January 10, 2017

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
ADDENDUM NO. 5 / IFB NO. Y17-722-PH

SOUTH WATER RECLAMATION FACILITY SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEMS IMPROVEMENTS

BID OPENING DATE: January 17, 2017

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents. Additions are indicated by **<u>underlining</u>**, deletions are indicated by ~~strikethrough~~.

A. BIDDER QUESTIONS

1. **Can you verify that the fire sprinkler system which is planned to be galvanized does not need to be painted…just want to be sure as the paint spec 09900 section C. 1 indicates galvanized components of process equipment shall be painted and section D. 8 indicates Any galvanized metal components does not get painted.**

   Response: Galvanized metal components, including the fire sprinkler system, shall be painted in accordance with Section 09900, paragraph 2.02A. Accordingly, delete paragraph 1.01D.8 in Section 09900.

2. **In Addendum #2 Item 8 "The redundant processor are required" in response to the drawing. Siemens does not offer redundancy in the S7-1500 CPU's Please advise how this will be installed, configured and perform.**

   Response: Contract Drawing I-04 has been revised to eliminate the redundant processor.

3. **What is the Memory card capacity required for the CPU's?**

   Response: Provide twice the memory capacity needed for the program to meet the functional requirements.

4. **The guardrails shown on Sheet C03 can't be construction per FDOT**

standards because; On sheet C03 they show the FDOT standard for the parallel end anchors. It shows them at 53' long. So this is 31" tall guardrail. If you construct two of them back to back, that's 106 FT (and in reality, you have to at least have one 12'-6" W beam between them). The run from STA 2+23 -> 2+55 is only 30 feet long. So, you can't even get in one of the end anchors, let alone two back to back. The other run, you can't construct the 53' end anchors on a curve like it shows around STA 0+70. You'd have to take the guardrail all the way around the curve to the top left end of the page to get a full 53' end anchor installed.

Response: The FDOT Guardrail Detail has been revised to depict the "End Anchorage Assembly Type II" rail. The dimensions on the rail allow for the end panels to be installed back to back, with the midspan splice in the middle. The lengths of the guardrails have been revised slightly to account for the dimensions provided on the FDOT detail. The FDOT Index Number and Page from the 2016 FDOT Design Standards has been referenced. See attached revised drawings.(C-3

5. **The spec (11345) indicates that the sodium hypochlorite feed pumps are to be variable speed, but I can't locate any references to the variable speed drives. I don't see any VFDs in the specs or on the electrical drawings. Can you please confirm that VFDs are required? If they are required, please confirm if they are to be part of the dosing skid or if they are located elsewhere and provided by others. A spec for the VFDs should also be provided.**

   Response: VFDs are required, and shall be provided by the pump skid manufacturer. The VFDs will be mounted in a Local Control Panel associated with but separate from each pump skid as identified herein. See addendum items for Section 11345 and Drawings.

6. **Can you please clarify the spare parts that are required? Spare parts for the pumps and skid system are listed in multiple locations and I would like clarification of the verbiage to ensure we provide the correct type & quantity of spare parts.**

   Response: Provide the following spare parts to the OWNER upon delivery of the pump skids. Spare parts shall include all parts required for (2) years of normal maintenance of all components of the chemical metering system. All parts shall be in separate boxes, one for each pump size supplied clearly labeled with the Skid ID and Pump information. Spare parts shall include at least the following items:

a. *Two replacement hose elements per pump.*
b. *For shoe type rotor, one gallon of hose lubricant per pump.*
c. *(1) maintenance kit for each chemical metering pump.*
d. *(3) maintenance kits total for pressure relief valve, if used.*
e. *(3) maintenance kits total for backpressure valve or check valve, if used.*
f. *(3) spare bladders total for a pulsation dampener, if used.*
g. *(2) spare ball valves for each pump skid.*
h. *(1) parts list for all serviceable components.*

