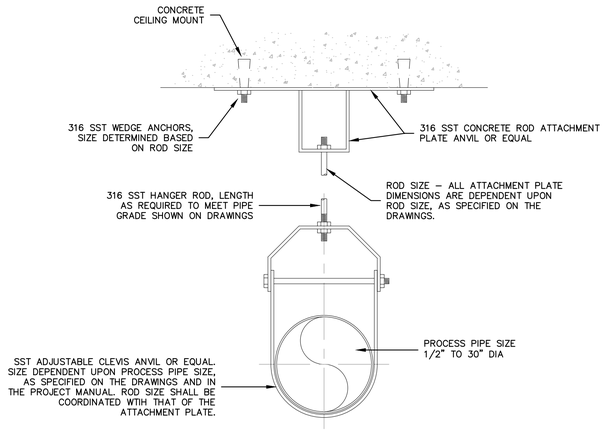
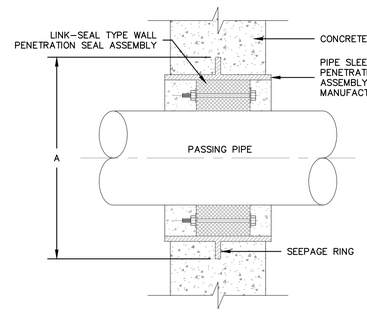


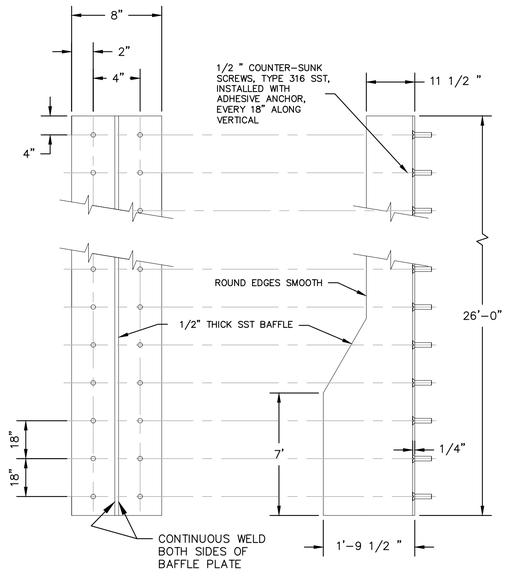
A
PIPE HANGER
SCALE: N.T.S.



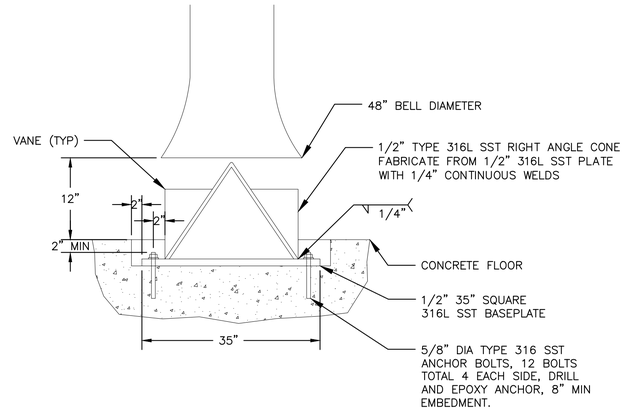
NOTE: ALL DIMENSIONS ARE GIVEN IN INCHES

PIPE SIZE (INCHES)	NOMINAL SLEEVE DIA.	"A"
2	4	6
2–1/2	4	7
3	5	7–1/2
4	6	9
6	10	13
8	12	15
10	14	17
12	16	19
14	18	21
16	20	23–1/2
18	24	25
20	24	27–1/2
24	30	32
30	36	40
42	48	52

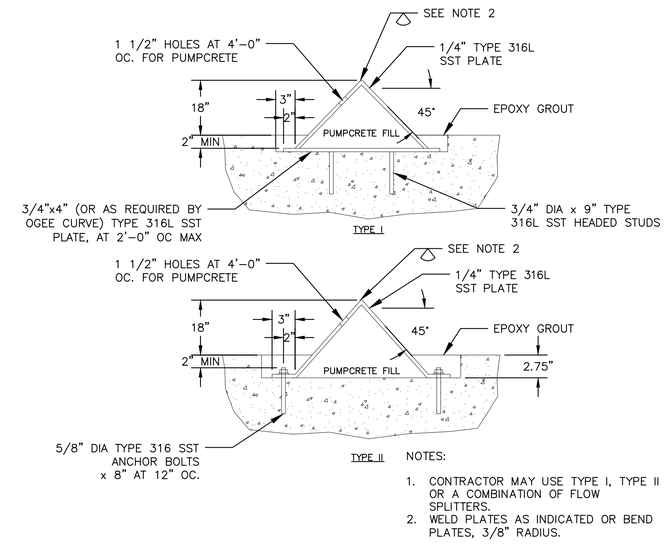
C
LINK SEAL PENETRATION
SCALE: N.T.S.



D
STAINLESS STEEL ANTI–ROTATION BAFFLE
SCALE: N.T.S.



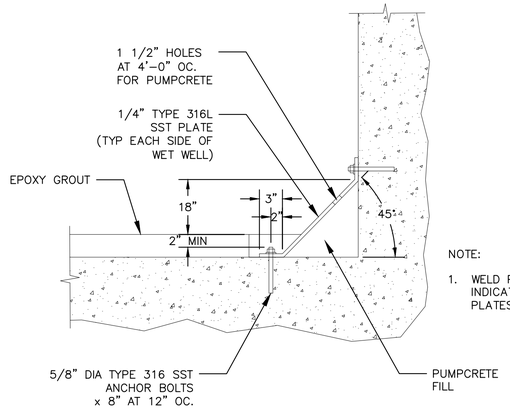
E
HYDROCONE WITH VANE
SCALE: N.T.S.



NOTES:

1. CONTRACTOR MAY USE TYPE I, TYPE II OR A COMBINATION OF FLOW SPLITTERS.
2. WELD PLATES AS INDICATED OR BEND PLATES, 3/8" RADIUS.

F
FLOW SPLITTER CENTER IN WET WELL
SCALE: N.T.S.



NOTE:

1. WELD PLATES AS INDICATED OR BEND PLATES, 3/8" RADIUS.

G
FLOW SPLITTER SIDES IN WET WELL
SCALE: 1' = 1'–0"

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
A	02/2017	90% DRAWINGS

LINE IS 2 INCHES AT FULL SIZE (IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

RE

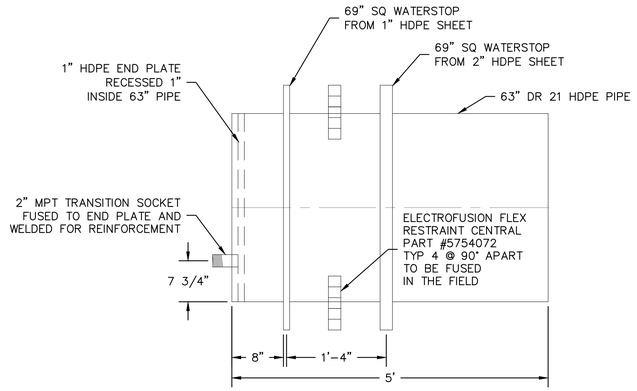
REISS ENGINEERING, INC.
CERTIFICATE OF AUTHORIZATION No. 8181
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679–5358
PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
MECHANICAL
DETAILS

STEFANO CERIANA, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #66379

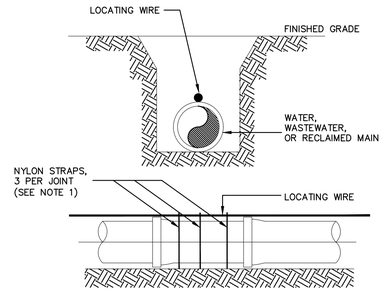
OCU FILE NO.: OCU #
DESIGNED BY: SC
DRAWN BY: DHG
CHECKED BY: MDP
CADD FILE: M17.DWG

SCALE: NOTED
DRAWING NO.: M17
SHEET: 80 OF 122



NOTES:
1. CONTRACTOR TO COORDINATE CONNECTION WITH REBAR LAYOUT

H
--
63 INCH HDPE WITH WATERSTOP
SCALE: N.T.S.



NOTES:
1. ALL PIPE SHALL REQUIRE INSULATED LOCATING WIRE (10 GAUGE SOLID COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE WRAPPED WITH NYLON STRAPS TO TOP CENTERLINE OF THE PIPE.
2. LOCATING WIRE SHALL BE CONTINUOUS INSIDE VALVE BOXES AND SHALL EXTEND 12" ABOVE TOP OF COLLAR.
3. WIRE INSULATION SHALL BE COLOR CODED FOR THE TYPE OF PIPE BEING INSTALLED.

DATE: February 11, 2011 PIPE LOCATING WIRE FIGURE A114

J
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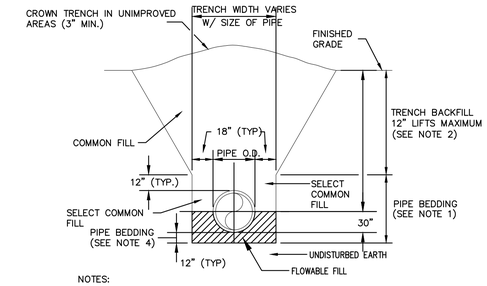
PIPE LOCATING WIRE
SCALE: N.T.S.



NOTES:
1. TRENCH BACKFILL: COMMON FILL COMPACTED TO 98% UNDER ROADS, CURB, GUTTER AND SHOULDERS; AND 95% IN ALL OTHER PLACES, OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR COMPACTION TEST, AASHTO T-180
2. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
3. REFER TO SPECIFICATIONS FOR SHEETING AND BRACING IN EXCAVATIONS.
4. GRAVITY SEWERS SHALL UTILIZE TYPE "A" BEDDING, IF REQUIRED BY THE ENGINEER. BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER LESS THAN 15", AND 6" MINIMUM FOR PIPE DIAMETER 16" AND LARGER.

PIPE BEDDING – TYPE A

K
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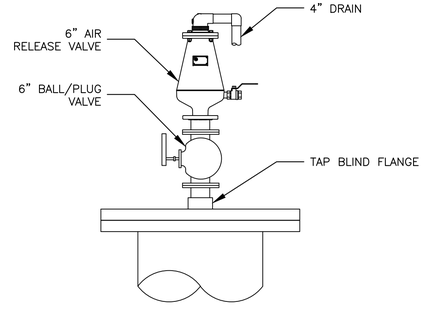
PIPE BEDDING TYPE – A
SCALE: N.T.S.



NOTES:
1. ABOVE DETAIL APPLIES TO A 6" ARV. FOR LARGER ARVS, PIPE DIAMETER AND VALVES SHALL BE EQUAL TO THE SIZE OF THE ARV.
2. ALL PIPING, VALVES AND APPURTENANCES TO BE 316 SST EXCEPT WHERE SPECIFIED OTHERWISE.

L
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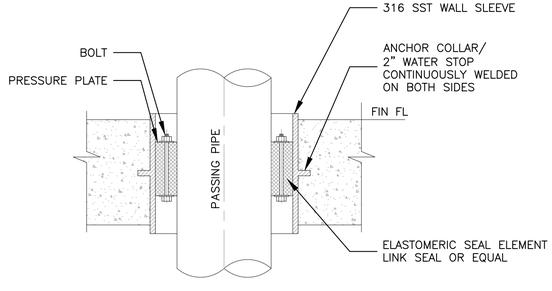
COMBINATION AIR RELEASE VALVE
SCALE: N.T.S.



M
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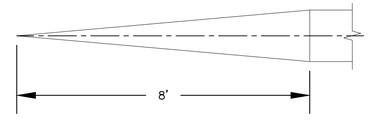
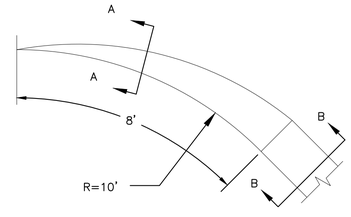
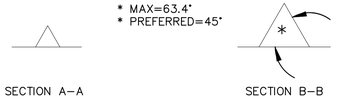
LINK SEAL FLOOR PENETRATION
SCALE: N.T.S.



PLAN, DEVELOPED



LONGITUDINAL SECTION



SECTION A–A SECTION B–B

N
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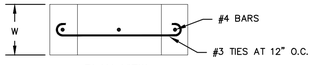
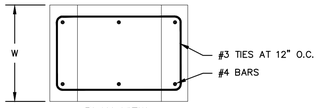
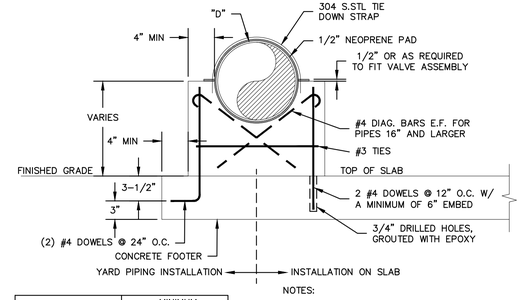
FLOW SPLITTER NOSE
SCALE: N.T.S.



PLAN VIEW
UP TO 16" PIPE



PLAN VIEW
24" PIPE THRU 60" PIPE



PIPE DIAMETER "D" (INCHES)	MINIMUM SUPPORT WIDTH "W" (INCHES)
≤ 12	6
≤ 16	8
≤ 24	12
30, 36, & 42	16
48	20
54 & 60	24

NOTES:
1. PROVIDE CONCRETE FOOTING BELOW GRADE FOR ALL FINISHED GRADE APPLICATIONS.
2. THE DRAWINGS INDICATE SUPPORTS FOR DEPICTION ONLY. ALL SUPPORT SPACING AND TYPE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. SUPPORT SPACING SHOWN ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF SUPPLYING AND INSTALLING ADEQUATE SUPPORTS PER THE SPECIFICATIONS.

P
--
CONCRETE PIPE SUPPORT
SCALE: N.T.S.

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C	12/2017	ISSUED FOR BID
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A	02/2017	90% DRAWINGS

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(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

REISS ENGINEERING, INC.
CERTIFICATE OF AUTHORIZATION No. 8181
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358

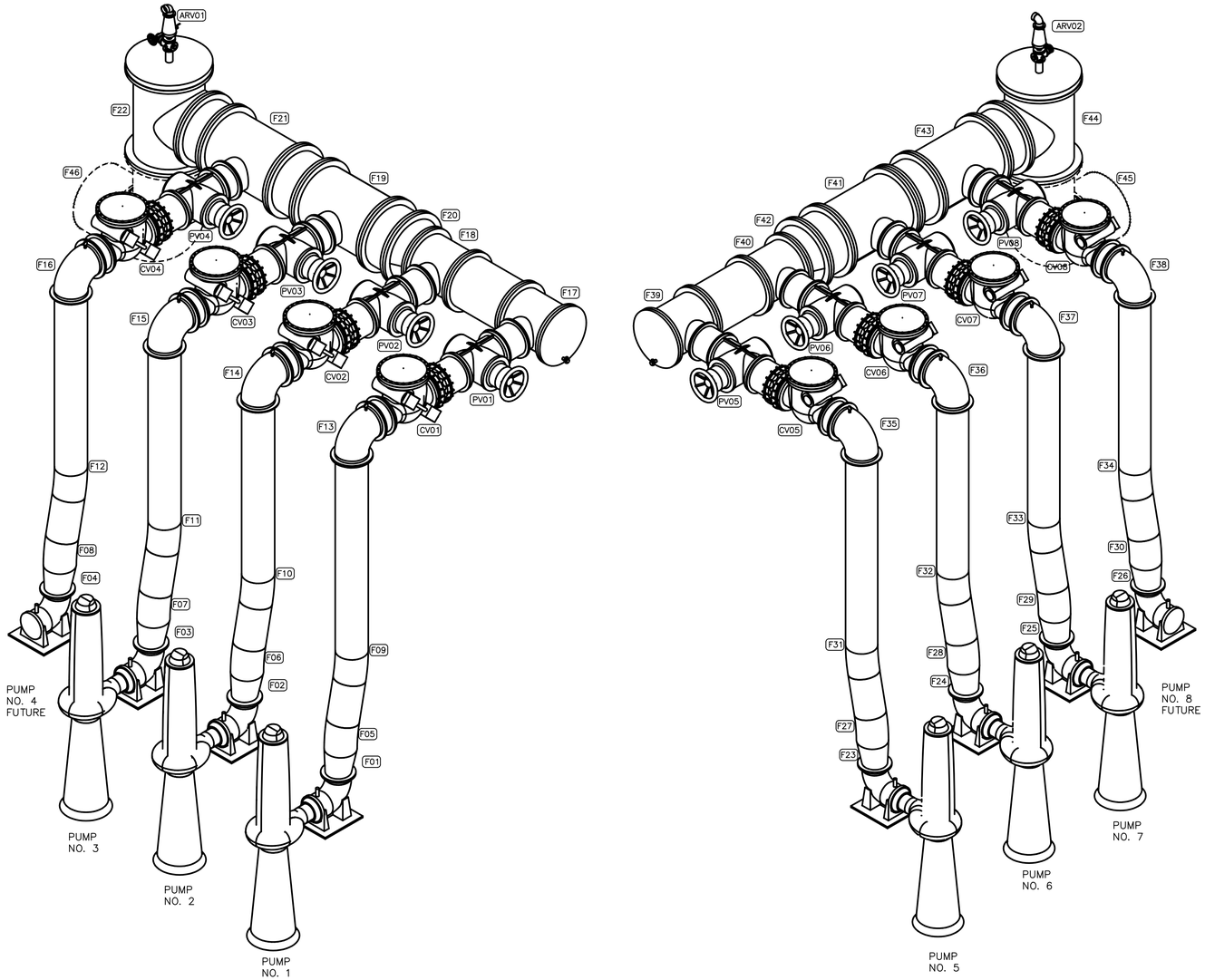
PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
MECHANICAL
DETAILS

STEFANO CERIANA, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #66379

OCU FILE NO.: OCU #
DESIGNED BY: SC
DRAWN BY: DHG
CHECKED BY: MDP
CADD FILE: M18.DWG

SCALE: NOTED
DRAWING NO.: M18
SHEET: 81 OF 122



FITTING ASSET TABLE

ID NUMBER	PLAN SHEET #	EASTING	NORTHING	ELEVATION	MAIN TYPE	FITTING TYPE	COMMENTS
F01	M08				Force Main	Reducer	
F02	M08				Force Main	Reducer	
F03	M08				Force Main	Reducer	
F04	M08				Force Main	Reducer	
F05	M08				Force Main	Bend 11.25°	
F06	M08				Force Main	Bend 11.25°	
F07	M08				Force Main	Bend 11.25°	
F08	M08				Force Main	Bend 11.25°	
F09	M08				Force Main	Bend 11.25°	
F10	M08				Force Main	Bend 11.25°	
F11	M08				Force Main	Bend 11.25°	
F12	M08				Force Main	Bend 11.25°	
F13	M07				Force Main	Bend 90°	
F14	M07				Force Main	Bend 90°	
F15	M07				Force Main	Bend 90°	
F16	M07				Force Main	Bend 90°	
F17	M07				Force Main	Tee	
F18	M07				Force Main	Tee	
F19	M07				Force Main	Tee	
F20	M07				Force Main	Reducer	
F21	M07				Force Main	Tee	
F22	M07				Force Main	Tee	
F23	M08				Force Main	Reducer	
F24	M08				Force Main	Reducer	
F25	M08				Force Main	Reducer	
F26	M08				Force Main	Reducer	
F27	M08				Force Main	Bend 11.25°	
F28	M08				Force Main	Bend 11.25°	
F29	M08				Force Main	Bend 11.25°	
F30	M08				Force Main	Bend 11.25°	
F31	M08				Force Main	Bend 11.25°	
F32	M08				Force Main	Bend 11.25°	
F33	M08				Force Main	Bend 11.25°	
F34	M08				Force Main	Bend 11.25°	
F35	M07				Force Main	Bend 90°	
F36	M07				Force Main	Bend 90°	
F37	M07				Force Main	Bend 90°	
F38	M07				Force Main	Bend 90°	
F39	M07				Force Main	Tee	
F40	M07				Force Main	Tee	
F41	M07				Force Main	Tee	
F42	M07				Force Main	Reducer	
F43	M07				Force Main	Tee	
F44	M07				Force Main	Tee	
F45	M08				Force Main	Bend 90°	
F46	M08				Force Main	Bend 90°	

VALVE ASSET TABLE

ID NUMBER	PLAN SHEET #	EASTING	NORTHING	ELEVATION	VALVE TYPE	MAIN TYPE	VALVE SIZE	VALVE MANUFACTURER	VALVE MODEL #	# TURNS TO CLOSE	GEAR ACTUATOR	GEAR RATIO	SIDE ACTUATOR	ACTUATOR MANUFACTURER	COMMENTS
PV01	M07				Plug	Force Main	30								
PV02	M07				Plug	Force Main	30								
PV03	M07				Plug	Force Main	30								
PV04	M07				Plug	Force Main	30								
PV05	M07				Plug	Force Main	30								
PV06	M07				Plug	Force Main	30								
PV07	M07				Plug	Force Main	30								
PV08	M07				Plug	Force Main	30								
CV01	M07				Check	Force Main	30								
CV02	M07				Check	Force Main	30								
CV03	M07				Check	Force Main	30								
CV04	M07				Check	Force Main	30								
CV05	M07				Check	Force Main	30								
CV06	M07				Check	Force Main	30								
CV07	M07				Check	Force Main	30								
CV08	M07				Check	Force Main	30								
ARV01	M07				ARV - Combination	Force Main	6								
ARV02	M07				ARV - Combination	Force Main	6								

NOTES

1. ASSET TABLES INCLUDE SPECIFIC ASSETS REQUIRED BY ORANGE COUNTY UTILITIES AND ARE NOT INCLUSIVE OF ALL ASSETS IN THIS SPECIFIC PROJECT.

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
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ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

REISS ENGINEERING, INC.
CERTIFICATE OF AUTHORIZATION No. 8181
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WINTER SPRINGS, FL 32708
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PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
MECHANICAL
AS-BUILT COORDINATE ASSET TABLES

STEFANO CERIANA, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #66379

OCU FILE NO.: OCU #
DESIGNED BY: SC
DRAWN BY: DHG
CHECKED BY: MDP
CADD FILE: M19.DWG

SCALE: NOTED
DRAWING NO. : M19
SHEET: 82 OF 122

MECHANICAL GENERAL NOTES

1 APPLICABLE CODES: FLORIDA BUILDING CODE FIFTH EDITION INCLUDING, MECHANICAL, PLUMBING, FUEL GAS. NEC 2011, SMACNA, ASHRAE, NFPA

2 THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF A COMPLETE SYSTEM IN ACCORDANCE WITH THESE DRAWINGS. THE APPLICABLE BUILDING CODE AND ALL OTHER APPLICABLE STATE, COUNTY, AND LOCAL ORDINANCES AND THE LATEST ADDITION OF THE FOLLOWING PUBLICATIONS; SMACNA, ASHRAE, NFPA 90A, 90B, 91, AND ANSI B-9.1 MECHANICAL REFRIGERATION.

3 THE CONTRACTOR SHALL PAY ALL COSTS OF PERMIT, INSPECTIONS, AND ALL OTHER COSTS INCIDENTAL TO THE COMPLETION AND TESTING OF THIS WORK.

4 THE CONTRACTOR SHALL VISIT THE SITE AND COORDINATE WITH ALL OTHER TRADES.

5 THE CONTRACTOR SHALL SUPPLY THE ARCHITECT WITH "AS-BUILT" DRAWINGS. IF FIELD CHANGES ARE MADE, CONTRACTOR NEEDING DRAWINGS CHANGES FOR INSPECTION, SHALL SUBMIT CHANGES WITH SUFFICIENT TIME TO MAKE DRAWINGS CHANGES. THE CONTRACTOR WILL BE BILLED HOURLY FOR CADD CHANGES IF THE CHANGES WERE NOT PRE-APPROVED BY THE ENGINEER AND OWNER.

6 THE CONTRACTOR SHALL SUBMIT FOR APPROVAL FIVE (5) COPIES OF MANUFACTURER'S DRAWINGS FOR EACH PIECE OF EQUIPMENT AND CONTROLS INCLUDED IN CONTRACT. CONTRACTOR SHALL ALSO SUBMIT OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT TO THE OWNER. CONTRACTOR SHALL ALSO SUBMIT WITH MANUFACTURER SUBMITTALS A NOTICE TO OWNER FOR TRAINING. TRAINING SHALL BE PROVIDED BY THE CONTRACTOR FOR ALL EQUIPMENT AND CONTROLS WITH NECESSARY TIME TO ENSURE THE OWNER HAS UNDERSTOOD SYSTEM. MINIMUM TRANING HOURS SHALL BE SHEDULED AT 4-HOURS. ALL COSTS AND TIME OF TRAINING SHALL BE INCLUDED IN THE BID.

7 ALL MATERIAL SHALL BE NEW OF U.S. MANUFACTURER OF GOOD QUALITY. ALL WORK SHALL BE PERFORMED AT INDUSTRY STANDARD QUALITY LEVEL BY CERTIFIED PROFESSIONALS. ALL EQUIPMENT SHALL BE UL OR ETL LISTED.

8 DUCT SIZES SHOWN ARE INSIDE AIRFLOW DIMENSIONS. WHERE INTERNAL LINERS ARE USED, INSIDE DIAMETER OF DUCT SHALL COMPENSATE FOR INSULATION THICKNESS.

9 ALL SUPPLY AND RETURN BRANCH TAKE-OFFS TO BE PROVIDED WITH MANUAL VOLUME DAMPERS. ALL ELBOWS AND TEE'S MUST BE FURNISHED IN TURNING VANES. PROVIDE MANUAL VOLUME DAMPERS AND EXTRACTOR AT ALL FLEX TAKE OFFS.

10 PROVIDE "CONSTRUCTION" AIR FILTERS IN ALL AIR MOVING EQUIPMENT AND ROUGHED IN AIR DEVICE BOOTS. FOR ALL ROUGHED IN FLEX RUN-OUTS PULL AND TWIST THE END SECTION OF THE OUTER FOIL FACE ONLY, SPIN SO THE FOIL CLOSES, SECURE WEATHER TIGHT WITH ZIP TIE TO PREVENT MOISTURE INTRUSION. PROVIDE NEW FILTERS FOR ALL AIR MOVING EQUIPMENT PRIOR TO START-UP. REPLACE ALL FILTERS PRIOR TO FINAL ACCEPTANCE BY OWNER. SUBMIT A NOTICE TO THE OWNER OF FILTER QUANTITIES, SIZES AND LOCATIONS OF ALL FILTERS CHANGED.

11 PROVIDE SMOKE DETECTORS WITH SERVICEABLE ACCESS DOORS IN ALL SUPPLY AIR DUCTS FROM ALL AIR HANDLERS WHERE NOTED. ALL SMOKE DETECTORS SHALL BE BY SAME MANUFACTURER, COORDINATE VOLTAGE, ETC. WITH ELECTRICAL CONTRACTOR AND FIRE ALARM SYSTEM, BEFORE ORDER. UPON DETECTION, SMOKE DETECTORS SHUT DOWN ASSOCIATED AIR MOVING EQUIPMENT AND ALL AIR MOVING EQUIPMENT SERVICING THAT AREA. WHERE NO FIRE ALARM SYSTEM IS INDICATED, MECHANICAL CONTRACTOR SHALL ALSO PROVIDE AND INSTALL REMOTE KEY SWITCH WITH AUDIBLE/VISUAL ALARM PER CODE.

12 PROVIDE TYPE "B" STATIC FIRE DAMPERS WITH CURTAIN TOTALLY OUT OF AIR STREAM IN ALL DUCTS OR OPENINGS PENETRATING RATED WALLS AND FLOORS PER ARCHITECTURAL LIFE SAFETY PLANS AND MECHANICAL PLANS.PROVIDE TYPE "A" STATIC FIRE DAMPERS WITH CURTAIN IN AIR STREAM FOR ALL FIRE DAMPERS USED IN CONJUNCTION WITH GRILLES/REGISTERS PENETRATING RATED WALLS AND FLOORS PER ARCHITECTURAL LIFE SAFETY PLANS AND MECHANICAL PLANS.

13 THERMOSTAT LOCATION SHALL BE APPROVED BY THE OWNER AND ENGINEERS BEFORE INSTALLATION. INSTALL 48" A.F.F. PER A.D.A. REQUIREMENTS. INCLUDE ADD ALTERNATE TO PROVIDE ALL THERMOSTATS WITH LOCKING COVERS AND COORDINATE REQUIREMENTS WITH OWNER. PROVIDE A KEYMAP AT EACH THERMOSTAT WHICH SHOWS A FLOOR PLAN OF AREA BEING SERVED BY THE THERMOSTAT. INSTALL KEYMAP WITHIN A GLASS PICTURE FRAME AND MOUNT ON WALL. LABEL THERMOSTAT FOR AIR UNIT BEING SERVED.

14 ALL INSULATION SHALL HAVE FIRE/SMOKE RATING LESS THAN 25/50.

15 PROVIDE MINIMUM OF 3' CLEARANCE IN FRONT OF ALL 120-240 VOLT PANELS AND 4' CLEARANCE IN FRONT OF ANY 480 VOLT PANEL. PROVIDE ADEQUATE SIDE CLEARANCE PER NEC.

16 MECHANICAL PLANS IN GENERAL, ARE DIAGRAMMATIC IN NATURE, AND ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, PLUMBING, ELECTRICAL, AND STRUCTURAL PLANS AND SHALL BE CONSIDERED AS ONE SET OF DOCUMENTS. DUCT AND PIPING OFFSETS, BENDS AND TRANSITIONS WILL BE REQUIRED TO PROVIDE AND INSTALL A COMPLETE FUNCTIONAL SYSTEM AND SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

17 THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO BIDDING, ORDERING, FABRICATING OR INSTALLATION OF MATERIALS OR EQUIPMENT.

18 ALL WORK SHALL BE DONE IN ACCORDANCE WITH FLORIDA BUILDING CODE FIFTH EDITION, NFPA, ASHRAE, AND SMACNA DUCT CONSTRUCTION STANDARDS.

19 ROUTE ALL DUCTWORK, PIPING AND ACCESSORIES IN A MANNER TO AVOID BUILDING COMPONENTS STRUCTURE, AND LIGHTING. COORIDNATE TRANSITIONS MADE TO MAXIMUM PRESSURE DROPS PER FAN AND PUMP MANUFACTURERS CURVES.

20 WHERE REFRIGERANT LINES ARE INSTALLED, SIZE PER MANUFACTURER'S INSTRUCTIONS WITH RESPECT TO LENGTH AND FITTINGS TO BE INSTALLED IN PIPING.

21 ALL DEBRIS SHALL BE PROPERLY DISPOSED OFF SITE. CLEAN UP SITE DAILY AFTER WORK IS COMPLETE. IF CLEAN UP PERFORMED BY OWNER'S REPRESENTATIVE AS A RESULT OF SUBCONTRACTOR NOT PERFORMING CLEAN UP OPERATIONS, OWNER WILL HAVE THE RIGHT TO CHARGE SUBCONTRACTOR FOR CLEAN UP LABOR.

22 CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY SUPPORTING DEVICES FOR ALL ACCESSORIES INCLUDED WITHIN THIS CONTRACT.

ABBREVIATIONS

AC	AIR CONDITIONING	MAX	MAXIMUM
ACH	AIR CHANGES PER HOUR	MBH	1000xBTU
AD	ACCESS DOOR	MCA	MINIMUM CIRCUIT AMPACITY
AFF	ABOVE FINISHED FLOOR	MIN	MINIMUM
AG	ABOVE GRADE	MISC	MISCELLANEOUS
AHU	AIR HANDLING UNIT	NTS	NOT TO SCALE
AI	ANALOG INPUT	OA	OUTSIDE AIR
AO	ANALOG OUTPUT	OC	ON CENTER
AP	ACCESS PANEL	PD	PRESSURE DROP
APPROX	APPROXIMATELY	PKU	PACKAGE UNIT
BAS	BUILDING AUTOMATION SYSTEM	PH	PHASE
BDD	BACK DRAFT DAMPER	POC	POINT OF CONNECTION
BFF	BELOW FINISHED FLOOR	PRESS	PRESSURE
		RA	RETURN AIR
BOD	BOTTOM OF DUCT	REF	REFRIGERANT
BOT	BOTTOM	RG	RETURN GRILLE
BTU	BRITISH THERMAL UNIT	RLA	RUNNING LOAD AMPS
CAP	CAPACITY	SA	SUPPLY AIR
CD	CONDENSATE DRAIN	SD	SUPPLY DIFFUSER
CFM	CUBIC FEET PER MINUTE	SD	SMOKE DETECTOR
CLG	CEILING	SEN	SENSIBLE
CMU	CONCRETE MASONRY UNIT	SG	SUPPLY GRILLE
CONN	CONNECTION	SP	STATIC PRESSURE
DB	DRY BULB	STRUCT	STRUCTURAL
DDC	DIRECT DIGITAL CONTROL	T	TEMPERATURE
DN	DOWN	TSP	TOTAL STATIC PRESSURE
DO	DIGITAL OUTPUT	TYP	TYPICAL
DP	DEW POINT	UG	UNDERGROUND
DX	DIRECT EXPANSION	UL	UNDERWRITERS LABORATORY
EA	EXHAUST AIR	VAV	VARIABLE AIR VOLUME
EAT	ENTERING AIR TEMPERATURE	VFD	VARIABLE FREQUENCY DRIVE
EA	EXHAUST AIR	WB	WET BULB
EER	ENERGY EFFICIENCY RATIO		
EF	EXHAUST FAN		
EG	EXHAUST GRILLE		
EL	ELEVATION		
ELEC	ELECTRICAL		
ENT	ENTERING		
EQUIP	EQUIPMENT		
ESP	EXTERNAL STATIC PRESSURE		
ET	EXPANSION TANK		
EXH	EXHAUST		
EXIST	EXISTING		
F	FAHRENHEIT		
FACP	FIRE ALARM CONTROL PANEL		
FL	FLOOR		
FLA	FULL LOAD AMPACITY		
H	HUMIDITY		
HC	HEATING COIL		
HP	HORSEPOWER		
	HERTZ		
IN-H20	INCHES OF WATER		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		

THIS IS A GENERAL LIST OF ABBREVIATIONS AND MAY NOT BE USED ON A SPECIFIC PROJECT. IF AN ABBREVIATION IS USED ON A PROJECT AND IS NOT REPRESENTED IN THIS LIST, CONTRACTOR SHALL SUBMIT A REQUEST FOR INFORMATION.

