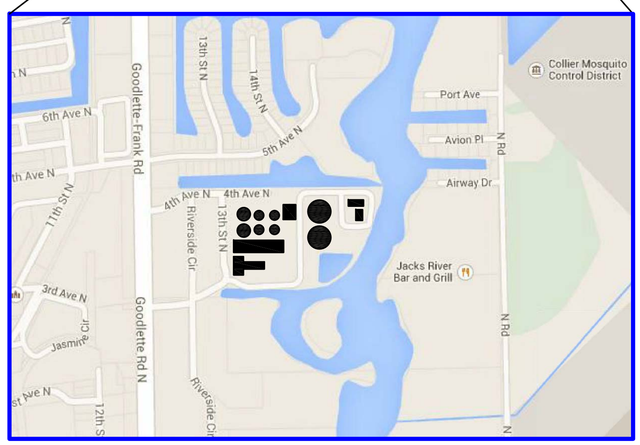
10/11/13 - 100% DESIGN REVISED
1/7/14 - Revised Plans for Re-Bid (DAG)

VICINITY MAP:





COLLIER COUNTY



NAPLES WWTRF PROJECT SITE

GENERAL NOTES

1. ALL LABOR, MATERIALS, AND METHODS OF CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE MINIMUM ENGINEERING AND CONSTRUCTION STANDARDS ADOPTED BY THE CITY OF NAPLES, THE PLANS, AND CONSTRUCTION SPECIFICATIONS. WHERE CONFLICTS OR OMISSIONS EXIST, THE CITY OF NAPLES STANDARDS SHALL DICTATE. SUBSTITUTIONS AND DEVIATION FROM PLANS AND SPECIFICATIONS SHALL BE PERMITTED ONLY WHEN WRITTEN APPROVAL HAS BEEN ISSUED BY THE ENGINEER.

2. SHOP DRAWINGS OF ALL MATERIALS BEING USED SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL REQUIRED PERMITS ARE OBTAINED AND IN HAND BEFORE BEGINNING ANY CONSTRUCTION. NO CONSTRUCTION OR FABRICATION OF ANY ITEM SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED ALL PLANS AND ANY OTHER DOCUMENTATION FROM ALL OF THE PERMITTING AND ANY OTHER REGULATORY AUTHORITIES. ANY PENALTIES, STOP WORK ORDERS ON ADDITIONAL WORK RESULTING FROM THE CONTRACTOR BEING IN VIOLATION OF THE REQUIREMENTS ABOVE SHALL BE FULLY BORNE BY THE CONTRACTOR.

4. THE LOCATION OF ALL EXISTING UTILITIES AND STORM DRAINAGE SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR INACCURACY. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITIES AND TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATION OF THESE UTILITIES WITH THE OWNER OF THE UTILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING UNDERGROUND UTILITY, WHETHER SHOWN ON THE PLAN OR LOCATED BY THE UTILITY COMPANY. ALL UTILITIES WHICH INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FIRST. ANY FEES ASSOCIATED WITH UTILITY RELOCATIONS SHALL BE BORNE IN ACCORDANCE WITH RESPECTIVE UTILITY COMPANY STANDARDS. IT IS REQUESTED UTILITY COMPANIES MOVE THEIR PARTICULAR UTILITIES. ANY DELAY OR INCONVENIENCE CAUSED TO THE CONTRACTOR BY THE RELOCATION OF THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.

5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION AND AT LEAST 48 HOURS BEFORE REQUIRED INSPECTION ON EACH AND EVERY PHASE OF WORK. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF 48 HOURS NOTICE PRIOR TO ANY SCHEDULED TESTING. NO PRESSURE TESTING, OR FINAL TESTING WILL BE ACCEPTED UNLESS WITNESSED BY THE ENGINEER'S REPRESENTATIVE.

6. ALL CONTRACTORS, CITY REPRESENTATIVES, AND UTILITY COMPANIES ARE RESPONSIBLE FOR THEIR RESPECTIVE SURVEYING AND LAYOUT FROM BENCHMARK PROVIDED ON CONSTRUCTION PLANS. ANY SURVEY MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE REPLACED UPON COMPLETION OF THE WORK BY A REGISTERED LAND SURVEYOR.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING ANY CONSTRUCTION ACTIVITIES FROM TAKING PLACE OUTSIDE OF THE LIMITS OF CONSTRUCTION SHOWN ON THE PLANS. ANY ON-SITE OR OFFSITE AREAS DISTURBED SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER.

8. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION PLANS AND ALL PERMITS ON THE JOB SITE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE TWO (2) SETS OF RECORD DRAWINGS TO THE ENGINEER OF RECORD WITHIN TWO (2) WEEKS AFTER CONSTRUCTION HAS BEEN COMPLETED ON EACH PHASE.

9. PRIOR TO BID PREPARATION, THE CONTRACTOR MUST BECOME FAMILIAR WITH THE OVERALL SITE CONDITIONS AND PERFORM ADDITIONAL INVESTIGATIONS AS DETERMINED NECESSARY TO UNDERSTAND THE LIMIT AND DEPTH OF EXPECTED ORGANIC SILT PEAT AREAS, ADEQUACY OF EXISTING MATERIALS AS FILL, DE-WATERING REQUIREMENTS, CLEAN FILL REQUIRED FROM OFFSITE, AND MATERIALS TO BE DISPOSED OF OFFSITE, ALL OF WHICH WILL AFFECT HIS PRICING. ANY DELAY, INCONVENIENCE, OR EXPENSE CAUSED TO THE CONTRACTOR DUE TO INADEQUATE INVESTIGATION OF EXISTING CONDITIONS SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED. THE MATERIALS ANTICIPATED TO BE ENCOUNTERED DURING CONSTRUCTION MAY REQUIRE DRYING PRIOR TO USE AS BACKFILL, AND THE CONTRACTOR MAY HAVE TO IMPORT MATERIALS, AT NO EXTRA COST, FROM OFFSITE TO MEET THE REQUIREMENTS FOR COMPACTION AND PROPER FILL.

10. THE CONTRACTOR SHALL SEED AND MULCH ALL AREAS DISTURBED BY CONSTRUCTION UNLESS SODDING, OR OTHER MORE READILY EFFECTIVE STABILIZATION PRACTICES ARE SPECIFIED ON THE PLANS.