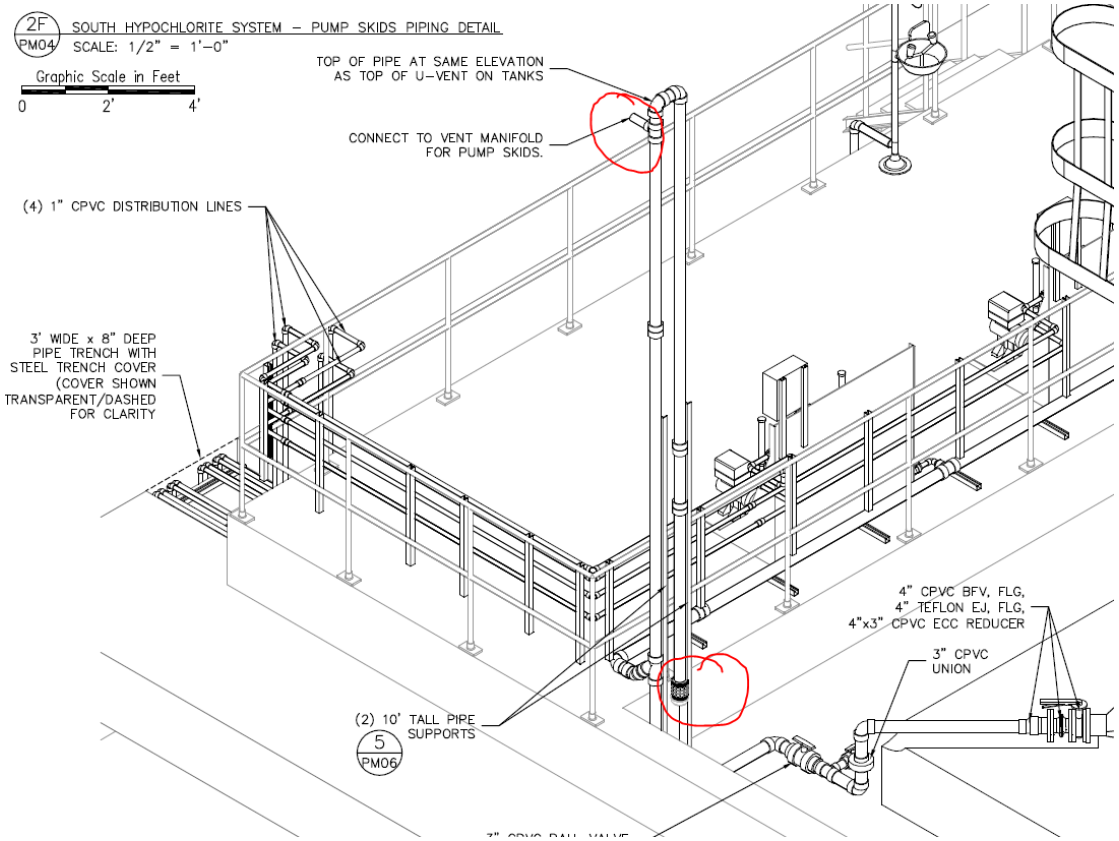
7. **With respect to the S7 1500 series PLC specified in division 13, the local Siemens representative has informed me that this system is not configurable with a redundant processor. Please confirm the redundancy requirement is not required.**

   Response: Contract Drawing I-04 has been revised to eliminate the redundant processor.

8. **Spec section 13300, part 1.01, subsection A, states there is to be two PLCs on this project, North Hypo System PLC-17A and South Hypo System PLC-18A. Please confirm PLC-15A & B plus redundant, Filter Ethernet Panel 2, N Plant PLC-14A & B, and PLC-16A & B (drawing I-4) is for future work and not in contract.**

   Response: Confirmed that only two PLC (PLC-17A and PLC-18A are required. Other PLC shown on I04 are either existing or future.

9. Connection to vent manifold (figure below). (No details for connection)



Response: The connection to the vent manifold shall be a 4"x4"x1 ¼" CPVC Tee, or equivalent 4" CPVC Tee and 4"x1 ¼" CPVC Bushing. The vent manifold serving the pump skids shall be 1 ¼" CPVC suspended from the roof structure.