LEGEND

SYMBOL	DESCRIPTION
	INDICATES DIRECTION OF AIRFLOW
TYPE A 6"Ø, AIRFLOW 100, CONNECTION SIZE	USE TO IDENTIFY SUPPLY, RETURN OR EXHAUST GRILLE VALUES AND TYPE
T	THERMOSTAT
SD	SMOKE DETECTOR
FD	GREENHECK STATIC FIRE DAMPER WITH ACCESS DOOR SEE ARCHITECTURAL LIFE SAFETY PLANS FOR FIRE RATED WALL LOCATIONS
FSD	GREENHECK FIRE-SMOKE DAMPER WITH ACCESS DOOR (24V ACTUATOR) SEE ARCHITECTURAL LIFE SAFETY PLANS FOR FIRE RATED WALL LOCATIONS
	CEILING SUPPLY DIFFUSER
	RETURN GRILLE
	EXHAUST GRILLE

THIS IS A GENERAL LIST OF SYMBOLS. ALL SYMBOLS MAY NOT BE USED ON A SPECIFIC PROJECT

DUCTWORK LEGEND

SYMBOL DOUBLE LINE	DESCRIPTION
	FLEXIBLE DUCTWORK
	EXISTING EQUIPMENT OR DUCTWORK TO BE REMOVED.
	EXISTING DUCTWORK TO REMAIN NEW DUCTWORK
	MANUAL VOLUME DAMPER (MVD) MOTOR OPERATED DAMPER (MOD)
AD AD	ACCESS DOOR
	RADIUS ELBOW (R=1.5)
	VANED ELBOW
	BRANCH DUCT TAKE-OFF
DN UP	RISE OR DROP DIRECTION OF AIR FLOW
	CHANGE FROM RECTANGULAR TO ROUND DUCT ON SINGLE LINE DUCT
	CHANGE IN SIZE OF DUCTWORK (CONCENTRIC)
	CHANGE IN SIZE OF DUCTWORK (ECCENTRIC)
	SPIN IN FITTING WITH MANUAL VOLUME DAMPER
	OPPOSED BLADE CONTROL DAMPER WITH ACTUATOR
	PARALLEL BLADE CONTROL DAMPER WITH ACTUATOR

THIS IS A GENERAL LIST OF SYMBOLS. ALL SYMBOLS MAY NOT BE USED ON A SPECIFIC PROJECT

SWRF INFLUENT PUMP HVAC	
Number	Sheet Name
H01	HVAC GENERAL INFORMATION AND SYMBOLS
H02	HVAC OVERALL FLOOR PLAN
H03	HVAC SECTIONS
H04	HVAC DETAILS
H05	HVAC SCHEDULES
H06	HVAC CONTROLS

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
A	02/2017	90% DRAWINGS

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

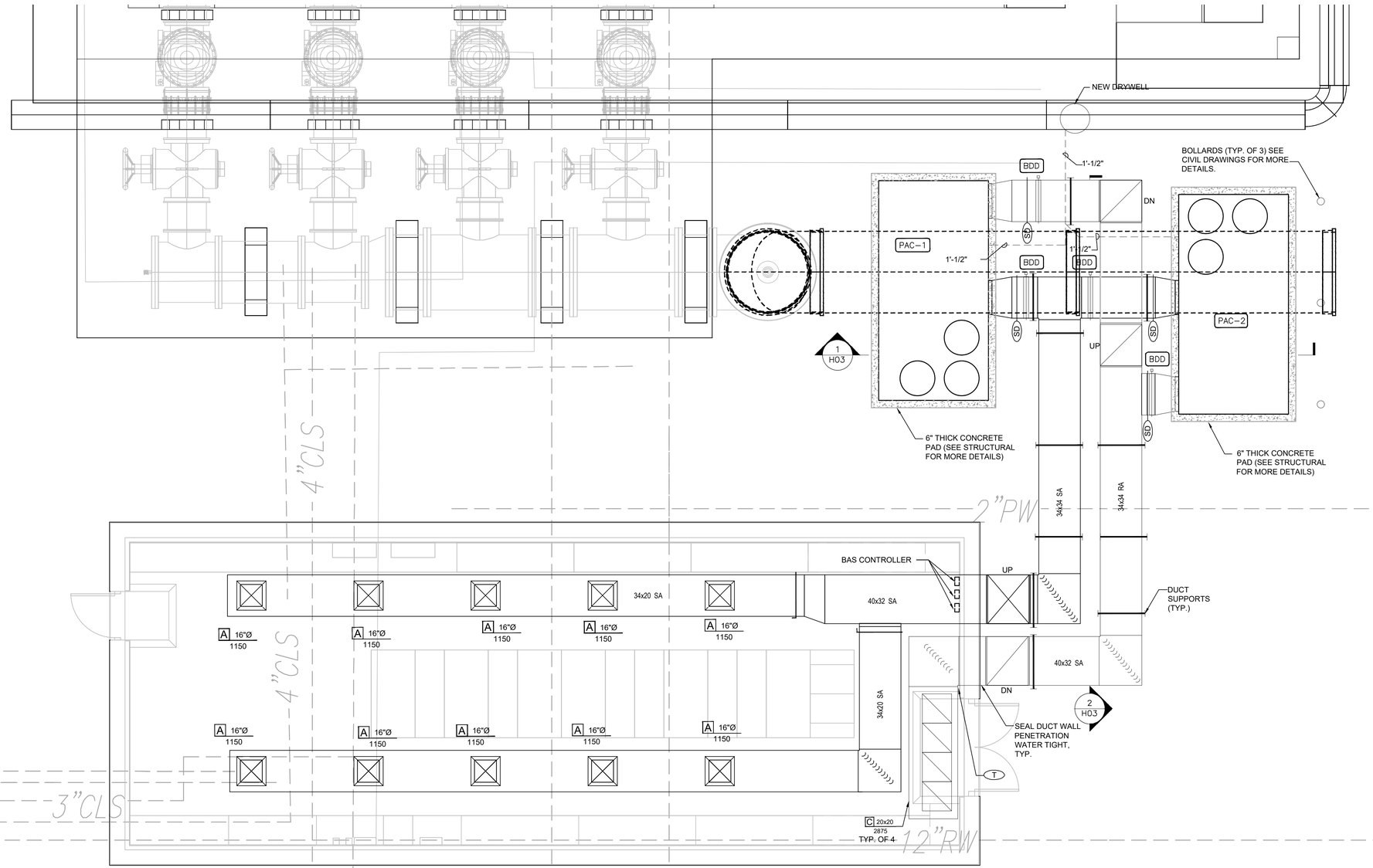
rtm engineering consultants
925 S Semoran Blvd | Suite 100 | Winter Park, Fl 32792
407.678.2055
Certificate of Authorization #31254

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
HVAC
GENERAL INFORMATION AND SYMBOLS

DALRIO ARTNEL LEWIS, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #77571

OCU FILE NO.: OCU #
DESIGNED BY: TB
DRAWN BY: TB
CHECKED BY: DL
CADD FILE: H01.DWG

SCALE: NOTED
DRAWING NO.: H01
SHEET: 83 OF 122



1 HVAC FLOOR PLAN

NORTH

0 2' 4' 8' 12'

1/4" = 1'-0"

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
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rtm engineering consultants
925 S Semoran Blvd | Suite 100 | Winter Park, Fl 32792
407.678.2005
Certificate of Authorization #31254

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
HVAC
FLOOR PLAN

DALRIO ARTNEL LEWIS, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 77571

OCU FILE NO.: OCU #
DESIGNED BY: TB
DRAWN BY: TB
CHECKED BY: DL
CADD FILE: H02.DWG

SCALE: NOTED
DRAWING NO. : H02
SHEET: 84 OF 122

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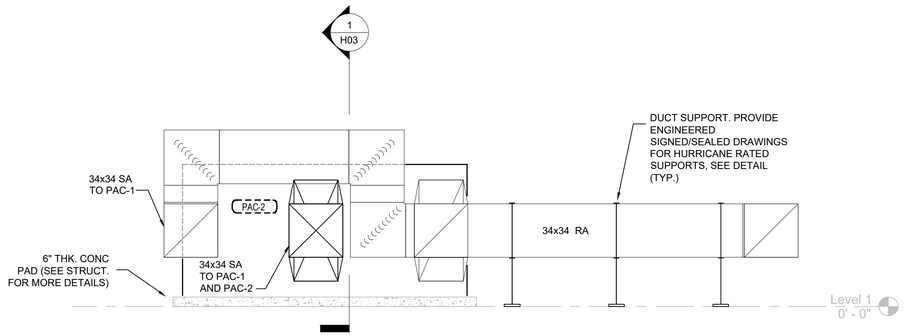
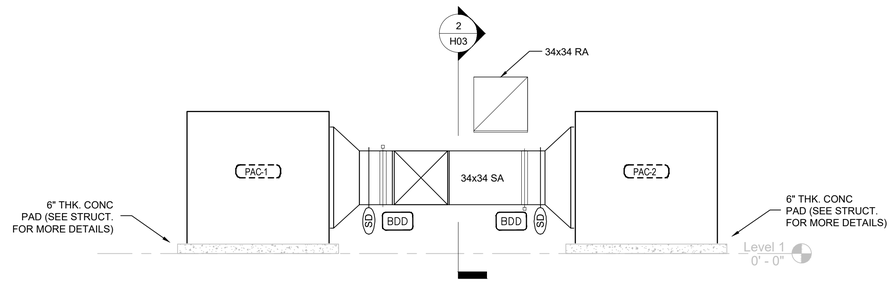


2 HVAC SECTION 2

NORTH

0 2' 4' 8' 12'

1/4" = 1'-0"



1 HVAC SECTION 1

NORTH

0 2' 4' 8' 12'

1/4" = 1'-0"

Parent Sheet Set:110031A_OCIPS Rev/Plot by:JAY MILLER Rev on:10/2/2017 8:50 AM Individual File Path:R:\PROJECTS\110031A - SOUTH WATER RECLAMATION FACILITY PUMP STATION (PH 2)\DESIGN\DRAWINGS\FINALDESIGN\H03.DWG

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
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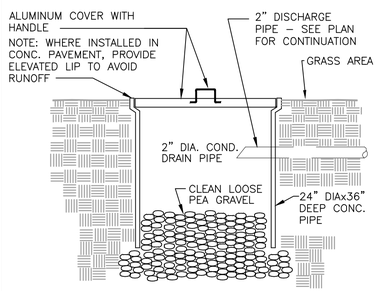
ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
HVAC
SECTIONS

DALRIO ARTNEL LEWIS, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 77571

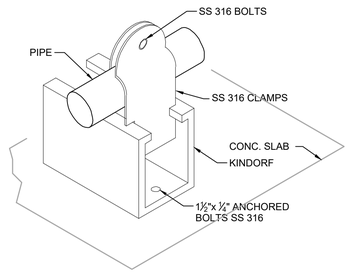
OCU FILE NO.: OCU #
DESIGNED BY: TB
DRAWN BY: TB
CHECKED BY: DL
CADD FILE: H03.DWG

SCALE: NOTED
DRAWING NO. : H03
SHEET: 85 OF 122



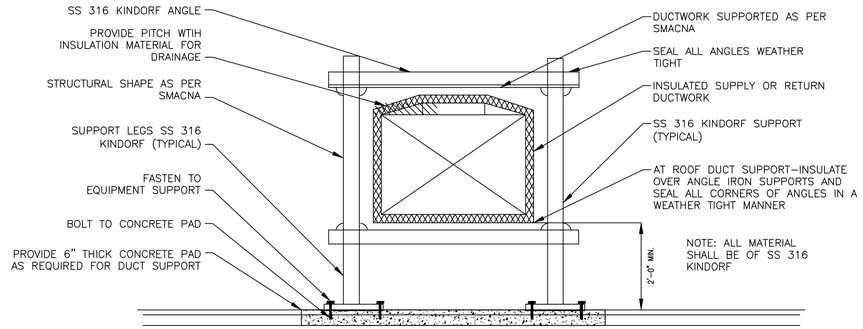
DRY WELL DETAIL

NOT TO SCALE



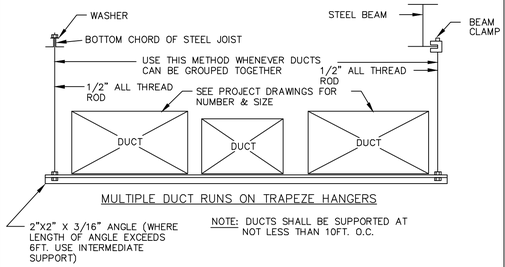
PIPE SUPPORT ON CONC. PAD DETAIL

NOT TO SCALE



DUCT SUPPORT ON GRADE DETAIL

NOT TO SCALE



MULTIPLE DUCT RUNS ON TRAPEZE HANGERS

NOTE: DUCTS SHALL BE SUPPORTED AT NOT LESS THAN 10FT. O.C.

HANGER AND SUPPORT DETAILS FOR LOW PRESSURE DUCTWORK (UP THRU 2" WG)

(VARIOUS METHODS OF ATTACHMENT) NOT TO SCALE

SMOKE DETECTOR SPECIFICATIONS

COMPANY : SIMPLEXGRINNELL (NO ACCEPTABLE SUBSTITUTIONS)

SMOKE DETECTOR TYPE : PHOTOELECTRIC 4 WIRE

GENERAL NOTES:

1. DUCT DETECTORS SHALL BE CONNECTED TO FIRE ALARM SYSTEM AS A SUPERVISORY SIGNAL ONLY (WHERE APPLICABLE).
2. EACH DUCT DETECTOR CONNECTED TO FIRE ALARM CONTROL PANEL, SHALL BE ON ITS OWN ZONE.

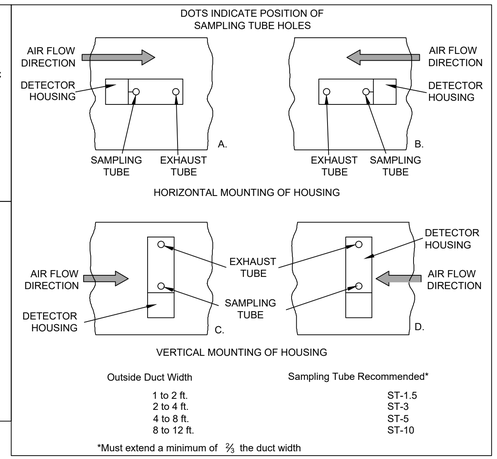
SMOKE DETECTOR SPECIFICATIONS

COMPANY : SYSTEM SENSOR
CONTACT : 1-800-SENSOR 2

SMOKE DETECTOR TYPE :
PHOTOELECTRIC 4 WIRE
MODEL # : DH100 AC DCLP

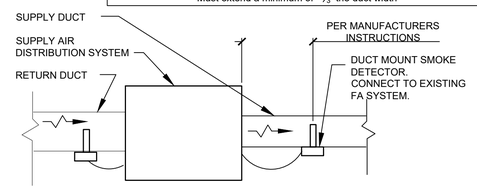
ALARM INDICATION TYPE :
AUDIBLE, VISIBLE, TEST
MODEL #: SSK451
PS24LOW
PS 12/245 LENSW

NOTES:
PROVIDE SUBMITTAL IF OTHER MANUFACTURER/MODELS ARE BID.



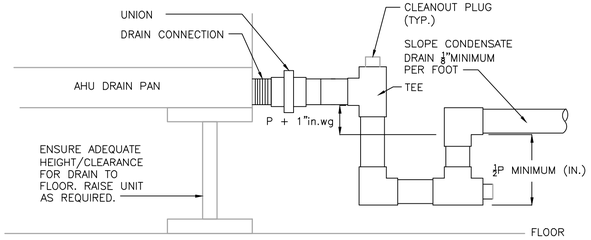
Outside Duct Width	Sampling Tube Recommended*
1 to 2 ft.	ST-1.5
2 to 4 ft.	ST-3
4 to 8 ft.	ST-5
8 to 12 ft.	ST-10

*Must extend a minimum of ⅔ the duct width



TYPICAL SMOKE DETECTOR MOUNTING DETAIL

NOT TO SCALE



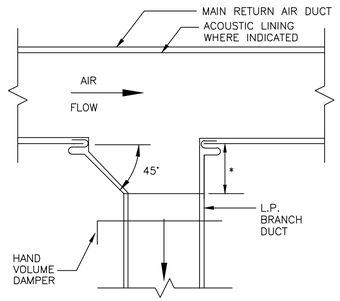
P - STATIC PRESSURE (in.wg) IN COOLING COIL PLUS ALL UPSTREAM STATIC PRESSURE.

GENERAL NOTES:

1. PRIOR TO ORDERING AHU, CONTRACTOR SHALL COORDINATE ALL BASE RAIL OR EQUIPMENT HEIGHTS TO OBTAIN PROPER CONDENSATE TRAP HEIGHTS AS ILLUSTRATED.
2. FILL CONDENSATE DRAIN TRAP PRIOR TO UNIT START-UP.
3. SIZE CONDENSATE DRAIN PIPING ACCORDING TO DRAWINGS. PIPE SIZE SHALL BE NO LESS THAN MANUFACTURER'S RECOMMENDED PIPE SIZE.

CONDENSATE TRAP DETAIL

NOT TO SCALE



*-EQUALS WIDTH OF BRANCH DUCT UP TO 12". 12" FOR ALL BRANCH DUCTS LARGER THAN 12".

TYPICAL SUPPLY AIR BRANCH DUCT TAKE-OFF

NOT TO SCALE

150 MPH WIND LOAD UN-INSULATED CURB INSTALLATION INSTRUCTIONS

The curbs should be anchored to concrete as follows:

- Anchors should be CODE APPROVED with nut & washer.
- Anchors should be placed in every hole provided in the base plate of the curb.
- Anchors should pass through the base plate & be embedded into the concrete.
- Follow anchor manufacturers instructions for grilling holes & installation into concrete.

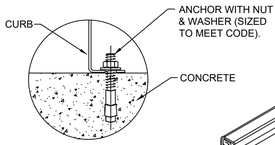
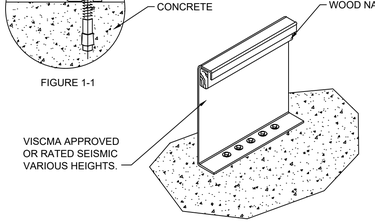


FIGURE 1-1



PACKAGE UNIT INSTALLATION AND HURRICANE REINFORCEMENT DETAIL

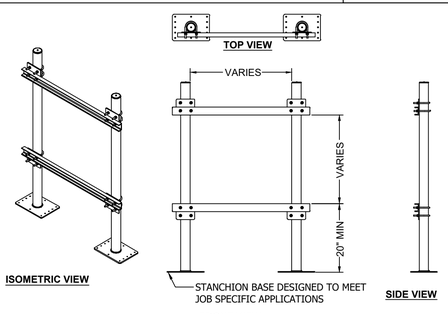
NOT TO SCALE

DESIGN CRITERIA

1. ADOPTED BUILDING CODE: FLORIDA BUILDING CODE 2014 WITH 2016 SUPPLEMENT AND ALL APPLICABLE LOCAL CODES
2. OCCUPANCY/RISK CATEGORY: II
3. WIND DESIGN CRITERIA:
   MEAN ROOF HEIGHT: 25'
   BASIC WIND SPEED: 139 mph - 3 sec gust
   EXPOSURE CATEGORY: B
4. APPLIANCES AND SUPPORTS THAT ARE EXPOSED TO WIND SHALL BE DESIGNED AND INSTALLED TO RESIST WIND PRESSURES DETERMINED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.
5. DESIGN REQUIREMENTS FOR ROOFTOP MECHANICAL/ELECTRICAL/PLUMBING SUPPORTS AND ATTACHMENTS SHALL BE PROJECT-SPECIFIC WITH SHOP DRAWINGS AND DOCUMENTATION SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF FLORIDA TO BE SUBMITTED FOR APPROVAL TO THE AUTHORITY HAVING JURISDICTION.

GENERAL NOTES:

1. RECOMMENDED SPACING IS NOT TO EXCEED 8 FEET ON CENTERS DEPENDING UPON THE LOAD.
2. WIDTH AND HEIGHT OF DUCT SUPPORTS SHALL BE BUILT JOB SPECIFIC.
3. ALL METAL PARTS SHALL BE STAINLESS STEEL 316.
4. BASIS OF DESIGN: MIRO INDUSTRIES STANCHION DUCT SUPPORTS.



DUCT SUPPORT DETAIL

NOT TO SCALE

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C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
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rtm engineering consultants
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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
HVAC
DETAILS

DALRIO ARTNEL LEWIS, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #77571

OCU FILE NO.: OCU #
DESIGNED BY: TB
DRAWN BY: TB
CHECKED BY: DL
CADD FILE: H04.DWG

SCALE: NOTED
DRAWING NO.: H04
SHEET: 86 OF 122

PACKAGED DX A/C SCHEDULE

	UNIT DESIGNATION	PAC-1	PAC-2
S/A FAN	TYPE	HORIZONTAL	HORIZONTAL
	TOTAL AIR C.F.M.	11500	11500
	OUTSIDE AIR C.F.M.	0	0
	NUMBER OF FANS	1	1
	EXT. STATIC PRESSURE (IN H2O)	1.5	1.5
	MOTOR HP	7.5	7.5
PERFORMANCE	MIN EFFECIENCY (EER)	11	11
	NOMINAL SYSTEM CAPACITY (TONS)	27.5	27.5
	MIN TOTAL CAPACITY (MBH)	309.7	309.7
	MIN SENSIBLE CAPACITY (MBH)	309.7	309.7
	ENTERING AIR TEMPERATURE °Fdb/wb	80/58.9	80/58.9
	LEAVING AIR TEMPERATURE °Fdb/wb	55.8/49.0	55.8/49.0
	FILTER TYPE AND THICKNESS	2" PLEATED	2" PLEATED
COMP	QUANTITY	3	3
	RLA	14.1/16.8/16.8	14.1/16.8/16.8
COND	NUMBER OF FANS	3	3
	AMBIENT AIR TEMPERATURE °Fdb	95°	95°
	FULL LOAD AMPS	3.50 EACH	3.50 EACH
FIRE ALARM	SUPPLY SIDE SMOKE DETECTION	YES	YES
	FIRE ALARM SHUT DOWN (DIV-16)	YES	YES
	KEYED SWITCH WITH ALARM (NO)	NO	NO
ELECTRIC	HEATER KW (AT SERVICE VOLTAGE)	-	-
	HEATER STAGES	-	-
	ELECTRIC SERVICE	460/3	460/3
	MINIMUM CIRCUIT AMPACITY (MCA)	72.1	72.1
	MAXIMUM OVERCURRENT PROTECTION	80	80
	OPERATING WEIGHT (LBS)	5000	5000
	DESIGN MFGR	TRANE	TRANE
	MODEL #	H330	H330
	SINGLE ZONE VAV	X	X
	ECM MOTOR WITH TRUE VAV OPERATION		
	HOT-GAS REHEAT		
	HIGH EFFICIENCY MOTORS	X	X
	MOTORIZED DAMPER	X	X
	THROUGH-THE BASE ELECTRICAL		
	SMOKE DETECTOR, RETURN & SUPPLY (BY MECH. CONTRACTOR)	X	X
	HAIL GUARDS	X	X
	DEMAND CONTROL VENTILATION KIT		
	CONDENSER COIL COATING	X	X
	HINGED ACCESS DOORS	X	X
	LOW AMBIENT CONTROLS	X	X
	CONTROL NOTES	ALL	ALL

1

Manufacturer shall provide the following options:

1. BacNet Communications Interface.
2. Complete coat on condenser coil unit.
3. High efficiency motors.
4. Hinged access doors.
5. Single Zone Variable Volume Motor.
6. Low Ambient controls to 30°F
7. Hail Guards.
8. Provide smoke detector in SA/RA duct (by mech. contractor)
9. Provide factory mounted disconnect switch.
10. Provide engineered curb with wind load calculations for Florida building code wind load compliance.
11. A basis of design: Thybar.

Control Notes - See schedule for final selections on each equipment

1. See control diagrams for more information. Provide control points as show on H06
2. BACnet comm interface, Provide control points as show on H06

AIR DISTRIBUTION SCHEDULE

TYPE — A SIZE — CFM — CONNECTION SIZE

TAG	SYMBOL	MOUNTING	DESCRIPTION
A		LAY-IN GRID CEILING	Ceiling supply air diffusers. 4-Cone Square. 24x24 Aluminized Steel Construction. Round Connection to match flex duct size. Diffuser shall consist of a precision formed back cone of one piece seamless construction which incorporates a round inlet collar of sufficient length for connecting rigid or flexible duct. The diffuser shall integrate with all duct sizes shown on the plans without affecting the face size and appearance of the unit. An inner cone assembly shall consist of 4 cones which drop below the ceiling plane to assure optimal VAV air diffusion performance. The inner cone assembly shall be completely removable from the diffuser face to allow full access to any dampers or other ductwork components located near the diffuser neck. Finish shall be 01 white. Basis of design is METALAIRE - Model 5800-AS.
C		LAY-IN GRID CEILING	Ceiling return air grille. 24x24 Aluminum Construction. Connection to match size listed on plan tag. Grilles shall be 45 degree deflection fixed louver type with blades spaced 2/3" on center. The blades shall run parallel to the (long / short) dimension of the grille. The grille shall be finished in (01 White). Basis of design is METALAIRE - Model RH.

REGISTERS, GRILLES AND DIFFUSERS PLANS SHALL HAVE A MINIMUM FLAME SPREAD RATING OF NOT OVER 25 AND A MINIMUM SMOKE DEVELOPED RATING OF NOT OVER 50 AND SHALL BE IN COMPLIANCE WITH SECTIONS 603.15 AND 603.15.1 OF. GRILLES, REGISTERS OR DIFFUSERS SHALL BE EQUIPPED WITH BALANCING DAMPERS WHERE BALANCING DAMPERS HAVE NOT BEEN INDICATED ON BRANCH DUCTS.

FBC Fifth Edition Energy Conservation C403.2.1 HVAC Sizing Calculations

Project Name/Owner	OC SWRF PUMP STATION
Project Address	ORLANDO, FL, 32819
Sizing method used	Peak load sizing
Outdoor Dry bulb used	**92.3 F**
Outdoor wet bulb used	**79.2 F**
Indoor Dry Bulb	**80.0 F**
Max RH used	**60% %RH**

		Cooling Capacity						Heating Capacity
Zone	Area	Total	Sensible	Latent	Grains of water/ LB Air			TOTAL
	SQFT	MBH	MBH	MBH	Entering	Leaving	Difference	(MBH)
PAC - 1/2	1170	314.5	314.5	0.0	40.8	40.5	0.3	0.0

* Above listed capacitied include Outside Air required to meet ASHRAE 62

WD-300 SERIES

BDD

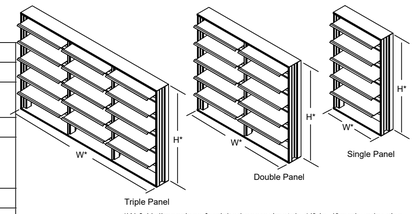
Backdraft Damper
Vertical Mount - Horizontal Airflow

Application and Design

The WD-300 series dampers are designed to prevent reverse airflow in horizontal exhaust applications. Featuring a pressure sensitive blade design, the WD-300 series open and remain open under low velocity conditions. The dampers are opened by air pressure differential and closed by gravity. Optional motor pack converts the dampers to motorized operation.

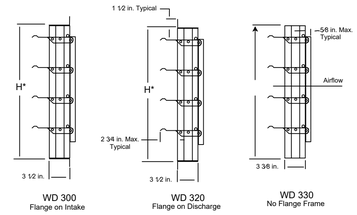
Ratings (See page 2 for specific limitations)
Pressure: 2.0 in. wg (498 Pa) - differential pressure.
Velocity: 2500 fpm (13 m/s)
Temperature: 180°F (82ºC)

Construction	Standard
Frame Material	Galvanized steel
Frame Thickness	18 ga. (1.3mm)
Blade Material	Roll formed aluminum
Blade Thickness	0.025 in.(0.64mm); 0.032 in. (0.8mm) for triple panel
Blade Seals	Vinyl
Axle	3/16 in. (4.8mm) dia. zinc plated steel pin on blade ends
Axle Bearings	Synthetic
Linkage Material	Galvanized steel



*W & H dimensions furnished approximately 1/8 in. (3mm) under size.

Options and Accessories (at additional cost)
- 11/2 in. (38mm) flange on intake: WD-300
- 11/2 in. (38mm) flange on discharge: WD-320
- End Switch Kit (See page 8): Model #851038
- Stainless Steel bearings
- Stainless Steel Axles



Size Limitations

W x H	Minimum Size	Maximum Size		
		Single Panel	Double Panel	Triple Panel
WD-300 & WD-320				
Inches	6 x 6	31 x 74	49 x 74	74 x 74
mm	152 x 152	787 x 1880	1245 x 1880	1880 x 1880
WD-330				
Inches	6 x6	31 x 74	50 x 74	NA
mm	152 x 152	787 x 1880	1270 x 1880	NA

REV	DATE	DESCRIPTION
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A	02/2017	90% DRAWINGS

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

rtm engineering consultants
925 S Semoran Blvd | Suite 100 | Winter Park, Fl 32792
407.678.2055
Certificate of Authorization #31254

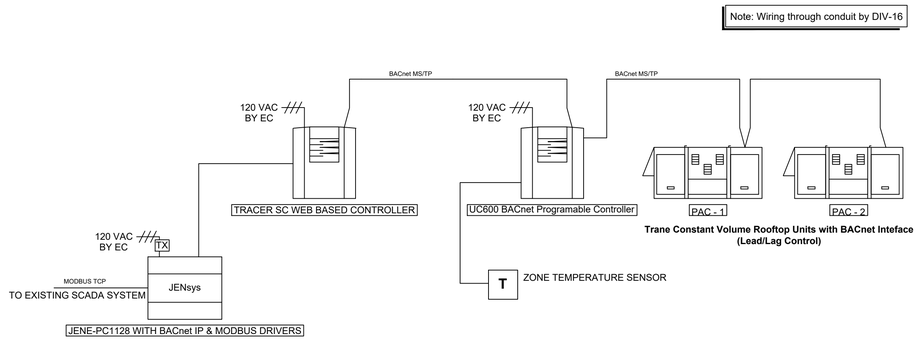
ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
HVAC
SCHEDULES

DALRID ARTNEL LEWIS, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 77571

OCU FILE NO.: OCU #
DESIGNED BY: TB
DRAWN BY: TB
CHECKED BY: DL
CADD FILE: H05.DWG

SCALE: NOTED
DRAWING NO.: H05
SHEET: 87 OF 122

Basis of Design
Trane Tracer SC™ Control System
SWRF PUMP STATION ELECTRICAL BUILDING



SYSTEM DESCRIPTION & SEQUENCE OF OPERATION

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL BE A WEB-BASED TRANE TRACER SC™ OR EQUIVALENT. SUPERVISORY CONTROLLER SHALL BE CAPABLE OF COMMUNICATION VIA BACNET MS/TP AND LONTALK™ PROTOCOL SIMULTANEOUSLY AT THE SYSTEM LEVEL TO ALLOW FOR SEAMLESS INTEGRATION WITH FUTURE EQUIPMENT EXPANSIONS. USER INTERFACE SHALL BE WEB BASED WITH ACCESS AVAILABLE VIA ANY STANDARD INTERNET BROWSER. SYSTEMS EMPLOYING LOCAL WORKSTATIONS OR PROPRIETARY PC SOFTWARE TO FACILITATE REMOTE ACCESS SHALL NOT BE ACCEPTABLE.

PAC-1 AND PAC-2 SHALL OPERATE IN A LEAD/LAG CONFIGURATION. TRACER BAS SHALL ALTERNATE OPERATIONAL STATUS OF UNITS TO OPTIMIZE RUNTIME OF EACH INDIVIDUAL UNIT. PACKAGED AIR CONDITIONERS (PACS) SHALL BE ENABLED IN ACCORDANCE WITH A USER DETERMINED OCCUPANCY SCHEDULE. DURING OCCUPIED PERIODS, THE ACTIVE PAC SHALL OPERATE IN ACCORDANCE WITH ITS INTEGRAL RELIATEL™ CONTROLS TO MAINTAIN AN ADJUSTABLE ZONE TEMPERATURE SET POINT. SET POINT SHALL BE BASED ON AN AVERAGE TEMPERATURE READING FROM ALL ASSOCIATED ZONES. DURING UNOCCUPIED PERIODS, PACS SHALL BE DISABLED. THE BAS SHALL BE CAPABLE OF EXECUTING OCCUPIED OVERRIDES OF THE OCCUPANCY SCHEDULE AS NEEDED.

PROVIDE (1) CONTROL PANEL FOR JENSYS, TRACER SC AND UC600.

THE JENSYS SHALL INTERFACE WITH THE SCADA NETWORK VIA MODBUS COMMUNICATION PROTOCOL (NOTE: VERIFY PROTOCOL AND PROVIDE ALL NECESSARY SOFTWARE INTERGRATION/CONNECTORS). THE FOLLOWING CONTROL POINTS SHALL BE VISIBLE VIA THE SCADA INTERFACE:

- ZONE TEMPERATURE
- ELECTRICAL ROOM HIGH TEMPERATURE ALARMS
- UNIT OPERATIONAL STATUS
- UNIT FAILURE ALARMS

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
HVAC
CONTROLS

DALRID ARTNEL LEWIS, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #77571

OCU FILE NO.: OCU #
DESIGNED BY: TB
DRAWN BY: TB
CHECKED BY: DL
CADD FILE: H06.DWG

SCALE: NOTED
DRAWING NO. : H06
SHEET: 88 OF 122

ELECTRICAL SYMBOLS – PLAN

30 NF J	NON-FUSED SWITCH,SIZE AS INDICATED ON DRAWINGS
30 NF F J	FUSED SWITCH, SIZE AS INDICATED ON DRAWINGS
M1	ENCLOSED MAGNETIC STARTER W/NEMA SIZE INDICATED
M1 J	ENCLOSED COMBINATION STARTER W/NEMA SIZE INDICATED
	CONTROL STATION – SEE SCHEMATIC DIAGRAM
T	TRANSFORMER
0001	CONDUIT NUMBER – SEE CONDUIT SCHEDULE
	CONDUIT – EXPOSED OR AS INDICATED ON PLANS
	CONDUIT – DIRECT BURIAL, IN SLAB OR CONCEALED
	CONDUIT – DIRECT BURIAL WITH CONCRETE ENCASEMENT (DYED RED)
	CONDUIT OR CONDUCTOR – TURNING UP
	CONDUIT OR CONDUCTOR – TURNING DOWN
	WIRE QUANTITIES – LONG LINES INDICATE NEUTRAL CONDUCTORS, SHORT LINES INDICATE HOT (SWITCHED OR UNSWITCHED) LEGS CONDUIT 3/4" U O N, #12 AWG U O N
A-1	HOMERUN TO PANEL A, CIRCUIT 1
	CONDUIT – CAPPED
J	JUNCTION BOX
A2a	INCANDESCENT, LED OR HID FIXTURE – "A" INDICATES TYPE, "2" INDICATES CIRCUIT, "a" INDICATES SWITCHING CONTROL (CALL – OUTS TYP FOR ALL FIXTURES)
	INCANDESCENT, LED OR HID FIXTURE – SURFACE MTD
	LED FIXTURE
	LED FIXTURE WITH BATTERY BACK-UP
	LED STRIP LIGHT
	LIGHTING STANDARDS, POLE MOUNTED
	EXIT LIGHT – ARROWS AS INDICATED
	EMERGENCY LIGHT FIXTURE
	POWER PANELBOARD
	LIGHTING PANELBOARD
S	SWITCH, SINGLE POLE
S_2	SWITCH, DOUBLE POLE
S_3	SWITCH, THREE WAY
S_4	SWITCH, FOUR WAY
S_a	SWITCH – "a" INDICATES DEVICE CONTROLLED
S_D	SWITCH, DIMMER
S_M S_{MK}	MANUAL MOTOR STARTER, MK = KEY OPERATED
S_{MT}	SWITCH, MOMENTARY TYPE SPRING RETURN TO CENTER
	DUPLEX RECEPTACLE
	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE FLOOR MOUNT FLUSH
	SPECIAL RECEPTACLE; NEMA TYPE AS INDICATED ON DRAWINGS
	BOND TO REINFORCING STEEL
	MOTOR
SPD	SURGE PROTECTION DEVICE
	AIR TERMINAL
	CONCRETE – ENCASED GROUND ELECTRODE
	GROUND ROD
G	INDICATES GROUND CONDUCTOR
	TELEPHONE BACKBOARD

ELECTRICAL SYMBOLS – PLAN

CCTV	CLOSED CIRCUIT TV CABINET
C	CCTV CAMERA
M	MAGNETIC CONTACT – SECURITY
TC	TIME CLOCK
L	LIGHTNING PROTECTION CABLE
C1	LIGHTING CONTACTOR
PC	PHOTOELECTRIC CELL
T	THERMOSTAT BY HVAC CONTRACTOR
	DATA OUTLET– 4"x4" OUTLET BOX MTD. AT 18"AFF W/1"C.O. UP TO CEILING SPACE
JS	SECURITY JUNCTION BOX–4"x4" FLUSH OUTLET BOX MTD. AT 48" AFF UON
+12"	INDICATED HEIGHT FROM FINISHED FLOOR OR GRADE TO CENTERLINE OF DEVICE
	TELEPHONE OUTLET – FLOOR MOUNTED
; W	TELEPHONE OUTLET +18"; TELEPHONE OUTLET +48" PROVIDE A 4"x4" OUTLET BOX , 1" CONDUIT WITH CAT. 5 TELEPHONE CABLE TO TTB

ELECTRICAL SYMBOLS – SCHEMATIC DIAGRAM/ SINGLE LINE DIAGRAM

NORMALLY OPEN	NORMALLY CLOSED	DEVICE
		CONTACT
		TIMED CONTACT CONTACT ACTION RETARDED ON DE-ENERGIZATION
		TIMED CONTACT CONTACT ACTION RETARDED ON ENERGIZATION
		PUSHBUTTON SINGLE CIRCUIT MOMENTARY CONTACT
		PUSHBUTTON SINGLE CIRCUIT LOCK – OUT
		LIMIT SWITCH
		LIQUID – LEVEL ACTUATED SWITCH
		PRESSURE OR VACUUM ACTUATED SWITCH
		FLOW ACTUATED SWITCH
		TEMPERATURE ACTUATED SWITCH

	SELECTOR SWITCH
	PANIC BUTTON, SINGLE CIRCUIT, MAINTAINED CONTACT, LARGE RED MUSHROOM HEAD
OL	MOTOR OVERLOAD HEATERS
A	PILOT LIGHT R=RED, W=WHITE, G=GREEN, A=AMBER, B=BLUE
A	PILOT LIGHT – PUSH TO TEST
R	RELAY
M	STARTER COIL
S	SOLENOID OPERATED CONTROL VALVE
ETM	ELAPSED TIME METER
	FUSE
	CONTROL POWER TRANSFORMER
	GROUND
	TERMINAL
	OVERLOAD RELAY
M	UTILITY METERING
A	AMMETER
V	VOLTMETER
	FIELD WIRING
3	CURRENT TRANSFORMER, QUANTITY INDICATED

ELECTRICAL SYMBOLS – SCHEMATIC DIAGRAM/ SINGLE LINE DIAGRAM – CONT'D

	DRAW-OUT TYPE EQUIPMENT
SC	SURGE CAPACITOR
LA	LIGHTING ARRESTER
52	MEDIUM VOLTAGE CIRCUIT BREAKER, DRAW-OUT TYPE
3	POTENTIAL TRANSFORMER, QUANTITY INDICATED
30A MCP	CIRCUIT BREAKER, 3 POLE UNLESS NOTED MCP INDICATES MOTOR CIRCUIT PROTECTION
4 RV	MAGNETIC MOTOR STARTER, NEMA SIZE INDICATED RV=REDUCED VOLTAGE STARTING 2S, 2W=2 SPEED, 2 WINDING
10 G	MOTOR, 10 = HORSEPOWER, G = GENERATOR
K	KEY INTERLOCKING OF EQUIPMENT
APFCC	AUTOMATIC POWER FACTOR CORRECTION CAPACITOR
	SOLID-STATE, REDUCED VOLTAGE SOFT START MOTOR STARTER

FIRE ALARM SYMBOLS

C	SPRINKLER FLOOR CONTROL VALVE
G	GAS DETECTOR
HRR	HEAT DETECTOR, RATE OF RISE
S	SMOKE DETECTOR
SD	DUCT SMOKE DETECTOR
F	FIRE ALARM PULL STATION
F	FIRE ALARM HORN/LIGHT
F	ALARM LIGHT
FS FS	FLOW SWITCH
TS TS	TAMPER SWITCH
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
B	FIRE ALARM BELL
S	SPEAKER

ELECTRICAL SYMBOLS – GENERAL

3 DE-2	CALL-OUT FOR DETAIL OR SECTION ON THE DWG'S "3" INDICATES NUMERICAL ORDER ON DETAIL DWG "DE-2" INDICATES DETAIL DWG REFERED TO

CONSTRUCT FACILITIES PER THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE

NOTE:

THIS IS A STANDARD SYMBOLS SHEET. THEREFORE SOME SYMBOLS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.