SHEET INDEX

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NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION	BY

CITY OF NAPLES, FL

CITY OF NAPLES WRF AERATION MONITOR & CONTROL INSTRUMENTATION IMPROVEMENTS

LOCATION MAP, GENERAL NOTES, AND DRAWING INDEX

Project No.:	200-08516-12001
Designed By:	JAS
Drawn By:	GM
Checked By:	FWY

G-001

Bar Measures 1 inch

BACKGROUND PLAN AND ONE LINE SYMBOLS

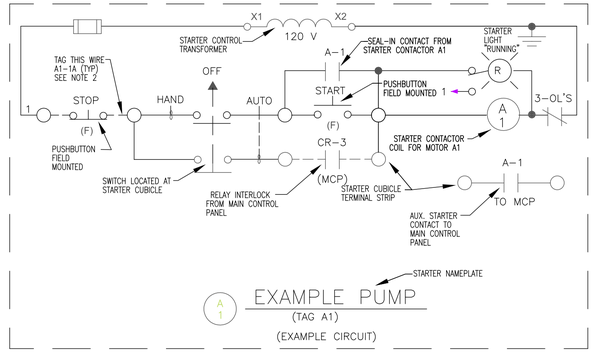
SYMBOL	DESCRIPTION
	CONTROL SWITCH (SEL. OR P.B.) SEE CIRCUITS FOR SPECIFIC TYPE
F FL	SEE CIRCUITS FOR SPECIFIC TYPE FLOAT SWITCH - FLOW SWITCH
T M	TEMPERATURE - HUMIDISTAT SWITCH (SUBSCRIPT = NO. OF STAGES)
L P V	LIMIT - PRESSURE - VACUUM SWITCH
ALT	ELECTRICAL OR MECHANICAL ALTERNATOR (SEE WIRING)
OS	OVERLOAD SWITCH OR DEVICE
TB	TERMINAL BOX
	SOLENOID VALVE
PC	PHOTOCELL LINE VOLTAGE
W	ITEM NO. INTERCOM EQUIPMENT
A WS LB	INTERCOMMUNICATION SYSTEM AMPLIFIER - WALL STATION - LINE BALANCE
DS	INTERCOMMUNICATION DESK SET
	FLOAT SWITCH
	INTERCOM. SPEAKER (CEILING LAY-IN)
	TELEPHONE OUTLET OR JUNCTION BOX
	WELDING RECEPTACLE - NEMA L9-50R 600V, 2P, 3W, SIMPLEX
HS	INTERCOM HANDSET - SURFACE MOUNTED WITH REMOTE SPEAKER AMPLIFIER
VC	INTERCOM VOLUME CONTROL
	INTERCOM SPEAKER - SURFACE MOUNTED
HS	INTERCOM HANDSET - FLUSH MOUNTED WITH REMOTE SPEAKER AMPLIFIER
	AS NOTED (LIGHTING PANEL, CONTROL PANEL, DISTRIBUTION PANEL ETC.) WALL MOUNTED
JB	JUNCTION BOX
	HEATER
	TRANSFORMER
	CONDUIT WITH CONDUIT SEAL FITTING
	CONDUIT EXPOSED
	CONDUIT CONCEALED
E	DIRECT BURIED CONDUIT
UG	DIRECT BURIED CABLE
OH	OVERHEAD LINE
DB	UNDERGROUND DUCT BANK
1 2 3 4 5 6	CONCRETE ENCASED DUCT BANK, WITH CABLE LOCATIONS AND SPARE DUCTS AS INDICATED ON DRAWINGS
	CABLE REEL
FOPP	16-PORT FIBER OPTIC PATCH PANEL (ST CONNECTORS)

SYMBOL	DESCRIPTION
	LOW VOLTAGE DISCONNECT SWITCH
	LOW VOLTAGE FUSE (BELOW 600V)
1 RV 2 FVR 3 2S,2W	ALL STARTERS SHALL BE FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE INDICATED (FVR) FULL VOLTAGE REVERSING (RV) REDUCED VOLTAGE (2S,2W) TWO SPEED, TWO WINDING
	600V, 3 POLE MOLDED CASE CIRCUIT BREAKER, FRAME & RATING AS SHOWN
1/2 A-3	SINGLE PHASE, FRACTIONAL HP MOTOR TO LOCATION INDICATED (SEE GEN. NOTE 4)
A1	THREE PHASE LOAD WITH IDENTIFICATION
	HIGH VOLTAGE FUSE (ABOVE 600 V)
FT 10	TAG NO. (BALLOON) FOR DEVICE INDICATED
A-3 FT 10 MCP OR CP-1	FOR POWER (SEE GEN. NOTE 4) 3/4"C(2/C#18 SHLD.)CONDUIT AND WIRE RUN FROM DEVICE INDICATED TO LOCATION INDICATED
	CAPACITOR, 3 PHASE, SIZE AS INDICATED
F C	DISCONNECT SWITCH (F) = FUSED (C) = CIRCUIT BREAKER
	MAGNETIC STARTER (BACKGROUND DRAWINGS ONLY)
SIZE 2	COMBINATION MAGNETIC STARTER FUSED UNLESS NOTED (CIRCUIT BREAKER)
LC	COMBINATION LIGHTING CONTACTOR WITH HAND-OFF-AUTO SWITCH
F R	MANUAL STARTER (R) = REVERSING
CP	CONTROL PANEL
TCP	TEMPERATURE CONTROL PANEL
1/8 UH-19	UNIT HEATER, 1/8 HORSEPOWER
BUS DUCT	600 VOLT FEEDER BUS DUCT (AMPERAGE AS INDICATED)
	LIGHTNING ARRESTOR
A-3	LOW VOLTAGE HOME RUNS 120/208 V 120/240 V (SEE GEN. NOTE 4)
NEMA 4	WATERTIGHT
NEMA 4X	WATERTIGHT AND CORROSION PROOF
NEMA 7	EXPLOSION PROOF - CLASS I, DIVISION I, GROUP D
NEMA 9	EXPLOSION PROOF - CLASS II, DIVISION 1
K	KEYLOCK
SD	SMOKE DETECTOR
E	EXIT LIGHT
	FLUORESCENT LUMINAIRE
	INCANDESCENT LUMINAIRE
	HIGH INTENSITY DISCHARGE LIGHT
EM	EMERGENCY BATTERY PACK

CONTROL CIRCUIT & PILOT DEVICE LEGEND

SYMBOL	DESCRIPTION
	PRESS. ACTUATED SWITCH
	FLOAT ACTUATED SWITCH
	FLOW ACTUATED SWITCH
	TEMP. ACTUATED SWITCH
	LIMIT SWITCH-NORMALLY OPEN
	LIMIT SWITCH-NORMALLY CLOSED
	LIMIT SWITCH-NORMALLY CLOSED-HELD OPEN
	LIMIT SWITCH-NORMALLY OPEN-HELD CLOSED
	LATCHING CABLE SWITCH
	TIME-DELAY FUSE
CR	CONTROL RELAY COIL
	CONTROL RELAY CONTACT-NORMALLY OPEN
	CONTROL RELAY CONTACT-NORMALLY CLOSED
CR L CR U	TWO COIL LATCHING RELAY
T	TIMING RELAY COIL
	TIMED CLOSED CONTACT ON ENERGIZATION
	TIMED OPEN CONTACT ON ENERGIZATION
	TIMED OPEN CONTACT ON DE-ENERGIZATION
	TIMED CLOSED CONTACT ON DE-ENERGIZATION
X1 X2	120 VAC TRANSFORMER