10. What fitting is shown at end of pipe (same figure)? Please clarify.

Response: The end of the pipe shall have a 24-mesh vinyl bug screen secured to the pipe with an All SS 316 hose clamp (TYP).

11. Are peristaltic pumps of the roller design not requiring glycerin oil acceptable for this project?

Response: Yes, peristaltic pumps of the roller design are acceptable. Regardless of shoe vs. roller, they shall be manufactured by Verder, Watson-Marlow, or Prominent. Also, see addendum items for Section 11345 herein.

B. DRAWINGS

1. Drawing E02: Replace Drawing E02 in its entirety with the attached Drawing E02 issued as part of this addendum.

2. Drawing E03: Replace Drawing E03 in its entirety with the attached Drawing E03 issued as part of this addendum.

3. Drawing E04: Replace Drawing E04 in its entirety with the attached Drawing E04 issued as part of this addendum.

4. Drawing E05: Replace Drawing E05 in its entirety with the attached Drawing E05 issued as part of this addendum.

5. Drawing E06: Replace Drawing E06 in its entirety with the attached Drawing E06 issued as part of this addendum.

6. Drawing E07: Replace Drawing E07 in its entirety with the attached Drawing E07 issued as part of this addendum.

7. Drawing E08: Replace Drawing E08 in its entirety with the attached Drawing E08 issued as part of this addendum.

8. Drawing E08: Replace Drawing E09 in its entirety with the attached Drawing E09 issued as part of this addendum.

9. Drawing E10: Replace Drawing E10 in its entirety with the attached Drawing E10 issued as part of this addendum.

10. Drawing FA01: Replace Drawing FA01 in its entirety with the attached Drawing FA01 issued as part of this addendum.

11. Drawing FA02: Replace Drawing FA02 in its entirety with the attached Drawing FA02 issued as part of this addendum.

12. Drawing I02: Replace Drawing I02 in its entirety with the attached Drawing I02 issued as part of this addendum.

13. Drawing I03: Replace Drawing I03 in its entirety with the attached Drawing I03 issued as part of this addendum.

14. Drawing I04: Replace Drawing I04 in its entirety with the attached Drawing I04 issued as part of this addendum.

C. SPECIFICATIONS

1. Section 11345

a. Paragraphs 2.02A.2 through 2.02A.10:

Delete these paragraphs in their entirety, preserve the paragraph numbering, and replace each with “Not Used.”

b. Paragraph 2.02A.13:

Delete the first two sentences of this paragraph, and replace them with the following:

The pumps shall be horizontal, positive displacement, peristaltic hose pumps using lubricated shoe or roller style technology. Where lubricant and associated switches, seals, etc. are mentioned herein, these requirements apply to the lubricated shoe technology only.

c. Paragraph 2.02A.13.g:

Replace the words “galvanized steel” with “stainless steel 316, or better”.

d. Paragraph 2.02A.14:

Delete this paragraph in its entirety, and replace it with the following:

14. Hose and Lubricant

Reinforced hoses shall be supplied by the pump manufacturer, and shall have materials and construction that are standard from the pump manufacturer for the liquid being pumped, the pump rotor technology, and service conditions. The hoses shall provide a long service life, and be replaceable without cover or pump removal. For lubricated shoe pumps, provide NSF-listed food grade, glycerin-based lubricant.

e. Paragraph 2.02A.15:

Add to the end of the title of this paragraph: “for Lubricated Shoe Pumps”.

f. Paragraph 2.02A.15.b.i:

Delete this paragraph in its entirety, and replace it with “Refer to Paragraph 2.02A.20.”

g. Paragraph 2.02A.15.d.i.II and Paragraph 2.02A.15.d.iii.II:

Delete these paragraphs in their entirety, and replace them with:

II. SPX25-100: 316 Stainless Steel

h. Paragraph 2.02A.20.g:

Delete “or EPDM”.

i. Paragraph 2.02A.20.j:

Delete this paragraph in its entirety, and replace it with the following:

High-build Halar coating will be acceptable in lieu of DuCoNite surface treatment.

j. Paragraph 2.02A.23:

Insert new Paragraph 2.02A.23 as follows:

23. Control / Electrical Service:

a. A Local Control Panel (LCP) shall be provided for each hypochlorite skid (one triplex skid, three simplex skids and two duplex skids are required). Power to the LCP shall be provided as shown on the Drawings. All electrical enclosures shall be rated NEMA 3R 316 stainless steel painted white. All VFDs shall be mounted inside the LCP. VFDs shall be suitable for operation in 50º C ambient. The control panel shall meet the new North American standard of cULus®. The LCP shall be mounted remotely from the skid by the Contractor as shown on the contract drawings. The Contractor shall hard wire connections from the LCP to the skid mounted junction box. This junction box shall be furnished and pre-wired on the skid by the chemical skid system supplier. See the electrical drawings for additional information. Power requirements for each LCP shall be 480V, 3-phase, 3 wire.

b. Each pump shall allow for the adjustment of RPM manually at the keypad of the VFD. All VFD keypads shall be mounted remotely through the outer door of the LCP. The ability for the VFD to adjust RPMs via a 4-20 mA input signal is also required. PI closed loop control shall also be integrated to allow for local set point and control of process parameters.

c. Manual / Auto mode for each system shall be supplied as an option in the VFD interface capable of switching the pumps from manual operation or to automatic. In automatic operation the system shall follow a 4-20 mA signal. The operating mode of

Manual/Off/Automatic must be selectable via a switch on the front of the LCP control panel.

d. Terminal strip contacts shall include:

i. Run Status for each pump.

ii. Fault Status for each pump.

iii. Remote On/Off for each pump.

iv. Remote Status for each pump.

v. Remote Speed Reference for each pump (local surge protection included).

vi. % Speed (output and feedback) for each pump.

vii. Flow Rate from Magnetic Flow Meter (local surge protection included).

e. Local Control Panel (LCP):

i. Furnish, install and test the LCP as hereinafter specified and as shown on the electrical drawings.

ii. Standards:

1. National Electrical Code (NEC).

2. Underwriters Laboratories (UL).

iii. Submit detailed drawings concerning for all control panels and all components including:

1. Cabinet assembly and layout drawings to scale.

2. Fabrication specifications with materials of construction of all components.

3. Point-to-point wiring diagrams depicting wiring within the panel and connection to external devices. Free-hand drawings are unacceptable.

4. Catalog cut-sheet on all panel components with manufacturer's complete model number.

iv. The data sheet and drawings shall be provided with an index and proper identification and cross-referencing. Each control panel shall be submitted in its entirety.

v. Products:

1. This section specifies the control system requirements for the LCPs as noted on the electrical drawings.

2. All components shall be mounted in a manner that shall permit servicing, adjustment, testing, and removal without disconnecting, moving or removing any other component. Components mounted on the inside of panels shall be mounted on a back plate and not directly to the enclosure. Mounting shall be rigid and stable unless shock mounting is required by the manufacturer to protect equipment from vibration. Component mounting shall be oriented in accordance with the component manufacturer's and industry standard practices. All internal components shall be identified with suitable plastic or metal engraved tags attached with drive pins adjacent to (not on) each component identifying the component in accordance with the drawings, specifications, and supplier's data.

3. Control panel main components:

a. The LCP shall consist of a main breaker and magnetic circuit breaker for each VFD, 15 ampere, 480 volt circuit breakers. Control switches shall provide means to operate each pump manually or automatically. Refer to the electrical drawings for additional requirements.

b. Air-conditioning unit as furnished by Pentair – Proair Harsh Environment, model CR23 with harsh environment and stainless steel packages, or approved equal.