ELECTRICAL ABBREVIATIONS

A	A	AMP
	AF	AMP FRAME
	AFF	ABOVE FINISHED FLOOR
	AFG	ABOVE FINISHED GRADE
	AISC	AMPERE INTERRUPTING CAPACITY, SYMMETRICAL
	AT	AMP TRIP
	ATS	AUTOMATIC TRANSFER SWITCH
	AWG	AMERICAN WIRE GAUGE
B	BKR	BREAKER
C	C	CONDUIT
	CB	CIRCUIT BREAKER
	CCB	CONTROL CIRCUIT BREAKER
	CKT	CIRCUIT
	CL2	CHLORINE
	CP	CONTROL PANEL
	CPT	CONTROL POWER TRANSFORMER
	CS	CONSTANT SPEED
	CTLS	CONTROLS
	CO	CONDUIT ONLY
	CTRL	CONTROL
D	DPDT	DOUBLE POLE DOUBLE THROW
	DRB	DUPLEX RECEPTACLE BREAKER
	DWG	DRAWING
E	EF	EXHAUST FAN
	ETM	ELAPSED TIME METER
	EX	EXPLOSION PROOF
	EXST	EXISTING
F	F	FUSE
	FB	FUSE BLOCK
	FIT	FLOW INDICATING TRANSMITTER
	FS	FLOW SWITCH
	FVNR	FULL VOLTAGE NON-REVERSING
G	GCB	GENERATOR CIRCUIT BREAKER
	GEN	GENERATOR
	GFI	GROUND FAULT INTERRUPTER
	GFDR	GROUND FAULT DUPLEX RECEPTACLE
	G,GND	GROUND
H	HH	HANDHOLE
	HOA	HAND/OFF/AUTOMATIC
	HPS	HIGH PRESSURE SODIUM
	HSP	HIGH SERVICE PUMP
	HZ	HERTZ
J	J-BOX	JUNCTION BOX
K	kcmil	THOUSAND CIRCULAR MILLS
	KV	KILOVOLT
	KVA	KILOVOLT-AMPERE
	KW	KILOWATT
	KWH	KILOWATT-HOUR
L	LOS	LOCK-OUT-STOP
	LTG	LIGHTING
	LTNG PROT	LIGHTNING PROTECTION
M	MB	MOTOR BREAKER
	MCB	MAIN CIRCUIT BREAKER
	MCC	MOTOR CONTROL CENTER
	MCP	MOTOR CIRCUIT PROTECTOR, MAIN CONTROL PANEL
	MH	METAL HALIDE, MANHOLE
	MOV	MOTOR OPERATED VALVE
	MTR	MOTOR
N	N	NEUTRAL
	NEC	NATIONAL ELECTRICAL CODE
	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
O	O/O	ON/OFF
	OCA	OPEN/CLOSE/AUTO
	OL	OVERLOAD
	OSC	OPEN/STOP/CLOSE
P	P	POLE
	PB	PULL BOX, PANIC BUTTON,POWER BLOCK
	PLC	PROGRAMMABLE LOGIC CONTROLLER
	PM	PHASE MONITOR
	PNL	PANEL
	PR	PAIR
	PVC	POLYVINYL CHLORIDE
	PWR	POWER
R	R	RETURN, RELAY
	RAL	RIGID ALUMINUM
	RECPT	RECEPTACLE
	RGS	RIGID GALVANIZED STEEL
	RMS	ROOT MEAN SQUARE
	RR	RATE OF RISE
	RTU	REMOTE TERMINAL UNIT
	RVS	REVERSE
S	S	SUPPLY
	SF	SUPPLY FAN
	SMC	SMART MOTOR CONTROLLER – SOLID STATE STARTER
	SSSS	SOLID STATE SOFT START
	SST	STAINLESS STEEL
	SW	SWITCH
	SWBD	SWITCHBOARD
	SYM	SYMMETRICAL
T	TB	TERMINAL BLOCK
	TCB	TIE CIRCUIT BREAKER
	TDR	TIME DELAY RELAY
	TDODE	TIME DELAY ON DE-ENERGIZED
	TPDT	TRIPLE POLE DOUBLE THROW
	TSP	TWISTED SHIELDED PAIR
	TTS	THERMAL TERMINAL STRIP
	TYP	TYPICAL
	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
U	UGND	UNDERGROUND
	UL	UNDERWRITERS LABORATORIES
	UON	UNLESS OTHERWISE NOTED
	UPS	UNINTERRUPTIBLE POWER SYSTEM
V	V	VOLT
	VFD	VARIABLE FREQUENCY DRIVE
	VS	VARIABLE SPEED
W	W	WIRE
	WP	WEATHERPROOF
X	XFMR	TRANSFORMER
	XMTR	TRANSMITTER

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ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM

AECOM TECHNICAL SERVICES INC. 150 N ORANGE AVENUE, SUITE 200 ORLANDO, FLORIDA 32801 PHONE 407.843.6552

CERTIFICATE OF AUTHORIZATION NO. 8115

PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
ELECTRICAL SYMBOLS AND ABBREVIATIONS

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E01.DWG

SCALE: NOTED
DRAWING NO. : E01
SHEET: 89 OF 122

(EXISTING) SWGR–WP
WEST ELECTRICAL BLDG
TX–NPA (EXISTING)
TX–NPB (EXISTING)
(EXISTING) TX–NPD
(EXISTING) TX–NPC
EXISTING POWER MANHOLE P–6
2
1129
1130
PHH–1
5 E20 (TYP.)
EXISTING INFLUENT PUMP STATION (IPS)
CELLULAR TOWER
1001
1002
1128
NEW IPS
PHH–2
3 E21 (TYP.)
NEW IPS ELECTRICAL BUILDING
1001 1002 1127
OLD INFLUENT PUMP STATION
TX–NPE
TX–NPF
TX–NPG
TX–NPH
IPS ODOR CONTROL
OLD CHLORINE BUILDING
2
1088
1089
1125
PHH–3
1088 1126
1089
PHH–4
1088 1089
PHH–5
2
WAS TANK No 2
WAS TANK No 1
WAS TANK No 3
BOILER & HOT WATER PUMPS
WASTE HEAT RADIATOR
ANAEROBIC DIGESTER No 2
ANAEROBIC DIGESTER No 4
POWER GENERATION BLDG
ANAEROBIC BUILDING
PHH–6
1088
1089
1124
2
ANAEROBIC DIGESTER No 1
ANAEROBIC DIGESTER No 3
POLYMER
DEWATERING BLDG
SOLIDS BUILDING
WASTE GAS BURNER

SPECIFIC NOTES:

1. SEE DRAWING E08 FOR ADDITIONAL UNDERGROUND ELECTRICAL WORK ASSOCIATED WITH NEW IPS
2. SEE ASPHALT OPEN CUT DETAILS ON DRAWING C–15 FOR NEW ELECTRICAL DUCT BANK CROSSINGS.

– TO BE DEMOLISHED

ELECTRICAL SITE PLAN

SCALE: 1" = 30'–0"

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AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
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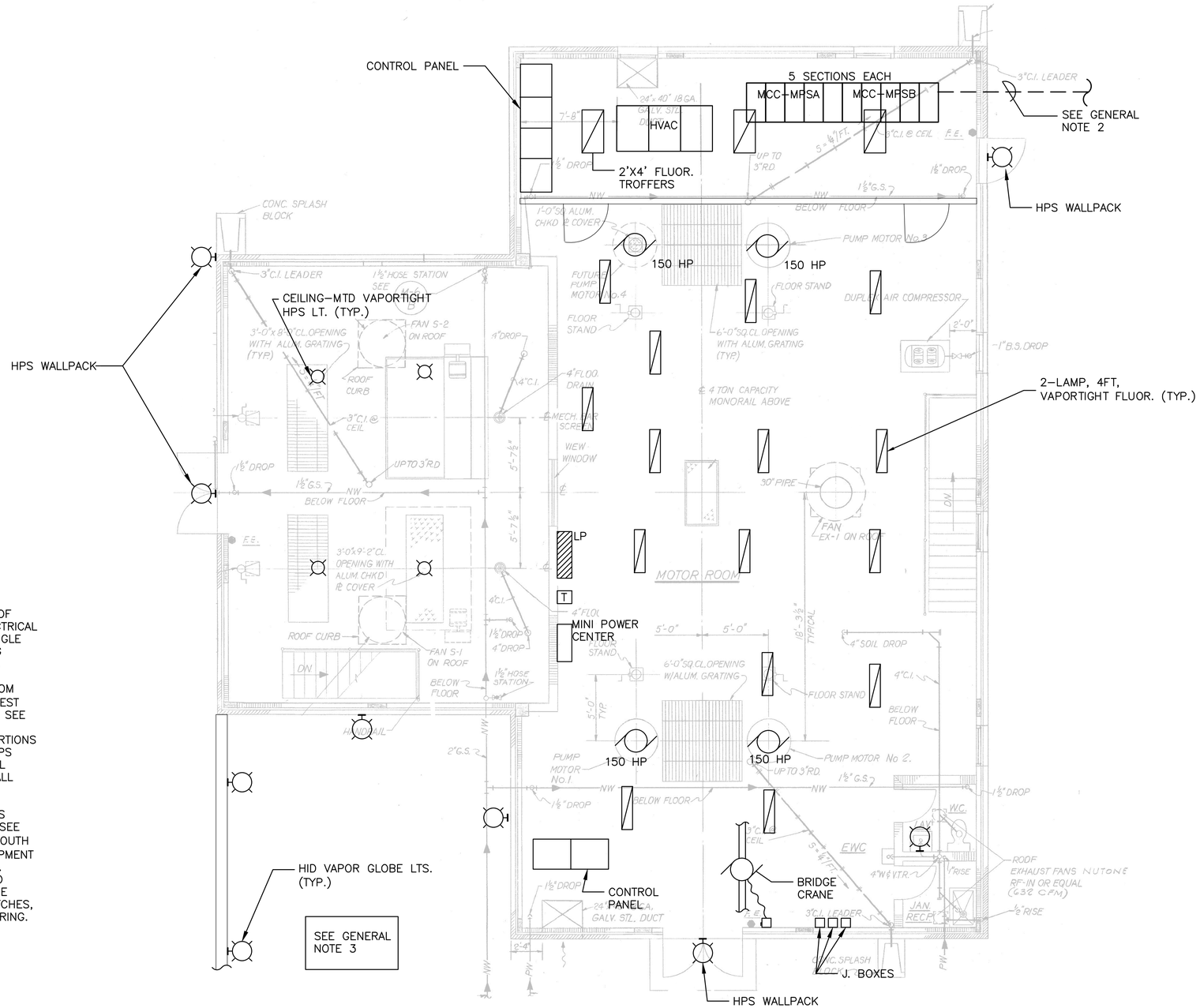
ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
ELECTRICAL SITE PLAN

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E02.DWG

SCALE: NOTED
DRAWING NO.: E02
SHEET: 90 OF 122



GENERAL NOTES:

1. BUILDING TO BE DEMOLISHED, REMOVE AND DISPOSE OF TWO MOTOR CONTROL CENTERS, AND ALL OTHER ELECTRICAL EQUIPMENT AS INDICATED ON OLD IPS DEMOLITION SINGLE LINE DIAGRAM. REMOVE AND DISPOSE OF ALL LIGHTING FIXTURES, CONDUITS, WIRING, AND ANCILLARY DEVICES.

2. REMOVE EXISTING 480–VOLT FEEDER CONDUCTORS FROM SWITCHGEAR 'SWGR–WP' (FORMERLY 'SWGR–NP') IN WEST ELECTRICAL BUILDING TO MCC–MPSA AND MCC–MPSB. SEE DRAWING E02 SITE PLAN FOR SWGR–WP AND WEST ELECTRICAL BUILDING LOCATION. CUT AND REMOVE PORTIONS OF UNDERGROUND CONDUITS THAT FALL WITHIN OLD IPS BUILDING FOOTPRINT, CAP AND ABANDON IN PLACE ALL REMAINING UNDERGROUND CONDUIT PORTIONS THAT FALL OUTSIDE OF BUILDING FOOTPRINT.

3. CHLORINE BUILDING ATTACHED TO OLD IPS BUILDING IS LOCATED IN AREA INDICATED BY THIS NOTE CALLOUT. SEE DRAWING E02 FOR FULL FOOTPRINT (HATCHED AREA SOUTH OF OLD IPS BUILDING). REMOVE ALL ELECTRICAL EQUIPMENT IN THIS BUILDING, WHICH IS ALSO TO BE DEMOLISHED. EQUIPMENT INCLUDES APPROX. 20 WALL–MOUNTED HID LIGHT FIXTURES, 480V AND 120V PANELBOARDS, CRANE DISCONNECT SWITCH, MINI–POWER CENTER, LIGHT SWITCHES, RECEPTACLES, AND ALL ASSOCIATED CONDUITS AND WIRING.

OLD INFLUENT PUMP STATION – ELECTRICAL DEMOLITION PLAN

SCALE: NTS

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AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
OLD INFLUENT PUMP STATION
ELECTRICAL DEMOLITION PLAN

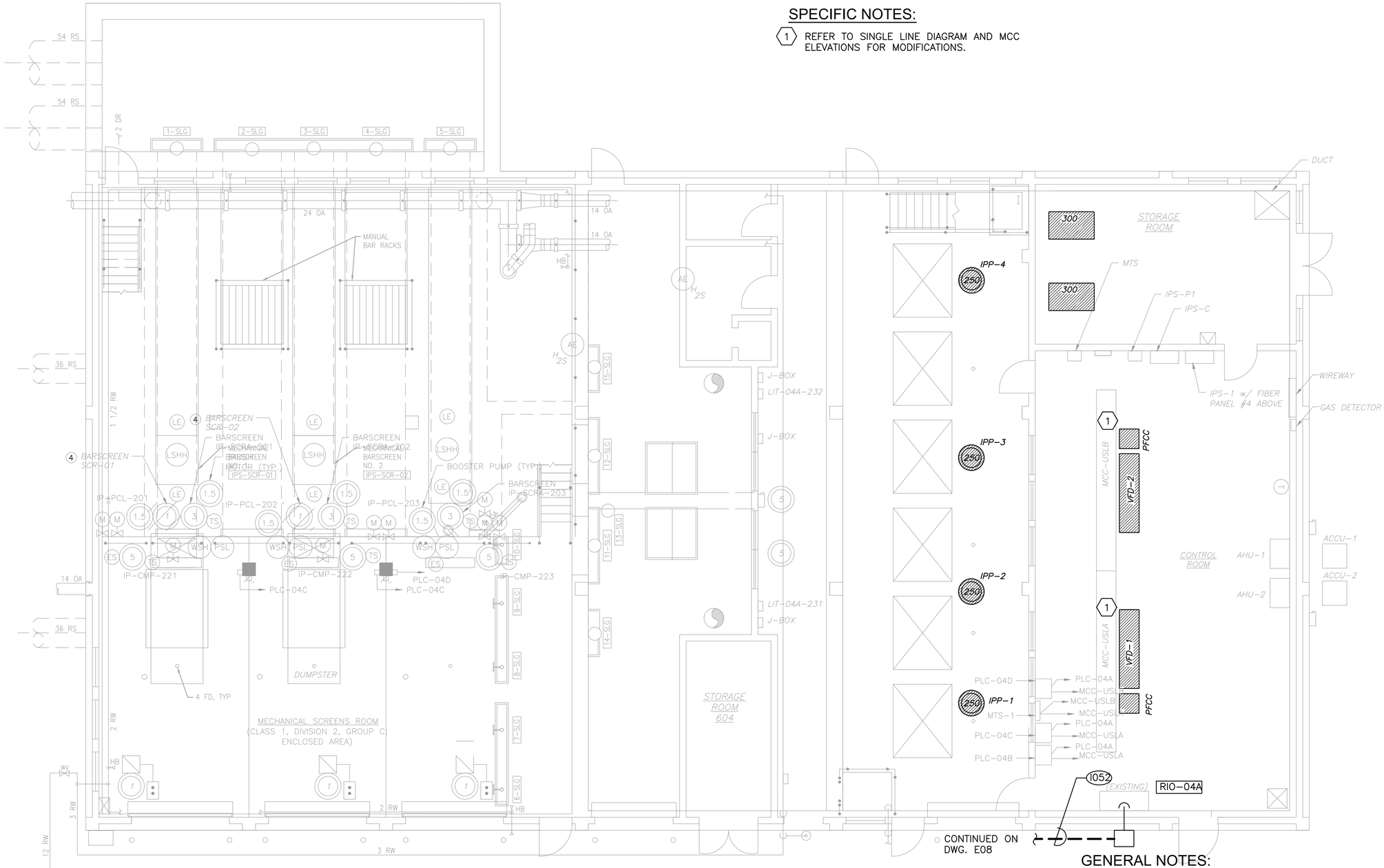
IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E03.DWG

SCALE: NOTED
DRAWING NO.: E03
SHEET: 91 OF 122

SPECIFIC NOTES:

1. REFER TO SINGLE LINE DIAGRAM AND MCC ELEVATIONS FOR MODIFICATIONS.



GENERAL NOTES:

1. DEMOLISH. REMOVE ASSOCIATED WIRING AND EXPOSED CONDUIT. ABANDON CONCEALED CONDUITS IN PLACE AND CAP. ALL OTHER EQUIPMENT SHALL REMAIN. SECURE DRIVE SHAFTS AS REQUIRED AFTER REMOVING MOTORS.

2. DEMOLITION OF EQUIPMENT SHALL NOT COMMENCE BEFORE NEW INFLUENT PUMP STATION HAS MET SUBSTANTIAL COMPLETION.

EXISTING INFLUENT PUMP STATION – ELECTRICAL PLAN

SCALE: 3/16"=1'-0"
6 4 2 0 5'

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ORLANDO, FLORIDA 32801
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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
EXISING INFLUENT PUMP STATION
ELECTRICAL PLAN

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

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CHECKED BY: IB
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SCALE: NOTED
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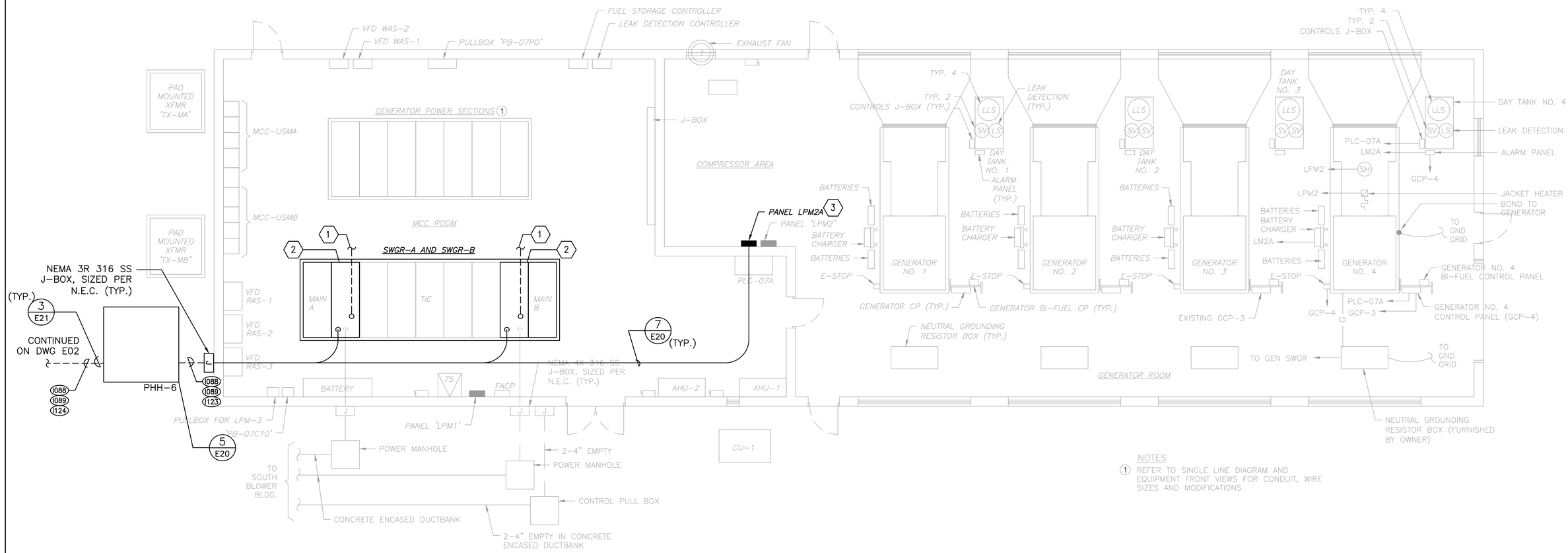
SHEET: 92 OF 122



NOTES

(1) REFER TO SINGLE LINE DIAGRAM AND EQUIPMENT FRONT VIEWS FOR CONDUIT, WIRE SIZES AND MODIFICATIONS.

SPECIFIC NOTES:

(1) AFTER INSTALLATION, TESTING, AND ENERGIZING OF NEW 15KV FEEDER CONDUCTORS, REMOVE EXISTING CONDUCTORS FROM SWGR-1 TO TRANSFORMER TX-NPA AND FROM SWFR-B TO TRANSFORMER TX-NPB.

(2) ADJUST EXISTING CIRCUIT BREAKER TRIP RATING AS INDICATED ON SINGLE LINE DIAGRAM, DWG. E10. REPLACE CT'S AS NECESSARY.

(3) PROVIDE 2 NEW 20-AMP 1-POLE CIRCUIT BREAKERS IN PANEL 'LPM2A' TO FEED SUMP PUMPS IN POWER HANDHOLES PHH-5 AND PHH-6

POWER GENERATION BUILDING ELECTRICAL PLAN

SCALE: 3/16"=1'-0"
6 4 2 0 5'

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PROJECT NO. 110031A

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
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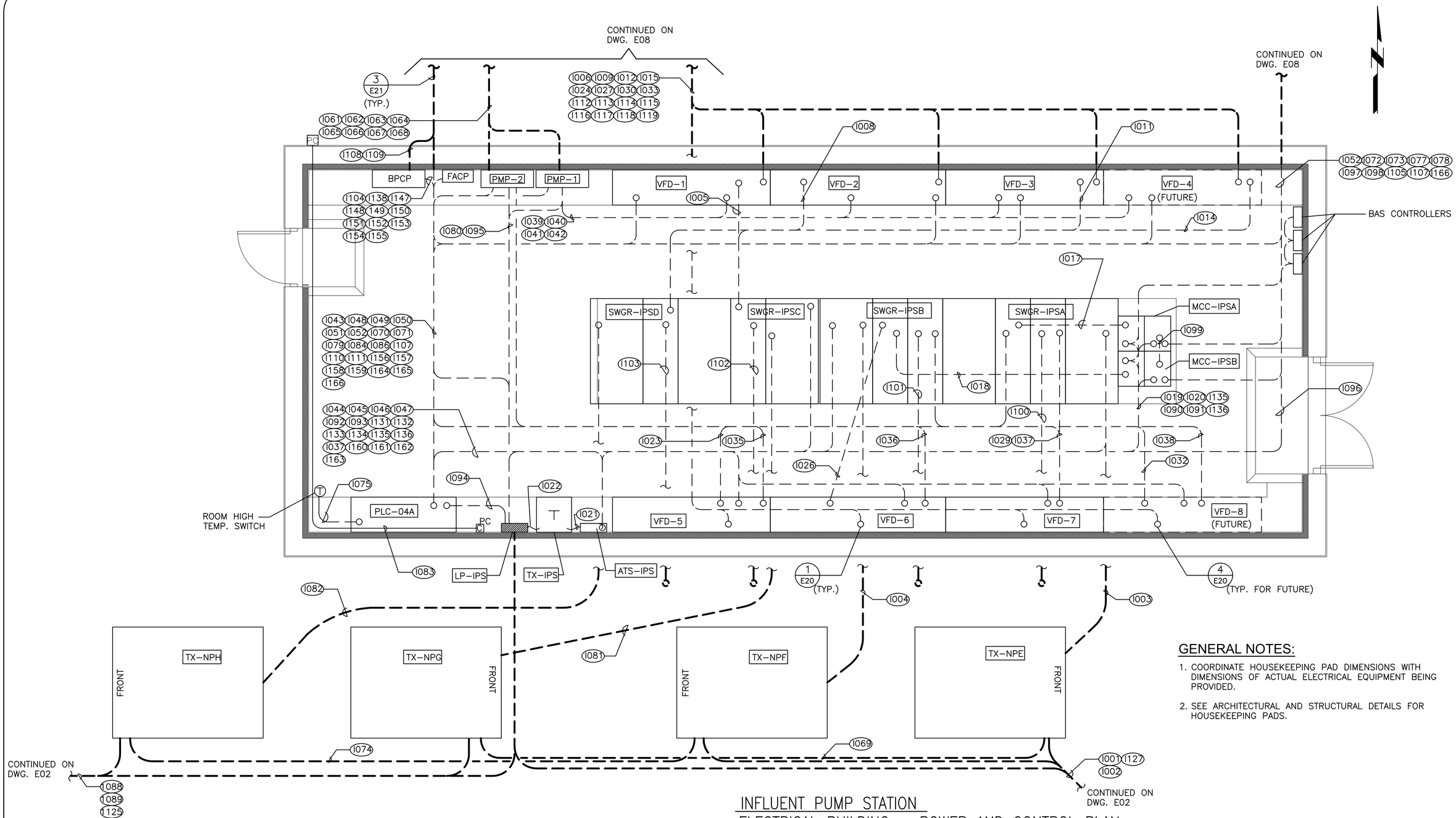
ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
WEST ELECTRICAL BUILDING POWER PLAN

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E05.DWG

SCALE: NOTED
DRAWING NO.: E05
SHEET: 93 OF 122



INFLUENT PUMP STATION
ELECTRICAL BUILDING – POWER AND CONTROL PLAN

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

GENERAL NOTES:

1. COORDINATE HOUSEKEEPING PAD DIMENSIONS WITH DIMENSIONS OF ACTUAL ELECTRICAL EQUIPMENT BEING PROVIDED.
2. SEE ARCHITECTURAL AND STRUCTURAL DETAILS FOR HOUSEKEEPING PADS.

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
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LINE IS 2 INCHES AT FULL SIZE (IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC., 150 N ORANGE AVENUE, SUITE 200 ORLANDO, FLORIDA 32801 PHONE 407.843.6552
PROJECT NO. 110031A
CERTIFICATE OF AUTHORIZATION NO. 8115

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
INFLUENT PUMP STATION ELECTRICAL BUILDING POWER AND CONTROL PLAN

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
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CADD FILE: E06.DWG

SCALE: NOTED
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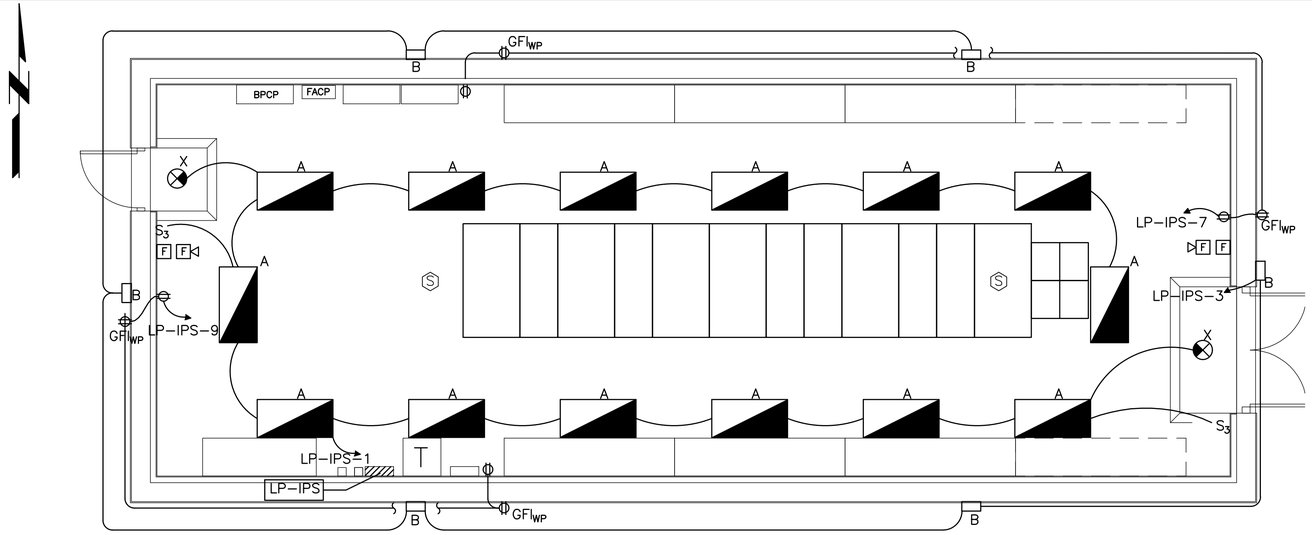
SHEET: 94 OF 122

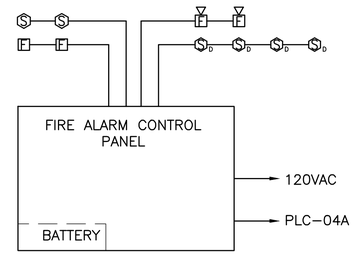


IPS ELECTRICAL BUILDING – LIGHTING AND FIRE ALARM PLAN

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

GENERAL NOTE:

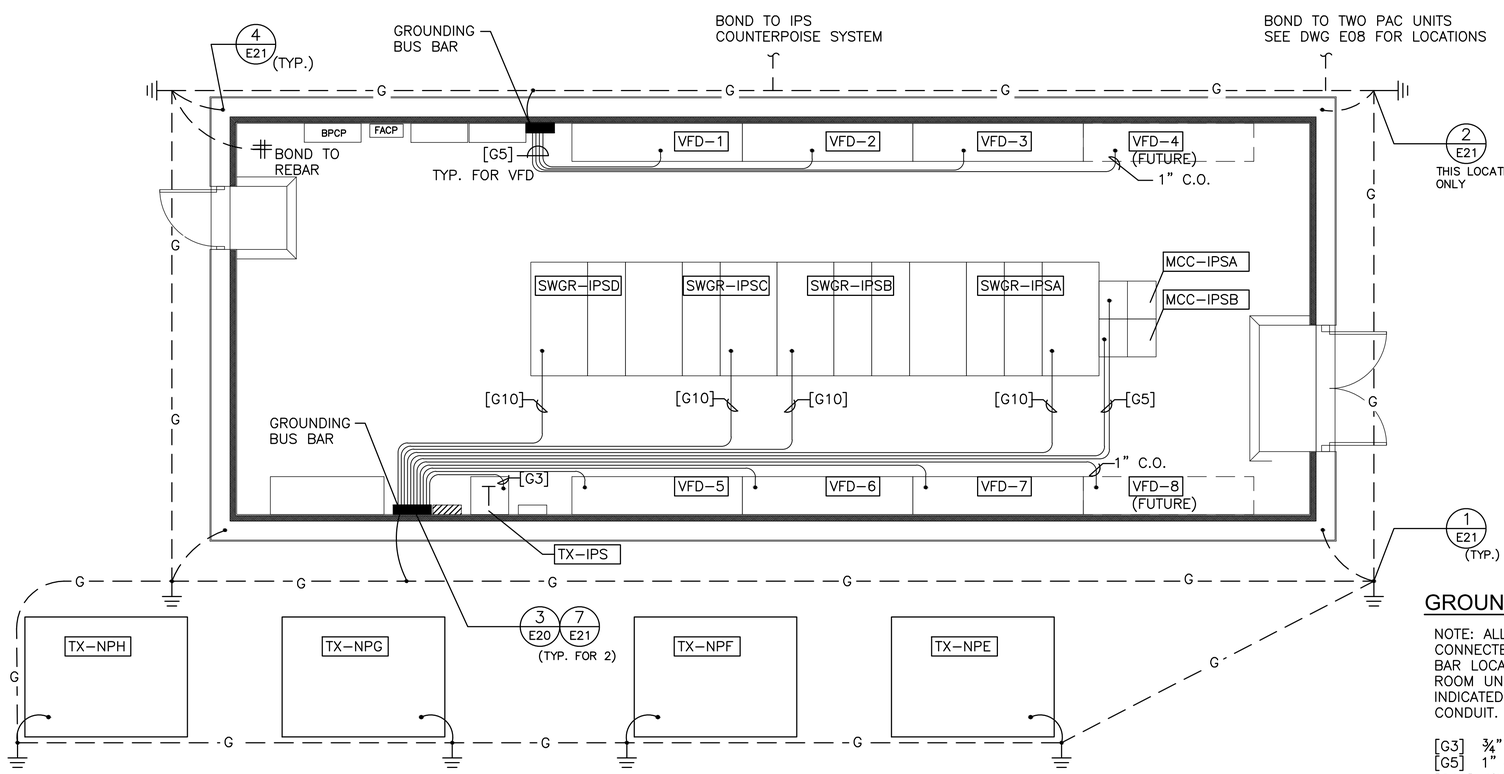
1. ALL HOME RUNS SHALL BE ¾"C., 2–#12, 1–#12G UNLESS OTHERWISE NOTED.
2. WIRE EMERGENCY AND EXIT LIGHT FIXTURES AHEAD OF SWITCHES



FIRE ALARM RISER DIAGRAM

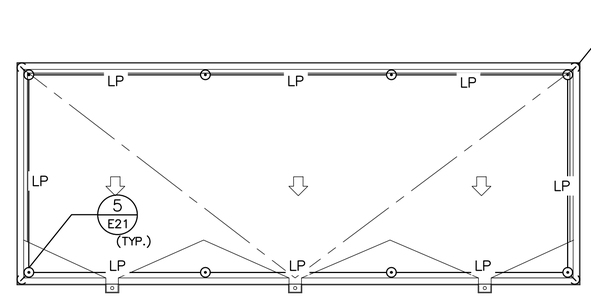
GENERAL NOTES:

1. OPERATION OF FIRE ALARM COMMON TROUBLE CONTACTS SHALL PLACE TRANSMITTER ZONE 4 IN TROUBLE.
2. FOR THE FIRE ALARM PANEL AND ASSOCIATED SYSTEMS/DEVICES, PRIOR TO INSTALLATION SUBMIT SHOP DRAWINGS, MANUFACTURER SPEC SHEETS, SEQUENCE OF OPERATIONS AND BATTERY CALCULATIONS TO THE AHJ.



IPS ELECTRICAL BUILDING – GROUNDING PLAN

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



IPS ELECTRICAL BUILDING – LIGHTNING PROTECTION PLAN

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

GROUNDING SCHEDULE

NOTE: ALL G SERIES SHALL BE CONNECTED TO GROUNDING BUS BAR LOCATED IN THE ELECTRIC ROOM UNLESS OTHERWISE INDICATED. INSTALL IN PVC CONDUIT.