SYMBOL	DESCRIPTION
H O A	SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY OPEN
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY CLOSED
	PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
(F)	FIELD LOCATED STOP BUTTON
	MAINTAINED PUSH-PULL OPERATOR
	MAINTAINED STOP-START PUSHBUTTON OPERATOR
	SOLENOID OR CLUTCH
R 1	PUSH-TO-TEST INDICATING LIGHT
	MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)
	ZERO SPEED OR ANTI-PLUGGING SWITCH
	LOCAL TERMINALS WITH EXTERNAL WIRING
ETH	ELAPSED TIME INDICATOR
INST. INST.	TIMING RELAY INSTANTANEOUS CONTACTS



GENERAL NOTES:

1. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
2. ITEMS SHOWN CROSSHATCHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED.
3. FOR ITEMS INDICATED AS "FIELD LOCATE" CHECK DRAWINGS OF OTHER TRADES (IN PARTICULAR PIPING AND STRUCTURAL) FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
4. INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THHN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND. CONDUIT SHALL BE 3/4" MIN.
5. ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. INSTALLATION SHALL BE PLUMB AND LEVEL.
6. ELECTRICAL EQUIPMENT REMOVED FROM SITE SHALL BE RETURNED TO OWNER INCLUDING, BUT NOT LIMITED TO, MCC, MCC BUCKETS AND COMPONENTS, AND WIRING.
7. ELECTRICAL WIRES SHOWN SHALL BE RATED FOR 90-DEGREES CELSIUS, MINIMUM.

NOTES:

1. THE FOLLOWING COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:
   (F) FIELD MOUNTED NOT AT STARTER OR OTHER CONTROL PANELS.
   (S) STARTER PANEL MOUNTED.
   (TCP) AT TEMPERATURE CONTROL PANEL.
   (MCP) AT MAIN CONTROL PANEL.
   (1) AT CONTROL PANEL NO. 1.
   (2) AT CONTROL PANEL NO. 2.
2. WIRE NUMBERS (1,3 & 5) ETC. SHALL BE PREFIXED WITH STARTER TAG NUMBERS. THE WIRE NUMBER AFTER THE PREFIX, MAY BE THE MANUFACTURERS WIRE NUMBERING SYSTEM. WIRE MARKERS MAY BE USED AT EACH WIRE TERMINATION POINT.
3. CONTRACTOR SHALL PROVIDE A LIST OF EQUIPMENT AND MATERIALS NECESSARY FOR CONSTRUCTION, PER COUNTY STANDARDS, TO COUNTY PRIOR TO BID. CONTRACTOR'S LIST SHALL BE APPROVED BY COUNTY PRIOR TO SUBMITTING BID, ANY ADDITIONAL COST ASSOCIATED WITH ADHERING TO COUNTY STANDARDS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

FLOW DIAGRAM SYMBOL LEGEND

SYMBOL	DESCRIPTION
	FIELD OR LOCALLY MOUNTED DEVICE
	BOARD OR PANEL MOUNTED DEVICE -(DASHED LINR THRU CIRCLE INDICATES DEVICE MOUNTED INSIDE OF PANEL)
	ELECTRICAL SIGNAL
	AIR LINE
	HYDRAULIC SIGNAL
	ELECTROMAGNETIC OR SONIC SIGNAL
	CONNECTION TO PROCESS, OR MECHANIICAL LINK
	PROGRAMMED FUNCTION NOT NORMALLY ACCESSIBLE TO OPERATOR
	PROGRAMMED FUNCTION ACCESSIBLE THROUGH OPERATOR'S INTERFACE DEVICE
	PROGRAMMABLE CONTROLLER INPUT/OUTPUT POINT

R	RESET	F.O.	FAIL OPEN
T	TRIP	F.C.	FAIL CLOSE
AS	AIR SUPPLY		
DO	DISSOLVED OXYGEN		
GS	GAS SUPPLY		
HS	HYDRAULIC SUPPLY		
NS	NITROGEN SUPPLY		
ORP	OXYGEN REDUCTION POTENTIAL		
SS	STEAM SUPPLY		
SP	SET POINT		
WS	WATER SUPPLY		
PV	PROCESS VARIABLE		

SYMBOL	DESCRIPTION
	CHECK VALVE
S S0	SOLENOID VALVE OPERATOR, SOLENOID VALVE OPERATOR-DETENTED
	BUTTERFLY VALVE, DAMPER OR LOUVER
	GATE VALVE OR KNIFE GATE
	PLUG VALVE
	GLOBE VALVE
	FLOW ORIFICE
	VENTURI OR INSERT FLOW TUBE
	IN-LINE FLOW ELEMENT (MAGNETIC TYPE)
	IN-LINE FLOW ELEMENT (PROPELLER TYPE)
	IN-LINE FLOW ELEMENT (ULTRA SONIC)
PA PA	PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT & THROTTLING)
	STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT & THROTTLING)
M M	MOTOR OPERATED (OPEN-SHUT & THROTTLING)
	ROTAMETER
	TURBIDIMETER
	BALL VALVE
	SLUICE GATE
	SLIDE-STOP GATE
	INTERLOCKING AND MOTOR STARTER PURGE ALTERNATOR OR EXCLUSIVE OR
	PARSHALL FLUME
	COMPUTOR LOGIC SYSTEM, INPUT OR OUTPUT
	AIR SET ASSEMBLY
	TERMINAL OR TRANSITION POINT
	MOTOR

SYMBOL	DESCRIPTION
%	GAIN OR PROPORTIONAL CONTROL
∫	INTEGRAL OR RESET CONTROL
D	DERIVATIVE OR RATE CONTROL
V	VELOCITY ALGORITHM
1-0	ON-OFF CONTROL
√‾	SQUARE ROOT EXTRACTOR
Σ	ADD OR TOTALIZE
Δ	SUBTRACT OR DIFFERENCE
>	HIGHEST MEASURED VARIABLE
<	LOWEST MEASURED VARIABLE
E/I , I/P	CONVERT ONE TO ANOTHER
X , ÷	MULTIPLY , DIVIDE
Σ	BIAS OR REVERSING
f(x)	CHARACTERIZE - (EQUATION / /D/%/ETC.)