4. Control Panel Construction:

a. Panel Enclosure

i. All panels shall be U.L. listed NEMA 3R 316 stainless steel painted white, with dead front panel and 3-point latch. Cabinet doors shall be rubber gasketed with continuous hinge. Neoprene gasket shall be provided for removable panels. Cabinet shall have print pocket on interior side of door. Cabinet enclosure shall be as manufactured by Hoffman, or approved equal.

ii. There shall be permanently affixed to the interior side of the exterior enclosure door both a nameplate and a 10 inch by 12 inch pocket for log storage. The nameplate shall contain the voltage, phase, rated horsepower, speed, date of manufacture, pump and panel manufacturer's name, address and telephone number, pump data, including impeller data, operating point and head, kW input, amps at the operating point and at least two (2) other points on the pump curve.

b. The control panel shall have a minimum AIC rating of 42,000 amps.

c. A surge protector shall be included and wired to protect motors and control equipment from lightning induced line surges. All surge protectors shall be U.L. listed and installed per respective power company and manufacturer's specifications. Surge protectors shall be attached to the load side of the normal power main

breaker. Surge protector shall be as noted on the drawings.

d. Control relays shall be plug-in type with contacts rated at 600 VAC, 10 amperes, noninductive. Time delay relays shall be electronic type.

e. A phase monitor shall be used to protect electrical components due to phase loss, phase reversal, under voltage and over voltage. The plug base shall be keyed to allow for proper pin alignment. Phase monitors shall be manufactured by Diversified or approved equal.

f. The control relays shall operate from a 24 volt circuit and 120 volt circuits as indicated on the drawings. The relays shall be enclosed, eight-pin and/or eleven-pin plug-in type. The control relays shall contain test button and neon or LED energized indicator. The plug base shall be keyed to allow for proper pin alignment.

g. Control relay sockets shall be octal-style with clamp on screw terminals. These sockets shall be 600 VAC rated and mounted on DIN railing. All relay sockets shall be keyed to allow for proper pin alignment.

h. Control terminal blocks shall be clamp screw type and rated for 600 volts. The amperage rating of control terminal blocks shall accommodate the amperage of the circuit to which it is connected but have a minimum rating of 20 amps. An additional 20 space terminal strip shall be installed in the panel for future expansion.

i. Elapsed time meters shall be mounted on the face of the inner door unit with one for each pump. These meters shall be 115 volt non-resettable type and totalize pump running time in hours and tenths of hours to 99999.9 hours.

j. A 15 amp, 120 volt, duplex convenience receptacle shall be installed on the face of the inner door unit for

each panel. The receptacle shall contain a single pole, 15 amp circuit breaker for protection. Ground fault interrupt type shall be required.

k. All power wires shall be THW or THWN 75 degree C insulated stranded copper conductors and appropriately sized for the load application. All control circuit wire shall be Type THW, 14 AWG, stranded type copper. All wiring within the enclosure shall be neatly routed by the use of slotted type wiring duct with snap on type covers. Wiring on the rear of the inner door shall be neatly bundled with spiral wiring loom and include a sufficient loop across the hinges to prevent wire binding or damage. Both ends of each conductor shall be permanently identified. Color coding of all wiring is required: RED = 24VAC+; WHITE = Neutral; BLACK = 102VAC+; PURPLE = 12VDC+; GREY = 12VDC-; and GREEN = Equipment Ground.

l. Terminal points of all terminal strips, relays and components shall be permanently identified. All terminal numbers, wire numbers and identifying nomenclature shall correspond to and be shown on electrical schematic diagrams.

m. All circuit breakers, control switches, indicator lights, relays, and other control devices shall be identified with permanently affixed legend plates and lamicoid-type engraved nameplates where applicable. A black and red on white label stating "DANGER, HIGH VOLTAGE, 208, 240 or 480 (use applicable) VOLTS" shall be affixed to the face of the inner door unit.

n. The panel manufacturer shall furnish a list of components used in the construction of the panel. The list shall include renewal kits needed such as starter contacts, coils, bulbs, relays, alternators, switches and sockets. The list shall include manufacturer of the part, model number and part number.

o. The manufacturer shall furnish the following spare parts for each panel supplied:

i. 1-Phase Monitor

ii. 5-Fuses of each size and type used

iii. 5-Bulbs of each size and type used

iv. 2-Contact renewal kits

p. Spare parts shall be properly packaged and labeled for easy identification without opening the package and delivered at pump station start-up.