[G3] ¾" c, 1–8 AWG (G)
[G5] 1" c, 1–4 AWG (G)
[G10] 1½" c, 1–4/0 AWG (G)

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
INFLUENT PUMP STATION PLAN ELECT BLDG LIGHTING & GROUNDING PLAN

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
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CHECKED BY: IB
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SCALE: NOTED
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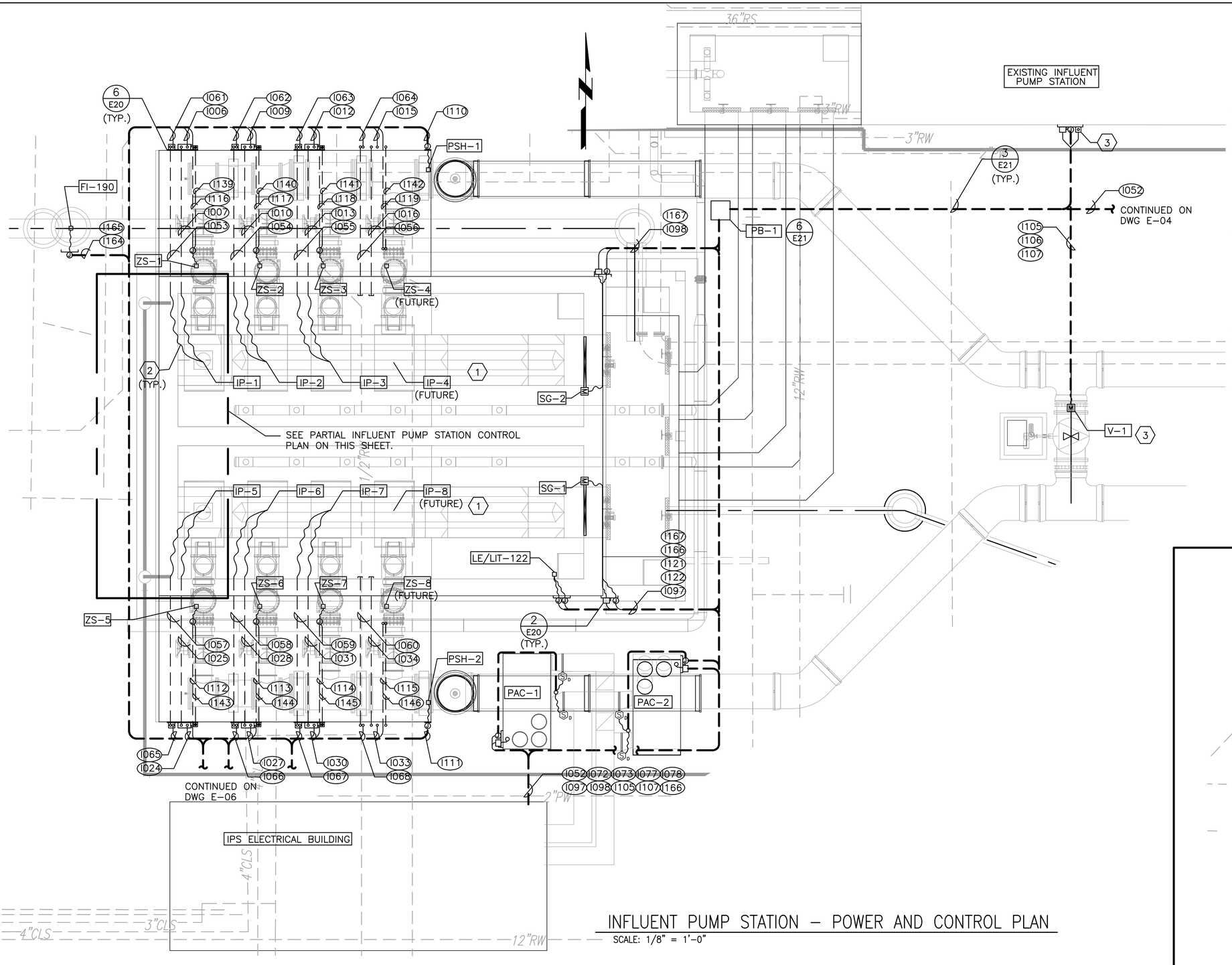
SHEET: 95 OF 122

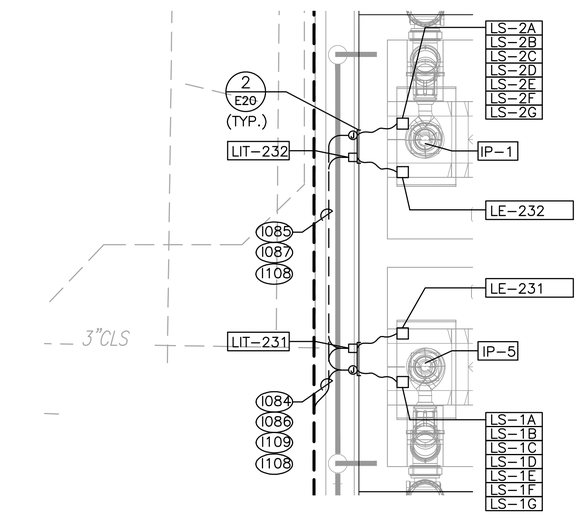


SPECIFIC NOTES:

1. WET WELL, ISOLATION BOX, AND OUTLET BOX ARE CLASSIFIED AS CLASS 1, DIV. 1. AREAS DIRECTLY ABOVE HATCHES FOR THESE STRUCTURES, EXTENDING OUT HORIZONTALLY 3 FT. BEYOND HATCHES IN EVERY DIRECTION AND 18 INCHES IN HEIGHT, ARE CLASSIFIED AS CLASS 1, DIV 2. LOCATE DISCONNECT SWITCHES AND JUNCTION BOXES FOR GATE ACTUATORS OUTSIDE OF CLASSIFIED AREAS, PROVIDE SEAL FITTINGS FOR ALL CONDUITS AND CABLES ENTERING AND LEAVING CLASSIFIED AREAS.
2. PROVIDE SUFFICIENT PUMP CABLE LENGTHS TO ALLOW FOR EASE OF PUMP REMOVAL THROUGH HATCH. COIL EXCESS CABLE LENGTH NEATLY AT PUMP. BUNDLE PUMP POWER AND CONTROL CABLES AND ROUTE NEATLY INSIDE WET WELL ALONG WALLS, PROVIDING CABLE SUPPORTS AS REQUIRED. PROVIDE STRAIN RELIEF FOR CABLES AT TOP OF WET WELL.
3. VALVE ACTUATOR SHALL BE LOCATED BELOW GRADE IN VAULT. PROVIDE REMOTE CONTROL STATION (L/O/R SELECTOR SWITCH, OPEN-CLOSE PUSHBUTTONS, INDICATING LIGHTS) IN NEMA 3R STAINLESS STEEL ENCLOSURE ON EXTERIOR WALL OF EXISTING IPS BUILDING AS SHOWN.

INFLUENT PUMP STATION – POWER AND CONTROL PLAN

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



PARTIAL INFLUENT PUMP STATION CONTROL PLAN

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

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150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
INFLUENT PUMP STATION PLAN – POWER AND CONTROL

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
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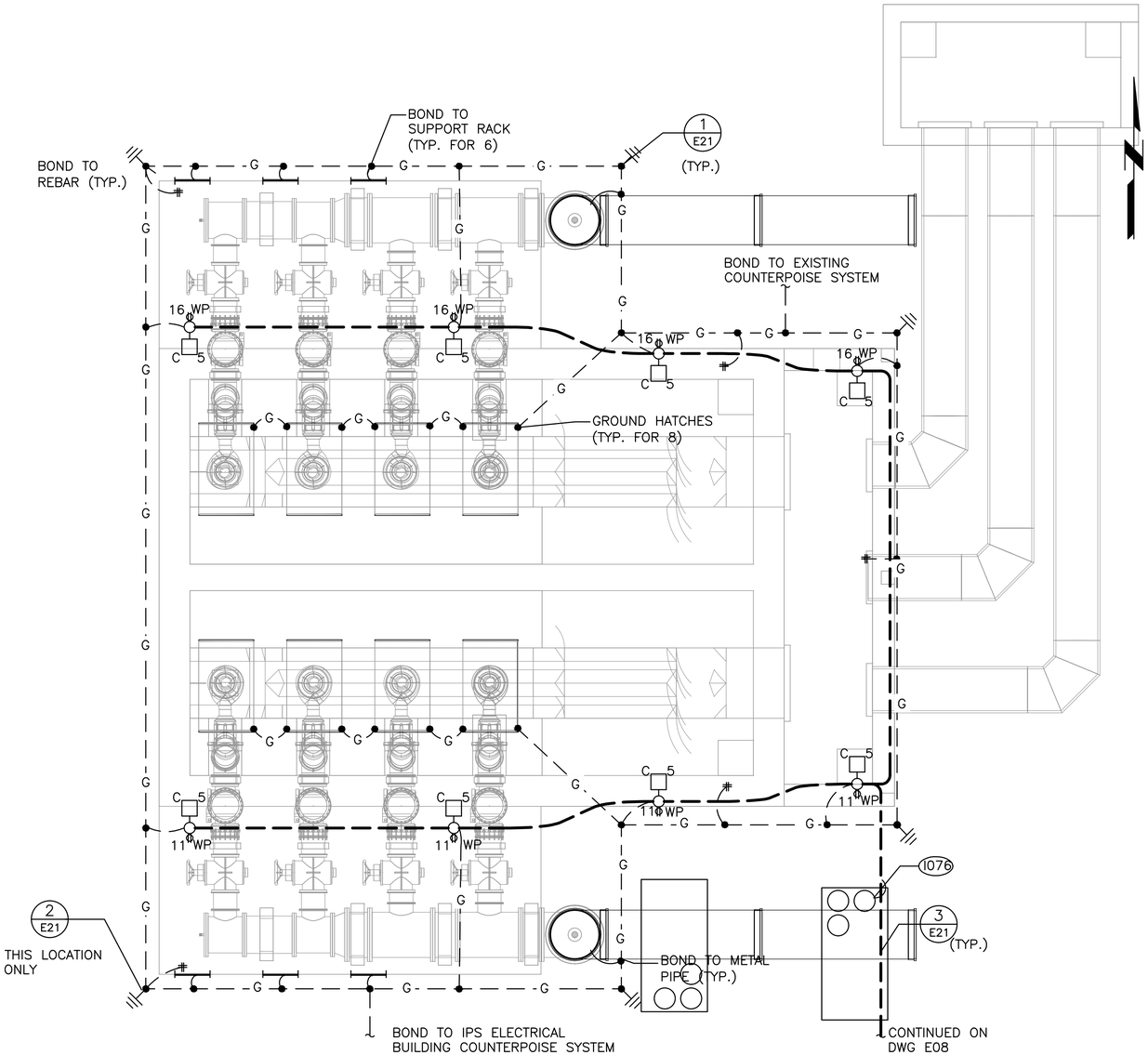
SHEET: 96 OF 122



INFLUENT PUMP STATION – LIGHTING AND GROUNDING PLAN

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

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ORLANDO, FLORIDA 32801
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ELECTRICAL
INFLUENT PUMP STATION LIGHTING AND GROUNDING PLAN

IRA BRANDELL, P.E.
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SCALE: NOTED
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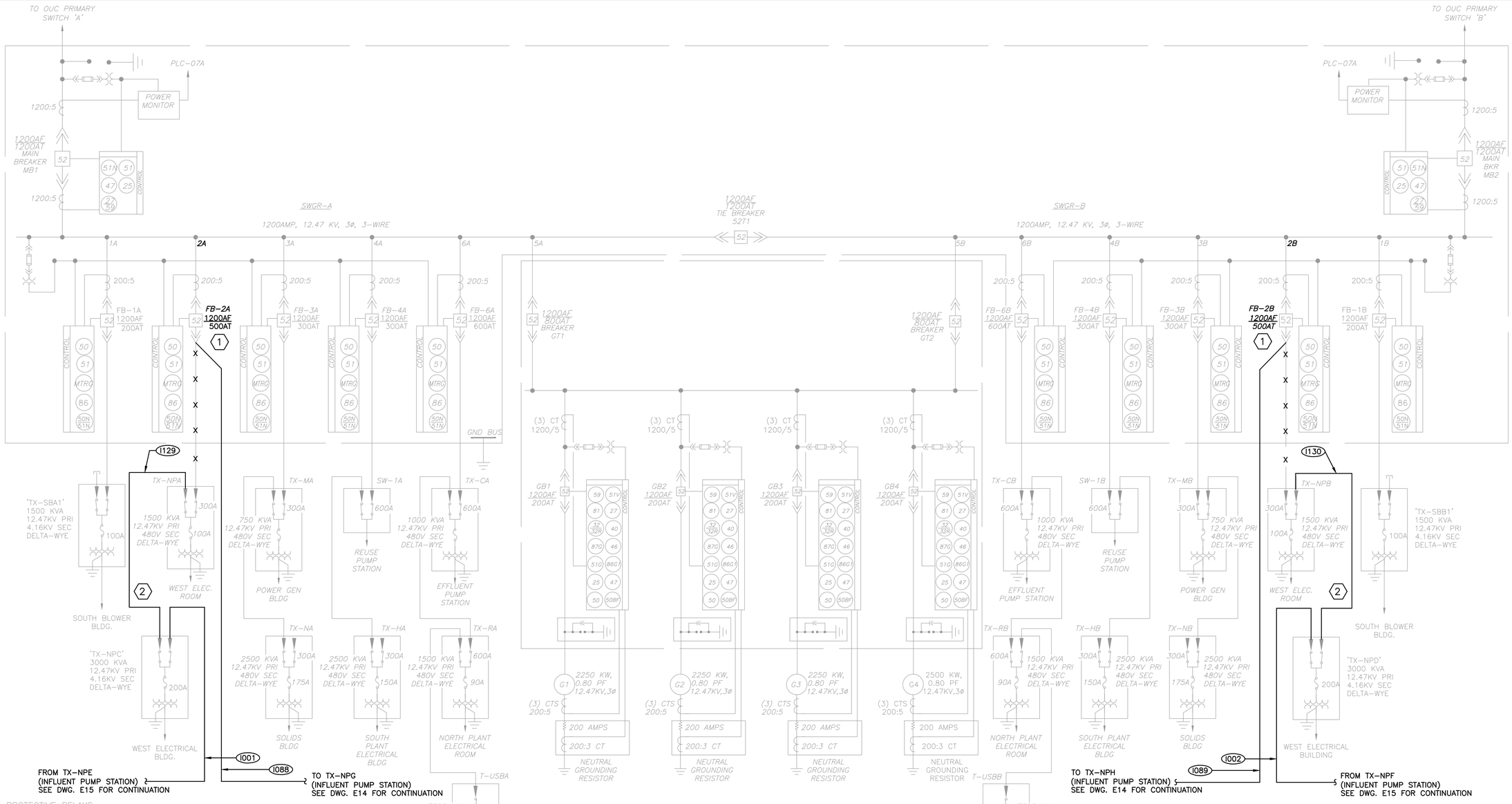

PROTECTIVE RELAYS

- (25) SYNCHRONIZING
- (25/25A) SYNCHRONIZING / SYNCHRONIZING ALARM
- (27) UNDERVOLTAGE
- (27/59) UNDERVOLTAGE / OVERVOLTAGE SIGNAL TO PLC
- (32/32A) DIRECTIONAL POWER / DIRECTIONAL POWER ALARM
- (40) LOSS OF EXCITATION
- (46) PHASE BALANCE (CURRENT BALANCE, NEGATIVE SEQUENCE CURRENT)
- (50) INSTANTANEOUS OVERCURRENT
- (50N/51N) INSTANTANEOUS OVERCURRENT GROUND FAULT PROTECTION / TIME-OVERCURRENT GROUND FAULT PROTECTION
- (51) TIME-OVERCURRENT
- (51G) TIME-OVERCURRENT GENERATOR PROTECTION
- (51V) TIME-OVERCURRENT USED FOR VOLTAGE
- (59) OVERVOLTAGE
- (81) UNDER FREQUENCY
- (86) LOCKOUT
- (86B) LOCKOUT BUS PROTECTION
- (86G) LOCKOUT GENERATOR PROTECTION
- (87) DIFFERENTIAL
- (87B) DIFFERENTIAL BUS PROTECTION
- (87G) DIFFERENTIAL GENERATOR PROTECTION

LEGEND

- x x REMOVE EXISTING CONDUCTORS
- EXISTING TO REMAIN
- NEW

SPECIFIC NOTES:

1. ADJUST TRIP SETTING ON CIRCUIT BREAKER FROM 200 AMPS TO 500 AMPS. ADJUST PROTECTIVE RELAY SETTINGS IN ACCORDANCE WITH RECOMMENDATIONS IN THE ELECTRICAL SYSTEM STUDY PERFORMED FOR THIS PROJECT.
2. REMOVE EXISTING 15 KV CONDUCTORS (3 #4/0 + 1 #1 GROUND) FROM 4" CONDUIT AND ABANDON CONDUIT IN PLACE. REPLACE WITH CONDUIT NUMBER INDICATED.

13 KV MAIN SWITCHGEAR SINGLE LINE DIAGRAM

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AECOM

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
SINGLE LINE DIAGRAM – WEST ELECTRICAL BUILDING

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
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CADD FILE: E10.DWG

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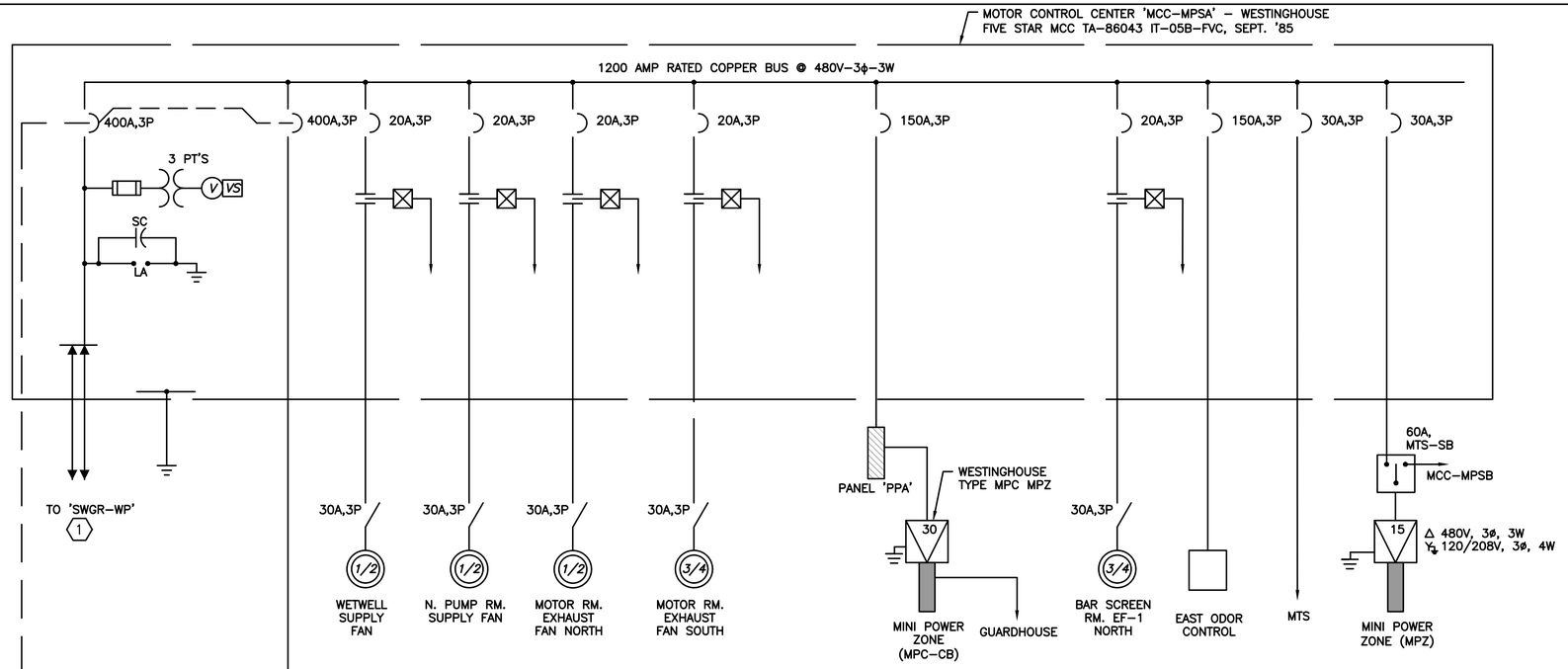
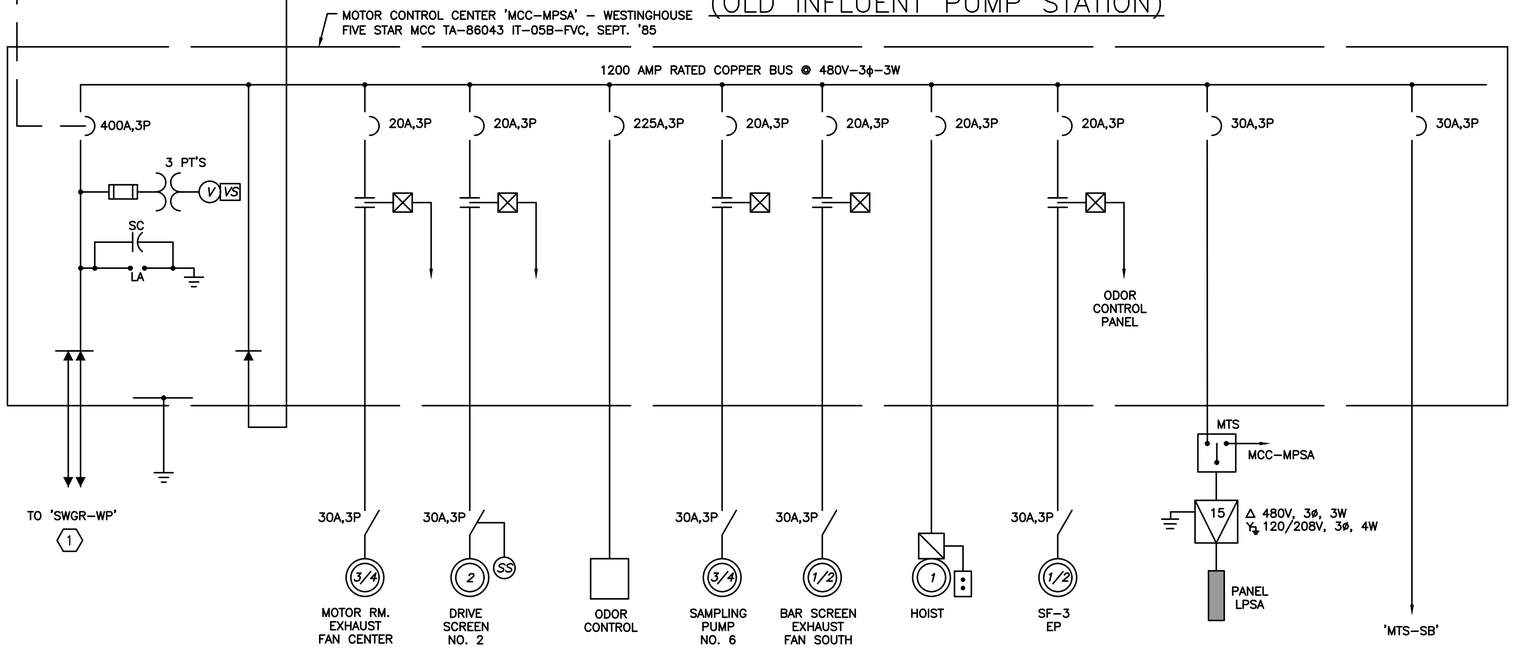
SHEET: 98 OF 122



'MCC-MPSA' DEMOLITION SINGLE LINE DIAGRAM (OLD INFLUENT PUMP STATION)



'MCC-MPSB' DEMOLITION SINGLE LINE DIAGRAM (OLD INFLUENT PUMP STATION)

SPECIFIC NOTES;

1. DEMOLISH EXISTING FEEDER FROM SWITCHGEAR SWGR-WP IN WEST ELECTRICAL BUILDING. REMOVE ALL CONDUCTORS AND EXPOSED CONDUIT. ABANDON CONCEALED OR BURIED CONDUIT IN PLACE AND CAP.

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AECOM
AECOM TECHNICAL SERVICES INC.
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ORLANDO, FLORIDA 32801
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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
SINGLE LINE DIAGRAM-OLD INFLUENT PUMP STATION DEMOLITION

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
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CADD FILE: E11.DWG

SCALE: NOTED
DRAWING NO.: E11
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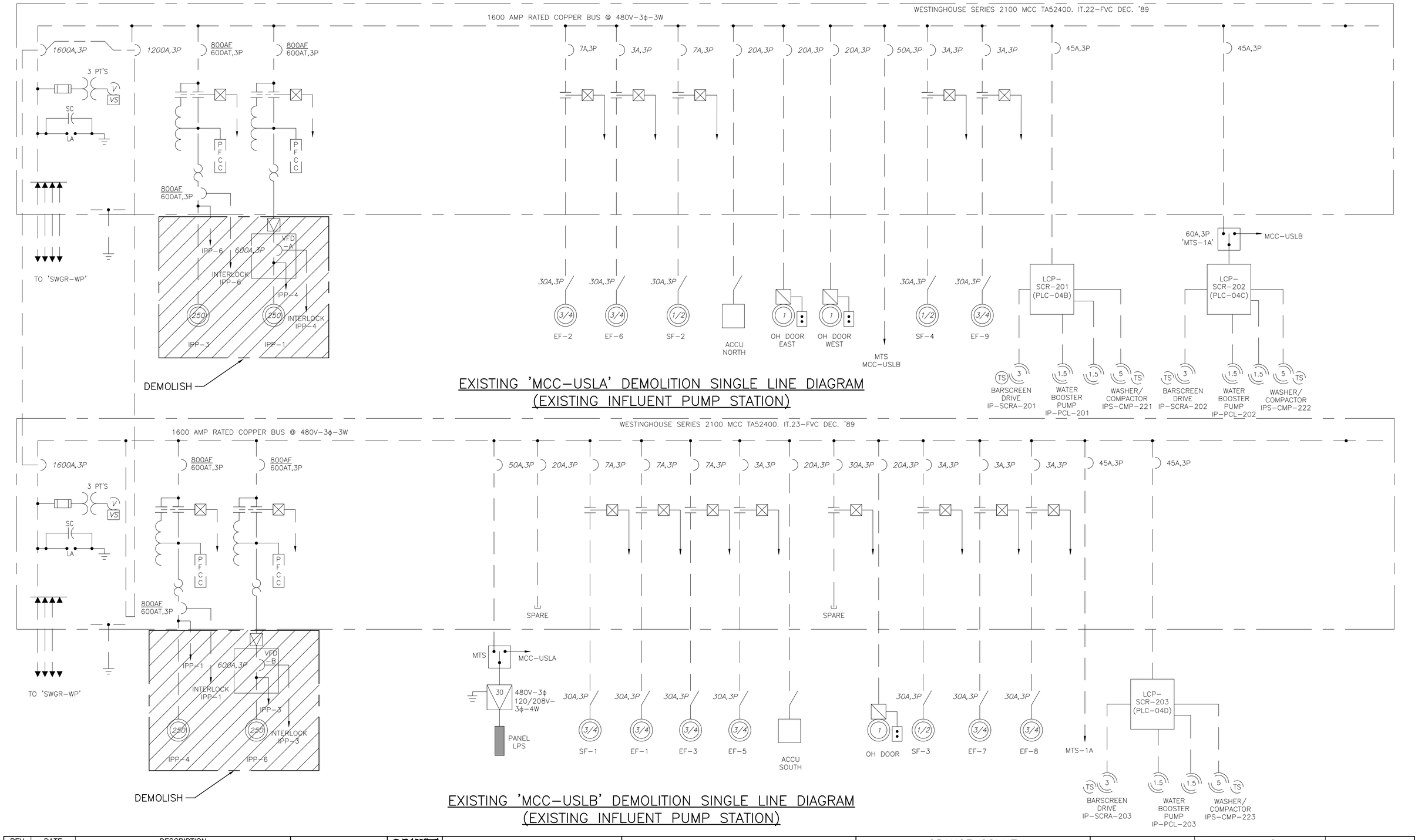

EXISTING 'MCC–USLA' DEMOLITION SINGLE LINE DIAGRAM (EXISTING INFLUENT PUMP STATION)

EXISTING 'MCC–USLB' DEMOLITION SINGLE LINE DIAGRAM (EXISTING INFLUENT PUMP STATION)

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
SINGLE LINE DIAGRAM –EXISTING INFLUENT PUMP STATION

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
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CADD FILE: E12.DWG

SCALE: NOTED
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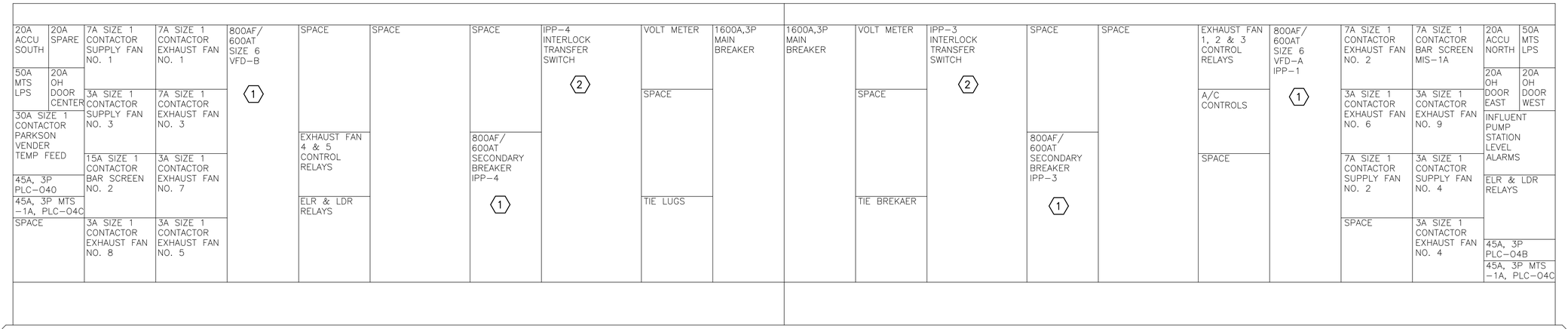

EXISTING MCC-USLB FRONT VIEW (EXISTING INFLUENT PUMP STATION)

SCALE: NTS

EXISTING MCC-USLA FRONT VIEW (EXISTING INFLUENT PUMP STATION)

SCALE: NTS

SPECIFIC NOTES;

1. DISCONNECT AND REMOVE WIRING FROM MOTOR STARTERS AND CIRCUIT BREAKERS TO MOTORS. REMOVE EXPOSED CONDUITS, AND CAP AND ABANDON CONCEALED CONDUITS IN PLACE. RE-LABEL MCC COMPARTMENTS AS "SPARE," AND LOCK CIRCUIT BREAKER IN "OFF" POSITION.
2. DISCONNECT AND REMOVE WIRING FROM TRANSFER SWITCH, AND ABANDON SWITCH IN PLACE. LOCK IN "OFF" POSITION.

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ELECTRICAL
EXISTING INFLUNT PUMP STATION
MCC ELEVATIONS

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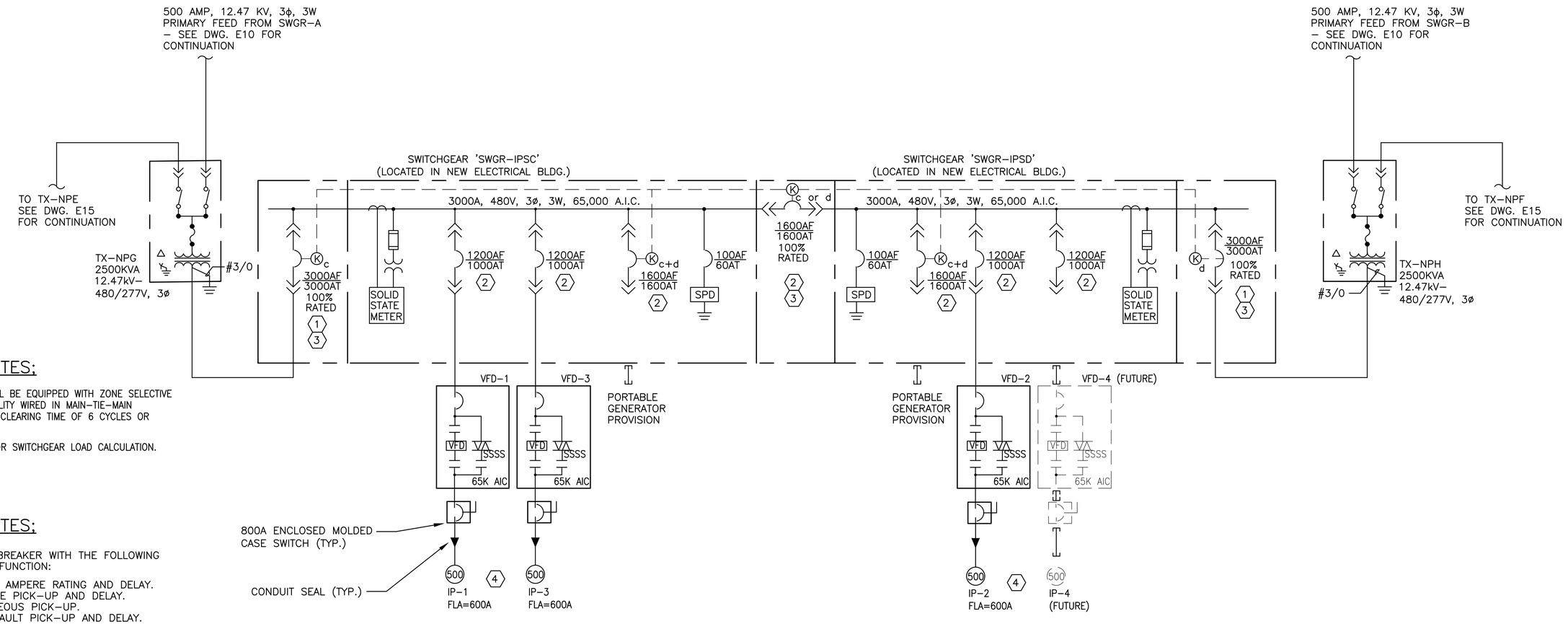

GENERAL NOTES;

1. ALL TRIP UNITS SHALL BE EQUIPPED WITH ZONE SELECTIVE INTERLOCKING CAPABILITY WIRED IN MAIN–TIE–MAIN CONFIGURATION WITH CLEARING TIME OF 6 CYCLES OR FASTER.
2. SEE DRAWING E16 FOR SWITCHGEAR LOAD CALCULATION.

SPECIFIC NOTES;

(1) PROVIDE CIRCUIT BREAKER WITH THE FOLLOWING ADJUSTABLE TRIP FUNCTION:

- A: LONG TIME AMPERE RATING AND DELAY.
- B: SHORT TIME PICK–UP AND DELAY.
- C: INSTANTANEOUS PICK–UP.
- D: GROUND FAULT PICK–UP AND DELAY.

100% RATED BREAKER

(2) PROVIDE CIRCUIT BREAKER WITH THE FOLLOWING ADJUSTABLE TRIP FUNCTION:

- A: LONG TIME AMPERE RATING AND DELAY.
- B: SHORT TIME PICK–UP AND DELAY.
- C: INSTANTANEOUS PICK–UP.

100% RATED BREAKER

(3) INTERLOCK MAIN AND TIE BREAKERS SO THAT FEEDER CIRCUITS CAN NOT BE PARALLELED.

(4) HORSEPOWER AND FULL LOAD AMPERAGE INDICATED FOR EACH MOTOR IS FROM DATA SUPPLIED BY ONE ACCEPTABLE PUMP MANUFACTURER. IF ANOTHER MANUFACTURER WITH DIFFERING DATA IS USED, PROVIDE VFD'S CONDUCTORS, AND CIRCUIT BREAKERS WITH RATINGS BASED ON THAT DATA.

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ELECTRICAL
SINGLE LINE DIAGRAM–INFLUENT PUMP STATION ELECTRICAL BUILDING

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OCU FILE NO.: OCU #
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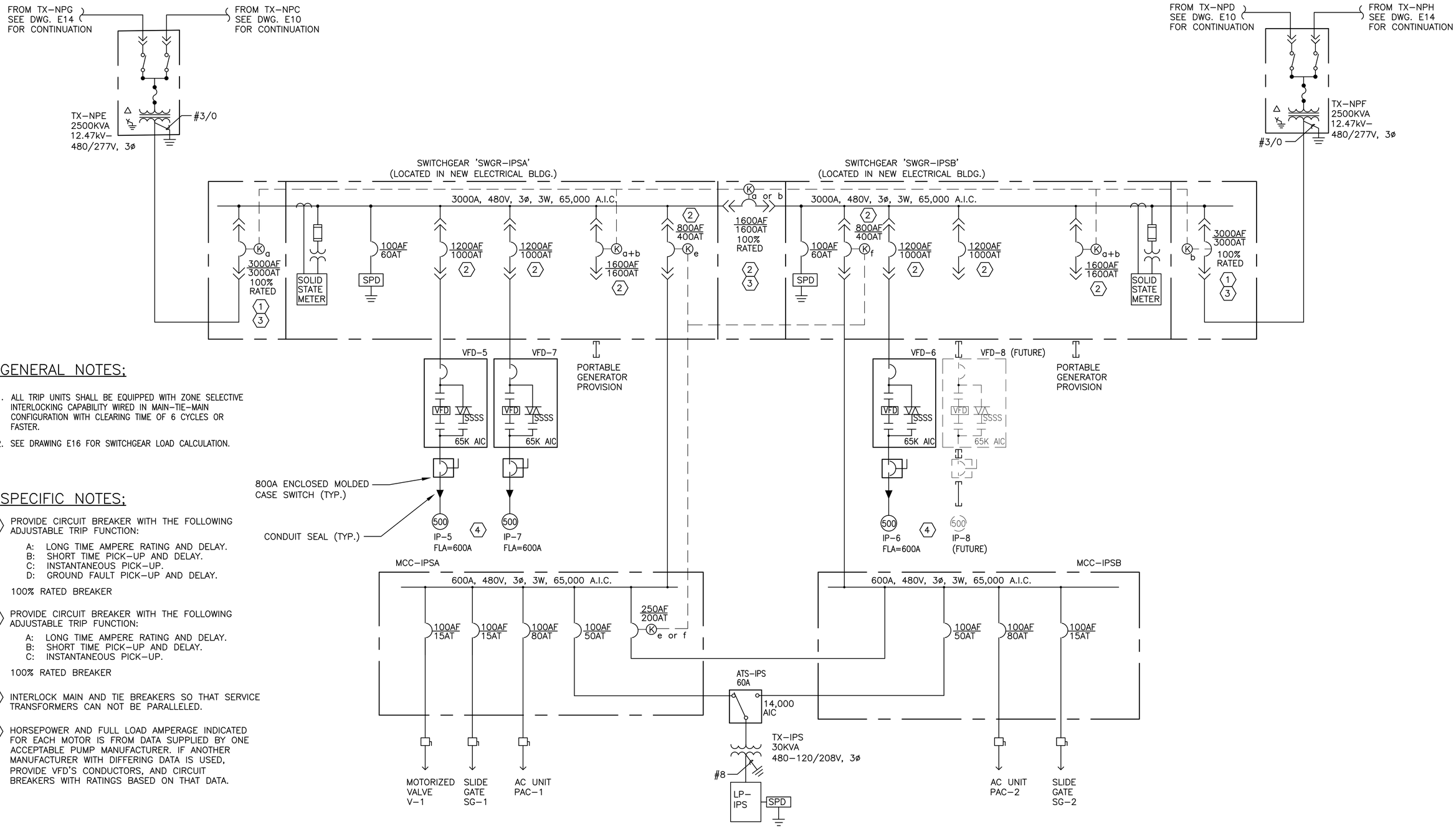

GENERAL NOTES;

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2. SEE DRAWING E16 FOR SWITCHGEAR LOAD CALCULATION.