I.S.A. STANDARD LETTER FUNCTIONS

SYMBOL	FIRST LETTER	SUCEEDING LETTERS
A	ANALYSIS , ANALOG	ALARM
B	BURNER , FLAME	BATCH
C	CONDUCTIVITY , COMMAND	CONTROL (FEEDBACK TYPE)
D	DENSITY , SPECIFIC GRAVITY	
E	VOLTAGE	PRIMARY ELEMENT
F	FLOW RATE	RATIO
G	GAGING	GLASS
H	HAND , MANUAL	HIGH
I	CURRENT	INDICATE
J	POWER	SCAN
K	TIME , TIME SCHEDULE	CONTROL (NO FEEDBACK)
L	LEVEL , LIGHT	LOW
M	MOISTURE , HUMIDITY	MIDDLE , MODULATE
N		
O	OVERLOAD	ORIFICE
P	PRESSURE , VACUUM	POINT
Q	QUANTITY	TOTALIZE , INTEGRATE
R	RADIOACTIVITY	RECORD , PRINT , RECEIVE
S	SPEED , FREQUENCY , SOLENOID	SWITCH
T	TEMPERATURE , TURBIDITY	TRANSMIT , TRANSFORM
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION , VISCOSITY	VALVE , DAMPER , LOUVER
W	WEIGHT , FORCE	
X		
Y		RELAY , COMPUTE
Z	POSITION	DRIVE , ACTUATE

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MARK	DATE	DESCRIPTION	BY

CITY OF NAPLES, FL

CITY OF NAPLES WRF AERATION MONITOR & CONTROL INSTRUMENTATION IMPROVEMENTS

ELECTRICAL LEGEND

Project No.:	200-08516-12001
Designed By:	JAS
Drawn By:	JAS
Checked By:	FWY

E-001

Bar Measures 1 Inch

AERATION BASINS DISSOLVED OXYGEN (DO) MONITORING

M — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM B)

1. JBOX#1A->PWR
2. JBOX#1B->CTP (HOME RUNS)

A — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM B)

1. JBOX#2A->1A
2. JBOX#2B->1B->CTP (HOME RUNS)

B2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#7 BELOW 1A-BB2 CONTROLLER TO JBOX#8 @ 1B-DOP

B — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 1.25"C(3EA-4/C#18SH)

1. JBOX#3A->2A
2. JBOX#3B->2B->1B->CTP (CONTINUOUS RUNS)

C2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#5 BELOW 1B-BB2 CONTROLLER TO JBOX#6 @ 1C-DOP

L — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM E)

1. JBOX#1A->PWR
2. JBOX#1B->CTP (HOME RUNS)

D — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM E)

1. JBOX#12A->15A
2. JBOX#12B->15B->CTP (HOME RUNS)

D2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#13 BELOW 2A-BB2 CONTROLLER TO JBOX#14 @ 2B-DOP

E — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 1.25"C(3EA-4/C#18SH)

1. JBOX#11A->12A
2. JBOX#11B->12B->15B->CTP (CONTINUOUS RUNS)

E2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#10 BELOW 2B-BB2 CONTROLLER TO JBOX#9 @ 2C-DOP

K — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM G)

1. JBOX#22A->PWR
2. JBOX#22B->CTP (HOME RUNS)

F — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM G)

1. JBOX#19A->22A
2. JBOX#19B->22B->CTP (HOME RUNS)

F2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#20 BELOW 3A-BB2 CONTROLLER TO JBOX#21 @ 3B-DOP

G — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 1.25"C(3EA-4/C#18SH)

1. JBOX#11A->18A
2. JBOX#18B->19B->22B->CTP (CONTINUOUS RUNS)

G2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#16 BELOW 3B-BB2 CONTROLLER TO JBOX#17 @ 3C-DOP

J — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM E)

1. JBOX#29A->PWR
2. JBOX#29B->CTP (HOME RUNS)

H — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 2"C(2EA-4/C#18SH) + (3EA-4/C#18SH FROM E)

1. JBOX#26A->29A
2. JBOX#26B->29B->CTP (HOME RUNS)

H2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#27 BELOW 4A-BB2 CONTROLLER TO JBOX#28 @ 4B-DOP

I — E-101 — SECTION — NO SCALE

1. 1"C(3#12BLK, 2#12WT, 1#12G)
2. 1.25"C(3EA-4/C#18SH)

1. JBOX#25A->26A
2. JBOX#25B->26B->29B->CTP (CONTINUOUS RUNS)

I2 — E-101 — SECTION — NO SCALE

1. 2"C(1-5/16" FLUSH TUBING[DO] & 1 - DO PROBE CABLE)

1. JBOX#24 BELOW 4B-BB2 CONTROLLER TO JBOX#23 @ 4C-DOP

NOTE:

1. THIS PROJECT SHALL REQUIRE 26 4-20 mA ANALOG INPUTS INTO THE PLC FOR DISSOLVED OXYGEN MONITORING, AND (4) ADDITIONAL SPARE 4-20 mA ANALOG INPUTS SHALL BE PROVIDED.

Q — E-101 102 — SECTION — NO SCALE

1. 1¼"C(4-STRAND FIBER)
2. 1¼"C(3#4,1#8G)

1. INSTALL NEW FIBER CONVERTER AT NEW PLC TO NEW INSTALLED FIBER CONVERTER AT EXISTING PLC IN GENERATOR BUILDING
2. GENERATOR BUILDING FROM MCC #8 TO NEW 40 CIRCUIT PANEL ON NORTH SIDE OF AERATION BASINS.

PLC — THE NEW SPECIFIED PLC SHALL BE INSTALLED IN AN ALUMINUM PANEL (HINGED DOOR, NEMA 3R, STAINLESS STEEL SNAP LATCHES, DRIP EDGE, AND BACK PLATE) OF SUFFICIENT SIZE TO MOUNT A RACK SYSTEM FOR THE POWER SUPPLY, CPU, AND THE ANALOG MODULES FOR THE DEVICES DEFINED IN THE PROJECT WITH PROPER SPACING FOR REQUIRED WIRING DUCTS. PROVIDE ENCLOSURE SIZED TO ACCOMMODATE THE FULL BUILD OUT FOR FUTURE – (30) THIRTY ADDITIONAL 4–20 mA ANALOG INPUT POINTS, (20) TWENTY ADDITIONAL 4–20 mA ANALOG OUTPUT POINTS & (20) TWENTY DIGITAL INPUT/OUTPUT POINTS. THE PROGRAMMABLE LOGIC CONTROLLER SHALL BE ALLEN BRADLEY CONTROLLOGIX SERIES, WITH A L6 PROCESSOR. PROVIDE PLC RACK SIZED TO ACCOMMODATE THE I/O SHOWN HEREIN, PLUS 10% SPARE PER I/O TYPE. PROVIDE I/O MODULES AS REQUIRED FOR THIS PROJECT I/O ONLY. PROVIDE UPS SIZED TO MAINTAIN POWER TO PLC AND NETWORK EQUIPMENT ONLY FOR 45 MINUTES MINIMUM. PANEL SHALL NOT REQUIRE A LOCAL INTERFACE. PROVIDE ROOM IN ENCLOSURE TO INSTALL THE REQUIRED FIBER CONVERTERS.

CTP — THE NEW COMM TERMINAL PANEL WILL BE INSTALLED IN AN ALUMINUM PANEL (HINGED DOOR, 3R OR 12, SS SNAP LATCHES, DRIP EDGE, AND BACK PLATE) OF SUFFICIENT SIZE TO MOUNT THE PROTECTIVE TERMINAL STRIPS THAT ARE DEFINED IN THE PLC DESCRIPTION FOR CURRENT PROJECT AND FUTURE NEEDS. ACTUAL TERMINALS TO BE INSTALLED THIS PROJECT SHALL BE FOR THE (30) THIRTY 4–20 mA ANALOG INPUTS DEFINED. THE FOLLOWING DIN RAIL MOUNTED DEVICES SHALL BE INSTALLED IN LINE FOR EACH LOOP: INVENSYS EUROTHERM ULTRA SLIMPAKII #WV408 DC VOLTAGE CURRENT INPUT SIGNAL CONDITIONER.