q. An electrical schematic diagram shall be permanently affixed to the interior side of the exterior enclosure door with a copy supplied to the Owner personnel at start-up. The schematic diagram shall include the rated amperage and voltage for all components.

k. <u>Paragraph 2.02A.24:</u>

Insert new Paragraph 2.02A.24 as follows:

24. Variable Frequency Drives

Variable Frequency Drives (VFDs) shall be Siemens, no equal. Siemens VFD requirements (power module and common control unit) are listed below for each motor horsepower:

1.5hp power module

Part Number: 6AG12101PE142UL1

SIPLUS SINAMICS G120 PM240-2 FSA-3KW -20 ... +50 degrees c with conformal coating based on 6sl3210-1pe14-3ul1. Unfiltered with built in braking chopper 3ac380-480v +10/-10% 47-63hz output high overload: 1.1kw for 200% 3s,150% 57s,100% 240s. Low overload: 3kw output low overload: 1.5kw at 196 x 73 x 165 (hxwxd), fsa protection IP20 without control unit and panel approved for firmware-version v4.6.

3hp power module

Part Number: 6AG12101PE182UL1

SIPLUS G120 PM240-2 FSA-3KW -20 ... +50 degrees c with conformal coating based on 6sl3210-1pe18-0ul1. Unfiltered with integrated brake chopper 3ac380-480v +10 / -10% 47-63hz. High overload: 2.2 kw for 200% 3s, 150% 57s, 100% 240s. Low overload: 3kw for 150% 3s, 110% 57s, 100% 240s 196 x 73 x 165 (hxwxd), fsa protection IP20 without control unit and panel approved for firmware-version v4.6.

Common control unit

Part Number: 6AG12440BB122FA0

SIPLUS G120 CU240E-2 PN CONTROL UNIT CU240E-2 PN -20 ... +60 degrees c with conformal coating based on 6sl3244-0bb12-1fa0. E-type with safety integrated STO Profinet 6DI, 3DO, 2AI, 2AO, max 1f-di ptc / KTY interface USB and SD / MMC interface protection IP20 without power module.

l. <u>Page 11345-13. Paragraph A:</u>

Renumber this paragraph, so that it becomes Paragraph 2.02B as follows:

B. Metering Pump Skid:

m. <u>Page 11345-15. Paragraph B:</u>

Delete this paragraph in its entirety, and replace it with the following:

C. Spare Parts

2. Provide the following spare parts to the OWNER upon delivery of the pump skids. Spare parts shall include all parts required for (2) years of normal maintenance of all components of the chemical metering system. All parts shall be in separate boxes, one for each pump size supplied clearly labeled with the Skid ID and Pump information. Spare parts shall include at least the following items:

a. Two replacement hose elements per pump.
b. For shoe type rotor, one gallon of hose lubricant per pump.
c. (1) maintenance kit for each chemical metering pump.
d. (3) maintenance kits total for pressure relief valve, if used.

e. (3) maintenance kits total for backpressure valve or check valve, if used.
f. (3) spare bladders total for a pulsation dampener, if used.
g. (2) spare ball valves for each pump skid.
h. (1) parts list for all serviceable components.

D. ACKNOWLEDGEMENT OF ADDENDA

a. The Proposer shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of proposal.
b. All other terms, conditions and specifications remain the same.

Receipt acknowledged by:

_____ _____
Authorized Signature Date Signed

_____
Title

_____
Name of Firm

EXISTING NORTH PLANT FILTERS

SAW CUT AND MATCH EXISTING ELEVATION AT EXISTING ROADWAY (5/C08)

MITER END SECTION INV EL = 85.58

12" RCP

EXISTING MES, INV. EL. 85.62

SAW CUT AND MATCH EXISTING ELEVATION AT EXISTING ROADWAY (5/C08)

+FFE 88.83

(2/C08) PROPOSED 4' SIDEWALK

EXPANSION JOINT WITH SEALANT (TYP, 10' O.C.)