SPECIFIC NOTES;

(1) PROVIDE CIRCUIT BREAKER WITH THE FOLLOWING ADJUSTABLE TRIP FUNCTION:

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100% RATED BREAKER

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- A: LONG TIME AMPERE RATING AND DELAY.
- B: SHORT TIME PICK-UP AND DELAY.
- C: INSTANTANEOUS PICK-UP.

100% RATED BREAKER

(3) INTERLOCK MAIN AND TIE BREAKERS SO THAT SERVICE TRANSFORMERS CAN NOT BE PARALLELED.

(4) HORSEPOWER AND FULL LOAD AMPERAGE INDICATED FOR EACH MOTOR IS FROM DATA SUPPLIED BY ONE ACCEPTABLE PUMP MANUFACTURER. IF ANOTHER MANUFACTURER WITH DIFFERING DATA IS USED, PROVIDE VFD'S CONDUCTORS, AND CIRCUIT BREAKERS WITH RATINGS BASED ON THAT DATA.

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ELECTRICAL
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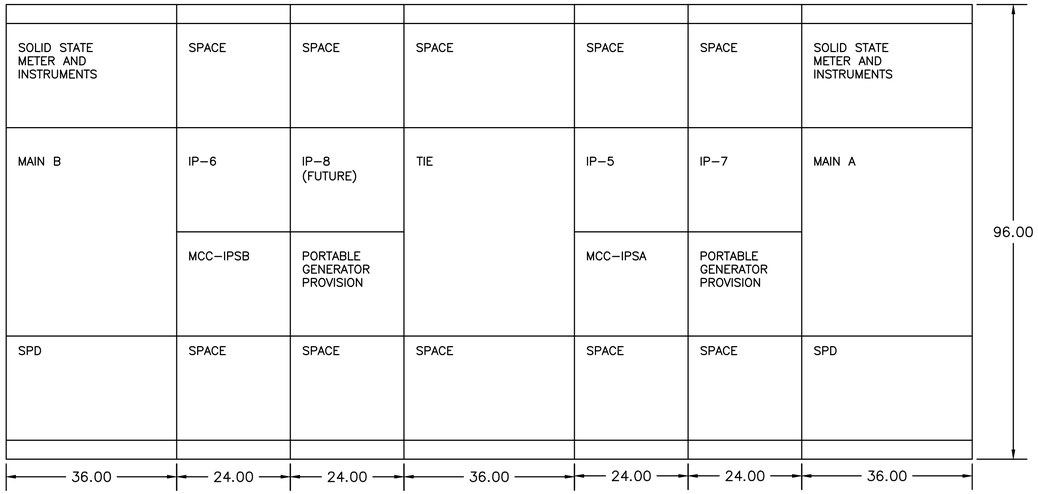
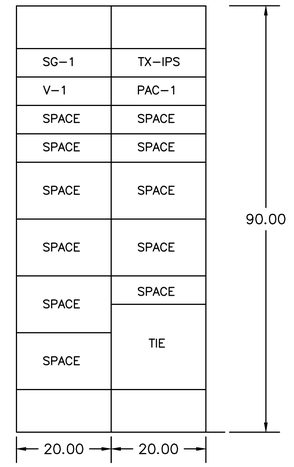
SCALE: NOTED
DRAWING NO.: E15
SHEET: 103 OF 122



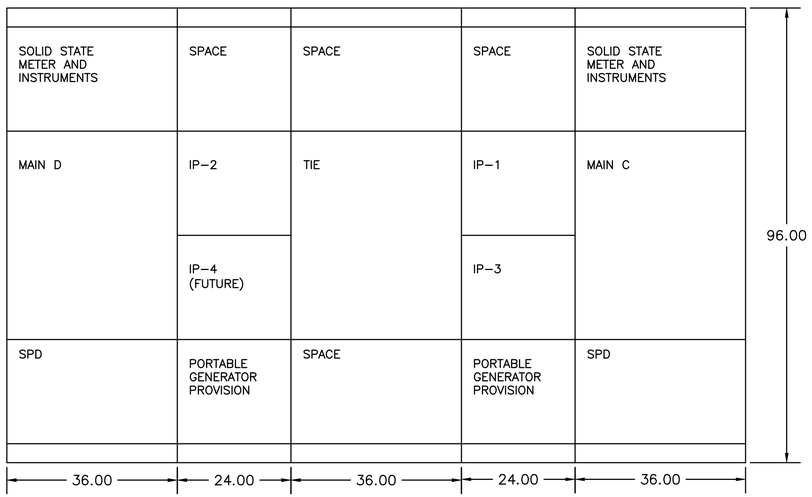
SWITCHGEAR SWGR–IPSA/IPSB ELEVATION

SCALE: NONE



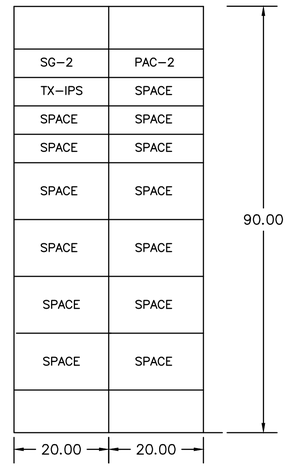
MCC–IPSA ELEVATION

SCALE: NONE



SWITCHGEAR SWGR–IPSC/IPSD ELEVATION

SCALE: NONE



MCC–IPSB ELEVATION

SCALE: NONE

Electrical Load Calculations

	Tag No.	Description	Connected HP	Connected FLA	Connected VA	Demand HP	Demand VA	Source
VFD	IP-1	**Influent Pump 1**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSC**
VFD	IP-2	**Influent Pump 2**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSD**
VFD	IP-3	**Influent Pump 3**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSC**
VFD	IP-4	**Influent Pump 4**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSD**
		Misc. MCC-USLA Loads			82689		82689	MCC-USLA
		Misc. MCC-USLB Loads			32654		32654	MCC-USLB
		MCC-USAA Loads			296754		296754	MCC-USAA
		MCC-USAB Loads			301626		301626	MCC-USAB
		MCC-MPSA Loads			0		0	MCC-MPSA
		MCC-MPSB Loads			0		0	MCC-MPSB
		DP-USQA Loads			214497		214497	DP-USQA
		DP-USQB Loads			159626		159626	DP-USQB
VFD	IP-5	**Influent Pump 5**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSA**
VFD	IP-6	**Influent Pump 6**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSB**
VFD	IP-7	**Influent Pump 7**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSA**
VFD	IP-8	**Influent Pump 8**	**500**	**600**	**498831**	**500**	**498831**	**SWGR-IPSB**
		MCC-IPSA						**SWGR-IPSA**
	PAC-1	**Air Conditioning Unit**	**60**	**77**	**64017**	**60**	**64017**	**SWGR-IPSA**
		1 Valve	**1**	**1.8**	**1496**	**1**	**1496**	**SWGR-IPSA**
		1 Gate	**2**	**3.4**	**2827**	**2**	**2827**	**SWGR-IPSA**
		MCC-IPSB						**SWGR-IPSB**
	PAC-2	**Air Conditioning Unit**	**60**	**77**	**64017**			**SWGR-IPSB**
		1 Gate	**2**	**3.4**	**2827**	**2**	**2827**	**SWGR-IPSB**
	LP-IPS	**Panelboard**			**30000**		**24000**	**SWGR-IPSA**
RVSS		Blower 1	600	86	619658	600	619658	SWGR-BP1
RVSS		Blower 2	600	86	619658	600	619658	SWGR-BP2
RVSS		Blower 3	600	86	619658	600	619658	SWGR-BP1
RVSS		Blower 4	600	86	619658	600	619658	SWGR-BP2
RVSS		Blower 5	1000	143	1030362	1000	1030362	SWGR-BP1

Connected Load

	KVA		Amps	
MCC-USLA	**83**	=	**99**	Remaining load after 2 existing 250 HP pump motors are removed from each MCC
MCC-USLB	**33**	=	**39**	
SWGR-WP1	**594**	=	**714**	MCC-USLA + MCC-USAA + DP-USQA
SWGR-WP2	**494**	=	**594**	MCC-USLB + MCC-USAB + DP-USQB
SWGR-IPSA	**1096**	=	**1318**	4 new pumps fed from new 480-volt Switchgear fed from new transformers TX-NPE and TX-NPF
SWGR-IPSB	**1065**	=	**1280**	
SWGR-IPSC	**998**	=	**1200**	4 new pumps fed from new 480-volt Switchgear fed from new transformers TX-NPG and TX-NPH
SWGR-IPSD	**998**	=	**1200**	
SWGR-BP1	**2270**	=	**315**	4160-volt Switchgear
SWGR-BP2	**1239**	=	**172**	
SWGR-A FB-2A	**4857**	=	**225**	12.47KV Feed (SWGR-WP2+IPSA+IPSC+BP1)
SWGR-A FB-2B	**3895**	=	**180**	12.47KV Feed (SWGR-WP1+IPSB+IPSD+BP2)

Demand Load

	KVA		Amps	Xfmr KVA	Bus/Bkr. Amps
MCC-USLA	**83**	=	**99**		**1600**
MCC-USLB	**33**	=	**39**		**1600**
SWGR-WP1	**594**	=	**714**	**1500**	**2000**
SWGR-WP2	**494**	=	**594**	**1500**	**2000**
SWGR-IPSA	**1090**	=	**1311**	**2500**	**3000**
SWGR-IPSB	**1000**	=	**1203**	**2500**	**3000**
SWGR-IPSC	**998**	=	**1200**	**2500**	**3000**
SWGR-IPSD	**998**	=	**1200**	**2500**	**3000**
SWGR-BP1	**2270**	=	**315**	**3000**	**1200**
SWGR-BP2	**1239**	=	**172**	**3000**	**1200**
SWGR-A FB-2A	**4851**	=	**225**	**9500**	**400**
SWGR-A FB-2B	**3831**	=	**177**	**9500**	**400**

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
A	02/2017	90% DRAWINGS

LINE IS 2 INCHES AT FULL SIZE (IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
PROJECT NO. 110031A
CERTIFICATE OF AUTHORIZATION NO. 8115

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
SWITCHGEAR AND MCC ELEVATIONS AND LOAD CALUCLATIONS

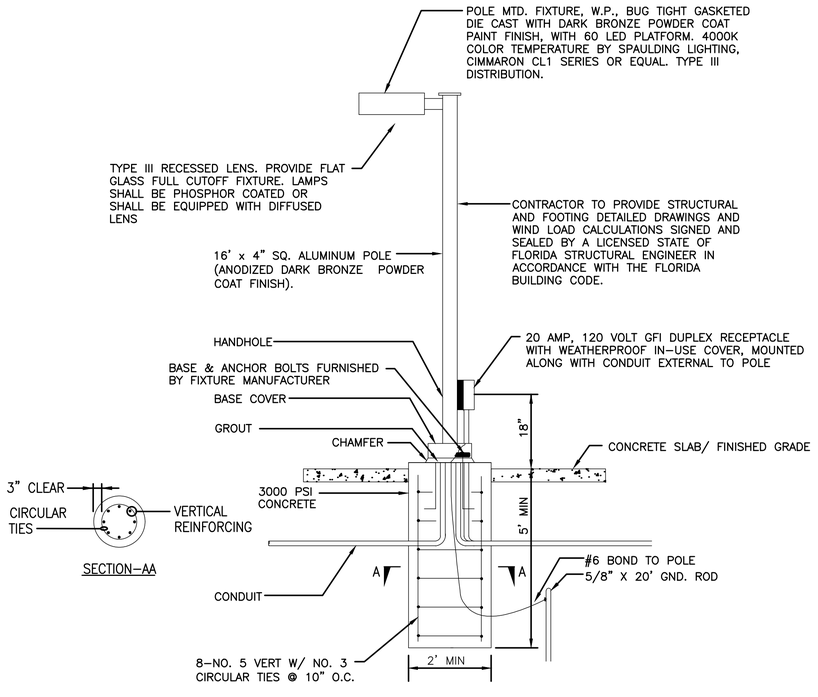
IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E16.DWG

SCALE: NOTED
DRAWING NO.: E16
SHEET: 104 OF 122

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER CATALOG NO.	DESCRIPTION	LAMPS VOLTS	LAMPS WATTS	LAMPS TYPE	MTG	REMARKS
A	COLUMBIA LIGHTING #LLT24-40HLG-FSA12F-E-U-ELL14 OR EQUAL	LED, 2x4, RECESSED LIGHT FIXTURE, WHITE BAKED ENAMEL STEEL HOUSING	120	45	LED 4K	RECESSED	EMERGENCY BATTERY PACK
B	HUBBELL LIGHTING #LMC-18-LEDS OR EQUAL	FULL CUTOFF WALLPACK, DECORATIVE DIE CAST ALUMINUM HOUSING & DOOR, BRONZE POWDER PAINT FINISH, 18 HIGH POWER LED'S, TYPE III DISTRIBUTION	120	45	LED 4K	WALL	MOUNTED 10'-0" AFF
C	SPAULDING LIGHTING OR EQUAL	SEE DETAIL BELOW	120	–	LED 4K	POLE	
X	COMPASS #CER OR EQUAL	LED EXIT SIGN, ABS THERMOPLASTIC HOUSING, NICKEL CADMIUM BATTERY	120	–	LED 4K	WALL	



POLE MOUNTED TYPE 'C' FIXTURE DETAIL

LP-IPS 225 AMP BUS **NEMA 1**
100 AMP MAIN BREAKER 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HZ
MIN. INTERRUPTING RATING 10,000 AMPS SURFACE MOUNTED

CKT NO.	AMP TRIP	POLE	DESCRIPTION	PHASE LOADING A	B	C	CKT NO.	AMP TRIP	POLE	DESCRIPTION	PHASE LOADING A	B	C
1	20	1	IPS ELEC BLDG INT LTS	0.9			2	20	3	SPD	-		
3	20	1	IPS ELEC BLDG EXT LTS		0.5		4	-	-	-		-	
5	20	1	IPS POLE LTS			1.2	6	-	-	-			-
7	20	1	IPS ELEC BLDG RECEPTS	0.8			8	20	1	FIRE ALARM PANEL FACP	1.2		
9	20	1	IPS ELEC BLDG RECEPTS		0.8		10	20	1	PLC-04A		1.8	
11	20	1*	IPS POLE RECEPTS			0.8	12	20	1	PMP-1			1.0
13	20	1	BAS CONTROLLER	0.6			14	20	1	PMP-2	1.0		
15	20	1	BAS CONTROLLER		0.6		16	20	1*	IPS POLE RECEPTS		0.8	
17	20	1	BAS CONTROLLER			0.6	18	20	1	PHH-1 SUMP PUMP			2.0
19	20	1	SPARE	-			20	20	1	PHH-2 SUMP PUMP	2.0		
21	20	1	SPARE		-		22	20	1	PHH-3 SUMP PUMP		2.0	
23	20	1	SPARE			-	24	20	1	PHH-4 SUMP PUMP			2.0
25	20	1	SPARE	-			26	20	1	BACKUP PUMP CTL PANEL	0.2		
27	20	1	SPARE		-		28	20	1	SPARE		-	
29	20	1	SPARE			-	30	20	1	SPARE			-
31	-	-	SPACE ONLY	-			32	-	-	SPACE ONLY	-		
33	-	-	SPACE ONLY		-		34	-	-	SPACE ONLY		-	
35	-	-	SPACE ONLY			-	36	-	-	SPACE ONLY			-
37	-	-	SPACE ONLY	-			38	-	-	SPACE ONLY	-		
39	-	-	SPACE ONLY		-		40	-	-	SPACE ONLY		-	
41	-	-	SPACE ONLY			-	42	-	-	SPACE ONLY			-

TOTAL CONNECTED LOAD: A= 6.7 B= 6.5 C= 7.6
TOTAL KVA = 20.8
TOTAL CONNECTED AMPS = 58

*** - GFI BREAKER**

CONDUIT SCHEDULE

CONDUIT NUMBER	CONDUIT SIZE	CONDUCTORS POWER, GROUND, & CONTROL	FROM	TO	REMARKS
I001	5"	3#500kcmil, 1#1/0 G. (15KV)	TX-NPE	EXIST. TX-NPC	RUN ADDITIONAL 5" SPARE C.
I002	5"	3#500kcmil, 1#1/0 G. (15KV)	TX-NPF	EXIST. TX-NPD	RUN ADDITIONAL 5" SPARE C.
I003	(8) 4"	3#600kcmil, 1#600 N. EA.	TX-NPE	SWGR-IPSA	
I004	(8) 4"	3#600kcmil, 1#600 N. EA.	TX-NPF	SWGR-IPSB	
I005	(2) 4"	3#500kcmil, 1#2/0 G. EA.	SWGR-IPSC	VFD-1	
I006	(2) 4"	(1) (3/C-#500kcmil w/ 3#1G.) EA.	VFD-1	IP-1 DISCONNECT SWITCH	VFD CABLE; PVC-COATED RGS
I007	(2) 5"	(3+G) MFR PUMP POWER CABLES EA	IP-1 DISCONNECT SWITCH	IP-1 (END CONDUIT @ WET WELL)	PVC-COATED RGS; CONDUIT SEAL
I008	(2) 4"	3#500kcmil, 1#2/0 G. EA.	SWGR-IPSD	VFD-2	
I009	(2) 4"	(1) (3/C-#500kcmil w/ 3#1G.) EA.	VFD-2	IP-2 DISCONNECT SWITCH	VFD CABLE; PVC-COATED RGS
I010	(2) 5"	(3+G) MFR PUMP POWER CABLES EA	IP-2 DISCONNECT SWITCH	IP-2 (END CONDUIT @ WET WELL)	PVC-COATED RGS; CONDUIT SEAL
I011	(2) 4"	3#500kcmil, 1#2/0 G. EA.	SWGR-IPSC	VFD-3	
I012	(2) 4"	(1) (3/C-#500kcmil w/ 3#1G.) EA.	VFD-3	IP-3 DISCONNECT SWITCH	VFD CABLE; PVC-COATED RGS
I013	(2) 5"	(3+G) MFR PUMP POWER CABLES EA	IP-3 DISCONNECT SWITCH	IP-3 (END CONDUIT @ WET WELL)	PVC-COATED RGS; CONDUIT SEAL
I014	(2) 4"	C.O.	STUB UP @ SWGR-IPSD	STUB UP @ FUTURE VFD-4	FUTURE CONDUCTORS
I015	(2) 4"	C.O.	STUB UP @ FUTURE VFD-4	STUB UP @ FUTURE IP-4 DISC SW	PVC-COATED RGS; FUTURE CABLES
I016	(2) 5"	C.O.	STUB UP @ FUTURE IP-4 DISC. SW	CAP @ WET WELL WALL (IP-4)	PVC-COATED RGS; FUTURE CABLES
I017	4"	3#600kcmil, 1#3 G.	SWGR-IPSA	MCC-IPSA	
I018	4"	3#600kcmil, 1#3 G.	SWGR-IPSB	MCC-IPSB	
I019	1"	3#8, 1#10 G.	MCC-IPSA	ATS-IPS	
I020	1"	3#8, 1#10 G.	MCC-IPSB	ATS-IPS	
I021	1"	3#8, 1#10 G.	ATS-IPS	TX-IPS	
I022	1-1/4"	4#3, 1#8 G.	TX-IPS	LP-IPS	
I023	(2) 4"	3#500kcmil, 1#2/0 G. EA.	SWGR-IPSA	VFD-5	
I024	(2) 4"	(1) (3/C-#500kcmil w/ 3#1G.) EA.	VFD-5	IP-5 DISCONNECT SWITCH	VFD CABLE; PVC-COATED RGS
I025	(2) 5"	(3+G) MFR PUMP POWER CABLES EA	IP-5 DISCONNECT SWITCH	IP-5 (END CONDUIT @ WET WELL)	PVC-COATED RGS; CONDUIT SEAL
I026	(2) 4"	3#500kcmil, 1#2/0 G. EA.	SWGR-IPSB	VFD-6	
I027	(2) 4"	(1) (3/C-#500kcmil w/ 3#1G.) EA.	VFD-6	IP-6 DISCONNECT SWITCH	VFD CABLE; PVC-COATED RGS
I028	(2) 5"	(3+G) MFR PUMP POWER CABLES EA	IP-6 DISCONNECT SWITCH	IP-6 (END CONDUIT @ WET WELL)	PVC-COATED RGS; CONDUIT SEAL
I029	(2) 4"	3#500kcmil, 1#2/0 G. EA.	SWGR-IPSA	VFD-7	
I030	(2) 4"	(1) (3/C-#500kcmil w/ 3#1G.) EA.	VFD-7	IP-7 DISCONNECT SWITCH	VFD CABLE; PVC-COATED RGS
I031	(2) 5"	(3+G) MFR PUMP POWER CABLES EA	IP-7 DISCONNECT SWITCH	IP-7 (END CONDUIT @ WET WELL)	PVC-COATED RGS; CONDUIT SEAL
I032	(2) 4"	C.O.	SWGR-IPSB	STUB UP @ FUTURE VFD-8	FUTURE CONDUCTORS
I033	(2) 4"	C.O.	STUB UP @ FUTURE VFD-8	STUB UP @ FUTURE IP-8 DISC SW	PVC-COATED RGS; FUTURE CABLES
I034	(2) 5"	C.O.	STUB UP @ FUTURE IP-8 DISC. SW	CAP @ WET WELL WALL (IP-8)	PVC-COATED RGS; FUTURE CABLES
I035	1"	4#14, 1#14 G.	VFD-5	PMP-2 (IP-5 START-STOP)	
I036	1"	4#14, 1#14 G.	VFD-6	PMP-2 (IP-6 START-STOP)	
I037	1"	4#14, 1#14 G.	VFD-7	PMP-2 (IP-7 START-STOP)	

REV	DATE	DESCRIPTION
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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC. 150 N ORANGE AVENUE, SUITE 200 ORLANDO, FLORIDA 32801 PHONE 407.843.6552
CERTIFICATE OF AUTHORIZATION NO. 8115
PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL
LIGHT FIXTURE, PANEL AND CONDUIT SCHEDULES

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E17.DWG

SCALE: NOTED
DRAWING NO.: E17
SHEET: 105 OF 122

CONDUIT SCHEDULE

CONDUIT		CONDUCTORS	FROM	TO	REMARKS
NUMBER	SIZE	POWER, GROUND, & CONTROL			
I038	1"	C.O.	STUB UP @ FUTURE VFD-8	PMP-2 (FUTURE IP-8 START-STOP)	FUTURE CONDUCTORS
I039	1"	4#14, 1#14 G.	VFD-1	PMP-1 (IP-1 START-STOP)	
I040	1"	4#14, 1#14 G.	VFD-2	PMP-1 (IP-2 START-STOP)	
I041	1"	4#14, 1#14 G.	VFD-3	PMP-1 (IP-3 START-STOP)	
I042	1"	C.O.	STUB UP @ FUTURE VFD-4	PMP-1 (FUTURE IP-4 START-STOP)	FUTURE CONDUCTORS
I043	1"	(1) CAT 6 CABLE	PMP-1	PLC-04A	
I044	1"	(1) PROFINET CABLE	VFD-5	PLC-04A	
I045	1"	(1) PROFINET CABLE	VFD-6	PLC-04A	
I046	1"	(1) PROFINET CABLE	VFD-7	PLC-04A	
I047	1"	C.O.	STUB UP @ FUTURE VFD-8	STUB UP @ PLC-04A	FUTURE PROFINET CABLE
I048	1"	(1) PROFINET CABLE	VFD-1	PLC-04A	
I049	1"	(1) PROFINET CABLE	VFD-2	PLC-04A	
I050	1"	(1) PROFINET CABLE	VFD-3	PLC-04A	
I051	1"	C.O.	STUB UP @ FUTURE VFD-4	STUB UP @ PLC-04A	FUTURE PROFINET CABLE
I052	2"	FIBER OPTIC CABLE	RIO-04A (EXIST. PLC-04A)	PLC-04A	
I053	2"	(2) MFR PUMP CONTROL CABLES	IP-1 (END CONDUIT @ WET WELL)	IP-1 CONTROL PULLBOX	PVC-COATED RGS; CONDUIT SEAL
I054	2"	(2) MFR PUMP CONTROL CABLES	IP-2 (END CONDUIT @ WET WELL)	IP-2 CONTROL PULLBOX	PVC-COATED RGS; CONDUIT SEAL
I055	2"	(2) MFR PUMP CONTROL CABLES	IP-3 (END CONDUIT @ WET WELL)	IP-3 CONTROL PULLBOX	PVC-COATED RGS; CONDUIT SEAL
I056	2"	C.O.	CAP @ WET WELL WALL (IP-4)	STUB UP @ FUT. IP-4 CTRL BOX	PVC-COATED RGS; FUTURE CABLE
I057	2"	(2) MFR PUMP CONTROL CABLES	IP-5 (END CONDUIT @ WET WELL)	IP-5 CONTROL PULLBOX	PVC-COATED RGS; CONDUIT SEAL
I058	2"	(2) MFR PUMP CONTROL CABLES	IP-6 (END CONDUIT @ WET WELL)	IP-6 CONTROL PULLBOX	PVC-COATED RGS; CONDUIT SEAL
I059	2"	(2) MFR PUMP CONTROL CABLES	IP-7 (END CONDUIT @ WET WELL)	IP-7 CONTROL PULLBOX	PVC-COATED RGS; CONDUIT SEAL
I060	2"	C.O.	CAP @ WET WELL WALL (IP-8)	STUB UP @ FUT. IP-8 CTRL BOX	PVC-COATED RGS; FUTURE CABLE
I061	2"	(2) MFR PUMP CONTROL CABLES	IP-1 CONTROL PULLBOX	PMP-1 (IP-1 SIGNALS)	CONT. IN C. I053
I062	2"	(2) MFR PUMP CONTROL CABLES	IP-2 CONTROL PULLBOX	PMP-1 (IP-2 SIGNALS)	CONT. IN C. I054
I063	2"	(2) MFR PUMP CONTROL CABLES	IP-3 CONTROL PULLBOX	PMP-1 (IP-3 SIGNALS)	CONT. IN C. I055
I064	2"	C.O.	STUB UP @ FUT. IP-4 CTRL BOX	PMP-1 (FUTURE IP-4 SIGNALS)	CONT. IN C. I056; FUTURE CABLES
I065	2"	(2) MFR PUMP CONTROL CABLES	IP-5 CONTROL PULLBOX	PMP-2 (IP-5 SIGNALS)	CONT. IN C. I057
I066	2"	(2) MFR PUMP CONTROL CABLES	IP-6 CONTROL PULLBOX	PMP-2 (IP-6 SIGNALS)	CONT. IN C. I058
I067	2"	(2) MFR PUMP CONTROL CABLES	IP-7 CONTROL PULLBOX	PMP-2 (IP-7 SIGNALS)	CONT. IN C. I059
I068	2"	C.O.	STUB UP @ FUT. IP-8 CTRL BOX	PMP-2 (FUTURE IP-8 SIGNALS)	CONT. IN C. I060; FUTURE CABLES
I069	5"	3#500kcmil, 1#1/0 G. (15KV)	TX-NPG	TX-NPE	RUN ADDITIONAL 5" SPARE C.
I070	1"	2#12, 1#12 G.	LP-IPS	FACP	
I071	1"	4#14, 1#14 G.	FACP	PLC-04A	
I072	1"	4#14, 1#14 G.	PAC-1 DUCT SMOKE DETECTORS	FACP	
I073	1"	4#14, 1#14 G.	PAC-2 DUCT SMOKE DETECTORS	FACP	
I074	5"	3#500kcmil, 1#1/0 G. (15KV)	TX-NPH	TX-NPF	RUN ADDITIONAL 5" SPARE C.
I075	1"	4#14, 1#14 G.	ROOM HIGH TEMP. SWITCH	PLC-04A	
I076	1"	6#12, 1#12 G.	LP-IPS	IPS POLE LIGHTS, RECEPTS.	LIGHTS VIA CONTACTOR 'PC'
I077	1-1/4"	3#4, 1#6 G.	MCC-IPSA	PAC-1	
I078	1-1/4"	3#4, 1#6 G.	MCC-IPSB	PAC-2	
I079	1"	(1) CAT 6 CABLE	PMP-2	PLC-04A	
I080	1"	2#12, 1#12 G.	LP-IPS	PMP-1	
I081	(8) 4"	3#600kcmil, 1#600 N. EA.	TX-NPG	SWGR-IPSC	
I082	(8) 4"	3#600kcmil, 1#600 N. EA.	TX-NPH	SWGR-IPSD	
I083	3/4"	3#14, 1#14 G.	PHOTOCELL	CONTACTOR 'PC'	CONTINUED TO LP-IPS
I084	1"	4#12, 1#12 G.	PLC-04A	LIT-231	
I085	1"	2#12, 1#12 G.	LIT-231	LIT-232	CONT. IN C. I084
I086	1"	(2) 2/C #16TSP	LIT-231	PLC-04A	
I087	1"	(1) 2/C #16TSP	LIT-232	LIT-231	CONT. IN C. I086
I088	5"	3#500kcmil, 1#1/0 G. (15KV)	SWGR-A (POWER GEN. BLDG.)	TX-NPG	RUN ADDITIONAL 5" SPARE C.
I089	5"	3#500kcmil, 1#1/0 G. (15KV)	SWGR-B (POWER GEN. BLDG.)	TX-NPH	RUN ADDITIONAL 5" SPARE C.
I090	1"	C.O.	MCC-IPSA	PLC-04A	
I091	1"	C.O.	MCC-IPSB	PLC-04A	
I092	1-1/4"	(2) PROFINET CABLES	SWGR-IPSC/ IPSD (METERS)	PLC-04A	
I093	1-1/4"	(2) PROFINET CABLES	SWGR-IPSA/ IPSB (METERS)	PLC-04A	
I094	1"	2#12, 1#12 G.	LP-IPS	PLC-04A	
I095	1"	2#12, 1#12 G.	LP-IPS	PMP-2	
I096	1"	4#12, 1#12 G.	LP-IPS	BAS CONTROLLERS	
I097	1"	3#12, 1#12 G.	MCC-IPSA	SG-1	
I098	1"	3#12, 1#12 G.	MCC-IPSB	SG-2	
I099	2"	3#3/0, 1# 6 G.	MCC-IPSA	MCC-IPSB	
I100	(4) 4"	C.O.	SWGR-IPSA	STUB UP 3 FT. OUTSIDE ELEC BLDG	PORTABLE GENERATOR PROVISION
I101	(4) 4"	C.O.	SWGR-IPSB	STUB UP 3 FT. OUTSIDE ELEC BLDG	PORTABLE GENERATOR PROVISION
I102	(4) 4"	C.O.	SWGR-IPSC	STUB UP 3 FT. OUTSIDE ELEC BLDG	PORTABLE GENERATOR PROVISION
I103	(4) 4"	C.O.	SWGR-IPSD	STUB UP 3 FT. OUTSIDE ELEC BLDG	PORTABLE GENERATOR PROVISION

CONDUIT SCHEDULE

CONDUIT		CONDUCTORS	FROM	TO	REMARKS
NUMBER	SIZE	POWER, GROUND, & CONTROL			
I104	1-1/2"	(4) FLOAT SW. CABLES	BACKUP PUMP CONTROL PANEL	PLC-04A	
I105	1"	3#12, 1#12 G.	MCC-IPSA	V-1	
I106	1"	(1) CABLE BY ACTUATOR MFR.	V-1 REMOTE CONTROL STATION	V-1	
I107	1"	(1) PROFINET CABLE	PLC-04A	V-1	
I108	2-1/2"	(7) FLOAT SW. CABLES	LS-2A/ LS-2H J. BOX	BACKUP PUMP CONTROL PANEL	(2) CABLES CONT. IN C. I104
I109	2-1/2"	(7) FLOAT SW. CABLES	LS-1A/ LS-1H J. BOX	BACKUP PUMP CONTROL PANEL	(2) CABLES CONT. IN C. I104
I110	1"	4#14, 1#14 G.	PSH-1	PLC-04A	
I111	1"	4#14, 1#14 G.	PSH-2	PLC-04A	
I112	1"	8#14, 1#14 G.	ZS-5, H/O/R SW-5	VFD-5	3#14 CONT. IN C. I160
I113	1"	8#14, 1#14 G.	ZS-6, H/O/R SW-6	VFD-6	3#14 CONT. IN C. I161
I114	1"	8#14, 1#14 G.	ZS-7, H/O/R SW-7	VFD-7	3#14 CONT. IN C. I162
I115	1"	C.O.	STUB UP @ FUTURE ZS-8	STUB UP @ FUTURE VFD-8	
I116	1"	8#14, 1#14 G.	ZS-1, H/O/R SW-1	VFD-1	3#14 CONT. IN C. I156
I117	1"	8#14, 1#14 G.	ZS-2, H/O/R SW-2	VFD-2	3#14 CONT. IN C. I157
I118	1"	8#14, 1#14 G.	ZS-3, H/O/R SW-3	VFD-3	3#14 CONT. IN C. I158
I119	1"	C.O.	STUB UP @ FUTURE ZS-4	STUB UP @ FUTURE VFD-4	
I120	1"	4#14, 1#14 G.	SMOKE DETECTORS	FACP	
I121	1"	2#12, 1#12 G.	PLC-04A	LIT-122	
I122	1"	(1) 2/C #16TSP	LIT-122	PLC-04A	
I123	1-1/4"	4#8, 1#8 G.	LPM2A	PHH-6 SUMP PUMP	
I124	1-1/4"	2#8, 1#8 G.	PHH-6 SUMP PUMP	PHH-5 SUMP PUMP	CONT. IN C. I123
I125	1-1/4"	4#8, 1#8 G.	LP-IPS	PHH-3 SUMP PUMP	
I126	1-1/4"	2#8, 1#8 G.	PHH-3 SUMP PUMP	PHH-4 SUMP PUMP	CONT. IN C. I125
I127	1-1/4"	4#8, 1#8 G.	LP-IPS	PHH-2 SUMP PUMP	
I128	1-1/4"	2#8, 1#8 G.	PHH-2 SUMP PUMP	PHH-1 SUMP PUMP	CONT. IN C. I127
I129	5"	3#500kcmil, 1#1/0 G. (15KV)	EXIST. TX-NPC	EXIST. TX-NPA	VIA EXIST. MANHOLE P-6
I130	5"	3#500kcmil, 1#1/0 G. (15KV)	EXIST. TX-NPD	EXIST. TX-NPB	VIA EXIST. MANHOLE P-6
I131	1"	(1) CAT 6 CABLE	SWGR-IPSA	PLC-04A	
I132	1"	(1) CAT 6 CABLE	SWGR-IPSB	PLC-04A	
I133	1"	(1) CAT 6 CABLE	SWGR-IPSC	PLC-04A	
I134	1"	(1) CAT 6 CABLE	SWGR-IPSD	PLC-04A	
I135	1"	(1) CAT 6 CABLE	MCC-IPSA	PLC-04A	
I136	1"	(1) CAT 6 CABLE	MCC-IPSB	PLC-04A	
I137	1"	(1) PROFINET CABLE	ATS-IPS	PLC-04A	
I138	1"	2#12, 1#12 G.	LP-IPS	BACKUP PUMP CONTROL PANEL	
I139	1"	6#14, 1#14 G.	H/O/R SW-1	ZS-1	CONT. IN C. I116
I140	1"	6#14, 1#14 G.	H/O/R SW-2	ZS-2	CONT. IN C. I117
I141	1"	6#14, 1#14 G.	H/O/R SW-3	ZS-3	CONT. IN C. I118
I142	1"	C.O.	STUB UP @ FUTURE H/O/R SW-4	STUB UP @ FUTURE ZS-4	CONT. IN C. I119; FUTURE CONDUCTORS
I143	1"	6#14, 1#14 G.	H/O/R SW-5	ZS-5	CONT. IN C. I112
I144	1"	6#14, 1#14 G.	H/O/R SW-6	ZS-6	CONT. IN C. I113
I145	1"	6#14, 1#14 G.	H/O/R SW-7	ZS-7	CONT. IN C. I114
I146	1"	C.O.	STUB UP @ FUTURE H/O/R SW-8	STUB UP @ FUTURE ZS-8	CONT. IN C. I115; FUTURE CONDUCTORS
I147	1"	16#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	PLC-04A	
I148	1"	4#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	VFD-1	
I149	1"	4#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	VFD-2	
I150	1"	4#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	VFD-3	
I151	1"	C.O.	BACKUP PUMP CONTROL PANEL	STUB UP @ FUTURE VFD-4	FUTURE CONDUCTORS
I152	1"	4#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	VFD-5	
I153	1"	4#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	VFD-6	
I154	1"	4#14, 1#14 G.	BACKUP PUMP CONTROL PANEL	VFD-7	
I155	1"	C.O.	BACKUP PUMP CONTROL PANEL	STUB UP @ FUTURE VFD-8	FUTURE CONDUCTORS
I156	1"	3#14, 1#14 G.	VFD-1	PLC-04A	
I157	1"	3#14, 1#14 G.	VFD-2	PLC-04A	
I158	1"	3#14, 1#14 G.	VFD-3	PLC-04A	
I159	1"	C.O.	STUB UP @ FUTURE VFD-4	STUB UP @ PLC-04A	FUTURE CONDUCTORS
I160	1"	3#14, 1#14 G.	VFD-5	PLC-04A	
I161	1"	3#14, 1#14 G.	VFD-6	PLC-04A	
I162	1"	3#14, 1#14 G.	VFD-7	PLC-04A	
I163	1"	C.O.	STUB UP @ FUTURE VFD-8	STUB UP @ PLC-04A	FUTURE CONDUCTORS
I164	1"	(1) PROFIBUS CABLE	FI-190	PLC-04A	
I165	1"	2#12, 1#12 G.	PLC-04A	FI-190	
I166	1"	8#14, 1#14 G.	SG-1	PLC-04A	
I167	1"	4#14, 1#14 G.	SG-2	SG-1	CONT. IN C. I166