PWR — THE NEW 40 CIRCUIT POWER PANEL SHALL BE A STANDARD, SURFACE MOUNT, WITH MAIN AND COVER AND SHALL BE INSTALLED IN AN ALUMINUM PANEL (HINGED DOOR, 3R OR 12, SS SNAP LATCHES, DRIP EDGE, AND BACK PLATE) OF SUFFICIENT SIZE TO MOUNT THE CIRCUIT BREAKER PANEL AND HAVE SUFFICIENT SPACE FOR REQUIRED CONDUITS/WIRING.

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NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION	BY

CITY OF NAPLES, FL

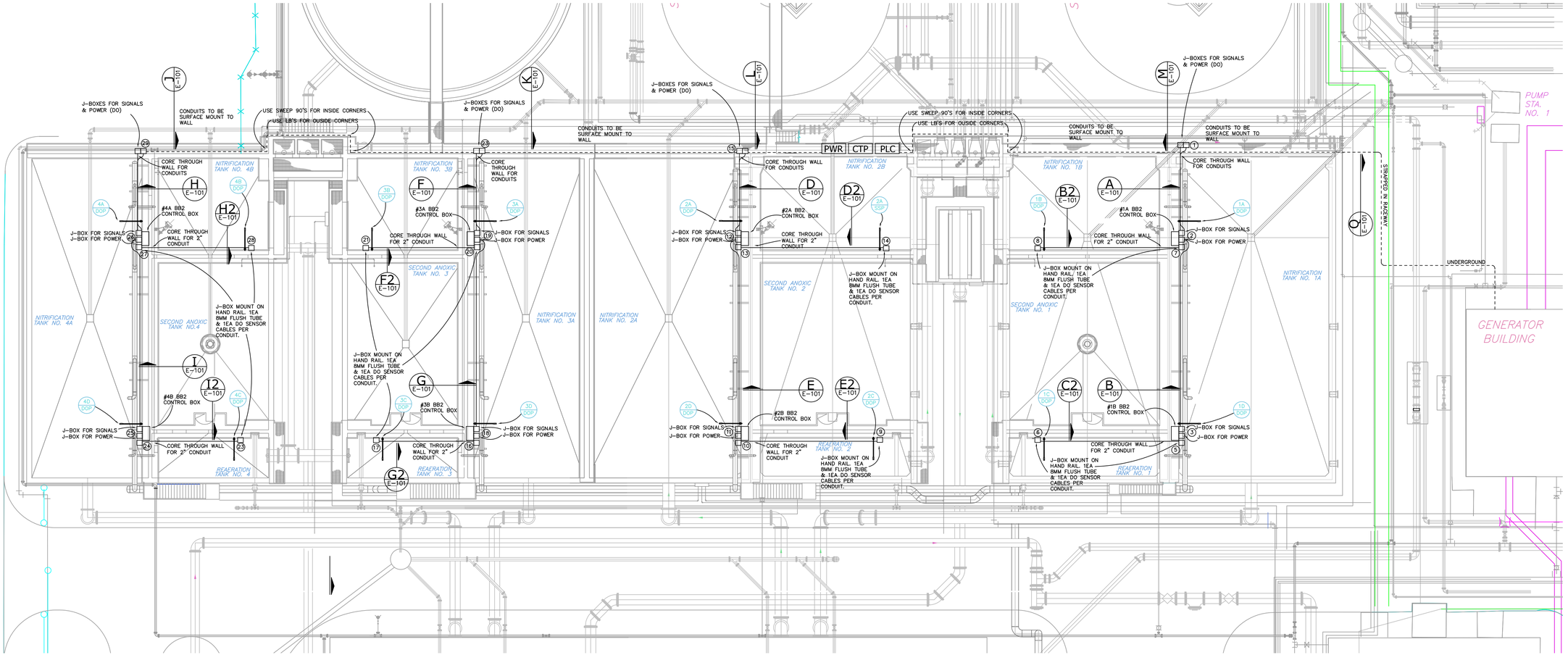
CITY OF NAPLES WRF AERATION MONITOR & CONTROL INSTRUMENTATION IMPROVEMENTS

AERATION DO - CONDUITS, CONDUCTORS, & TUBING LEGENDS

Project No.:	200-08516-12001
Designed By:	BCS
Drawn By:	BCS
Checked By:	WP

E-002

Bar Measures 1 inch



AERATION BASINS

SCALE: 1/16" = 1'-0"

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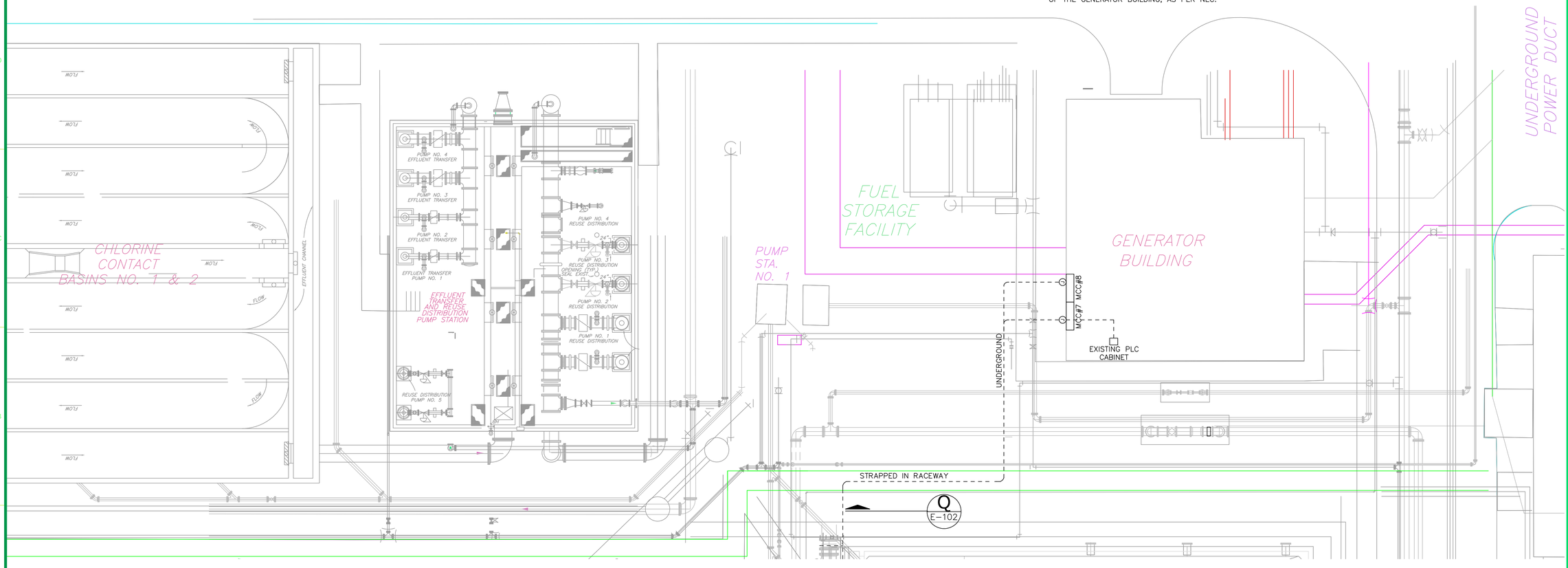
AERATION BASINS