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
A	02/2017	90% DRAWINGS

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
PROJECT NO. 110031A
CERTIFICATE OF AUTHORIZATION NO. 8115

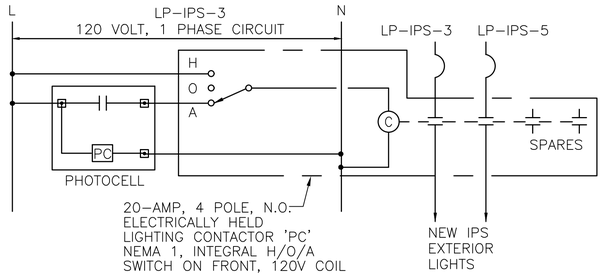
ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL

CONDUIT SCHEDLUES

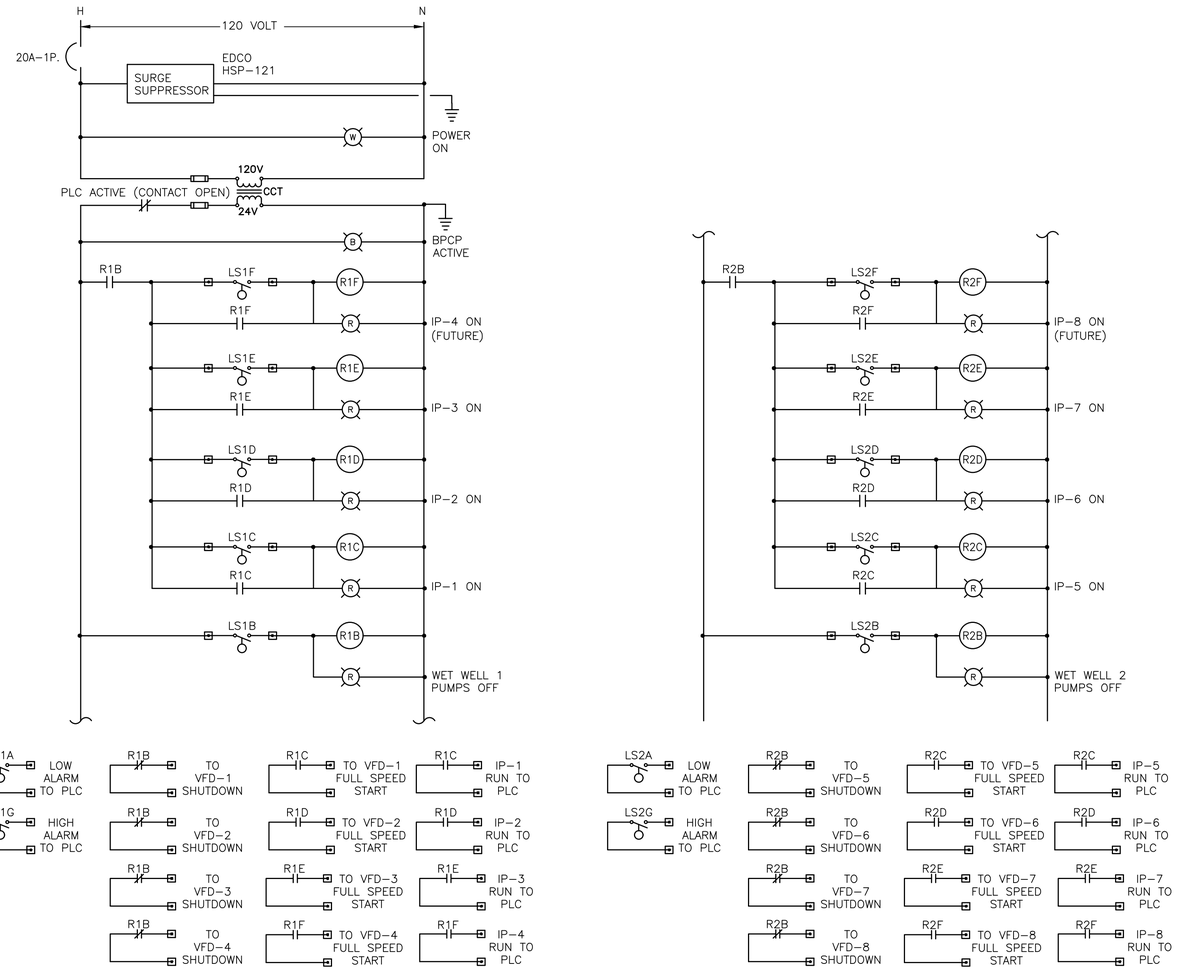
IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E18.DWG

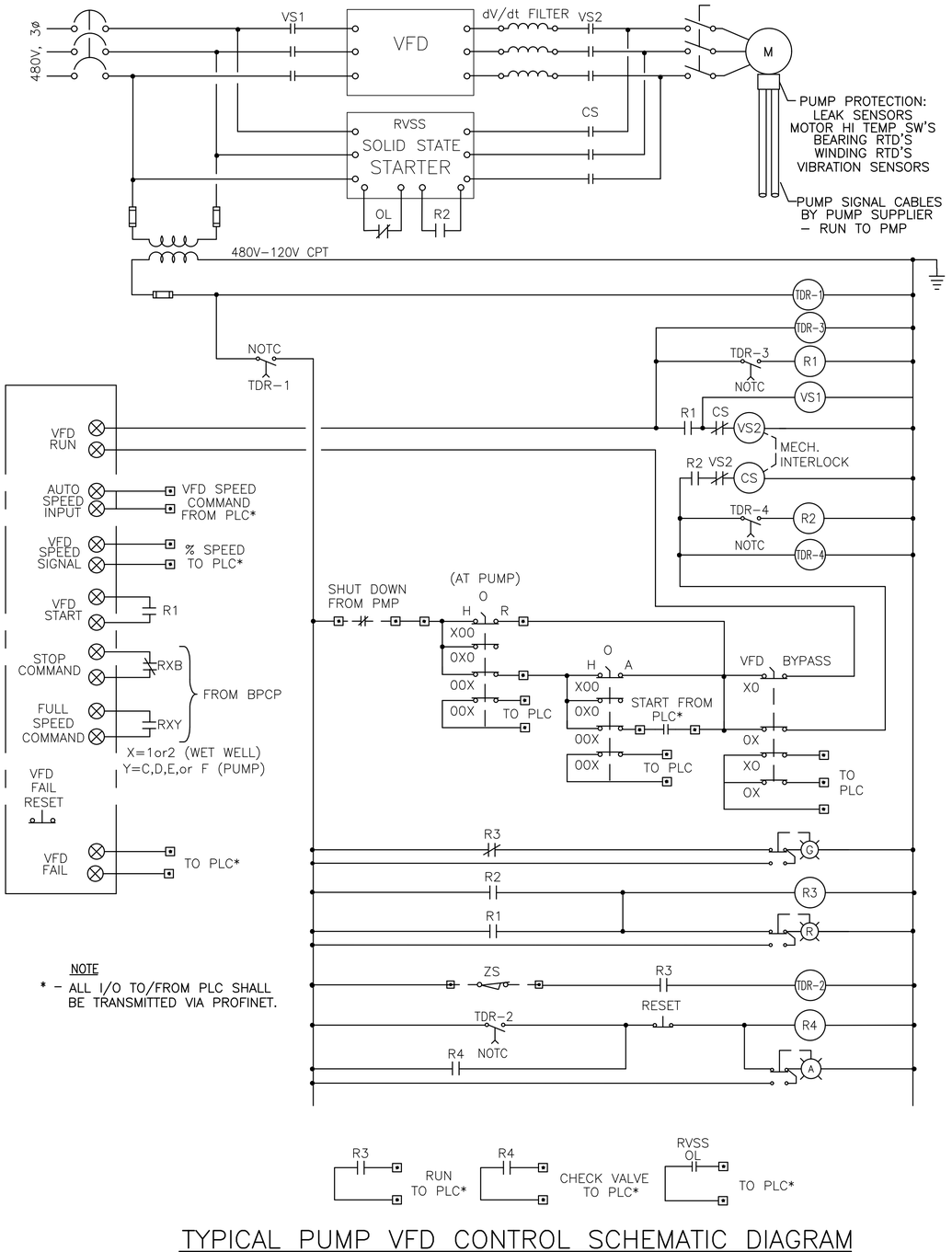
SCALE: NOTED
DRAWING NO.: E18
SHEET: 106 OF 122



EXTERIOR LIGHTING CONTROL DIAGRAM



BACKUP PUMP CONTROL PANEL SCHEMATIC DIAGRAM



NOTE

* – ALL I/O TO/FROM PLC SHALL BE TRANSMITTED VIA PROFINET.

TYPICAL PUMP VFD CONTROL SCHEMATIC DIAGRAM

TYPICAL FOR: IP–1, 2, 3, 5, 6, 7

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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
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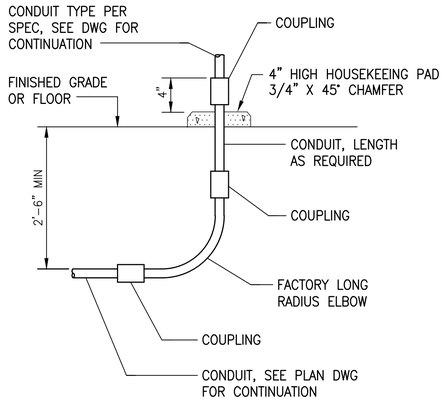
ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL

CONTROL SCHEMATIC DIAGRAMS

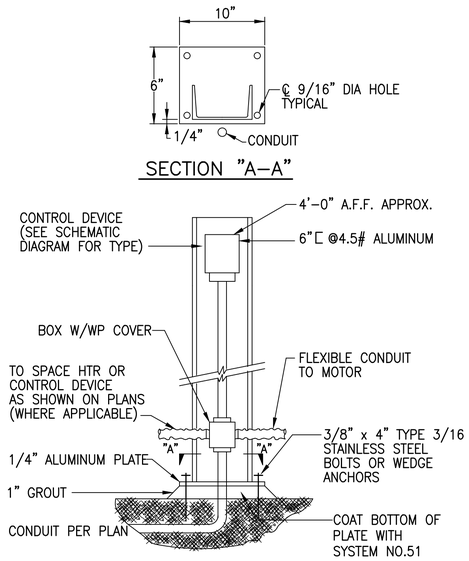
IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E19.DWG

SCALE: NOTED
DRAWING NO.: E19
SHEET: 107 OF 122

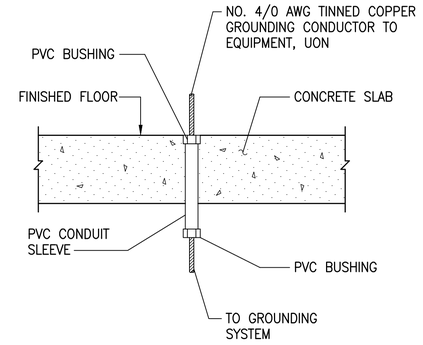


1 – CONDUIT TRANSITION DETAILS
SCALE: NONE



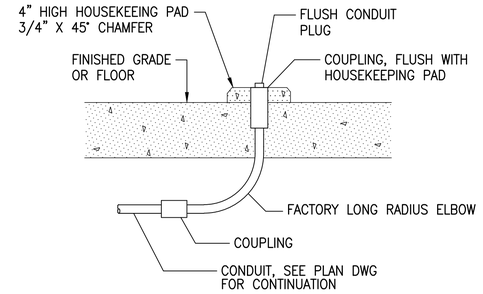
NOTES:
1. USE 316 SST MOUNTING HARDWARE

2 – CONTROL STATION MOUNTING



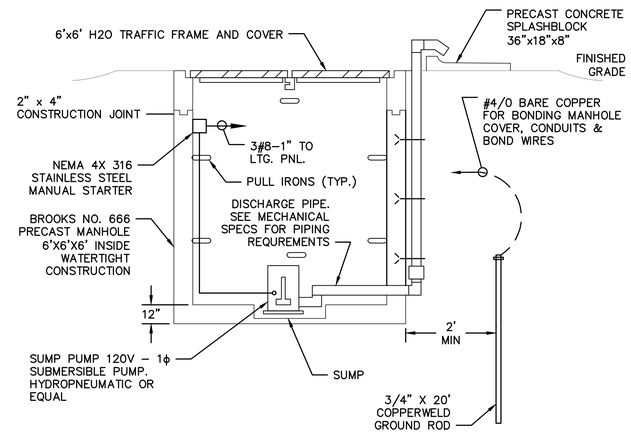
NOTES:
1. EXTEND PVC CONDUIT TO TOP OF BASE, OR PEDESTAL FOR BASE, OR PEDESTAL MOUNTED EQUIPMENT. SUPPORT AT (2) PLACES(MIN).

3 – GROUNDING CONDUIT SLEEVE DETAIL
SCALE: NONE

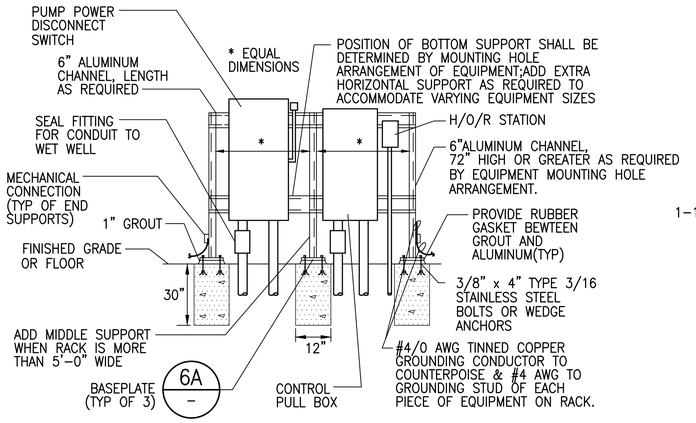


NOTES:
1. THIS STUB–UP IS ONLY TO BE USED FOR SPARES AND FUTURE USE.

4 – CONDUIT STUB–UP DETAIL
SCALE: NONE

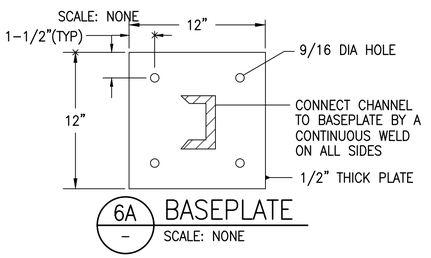


5 – PRE–CAST PULL BOX DETAIL (PRE–FAB)
SCALE: NONE

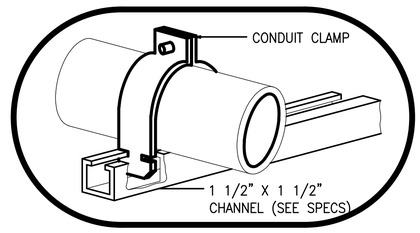


NOTES:
1. ENCLOSURES THAT ARE GREATER THAN 24" WIDE BY 6" DEEP SHALL BE PROVIDED WITH ADDITIONAL ENCLOSURE SUPPORTS. PROVIDE 1" ALUMINUM CONDUIT WITH ALUMINUM POST BASES AT EACH END AND SECURE THEM TO THE BASE OF THE ENCLOSURE AT EACH FRONT CORNER AND SECURE THE BOTTOM OF THE POST TO CONCRETE PAD OR STRUCTURE.
2. ALL HARDWARE TO ASSEMBLE RACK AND TO MOUNT EQUIPMENT SHALL BE 316 STAINLESS STEEL.
3. WHERE LOCATED IN GRASS AREAS, PROVIDE POURED CONCRETE PAD 4" ABOVE FINISHED GRADE AROUND RACK SUPPORT BASES AND ALL CONDUIT STUB–UPS.

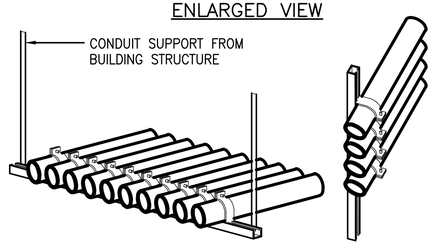
6 – EQUIPMENT RACK DETAIL
SCALE: NONE



6A – BASEPLATE
SCALE: NONE



ENLARGED VIEW



TRAPEZE ASSEMBLY

WALKWAY AND WALL MOUNTED

7 – CONDUIT PIPE STRAP MOUNTING DETAILS
SCALE: NONE

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C	12/2017	ISSUED FOR BID
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ORLANDO, FLORIDA 32801
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PROJECT NO. 110031A
CERTIFICATE OF AUTHORIZATION NO. 8115

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
ELECTRICAL

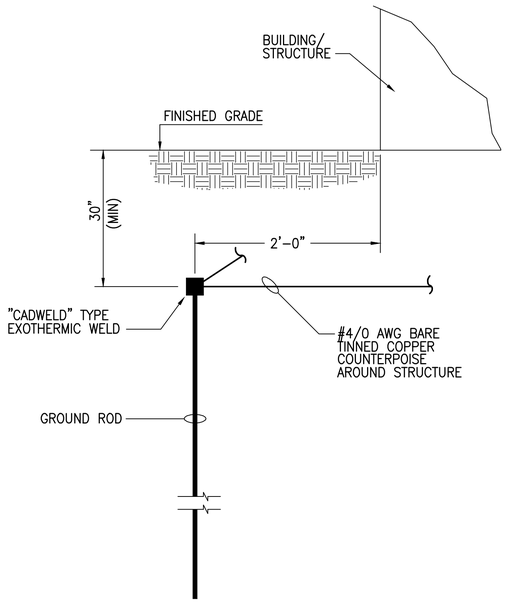
ELECTRICAL DETAILS

IRA BRANDELL, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

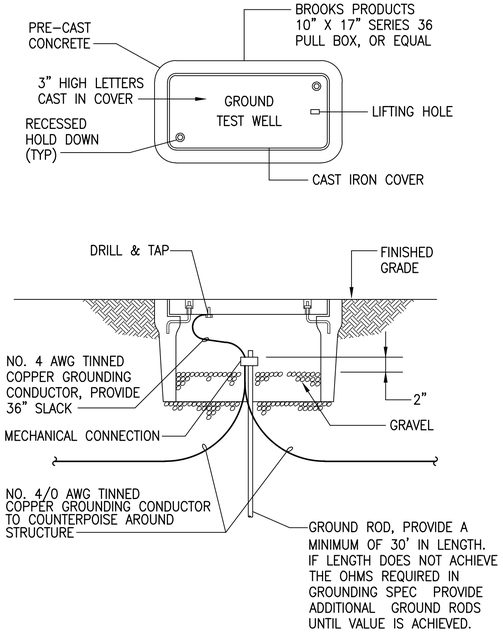
OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E20.DWG

SCALE: NOTED
DRAWING NO.: E20
SHEET: 108 OF 122

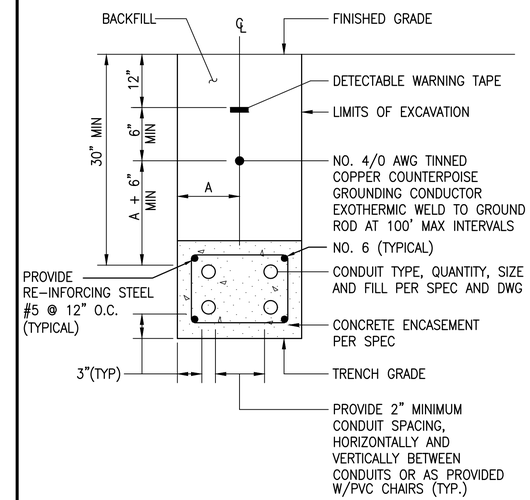
Parent Sheet Set:110031A_OOPS Rev/Plot by:JAY MILLER Rev on:10/31/2017 2:30 PM Individual File Path:R:\PROJECTS\110031A – SOUTH WATER RECLAMATION FACILITY PUMP STATION (PH 2)\DESIGN\DRAWINGS\FINAL\DESIGN\E20.DWG



1 — TYPICAL COUNTERPOISE/GROUND ROD INSTALLATION DETAIL
SCALE: NONE

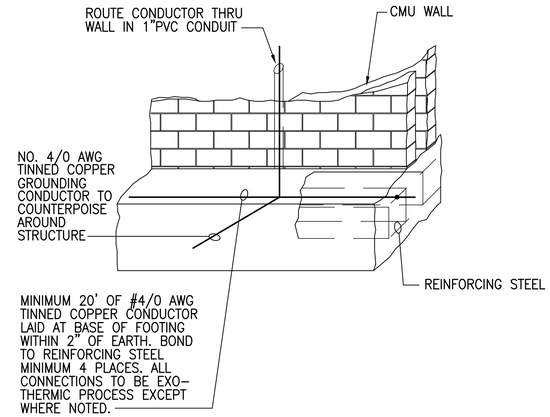


2 — GROUND TEST WELL
SCALE: NONE

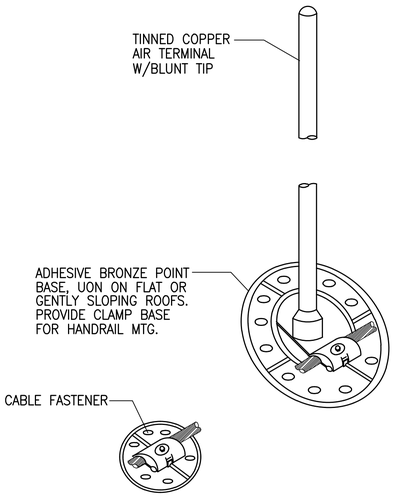


NOTES:
1. SEE "EARTHWORK AND TRENCHING" SPECIFICATION FOR EXCATATION AND BACKFILL.
2. THERE SHALL BE A MINIMUM 18" BETWEEN POWER AND ANALOG CONDUIT RUNS.
3. CONCRETE ENCASE ALL CONDUITS.

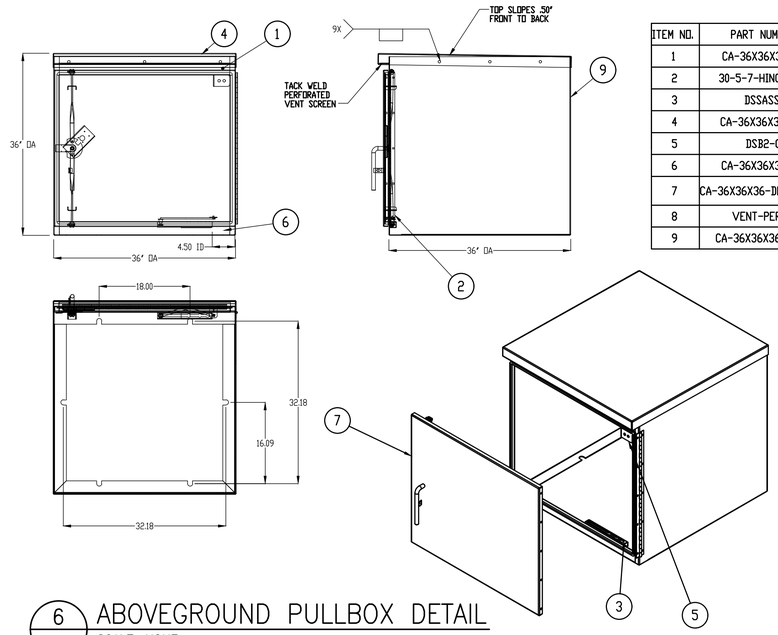
3 — CONCRETE-ENCASED CONDUITS
SCALE: NONE



4 — CONCRETE-ENCASED GROUND
SCALE: NONE



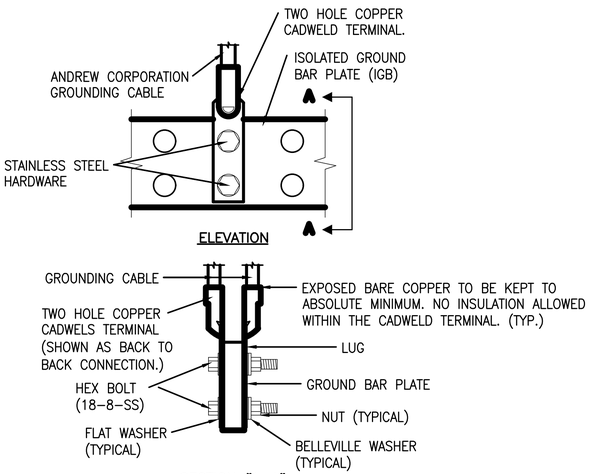
5 — BASE MOUNTED AIR TERMINAL
SCALE: NONE



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	CA-36X36X36-TFR	VENTED TOP FACE RAIL	1
2	30-5-7-HINGE-ASSY	HINGE ASSY, 30"	1
3	DSSASSY	DOOR STOP SLIDE BRKT ASSY	1
4	CA-36X36X36-TOP	TOP	1
5	DSB2-02	DOOR SWITCH BRACKET	1
6	CA-36X36X36-BFR	BOTTOM FACE RAIL	1
7	CA-36X36X36-DOOR-ASSY	36X36X36 DOOR ASSEMBLY	1
8	VENT-PERF-34	VENT-PERF-34	1
9	CA-36X36X36-BODY	BODY	1

NOTES:
1. PART NUMBERS LISTED ARE FROM SOUTHERN MANUFACTURING.
2. PROVIDE FULL HEIGHT AND DEPTH BARRIER BETWEEN POWER AND CONTROL CONDUIT SECTIONS. BOTH SECTIONS SHALL BE ACCESSIBLE VIA DOOR.

6 — ABOVEGROUND PULLBOX DETAIL
SCALE: NONE



NOTES:
1. DOUBLING UP OR 'STACKING' OF CONNECTIONS IS NOT PERMITTED. OXIDE – INHIBITING JOINT COMPOUND TO BE USED ON ALL CONNECTIONS. BACK TO BACK CONNECTIONS SHALL BE USED ONLY WHEN NUMBER OF CONNECTIONS TO FRONT OF BAR EXCEEDS NUMBER OF HOLES.
2. FOR LUG TO STEEL – INSERT DRAGON TOOTH (LOCK WASHER) BETWEEN LUG AND STEEL.

7 — TYPICAL GROUND BAR PLATE CONNECTIONS DETAIL
SCALE: NONE

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C	12/2017	ISSUED FOR BID
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ELECTRICAL

ELECTRICAL DETAILS

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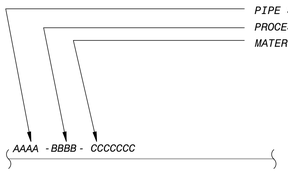
PROFESSIONAL ENGINEER
FLORIDA LICENSE #65814

OCU FILE NO.: OCU #
DESIGNED BY: MAP
DRAWN BY: IPF
CHECKED BY: IB
CADD FILE: E21.DWG

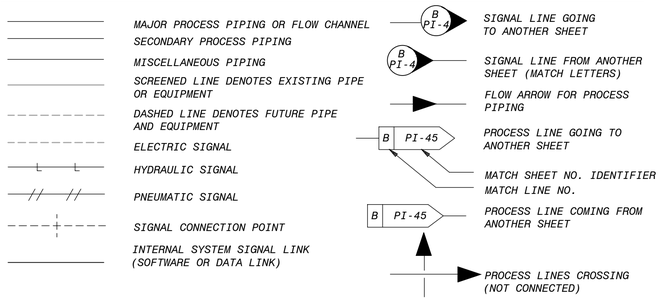
SCALE: NOTED
DRAWING NO.: E21
SHEET: 109 OF 122

EQUIPMENT IDENTIFICATION DESCRIPTION

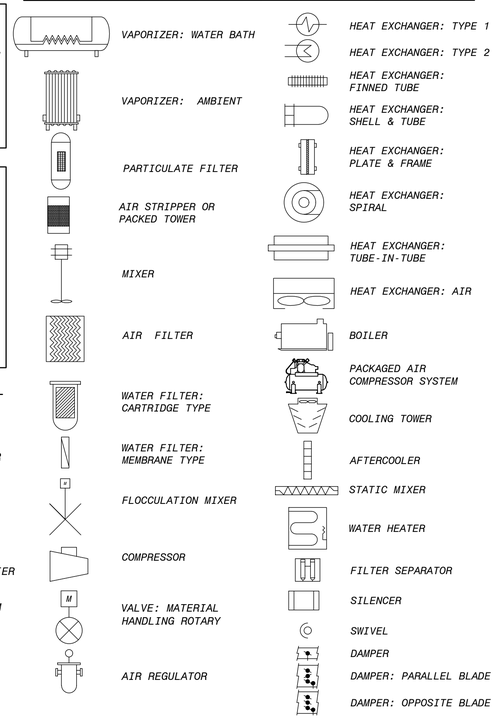
PIPELINE IDENTIFICATION DESCRIPTION



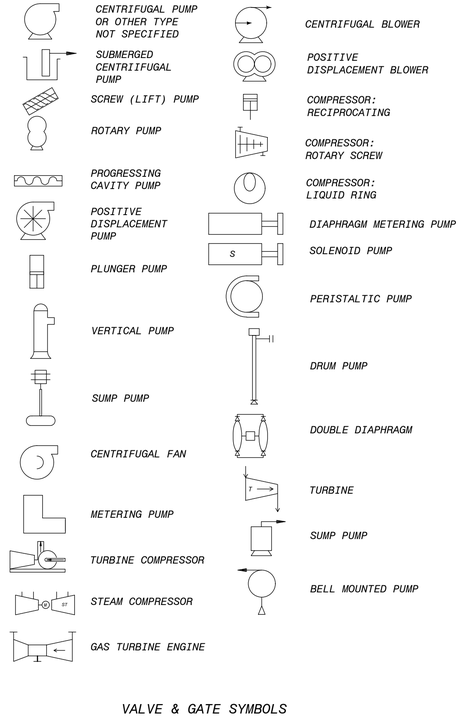
LINE SYMBOLS



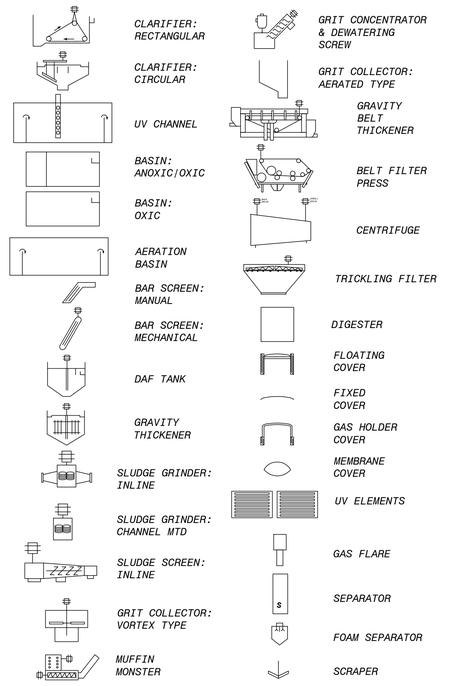
MECHANICAL EQUIPMENT SYMBOLS



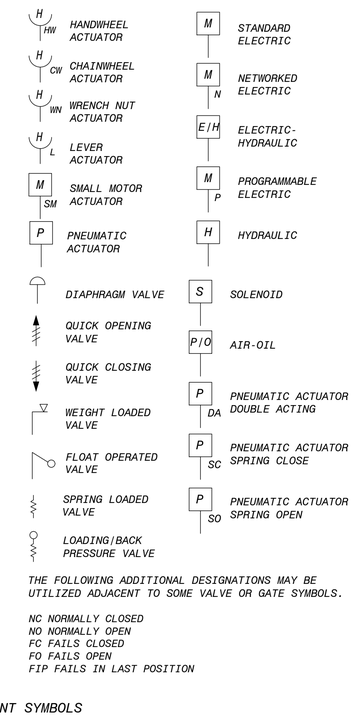
PUMP & BLOWER SYMBOLS



WASTEWATER PROCESS SYMBOLS



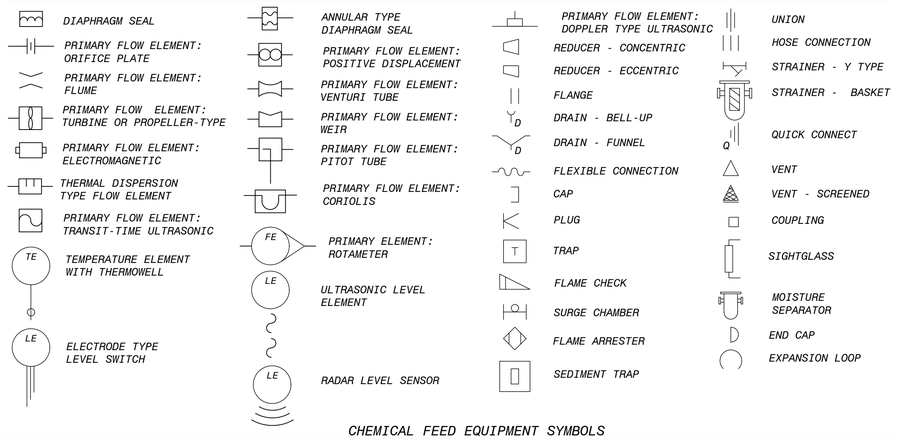
VALVE AND GATE ACTUATOR SYMBOLS



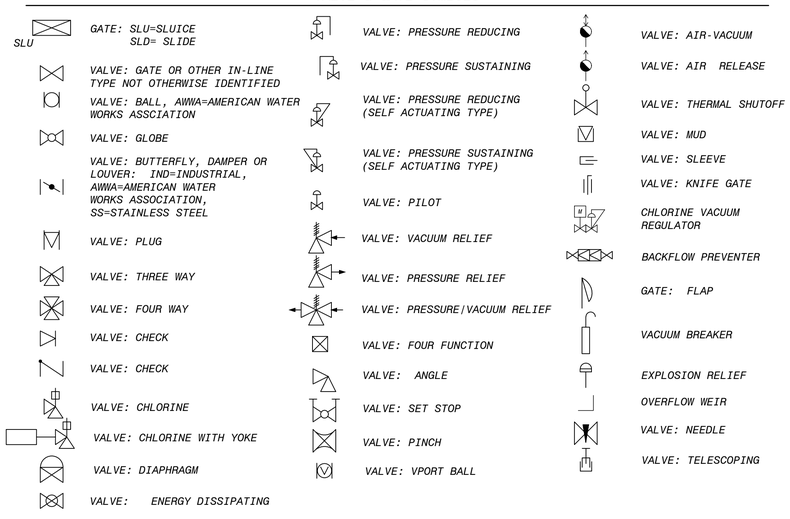
THE FOLLOWING ADDITIONAL DESIGNATIONS MAY BE UTILIZED ADJACENT TO SOME VALVE OR GATE SYMBOLS.

NC NORMALLY CLOSED
NO NORMALLY OPEN
FC FAILS CLOSED
FO FAILS OPEN
FIP FAILS IN LAST POSITION

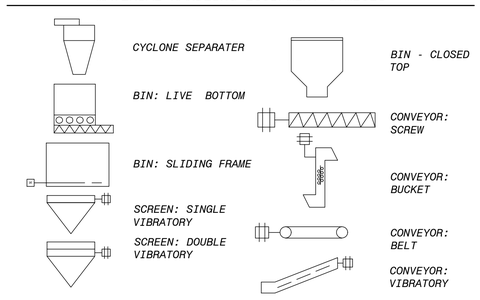
PRIMARY ELEMENT & FITTING SYMBOLS



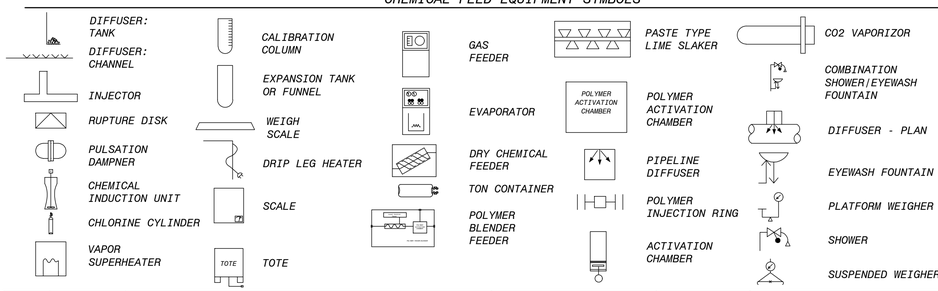
VALVE & GATE SYMBOLS

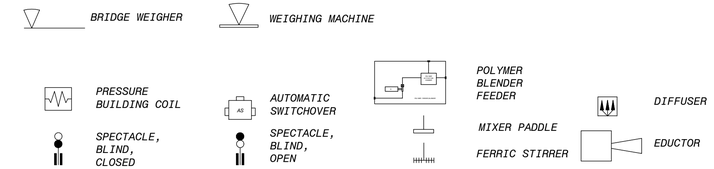


MATERIAL HANDLING EQUIPMENT SYMBOLS



CHEMICAL FEED EQUIPMENT SYMBOLS





GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ISA-S5.1 (1988). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM THE P&ID DRAWINGS.
3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
4. PIPING AND EQUIPMENT LEGEND APPLIES TO P&ID SHEETS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
A	02/2017	90% DRAWINGS

LINE IS 2 INCHES AT FULL SIZE (IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
CERTIFICATE OF AUTHORIZATION NO. 8115
PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS
INSTRUMENTATION LEGEND AND ABBREVIATIONS – 1 OF 3

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
DRAWN BY: IPF
CHECKED BY: ES
CADD FILE: I01.DWG

SCALE: NOTED
DRAWING NO.: I01
SHEET: 110 OF 122

INSTRUMENT TAG NUMBERS
MEANINGS OF IDENTIFICATION LETTERS

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

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PIPELINE MATERIAL CODE ABBREVIATIONS

RCP/ERCP	SECTION 02615, CONCRETE PIPE
PVC	SECTION 15064, POLYVINYL CHLORIDE PIPE
	SECTION 15290,
	SECTION 15291,
	SECTION 15292,
	SECTION 15293,
DIP	SECTION 15240, DUCTILE IRON PIPE
SP	SECTION 15065, MISCELLANEOUS STEEL PIPE, TUBING, AND ACCESSORIES
SST	SECTION 15064, STAINLESS STEEL PIPE, TUBING, AND ACCESSORIES
BR-1	SECTION 15060, MISCELLANEOUS PIPING PIPE AND PIPE ACCESSORIES

NOTE, SEE G-4 FOR FLOW STREAM IDENTIFICATION TABLE

GENERAL INSTRUMENT SYMBOLS

- FIELD MOUNTED INSTRUMENT
- INSTRUMENT MOUNTED ON FACE OF PANEL
- INSTRUMENT MOUNTED BEHIND OR INSIDE OF PANEL
- INSTRUMENT MOUNTED ON FACE OF LOCAL PANEL
- INSTRUMENT MOUNTED BEHIND OR INSIDE OF LOCAL PANEL
- SINGLE INSTRUMENT HOUSING CONTAINING TWO (OR MORE) INSTRUMENTATION FUNCTIONS
- I — CONTROL INTERLOCK FUNCTION, SEE SCHEMATICS AND SYSTEM SPECIFICATIONS FOR SPECIFIC FUNCTION

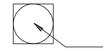
TAG NUMBERS AND ADDITIONAL DESIGNATIONS

FIRST LETTER
SUCCEEDING LETTERS
NUMBER AFTER DASH (-1, -2, ETC) DENOTES MULTIPLE DEVICES USED IN IDENTICAL DUPLICATE SYSTEMS.
A LETTER AFTER THE LOOP NUMBER (31A, 31B, ETC) IS USED TO DISTINQUISH MULTIPLE SIMILAR DEVICES IN THE SAME INSTRUMENT LOOP.
LOOP DESIGNATION NUMBER

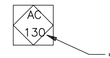
SEE INSTRUMENT FUNCTIONAL DESIGNATIONS AND ABBREVIATIONS.