Project No.:	200-08516-12001
Designed By:	BCS
Drawn By:	BCS
Checked By:	WAP

E-101

Bar Measures 1 inch

NOTES:
1. PROVIDE A 5KVA TRANSFORMER 480V–208V/120VAND CONNECT TO SPARE BREAKER IN MCC #8. REFER TO SECTION 'Q' ON E–002.
2. EQUIPMENT AND CONDUIT RUNS THAT REFER TO SHEET E–003 SHALL BE PERFORMED UNDER SEPARATE CONTRACT.
3. CONTRACTOR MAY USE EXISTING WIREWAY ON THE SIDE OF THE GENERATOR BUILDING, AS PER NEC.



0 2' 4' 8'
SCALE: 3/32"=1'-0"

AERATION BASINS TO GENERATOR
POWER & FIBER LOCATIONS
SCALE: 3/32" = 1'-0"

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MARK	DATE	DESCRIPTION	BY

CITY OF NAPLES, FL

CITY OF NAPLES WRF AERATION MONITOR & CONTROL INSTRUMENTATION IMPROVEMENTS

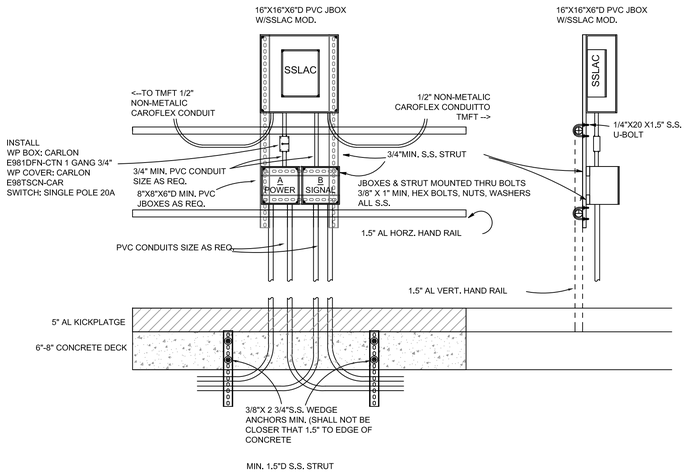
CONTINUATION OF E-101 POWER & FIBER

Project No.:	200-08516-12001
Designed By:	BCS
Drawn By:	BCS
Checked By:	CONTINUATION OF E-102

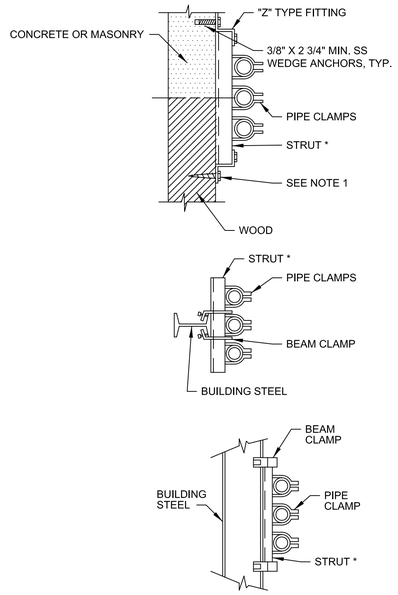
E-102

Bar Measures 1 inch

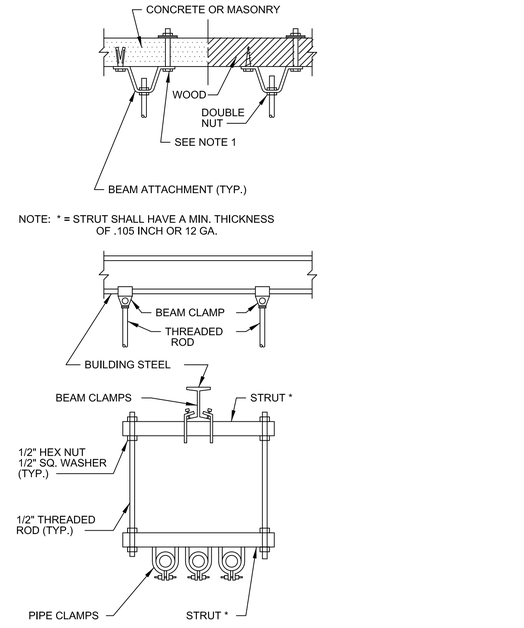
2/10/2014 2:13:59 PM - Z:\DCONST\UTIL\PROJECTS\2013\20142013 WWTP BLOWER_CONTROL PROJECT\TT DRAWINGS\E-102 - CONT E-101 POWER&FIBER TO GEN01072014.DWG - DAVE GRAFF



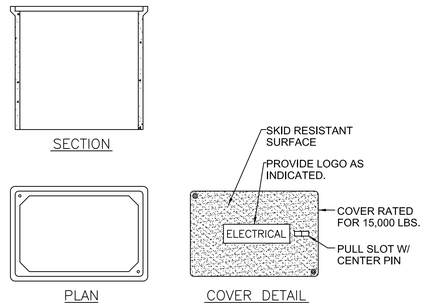
TYPICAL JBOX INSTALLATION ON HAND RAILS
(LAYOUTS MAY VARY) NO SCALE



VERTICALLY RACKED AND VERTICAL RUNS
NO SCALE



HORIZ. RACKED SUSPENDED RUN
NO SCALE



NOTES:

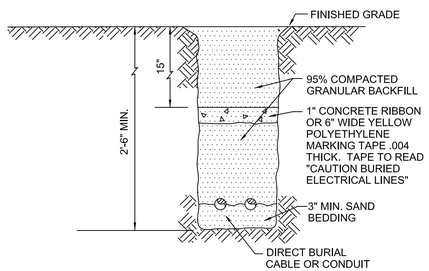
1. HANDHOLES FOR LOW VOLTAGE CABLES INSTALLED IN PARKING LOTS, SIDEWALKS, AND TURFED AREAS SHALL BE FABRICATED FROM AN AGGREGATE CONSISTING OF SAND AND WITH CONTINUOUS WOVEN GLASS STRANDS HAVING AN OVERALL COMPRESSIVE STRENGTH OF AT LEAST 10,000 PSI AND A FLEXURAL STRENGTH OF AT LEAST 5,000 PSI. PULLBOX AND HANDHOLE COVERS IN SIDEWALKS, AND TURFED AREAS SHALL BE OF THE SAME MATERIAL AS THE BOX. CONCRETE PULLBOXES SHALL CONSIST OF PRECAST REINFORCED CONCRETE BOXES, EXTENSIONS, BASES, AND COVERS.
2. IN PAVED AREAS, FRAMES AND COVERS FOR HANDHOLE ENTRANCES IN VEHICULAR TRAFFIC AREAS SHALL BE FLUSH WITH THE FINISHED SURFACE OF THE PAVING. IN UNPAVED AREAS, THE TOP OF MANHOLE COVERS SHALL BE APPROXIMATELY 1/2" ABOVE THE FINISHED GRADE.

QUAZITE COMPOSOLITE OR EQUAL

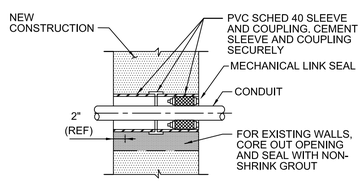
HANDHOLE DETAIL
NO SCALE

NOTE:

1. ALL MOUNTING HARDWARE SHALL BE 304 STAINLESS STEEL (I.E.: ANCHORS, BOLTS, WASHERS, NUTS, THREADED ROD, CLAMPS, STRUTS, ETC.)



TRENCHING DETAIL
NO SCALE



EXTERIOR WALL CONDUIT SLEEVE DETAIL
NO SCALE DO NOT USE BELOW GRADE

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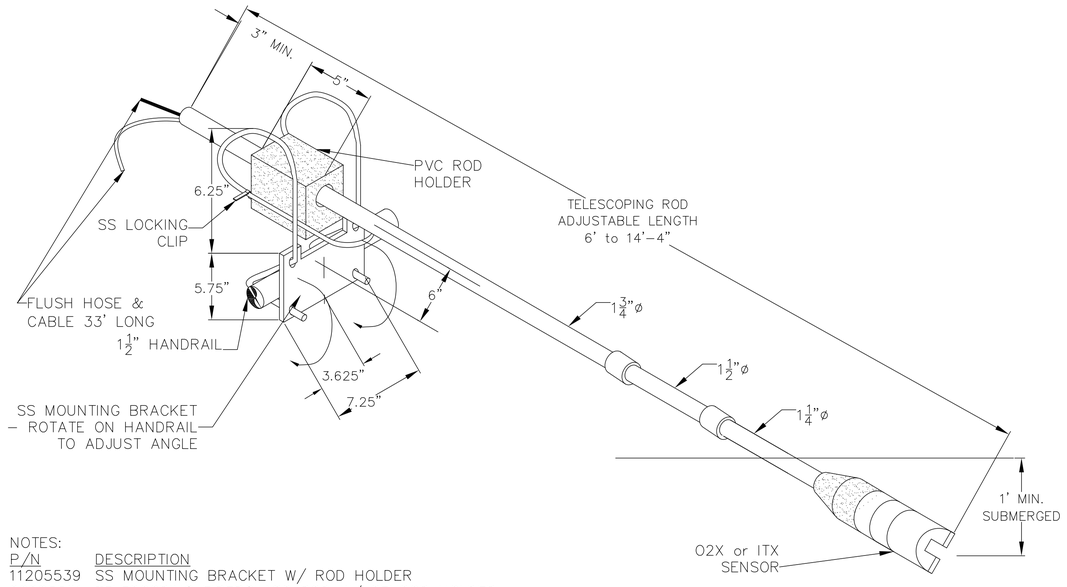
CITY OF NAPLES WRF AERATION MONITOR & CONTROL INSTRUMENTATION IMPROVEMENTS

DUCTBANK SECTIONS

Project No.:	200-08516-12001
Designed By:	JAS
Drawn By:	JAS
Checked By:	FWY

E-105

Bar Measures 1 inch

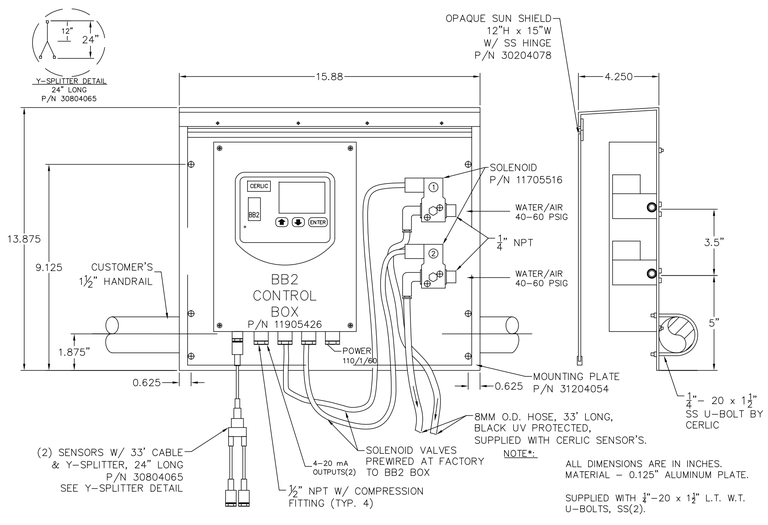


NOTES:

P/N	DESCRIPTION
11205539	SS MOUNTING BRACKET W/ ROD HOLDER
20205501	TELESCOPING FIBERGLASS ROD W/ SENSOR HOLDER
11305455	ITX SENSOR W/ 33' CABLE & HOSE
11305473	O2X SENSOR W/ 33' CABLE & HOSE

SS HANDRAIL MOUNTING BRACKET & RODTO 1-1/2" HANDRAIL

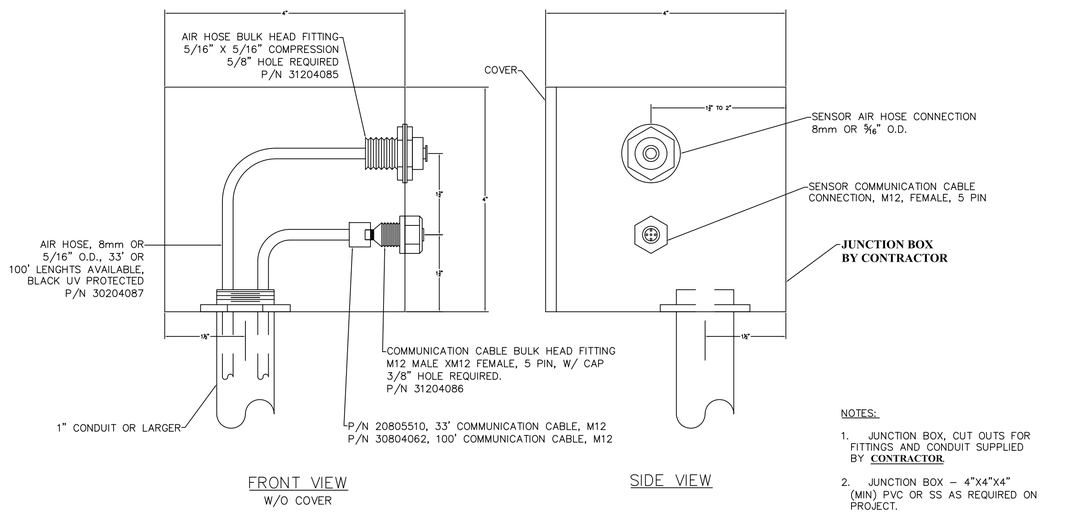
NO SCALE



ALL BB2 CONTROL BOXES SHALL BE SUPPLIED WITH 4 EA 4–20MA OUTPUTS

BB2 CONTROL BOX W/ 2 SOLENOID VALVES, MOUNTING PLATE & SUN SHIELD

NO SCALE



NOTES:

1. JUNCTION BOX, CUT OUTS FOR FITTINGS AND CONDUIT SUPPLIED BY **CONTRACTOR**.
2. JUNCTION BOX – 4"X4"X4" (MIN) PVC OR SS AS REQUIRED ON PROJECT.

JUNCTION BOX FOR M12 CABLE & 5/16" HOSE MINIMUM SIZE 4"x4"x4"

NO SCALE

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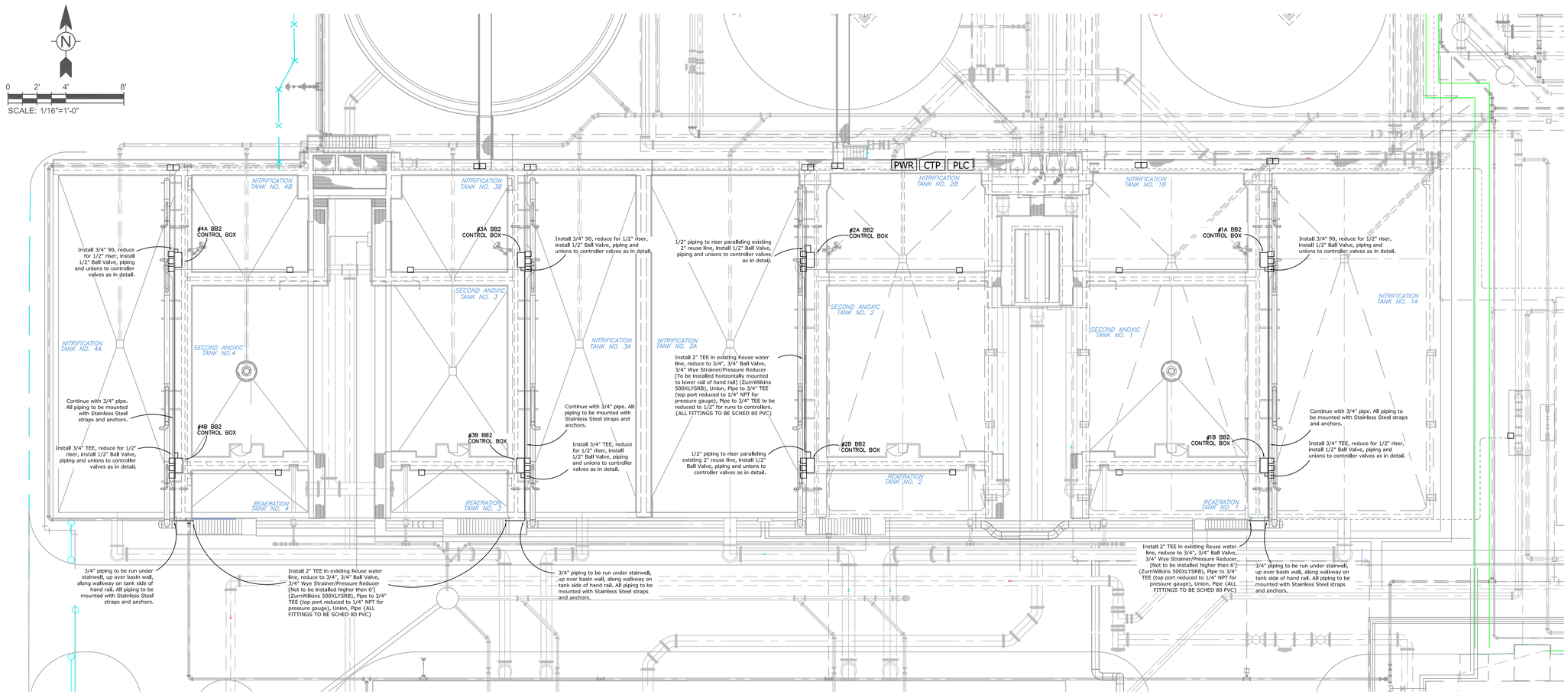
DETAILS

Project No.:	200-08516-12001
Designed By:	BCS
Drawn By:	BCS
Checked By:	DMB

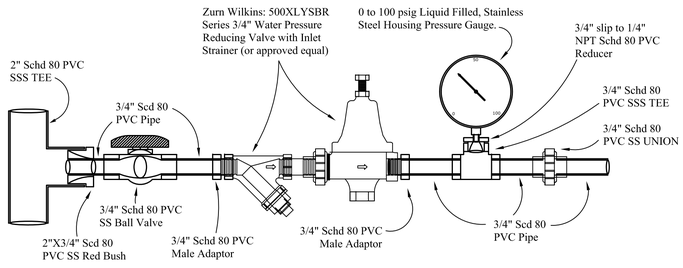
E-501

Bar Measures 1 inch



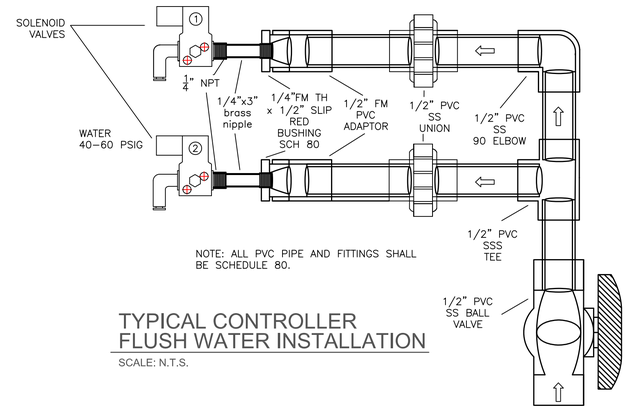
AERATION BASINS

SCALE: 1/16" = 1'-0"



TYPICAL PRESSURE REDUCING ASSEMBLY INSTALLATION

SCALE: N.T.S.



TYPICAL CONTROLLER FLUSH WATER INSTALLATION

SCALE: N.T.S.

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CITY OF NAPLES WRF AERATION MONITOR & CONTROL INSTRUMENTATION IMPROVEMENTS

FLUSH WATER PIPING REQUIREMENTS

Project No.: 200-08516-12001
Designed By:
Drawn By: GM
Checked By:

M-001

Bar Measures 1 inch