DIGITAL SYSTEMS INTERFACE SYMBOLS

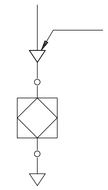
NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.



COMPUTER, DISTRIBUTED CONTROL SYSTEM, OR DISPLAY FUNCTION BLOCK
LETTERS, TAG NUMBERS, ABBREVIATIONS AND OTHER ANNOTATIONS ARE SIMILAR TO THE GENERAL INSTRUMENT LEGEND



PROGRAMMABLE LOGIC CONTROLLER SYSTEM FUNCTION BLOCK
"CB" NUMBER REFERS TO SOFTWARE CONTROL BLOCK DESCRIPTION IN THE SPECIFICATIONS.



DIGITAL SYSTEM I/O INTERFACE
DIRECTION OF ARROW DENOTES WHETHER INPUT OR OUTPUT

▽2 DISCRETE I/O

▲2 ANALOG I/O

FUNCTION DESIGNATIONS AND ABBREVIATIONS

INSTRUMENT DESIGNATIONS

K	GAIN OR ATTENUATE (INPUT:OUTPUT)
−K	GAIN AND REVERSE
Σ	ADD OR SUM (ADD AND SUBTRACT)
Δ	SUBTRACT (DIFFERENCE)
√‾	EXTRACT SQUARE ROOT
÷	DIVIDE
F(X)	CHARACTERIZE SIGNAL
>	HIGH-SELECT
<	LOW-SELECT
×	MULTIPLY
∫	INTEGRATE (TIME INTEGRAL)
CH_4	METHANE
CL_2	CHLORINE RESIDUAL
CO_2	CARBON DIOXIDE
DO	DISSOLVED OXYGEN
LEL	LOWER EXPLOSIVE LIMIT
MCC	MOTOR CONTROL CENTER
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
O_2	OXYGEN (PURITY)
pH	pH CELL
TURB	TURBIDITY

HAND SWITCH DESIGNATIONS

HOA	HAND-OFF-AUTO
LR	LOCAL REMOTE
OC	OPEN-CLOSE
OO	ON-OFF
LOR	LOCAL-OFF-REMOTE
OOA	ON-OFF-AUTO
OCR	OPEN-CLOSE-REMOTE
OOR	ON-OFF-REMOTE
FR	FORWARD-REVERSE
ST/STP	START-STOP

TRANSDUCER & CONVERTER DESIGNATION

E	VOLTAGE
FSK	FREQUENCY SHIFT KEYING
H	HYDRAULIC
I	CURRENT
P	PNEUMATIC PULSE
PD	PULSE DURATION
PF	PULSE FREQUENCY
R	RESISTANCE (ELECTRICAL)

EXAMPLE: I/P = CURRENT TO PNEUMATIC TRANSDUCER

POWER SUPPLY ABBREVIATIONS

AS	AIR SUPPLY
ES	ELECTRIC SUPPLY
GS	GAS SUPPLY
HS	HYDRAULIC SUPPLY
NS	NITROGEN SUPPLY
SS	STEAM SUPPLY
WS	WATER SUPPLY

AS > — POWER SUPPLY SOURCE LABEL. USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.

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INSTRUMENTATION LEGEND AND ABBREVIATIONS – 2 OF 3

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
DRAWN BY: IPF
CHECKED BY: ES
CADD FILE: I02.DWG

SCALE: NOTED
DRAWING NO.: I02
SHEET: 111 OF 122

FUNCTION CODE ABBREVIATIONS

ACTIVATION CHAMBER	ACMB	DEWATERING SCREW	DWS	HOIST, CHAIN	HSC	RESERVOIR	RSV	VACUUM BREAK	VB
ADJUSTABLE FREQUENCY DRIVE	AFD	DIAPHRAGM SEAL	DPS	HOIST, WIRE ROPE	HSE	RESIDUAL COLLECTOR	RCO	VACUUM REGULATOR	VRG
AERATOR, COARSE BUBBLE DIFFUSED	AOD	DIFFUSER, CHANNEL	DIF	HYDRANT, FIRE	HYDF	ROTAMETER	RM	VALVE, AIR RELEASE	AVR
AERATOR, FINE PORE DIFFUSED	AEFD	DIFFUSER BANK	DFB	HYDRANT, WALL	HYDW	RUPTURE DISK	RD	VALVE, AIR-VACUUM	AVRV
AERATOR, FLOATING SURFACE	AFS	DIFFUSER, PIPELINE	DIP	HYDROCYCLONE	HYC	SAMPLER	SAMP	VALVE, ANGLE	VAG
AERATOR, SURFACE	AES	DIFFUSER, TANK	DIR	INJECTOR, CHEMICAL	INJ	SCALE	SCL	VALVE, AWWA BALL	VBM
AFTERCOOLER	AFC	DIGESTER, AEROBIC	DGE			SCALE, WEIGHT	SC	VALVE, AWWA BUTTERFLY	VBF
AIR DRYER	AD	DIGESTER, ANAEROBIC PRIMARY	DGAP			SCREEN, HORIZONTAL	SCRHT	VALVE, BACKFLOW PREVENTER	VBFP
AIR FILTER	AF	DIGESTER, ANAEROBIC SECONDARY	DGAS			SCREEN, INLINE SLUDGE	SCRI	VALVE, BALL MISCELLANEOUS	VBM
AIR RECEIVER OR REGULATOR	AR	DISINFECTION UNIT, UV	DSUV			SCREEN, MANUAL OR MECH CLEANED BAR	SCRA	VALVE, CHECK	VCK
AIR SEPARATOR	AS	DISSOLVED AIR FLOTATION THICKENER	DAF			SCREEN, STEP	SCRS	VALVE, CONTROL	CV
AIR STRIPPER	AST	DUST COLLECTOR	DUC			SCREEN, TRAVELLING WATER	SCT	VALVE, CONE	VCN
BACKFLOW PREVENTER	BFP	EDUCTOR	EDC	MIXER, CARBON	MXC	SCREEN, VIBRATORY	SCR	VALVE, DIAPHRAGM OPERATED	VDG
BASIN, AERATION	BSNA	ELECTRICAL EQUIPMENT, GENERAL	EQPE	MIXER, FLOCCULATION	FLM	SCRUBBER	SCU	VALVE, DOUBLE DISC GATE	VGD
BASIN, ANOXIC/OXIC	BSNX	EMERGENCY EYE WASH FOUNTAIN	EWSH	MIXER, IN-LINE	MXI	SCUM COLLECTOR	SMC	VALVE, ECCENTRIC PLUG	VPL
BASIN, BNR	BNR	EMERGENCY SHOWER	ESHR	MIXER, PUGMILL	MXPG	SCUM WEIR - ROTATING	SCW	VALVE, EXPLOSION RELIEF	VER
BASIN, CHLORINE CONTACT	BSNC	EMERGENCY SHOWER & EYEWASH	EMEW	MIXER, RAPID	MXR	SEPARATOR, MOISTURE OR CYCLONE	SEP	VALVE, FOUR WAY	VFW
BASIN, OXIC	BSNO	EQUIPMENT, BUILDING SERVICES	EQPB	MIXER, STATIC	MXS	SIGHT GLASS - TALL	SGT	VALVE, GATE	VG
BASIN, RECTANGULAR SEDIMENTATION	RBSN	EQUIPMENT, GENERAL OR UNSPECIFIED	EQPT	MIXER, SUBMERSIBLE, PROP OR BLENDER	MXP	SIGHT GAUGE	SG	VALVE, GENERAL OR UNSPECIFIED	V
BELT FILTER PRESS	BFPS	EVAPORATOR	EV	MUFFIN MONSTER	MM	SILENCER	SIL	VALVE, GLOBE	VGL
BIN (STORAGE - ALL TYPES)	B	EXPANSION CHAMBER	EXC	OVERFLOW ROOF DRAIN	ORD	SLUDGE COLLECTOR, CIRCULAR	SLC	VALVE, INDUSTRIAL BUTTERFLY	VBI
BIN ACTIVATOR	BA	FAN, AXIAL FLOW	FAX			SLUDGE COLLECTOR, CROSS	GCLR	VALVE, KNIFE GATE	VKG
BLOWER, CENTRIFUGAL	BLC	FAN, CENTRIFUGAL	FAN			SLUDGE COLLECTOR, FLOC-CLARIFYING	SFC	VALVE, MATERIAL HANDLING ROTARY	VMR
BLOWER, POSITIVE DISPLACEMENT	BL	FENCE STIRRER	FST			SLUDGE COLLECTOR, SEC CLARIFIERS	SCS	VALVE, MUD	VMD
BOILER	BLR	FILTER GAS PARTICULATE	FTSP	PARTICLE COUNTER	PCN	SLUDGE COLLECTOR, SOLIDS CONTACT	SSC	VALVE, NEEDLE	VND
BULLDOZER	BDZ	FILTER, CARTRIDGE TYPE	FLC	PELLETIZER	PLT	SLUDGE COLLECTOR, STRAIGHT LINE	SLCS	VALVE, PILOT	PTV
CALIBRATION COLUMN	CCLM	FILTER, UNDERDRAINS OR PRESSURE	FLT	PENSTOCK	PS	SLUDGE GRINDER, INLINE OR CHANNEL	GRD	VALVE, PINCH	VPN
CENTRIFUGE	CFG	FILTER. SURFACE WASH EQUIPMENT	FSW	PIPE	PIPE	SOLIDS BLENDER-INLINE	SBL	VALVE, PISTON OPERATED	VPO
CHEMICAL FEEDER	CHF	FITTING, MISCELLANEOUS	FTTNG	PLATE SETTLER	PSE	STRAINER	STR	VALVE, PLUG	VPG
CHLORINE GAS SCRUBBER	CGS	FLAME ARRESTER	FAR	POLYMER INJECTOR RING	INJ	STRAINER BASKET TYPE	STRB	VALVE, PRESSURE REDUCING	VPC
CLARIFIER, PRIMARY	PCLR	FLAME CHECK	FC	PRESSURE BUILDING COIL	PBC	STRAINER Y TYPE	STRY	VALVE, PRESSURE SUSTAINING	VPC
CLARIFIER, SECONDARY	SCLR	FLOCCULATOR, HORIZONTAL	FLCH	PULSATION DAMPNER	PD	SURGE CHAMBER	SRCH	VALVE, PRESSURE RELIEF	VSP
CLASSIFIER, GRIT	CGR	FLOCCULATOR, VERTICAL	FLCV	PUMP, AIR DIAPHRAGM	PAD	TANK, ABOVE GROUND STORAGE	TSA	VALVE, PRESSURE/VACUUM RELIEF	VSPV
CLEARWELL	CW	FLOOR DRAIN	FD	PUMP, CENTRIFUGAL	PCL	TANK, AMMONIA STORAGE	TCN	VALVE, PROCESS	VP
COMPRESSOR	CMP	FLOW SPLITTER	FS	PUMP, DIAPHRAGM METERING	PDM	TANK, CRYOGENIC STORAGE	TCR	VALVE, RESILIENT SEATED GATE	VGR
COMPRESSOR, LIQUID RING	CMB	FLUME, PARSHALL	FE	PUMP, HEATING WATER	PHW	TANK, DOUBLE WALL	DWT	VALVE, SAFETY	VS
COMPRESSOR, ROTARY SCREW	CMR	FOAM SEPARATOR	FMSP	PUMP, HORIZONTAL END SUCTION	PHE	TANK, ELEVATED STORAGE	TSE	VALVE, SLEEVE	VSLV
COMPRESSOR, STEAM	CMPS	FORKLIFT	FL	PUMP, HORIZONTAL SPLIT CASE	PSC	TANK, EXPANSION	TX	VALVE, SOLENOID	VSL
CONTAINER, PROCESS	CTR	GAS FEEDER	CHF	PUMP, PERISTALTIC	PPS	TANK, FRP CHEMICAL STORAGE	TNK	VALVE, TELESCOPING	VTV
CONVEYOR, BELT	COB	GAS FLARE	GF	PUMP, PLUNGER	PPL	TANK, GENERAL OR UNSPECIFIED	TNK	VALVE, THERMAL SHUTOFF	VTS
CONVEYOR, SCREW	COS	GAS WATER HEATER	GWH	PUMP, PROGRESSING CAVITY	PPC	TANK, METHANOL	TCP	VALVE, THREE WAY	VTW
COVER, ALUMINUM DOME BASIN	CFA	GATE, FLAP	GFL	PUMP, SCREW ENCLOSED	PSE	TANK, SAMPLER	SMPT	VALVE, VACUUM BREAKER	VVB
COVER, FIXED DIGESTER	CFD	GATE, SLUICE	GSC	PUMP, SCREW OPEN	PSE	TANK, CHLORINE CONTACTOR	TCS	VALVE, VACUUM RELIEF	VSV
COVER, FLOATING DIGESTER	CFL	GENERATOR, ENGINE (BACKUP POWER)	GEN	PUMP, SUBMERSIBLE	PSM	TANK, FLAT TOP STEEL WATER	TSW	VALVE, V-PORT BALL	VVP
COVER, GAS HOLDER	DCG	GRAVITY BELT THICKENER	GBT	PUMP, SUBMERSIBLE CHOPPER	PCH	TRAP, DRIP	TRP	VAPORIZER	VAP
COVER, MEMBRANE	DCM	GRAVITY THICKENER	GVT	PUMP, SUBMERSIBLE SUMP	PSS	TRAP, SEDIMENT	TRPS	VESSEL, BOOT	VSLB
CRANE	CRN	GRINDER PULVERIZER	GRD	PUMP, SUMP	PSP	TRUCK	TRK	VARIABLE FREQUENCY DRIVE	VFD
CRANE, GANTRY	CRG	GRIT BASIN, VORTEX TYPE	GRB	PUMP, POSITIVE DISPLACEMENT, ROTARY, DRUM OR BELL MOUNTED	P	TURBINE	TB	WEIR, CIPOLETTI	WC
CRANE, JIB	CRJ	GRIT SCREW CONCENTRATOR	GRV			TURBINE COMPRESSOR	TBC	WEIR, RECTANGULAR	WR
CRANE, PORTABLE GANTRY	CRP	HEAT EXCHANGER	HEX	PUMP, VERTICAL DIFFUSION VANE	PVD	TURBINE ENGINE	TBG	WEIR, V-NOTCH	WV
CRANE, TRAVELLING BRIDGE	CRT	HOIST	HST	PUMP, VERTICAL END SUCTION	PVE	UNINTERRUPTABLE POWER SUPPLY	UPS	WELL, HORIZONTAL COLLECTOR	WLHC
CYLINDER, CHLORINE	CYL			PUMP, VERTICAL WET PIT	PVW			WELL, VERTICAL	WLV
CYLINDER, GAS	CYG			PUMP, SUBMERSIBLE HORIZONTAL PROP	PSHP				

NEW PROCESS CODE ABBREVIATIONS

ACETIC ACID	ACE	FLOCCULATION	FLC	RESIDUALS	RES
ACETYLENE	ACT	GASEOUS OXYGEN	GOX	RETURN ACTIVATED SLUDGE	RAS
ACTIVATED CARBON - GRANULAR	GAC	GASOLINE	GSL	REVERSE OSMOSIS	ROS
AERATION AIR/PROCESS AIR	AIR	GREASE	GRS	RAW SEWAGE	RS
AERATION SYSTEM	AER	GRIT	GRT	SCREENINGS	SCR
AIR WASH	ARW	HELIUM	HEL	SECONDARY CLARIFICATION	SCL
ALUMINUM SULFATE	ALS	HYDRAULIC FLUID	HFL	SECONDARY INFLUENT	SI
AMMONIUM SULFATE	NSO4	HYDROCHLORIC ACID	HCL	SECONDARY SCUM	SSC
ANHYDROUS AMMONIA	NH3	HYDROFLUOSILIC ACID	HFS	SEPTAGE	SEP
ANTI-SEALANT	AS	HYDROGEN	HYD	SETTLED WATER	SET
AQUA AMMONIA	NHOH	HYDROGEN PEROXIDE	PER	SODA ASH	NAC
ARGON	ARG	INCINERATION	INC	SODIUM ALUMINATE	NAL
ASH	ASH	INFLUENT PUMPING	INFP	SODIUM ALUMINATE	NAM
BACKWASH - MEMBRANE/FILTER	BWH	INTAKE	INT	SODIUM BICARBONATE	NBC
BALLASTED FLOCCULATION	BAL	LAGOON STORAGE	LAG	SODIUM BISULFITE	NHS
BIOSOLIDS	BNR	LAND APPLICATION	LAP	SODIUM CHLORIDE	NCL
BIOTOWER	BIO	LIME - HYDRATED	CAH	SODIUM CHLORITE	NCL2
BLENDED SLUDGE	BIT	LIME - QUICKLIME	CAO	SODIUM FLUORIDE	NAF
BNR	BLS	LIME STABILIZATION	LIM	SODIUM HEXAMETAPHOSPHATE	NAX
BRINE	BRN	LIQUID OXYGEN	LOX	SODIUM HYDROXIDE	NAOH
CALCIUM HYPOCHLORITE	CACL	LP GAS OR PROPANE GAS	LPG	SODIUM HYPOCHLORITE	NOCL
CALCIUM THIOSULFATE	CATS	MAGNESIUM HYDROXIDE	MGOH	SODIUM SILICOFLUORIDE	NASF
CARBON DIOXIDE	CO2	MEMBRANE	MEM	STEAM	STM
CARBON SLURRY	CAS	METHANE GAS	MEG	STORM SEWER	STS
CARBONIC ACID	HCO3	METHANOL	MTH	STORM WATER	STW
CENTRATE	CEN	MIXED LIQUOR	MXL	SULFUR DIOXIDE	SO2
CHEMICAL ENHANCED BACKWASH - MEMBRANE	CEB	NATURAL GAS	NG	SULFURIC ACID	HSO4
CHLORINE	CL2	NITROGEN	NIT	SURFACE WASH	SW
CHLORINE DIOXIDE	CLO2	NITROUS OXIDE	NIO	TERTIARY TREATMENT	TERT
CITRIC ACID	CA	ODOR CONTROL	ODC	THICKENED PRIMARY SLUDGE	TPRS
CLEAN IN PLACE	CIP	OIL	FO	THICKENED WASTE ACTIVATED SLUDGE	TWAS
COAGULATION	COA	OIL - FUEL	OIL	THICKENING	THCK
COMPRESSED AIR - INSTRUMENT	CAI	OZONE	OZN	TREATED WATER	TW
COMPRESSED AIR - SERVICE	CMS	OZONE DESTRUCT	OZD	TRICKLING FILTER	TF
COPPER SULFATE	CUS	PHOSPHATE	PPP	ULTRAVIOLET	UV
CORROSION INHIBITOR	CI	PHOSPHORIC ACID	PO4	VACUUM	VAC
DECHLORINATION	DCL	POLYALUMINUM CHLORIDE	PCL	WASH WATER	WW
DETERGENT	DET	POLYMER	POLF	WASTE ACTIVATED SLUDGE	WAS
DEWATERING	DWT	POTASSIUM PERMANGANATE	KMN	WASTE WASH WATER	WWW
DIESEL FUEL	FUE	POWDERED ACTIVATE CARBON	PAC	WATER - CONDENSATE	CDW
DIGESTER GAS	DGG	PRE-AERATION	PAR	WATER - COOLING	COLW
DIGESTER GAS MIXING	DGM	PRESEDIMENTATION	PSD	WATER - DISTILLED WATER	DW
DIGESTER SLUDGE	DGS	PRIMARY CLARIFICATION	PRC	WATER - FIRE	FW
DIGESTION - AEROBIC	DGA	PRIMARY SCUM	PSC	WATER - IRRIGATION	IRW
DIGESTION - ANAEROBIC	DIG	PRIMARY SLUDGE	PRS	WATER - OZONATED	OZW
DISINFECTION CONTACT BASIN	DCB	RAW WASTEWATER PUMPING	WWP	WATER - SEAL	SWT
DISSOLVED AIR FLOTATION	DAF	RAW WATER PUMPING	RWP	WATER - WATER HEATING	HW
DRAINAGE	DR	RECIRCULATED SLUDGE	RCS	WATER - DEIONIZED	DEIW
EFFLUENT PUMPING	EFP	REFRIGERANT	REF	WATER - NON-POTABLE	NPW
ENGINE EXHAUST	EXH	MIXED LIQUOR RETURN	IR	WATER - FILTER EFFLUENT	FE
EQUALIZATION BASIN	EQB			WATER - POTABLE	PW
FERRIC CHLORIDE	FEC			WATER - RECLAIMED	RW
FERRIC SULFATE	FES			WATER - EQUALIZED	EQ
FERROUS CHLORIDE	FRC			WET WEATHER TREATMENT	WWT
FERROUS SULFATE	FRS			ZINC ORTHOPHOSPHATE	ZOP
FILTRATION	FLT				
FILTER REJECT	REJ				

PLANT CODE ABBREVIATIONS

N	NORTH PLANT
N1	NORTH 1 PLANT
N2	NORTH 2 PLANT
S	SOUTH PLANT
SE	SOUTH PLANT EAST
SW	SOUTH PLANT WEST

EXISTING PROCESS CODE ABBREVIATIONS

BACKFLUSH	BACKFLUSH
CHLORINE SOLUTION	CLS
CLARIFIED EFFLUENT	CE
EFFLUENT	EFF
FILTERED WATER	FLW
FLOW EQUALIZATION	FEQ
OXIDIZED SLUDGE	OS
SLIDE GATE MANUAL CRANK	SLGC
RECLAIMED WATER	RWS
CLARIFIED WATER	CLW
RETURN ACTIVATED SLUDGE	RAS
WASTE ACTIVATED SLUDGE	WAS
PRETREATMENT	PT

EXISTING EQUIPMENT CODES

SLIDE GATE	SLG
BUTTERFLY VALVE	BFV
BALL VALVE	BAV
WEIR SLIDE GATE	WSG
PLUG VALVE	PV
GRIT PUMP	GRP
GRIT CHAMBER	GRC
WEIR PLATE	WP
SLUICE GATE	SLU
AIR RELEASE VALVE	ARV
BALL VALVE	BV
CHLORINATOR	CHL
EVAPORATOR	EVP
INFLUENT PUMP	IPP

EXISTING MATERIAL CODES

BS	BLACK STEEL PIPE
CI	CAST IRON
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER
DI	DUCTILE IRON
DIGL	DUCTILE IRON GLASS LINED
FRP	FIBERGLASS REINFORCED PLASTIC
GS	GALVANIZED STEEL
HDPE	HIGH DENSITY POLYETHYLENE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
POLYP	POLYPROPYLENE
PPSTL	POLYPROPYLENE LINED STEEL PIPE
PVC	POLYVINYL CHLORIDE
RC	REINFORCED CONCRETE SEWER PIPE
RUB	RUBBER
SS	STAINLESS STEEL

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ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
CERTIFICATE OF AUTHORIZATION NO. 8115

PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS
INSTRUMENTATION LEGEND AND ABBREVIATIONS – 3 OF 3

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
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CHECKED BY: ES
CADD FILE: I03.DWG

SCALE: NOTED
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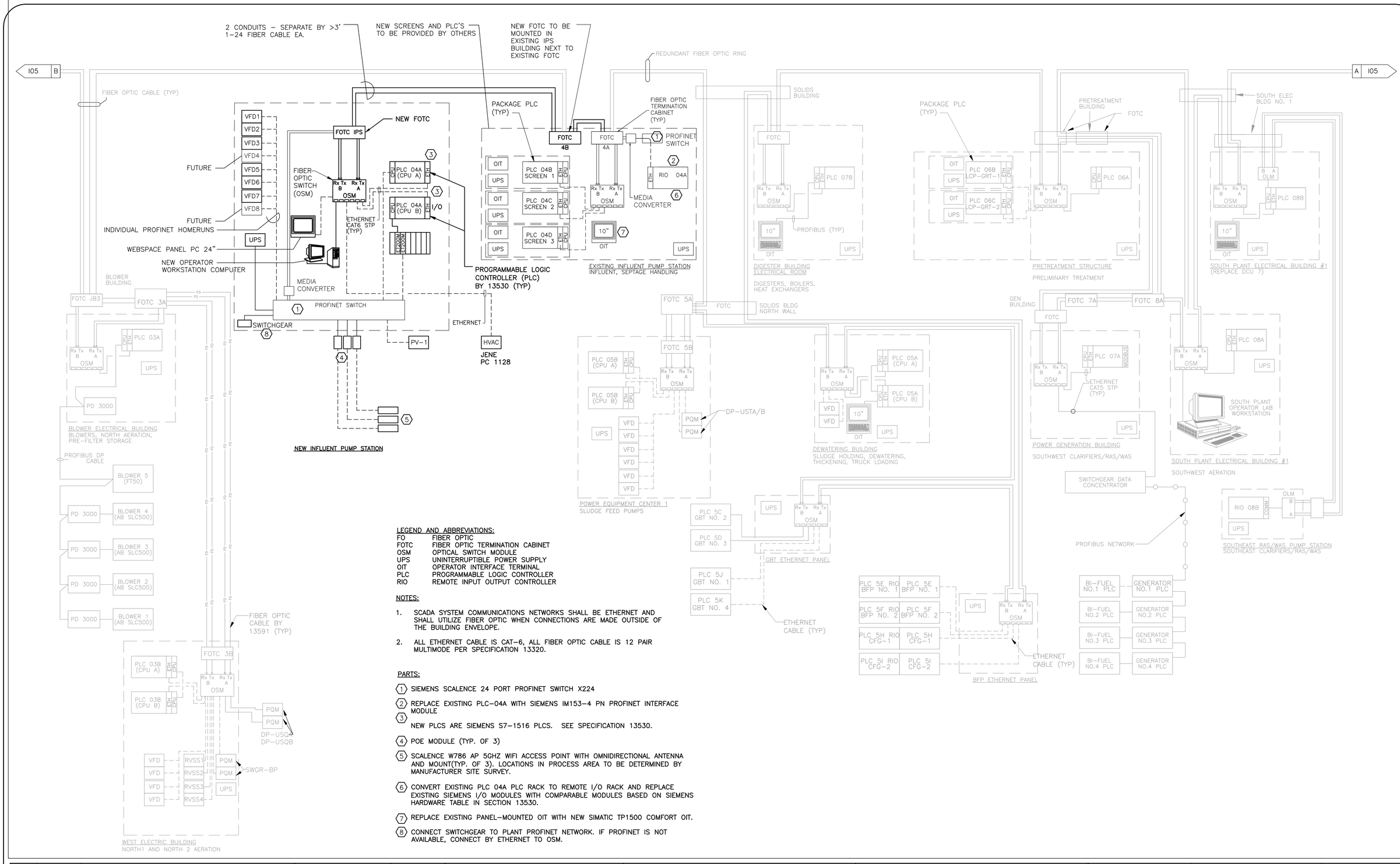
SHEET: 112 OF 122



LEGEND AND ABBREVIATIONS:

FO	FIBER OPTIC
FOTC	FIBER OPTIC TERMINATION CABINET
OSM	OPTICAL SWITCH MODULE
UPS	UNINTERRUPTIBLE POWER SUPPLY
OIT	OPERATOR INTERFACE TERMINAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE INPUT OUTPUT CONTROLLER

NOTES:

1. SCADA SYSTEM COMMUNICATIONS NETWORKS SHALL BE ETHERNET AND SHALL UTILIZE FIBER OPTIC WHEN CONNECTIONS ARE MADE OUTSIDE OF THE BUILDING ENVELOPE.
2. ALL ETHERNET CABLE IS CAT–6, ALL FIBER OPTIC CABLE IS 12 PAIR MULTIMODE PER SPECIFICATION 13320.

PARTS:

1. SIEMENS SCALENCE 24 PORT PROFINET SWITCH X224
2. REPLACE EXISTING PLC–04A WITH SIEMENS IM153–4 PN PROFINET INTERFACE MODULE
3. NEW PLCS ARE SIEMENS S7–1516 PLCS. SEE SPECIFICATION 13530.
4. POE MODULE (TYP. OF 3)
5. SCALENCE W786 AP 5GHZ WIFI ACCESS POINT WITH OMNIDIRECTIONAL ANTENNA AND MOUNT(TYP. OF 3). LOCATIONS IN PROCESS AREA TO BE DETERMINED BY MANUFACTURER SITE SURVEY.
6. CONVERT EXISTING PLC 04A PLC RACK TO REMOTE I/O RACK AND REPLACE EXISTING SIEMENS I/O MODULES WITH COMPARABLE MODULES BASED ON SIEMENS HARDWARE TABLE IN SECTION 13530.
7. REPLACE EXISTING PANEL–MOUNTED OIT WITH NEW SIMATIC TP1500 COMFORT OIT.
8. CONNECT SWITCHGEAR TO PLANT PROFINET NETWORK. IF PROFINET IS NOT AVAILABLE, CONNECT BY ETHERNET TO OSM.

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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM

AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552

PROJECT NO. 110031A

CERTIFICATE OF AUTHORIZATION NO. 8115

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS

CONTROL SYSTEM ARCHITECTURE

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
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CADD FILE: I04.DWG

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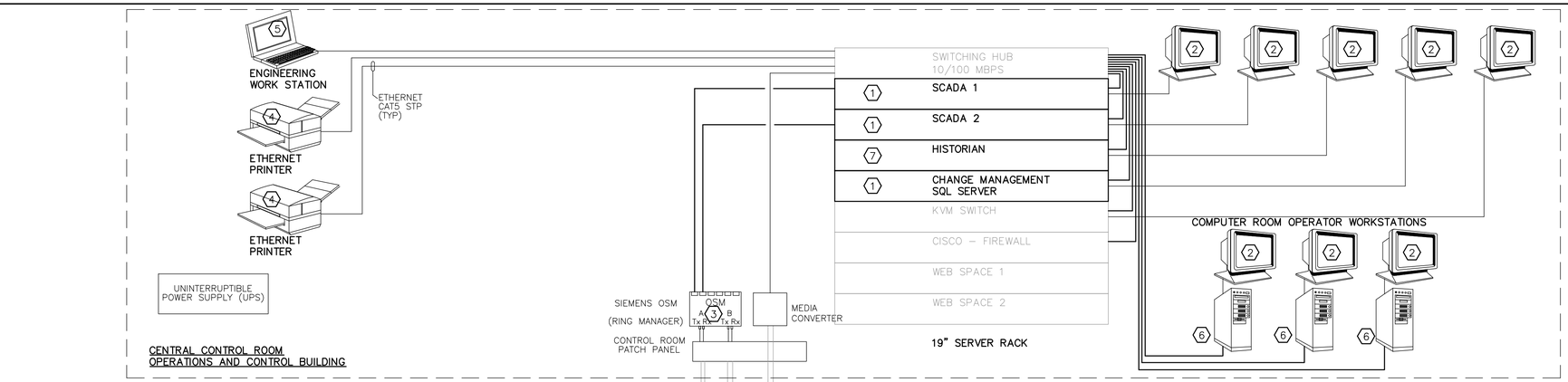
SHEET: 113 OF 122

Parent Sheet Set:110031A_OOPS Rev/Plot by:JAY MILLER Rev on:10/24/2017 1:13 PM Individual File Path:R:\PROJECTS\110031A – SOUTH WATER RECLAMATION FACILITY PUMP STATION (PH 2)\DESIGN\DRAWINGS\FINALDESIGN\I04.DWG



LEGEND AND ABBREVIATIONS:

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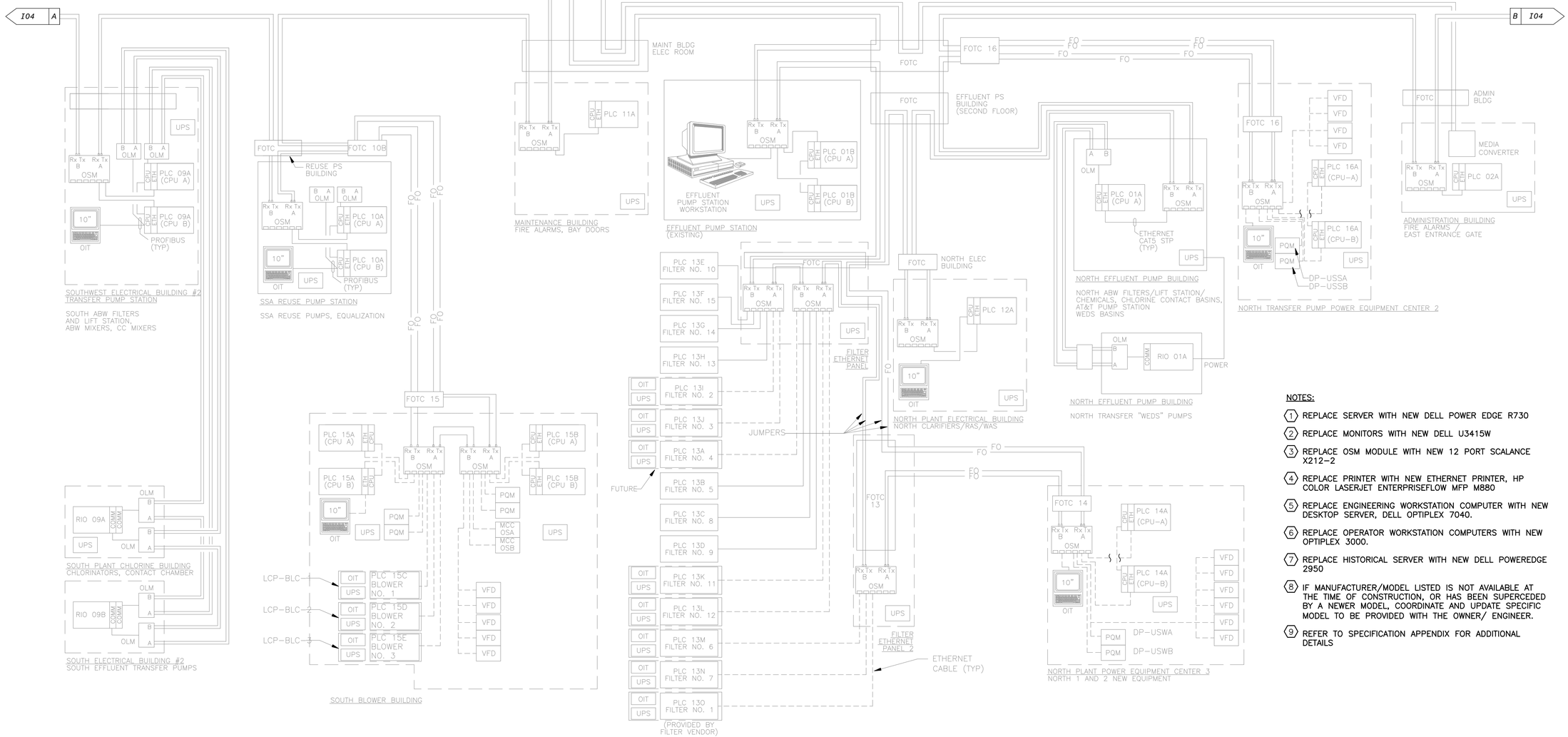
FOTC	FIBER OPTIC TERMINATION CABINET
OSM	OPTICAL SWITCH MODULE
UPS	UNINTERRUPTIBLE POWER SUPPLY
OIT	OPERATOR INTERFACE TERMINAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE INPUT OUTPUT CONTROLLER

PROCESS CONTROL NETWORK



NOTES:

1. REPLACE SERVER WITH NEW DELL POWER EDGE R730
2. REPLACE MONITORS WITH NEW DELL U3415W
3. REPLACE OSM MODULE WITH NEW 12 PORT SCALANCE X212–2
4. REPLACE PRINTER WITH NEW ETHERNET PRINTER, HP COLOR LASERJET ENTERPRISEFLOW MFP M880
5. REPLACE ENGINEERING WORKSTATION COMPUTER WITH NEW DESKTOP SERVER, DELL OPTIPLEX 7040.
6. REPLACE OPERATOR WORKSTATION COMPUTERS WITH NEW OPTIPLEX 3000.
7. REPLACE HISTORICAL SERVER WITH NEW DELL POWEREDGE 2950
8. IF MANUFACTURER/MODEL LISTED IS NOT AVAILABLE AT THE TIME OF CONSTRUCTION, OR HAS BEEN SUPERCEDED BY A NEWER MODEL, COORDINATE AND UPDATE SPECIFIC MODEL TO BE PROVIDED WITH THE OWNER/ ENGINEER.
9. REFER TO SPECIFICATION APPENDIX FOR ADDITIONAL DETAILS

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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM

AECOM TECHNICAL SERVICES INC. 150 N ORANGE AVENUE, SUITE 200 ORLANDO, FLORIDA 32801 PHONE 407.843.6552

CERTIFICATE OF AUTHORIZATION NO. 8115

PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS

SCADA NETWORK INTERFACE

WILLIAM L. OVERBEEK PROFESSIONAL ENGINEER FLORIDA LICENSE #50398

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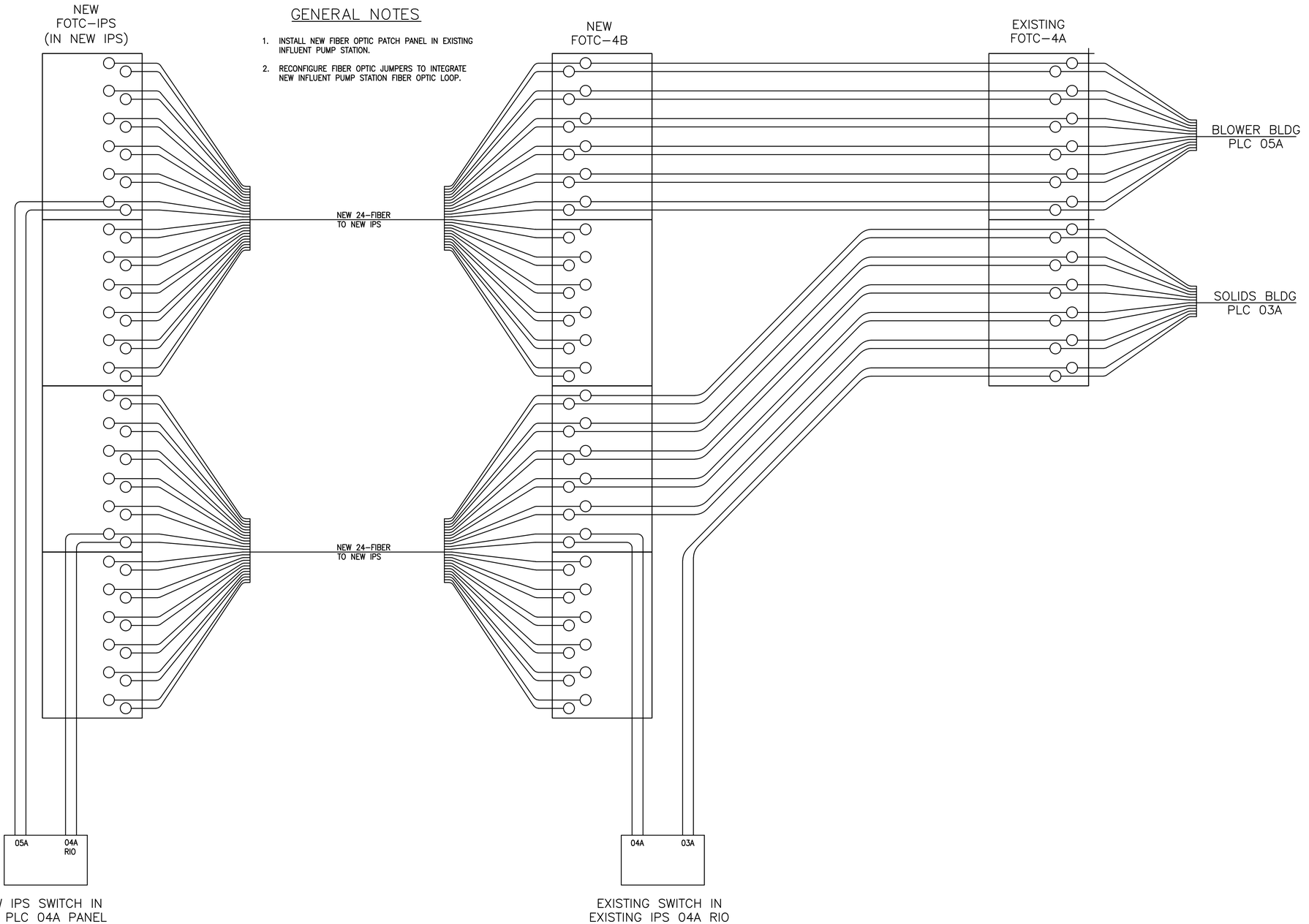

GENERAL NOTES

1. INSTALL NEW FIBER OPTIC PATCH PANEL IN EXISTING INFLUENT PUMP STATION.
2. RECONFIGURE FIBER OPTIC JUMPERS TO INTEGRATE NEW INFLUENT PUMP STATION FIBER OPTIC LOOP.

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UTILITIES DEPARTMENT
ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
CERTIFICATE OF AUTHORIZATION NO. 8115

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS
FIBER OPTIC ROUTING
AND TERMINATION

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
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CADD FILE: I06.DWG

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DRAWING NO. : I06
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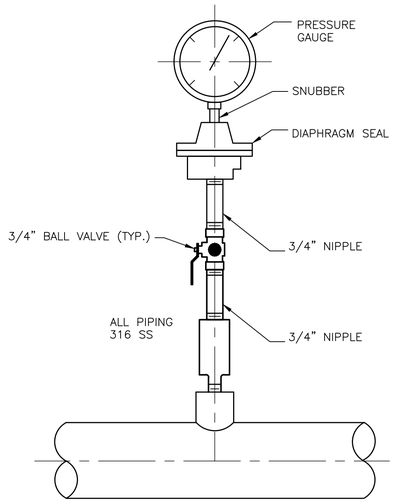
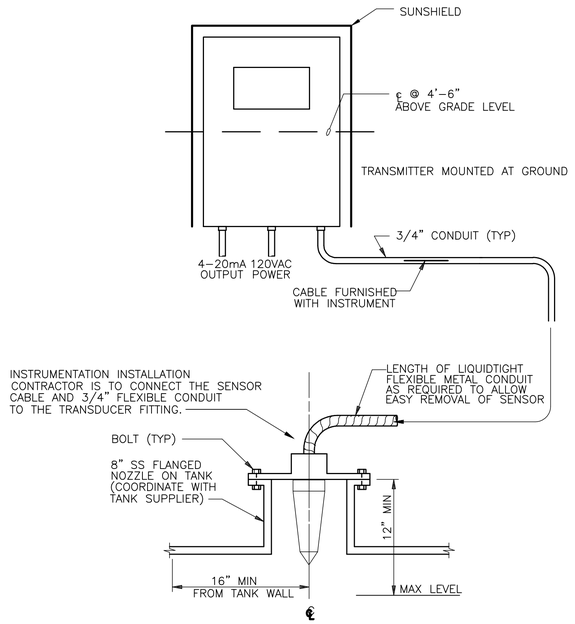


PRESSURE SWITCH INSTALLATION DETAIL

NO SCALE

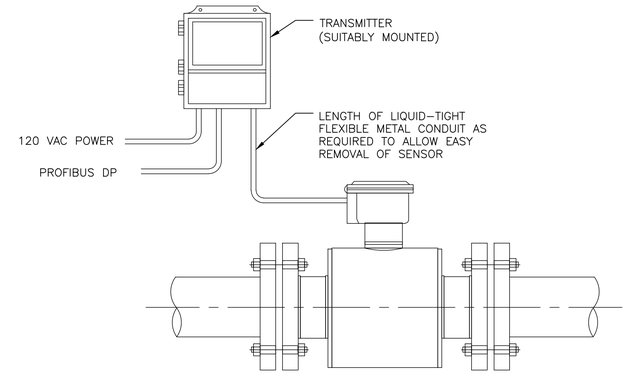


RADAR LEVEL SENSOR WET WELL INSTALLATION DETAIL

NO SCALE

NOTES:

1. VERIFY INSTRUMENTATION PLACEMENT TO AVOID OBSTRUCTIONS.
2. INSTALL INSTRUMENTATION IN FULL COMPLIANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
3. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR TRANSMINTTER/SENSOR LOCATION.
4. ORIENT DIGITAL DISPLAY TO FACE NORTH.
5. PROVIDE SELF-SUPPORTING SS STRUCTURE.

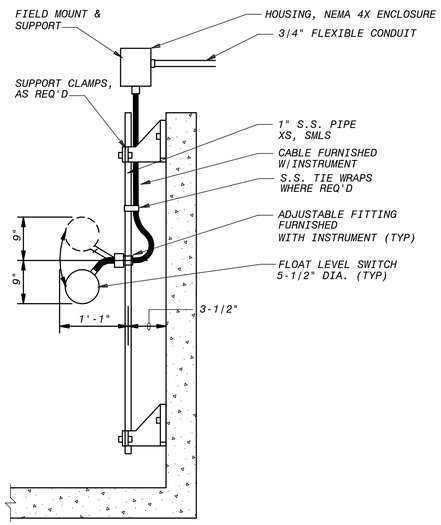


MAGNETIC FLOW METER AND TRANSMITTER INSTALLATION

NO SCALE

NOTES:

1. PROVIDE GROUNDING RINGS AS REQUIRED BY MANUFACTURER.
2. 120 VAC POWER TO TRANSMITTER AND PROFIBUS DP CABLING SHALL BE ROUTED THROUGH SEPARATE JUNCTION BOXES.



LEVEL FLOAT INSTALLATION DETAIL

NO SCALE

TYPICAL OF FLOATS IN EACH WETWELL CHAMBER.

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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM

AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS

DETAILS

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
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SCALE: NOTED
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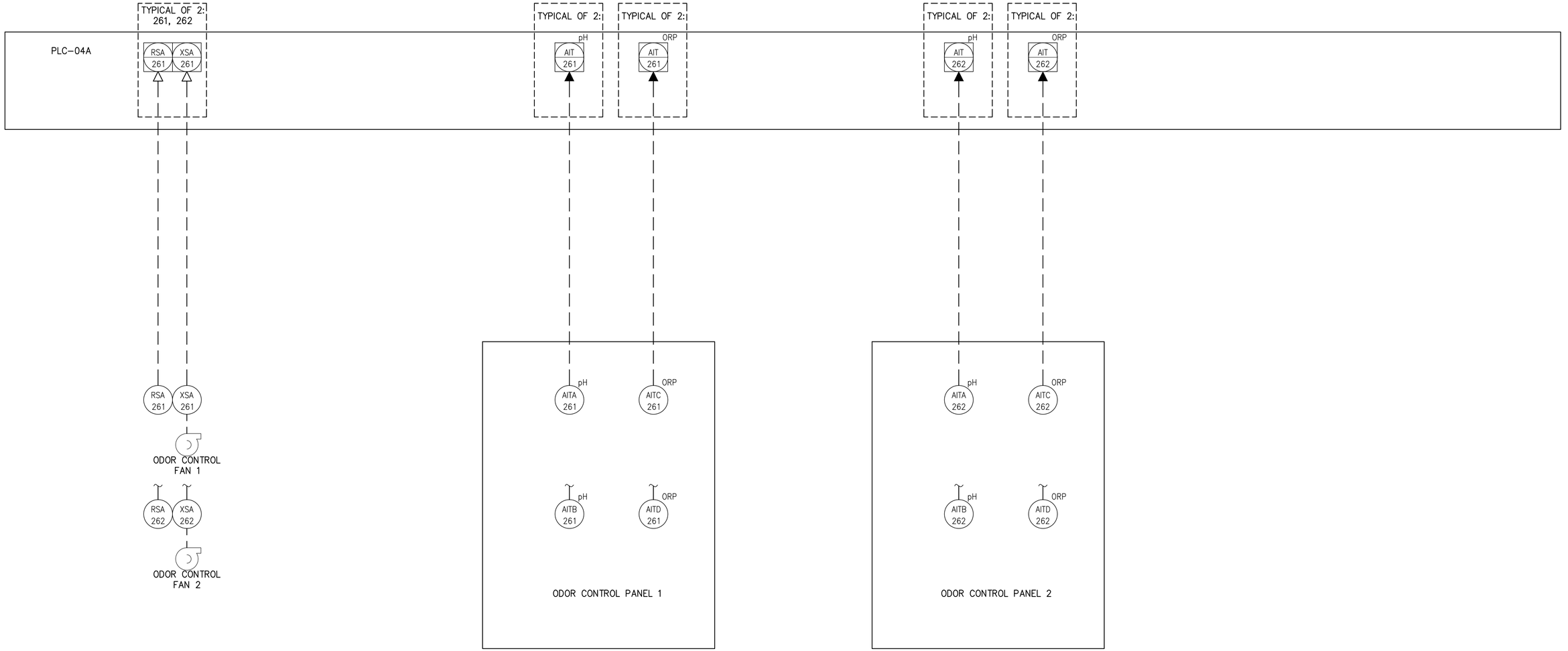

ODOR CONTROL P&ID

SCALE: NONE

NOTES:

1. THIS P&ID SHOWS EXISTING ODOR CONTROL I/O CURRENTLY TERMINATED IN THE EXISTING PLC-04A IN THE EXISTING INFLUENT PUMP STATION. THIS I/O IS TO REMAIN IN OPERATION DURING CONSTRUCTION, AND AFTER SUBSTANTIAL COMPLETION IS TO BE RE TERMINATED ON NEW I/O MODULES WHEN EXISTING PLC-04A IS CONVERTED TO REMOTE I/O. PROVIDE PROGRAMMING IN NEW PLC-04A TO DUPLICATE EXISTING FUNCTIONALITY OF THIS PROCESS AREA

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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM

AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS

ODOR CONTROL P&ID

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
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CADD FILE: I08.DWG

SCALE: NOTED
DRAWING NO.: I08
SHEET: 117 OF 122

TYPICAL OF 6: 271,272,273, 274,275,277

TYPICAL OF 2: 231, 232

TYPICAL OF 2: 241, 243

TYPICAL OF 2: 244, 246

TYPICAL OF 7: 281,282,283,284, 286,288,289

EXISTING PLC-04A

RS 271 | MF 271

LAHH 231 | LSHH 231 | FC 290 | LIT 231

HSC 241 | HSD 241 | XS 241 | SI 241 | HSC 241 | HSF 241 | SK 241 | RS 241

HSC 244 | HSD 244 | XS 244 | SI 244 | HSC 244 | HSF 244 | SK 244 | RS 244

TSHH 258 | TSLL 258

UPS BYPASS BY 250 | UPS COMM ALARM CA 250 | UPS ON INVERTER UPSI 250 | PANEL INTRUSION PNLI 250 | OSMTP62 FAULT OSMTP62 250

ASH 252 | ASH 254 | ASH 251 | ASH 253

RS 281 | MF 281 | FS 256 | FS 257

SPEED CONTROLLER PUMPS 1&3

HSD 241 | RS 241 | XS 241

SPEED CONTROLLER PUMPS 4&6

HSD 244 | RS 244 | XS 244

TSHH 258 | TSLL 258 | BY 250 | CA 250 | UPSI 250 | PNLI 250 | OSMTP62 250 | ASH 252 H2S | ASH 254 COMB | ASH 251 H2S | ASH 253 COMB | FS 256 | FS 257

EYEWASH IN USE

HSC 241 | RS 241 | XS 241

LSHH 231 | LIT 231 | LE 231

PUMP 1 241

HSC 243 | RS 243 | XS 243

PUMP 3 243

LSHH 232 | LIT 232 | LE 232

HSC 244 | RS 244 | XS 244

PUMP 4 244

HSC 246 | RS 246 | XS 246

PUMP 6 246

LSLL 233

INFLUENT WASTEWATER

INFLUENT WASTEWATER

INFLUENT WASTEWATER

INFLUENT WASTEWATER

INFLUENT WASTEWATER

INFLUENT SAMPLER 290

SUPPLY FAN 1 271 | SUPPLY FAN 2 272 | SUPPLY FAN 5 275

SUPPLY FAN 3 273 | SUPPLY FAN 4 274 | SUPPLY FAN 7 277

RS 289 | MF 289 — EXHAUST FAN 9 289

RS 288 | MF 288 — EXHAUST FAN 8 288

RS 286 | MF 286 — EXHAUST FAN 6 286

RS 284 | MF 284 — EXHAUST FAN 4 284

RS 282 | MF 282 — EXHAUST FAN 2 282

RS 283 | MF 283 — EXHAUST FAN 3 283

RS 281 | MF 281 — EXHAUST FAN 1 281

NOTES:

1. GREY SCALE ITEMS ARE TO REMAIN IN PLACE. THIS I/O IS TO REMAIN IN OPERATION WHEN EXISTING PLC-04A IS CONVERTED TO REMOTE I/O. PROVIDE PROGRAMMING IN NEW PLC-04A TO DUPLICATE EXISTING FUNCTIONALITY OF THIS PROCESS AREA
2. SOLID ITEMS WILL BE REMOVED FROM OPERATION FOLLOWING SUBSTANTIAL COMPLETION. DISCONNECT AND ABANDON I/O

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9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM

AECOM TECHNICAL SERVICES INC. 150 N ORANGE AVENUE, SUITE 200 ORLANDO, FLORIDA 32801 PHONE 407.843.6552

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS
OLD INFLUENT PUMP STATION – P&ID
DEMOLITION AND MODIFICATIONS

WILLIAM L. OVERBEEK PROFESSIONAL ENGINEER FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
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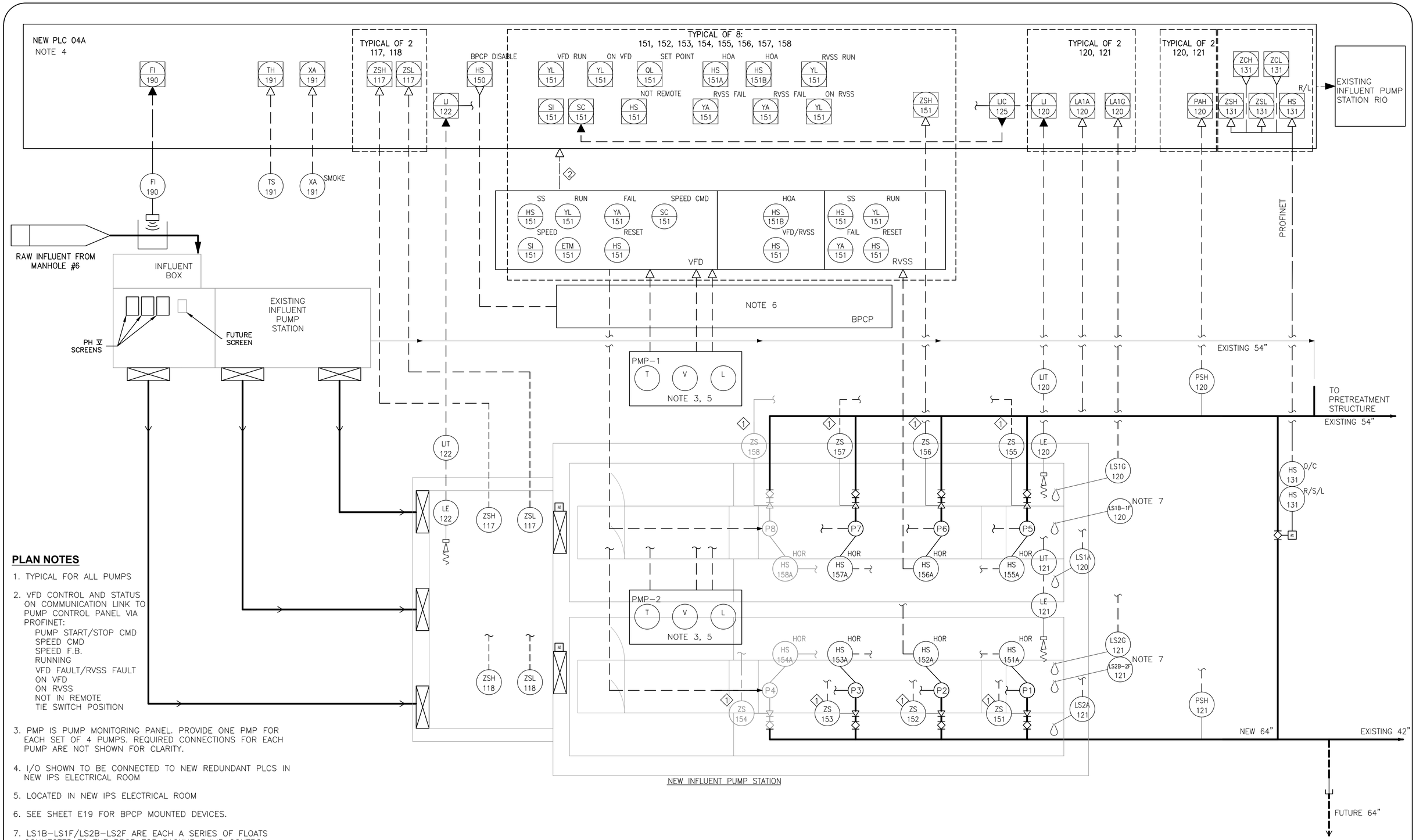
CHECKED BY: ES
CADD FILE: I09.DWG

SCALE: NOTED
DRAWING NO.: 109
SHEET: 118 OF 122



NEW INFLUENT PUMP STATION

PLAN NOTES

1. TYPICAL FOR ALL PUMPS
2. VFD CONTROL AND STATUS ON COMMUNICATION LINK TO PUMP CONTROL PANEL VIA PROFINET:
   - PUMP START/STOP CMD
   - SPEED CMD
   - SPEED F.B.
   - RUNNING
   - VFD FAULT/RVSS FAULT
   - ON VFD
   - ON RVSS
   - NOT IN REMOTE
   - TIE SWITCH POSITION
3. PMP IS PUMP MONITORING PANEL. PROVIDE ONE PMP FOR EACH SET OF 4 PUMPS. REQUIRED CONNECTIONS FOR EACH PUMP ARE NOT SHOWN FOR CLARITY.
4. I/O SHOWN TO BE CONNECTED TO NEW REDUNDANT PLCS IN NEW IPS ELECTRICAL ROOM
5. LOCATED IN NEW IPS ELECTRICAL ROOM
6. SEE SHEET E19 FOR BPCP MOUNTED DEVICES.
7. LS1B–LS1F/LS2B–LS2F ARE EACH A SERIES OF FLOATS CONNECTED TO THE BPCP FOR BACKUP PUMP CONTROL

REV	DATE	DESCRIPTION
C	12/2017	ISSUED FOR BID
B	10/2017	100% FOR BID
A	02/2017	90% DRAWINGS

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY GOVERNMENT FLORIDA

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

AECOM
AECOM TECHNICAL SERVICES INC.
150 N ORANGE AVENUE, SUITE 200
ORLANDO, FLORIDA 32801
PHONE 407.843.6552
CERTIFICATE OF AUTHORIZATION NO. 8115

PROJECT NO. 110031A

ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS

INFLUENT PUMP STATION – P&ID

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
DRAWN BY: IPF
CHECKED BY: ES
CADD FILE: I10.DWG

SCALE: NOTED
DRAWING NO.: I10
SHEET: 119 OF 122

GENERAL NOTES:

1. REMOVE EXISTING PLC 04A RACK AND CONTENTS
2. REPLACE 2 SIMATIC ET 200M MODULES WITH ONE IM 153–4 PN MODULE
3. REMOVE THE ACTIVE BACKPLANE I/O MODULES AND EXISTING 3" DIN RAIL AND REPLACE WITH STANDARD 3" DIN RAIL
4. REPLACE EXISITNG I/O MODULES POWER SUPPLIES AND MOUNTING HARDWARE WITH COMPARABLE NEW MODULE FROM COMPONENTS LIST IN SPEC SECTION 13530.2.03.H
5. REPLACE EXISTING PANEL DOOR MOUNTED OIT WITH NEW SIMATIC TP1500 COMFORT PANEL, 15" WIDESCREEN DISPLAY, MODEL 6AV2124–0QC13–0AX0

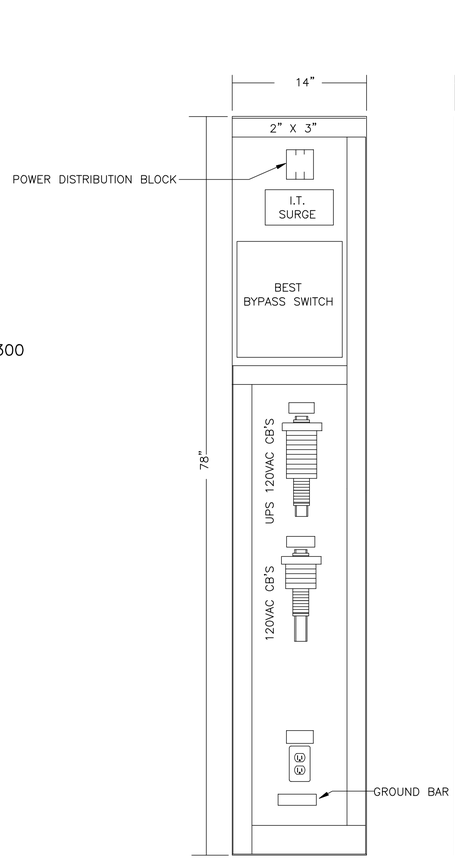
PARTS:

(1) SIMATIC ET 200M

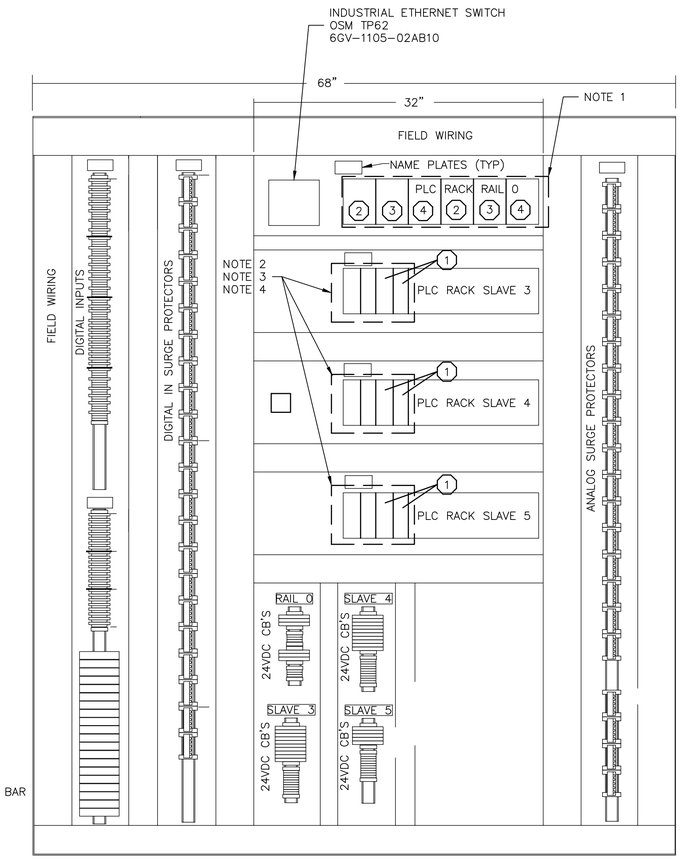
(2) PLC POWER SUPPLY PS307

(3) PLC PROCESSOR SIEMENS CPU 317–2 DP SIMATIC S7–300

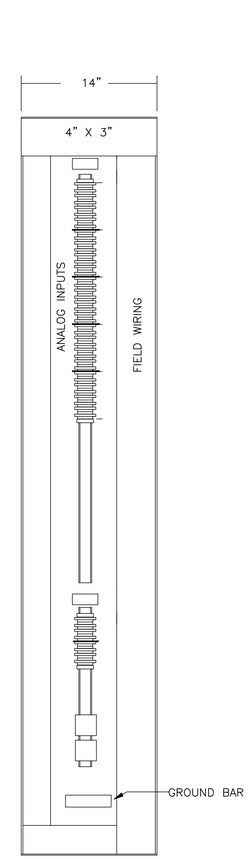
(4) SIMATIC NET COMMUNICATIONS MODULE CP 343–1



LEFT SIDE PANEL



INSIDE BACK PANEL



RIGHT SIDE PANEL

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
INSTRUMENTATION & CONTROLS

EXISTING PLC 04 PANEL

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
DRAWN BY: IPF
CHECKED BY: ES
CADD FILE: I11.DWG

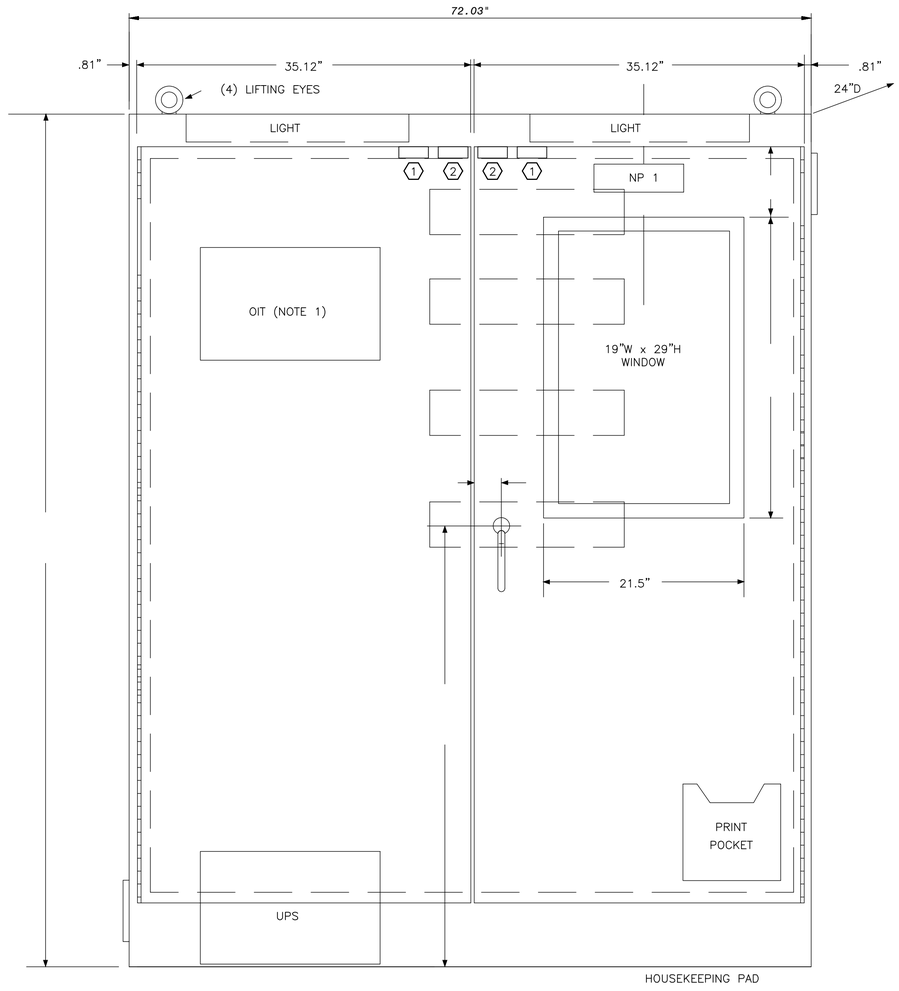
SCALE: NOTED
DRAWING NO. : I11
SHEET: 120 OF 122

GENERAL NOTES:

1. I-TECH OIT, CONFIGURE AND PROGRAM AS A WEBSPACE THIN CLIENT.

PARTS:

1. LIGHT SWITCH
2. PANEL INTRUSION SWITCH



FRONT ELEVATION

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ORANGE COUNTY
SOUTH WATER RECLAMATION FACILITY INFLUENT PUMP STATION
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NEW PLC 04A PANEL

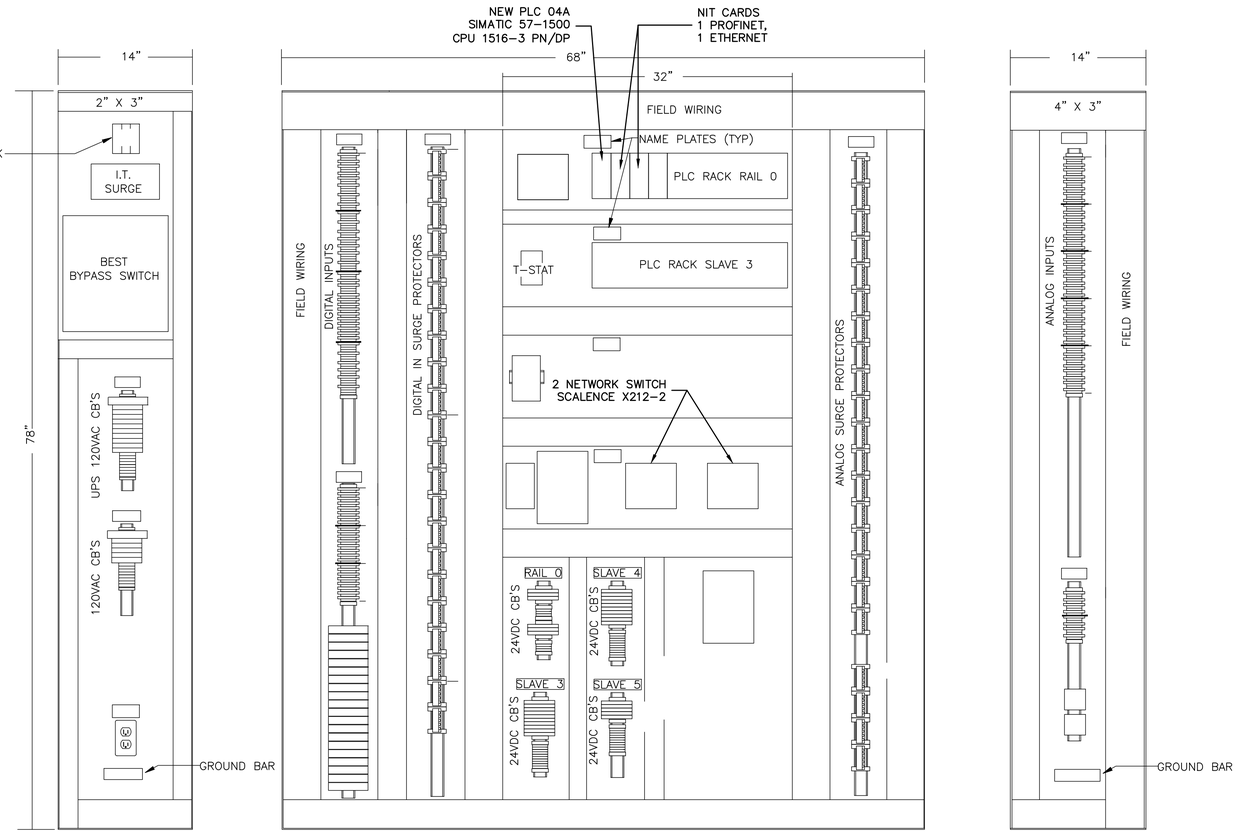
WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
DRAWN BY: IPF
CHECKED BY: ES
CADD FILE: I12.DWG

SCALE: NOTED
DRAWING NO. : 112
SHEET: 121 OF 122

GENERAL NOTES:

1. PANEL LAYOUT IS REPRESENTATIVE OF EXISTING PLC CABINETS CONTRACTOR TO SIZE THE PANELS FOR THE ACTUAL I/O
2. SIEMENS REDUNDANCY MODULE SIMATIC ET200M IM153-2
3. EDCO SURGE PROTECTOR PC 642C-036
4. INNOVATIVE TECHNOLOGIES HT MODEL SURGE PROTECTION
5. SCALENCE X212-2 ETHERNET NETWORK SWITCH
6. SIEMENS PLC, SIMATIC S7-1500, PROCESSOR
7. TERMINAL BLOCKS, BREAKERS, SURGE PROTECTORS AS REQUIRED, DIN RAIL MOUNTED.
8. PANEL LAYOUT IS REPRESENTATIVE OF EXISTING PLC CABINETS CONTRACTOR TO SIZE THE PANELS FOR THE ACTUAL I/O.
9. PROVIDE CPU, RACK/MOUNTING RAIL, I/O MODULES, COMM MODULES AS NECESSARY TO MEET REQUIRED FUNCTIONALITY
10. PROVIDE 1 SCALENCE SWITCH WITH FIBER PORTS
11. PROVIDE 1 SCALENCE SWITCH WITHOUT FIBER PORTS



LEFT SIDE PANEL | INSIDE BACK PANEL | RIGHT SIDE PANEL

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PLC RACK LAYOUT

WILLIAM L. OVERBEEK
PROFESSIONAL ENGINEER
FLORIDA LICENSE #50398

OCU FILE NO.: OCU #
DESIGNED BY: WLO
DRAWN BY: IPF
CHECKED BY: ES
CADD FILE: I13.DWG

SCALE: NOTED
DRAWING NO. : 113
SHEET: 122 OF 122