GUARDRAIL BEGINNING POINT STA. 0+70.63 16.25' FROM CL (C)

CONCRETE COLLAR FOR EXTENSION OF EXISTING PIPE CULVERTS PER FDOT INDEX NO. 280 (SEE DRAWING C09 FOR DETAIL)

CONCRETE COLLAR FOR EXTENSION OF EXISTING PIPE CULVERTS PER FDOT INDEX NO. 280 (SEE DRAWING C09 FOR DETAIL)

RAISE TOP TO EL. 87.00

87.00

(4/C08) PROPOSED ROADWAY (TYP)

20'

L1

2+00

3+23.30

GUARDRAIL PER FDOT INDEX 400

GUARDRAIL PER FDOT INDEX 400

GUARDRAIL END POINT STA. 1+26.88 10.48' FROM CL (C)

GUARDRAIL BEGINNING POINT STA. 2+23.00 10.48' FROM CL (C)

GUARDRAIL END POINT STA. 2+54.25 10.48' FROM CL (C)

CONCRETE ENDWALL WITH 45° WINGS PER FDOT INDEX NO. 280

CONCRETE ENDWALL WITH 45° WINGS PER FDOT INDEX NO. 280

EXTEND 42" RCP INV. EL. 81.00

EXTEND 12" RCP INV. EL. 85.31

6' CHAIN LINK FENCE 3 STRANDS BARB WIRE

GUARD RAIL

MITER END SECTION INV EL = 80.19

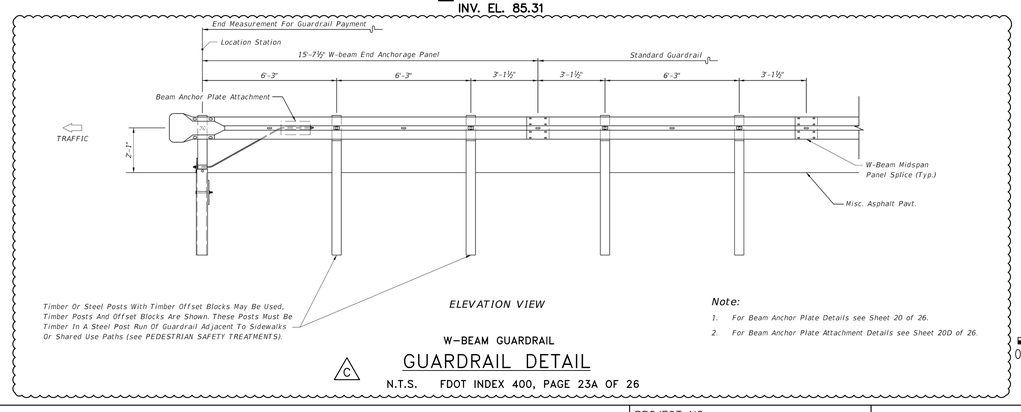
MITER END SECTION INV EL = 78.30

DRAINAGE MANIFOLD TOP EL = 86.41 INV (E) = 79.21 INV (N) = 79.31

OVERFLOW STRUCTURE TOP EL = 85.27 METAL WEIR EL = 85.01 CONCRETE WEIR EL = 84.03 INV (SW) = 81.59 INV (NE) = 80.83

Line Table		
Line #	Length	Direction
L1	149.711	N00° 00' 00.00"E

Curve Table			
Curve #	Length	Radius	Delta
C1	57.157	88.432	037.0323
C2	53.966	38.865	079.5585
C3	62.468	40.000	089.4785



W-BEAM GUARDRAIL

GUARDRAIL DETAIL

(C) N.T.S. FDOT INDEX 400, PAGE 23A OF 26

Graphic Scale in Feet
0 10' 20'
1"=10'

REV	DATE	DESCRIPTION	BY
C	1/3/17	REV TO PLANS (CPH)	ACL
B	3/2016	100% DRAWINGS	RLL
A	1/26/15	90% DRAWINGS	RLL

Issue Certification

Curtis I. Kunihiro, P.E.
Florida P.E. No. 33688
Reiss Engineering, Inc.
Certificate of Authorization No. 8181
1016 Spring Villas Pt.
Winter Springs, FL 32708

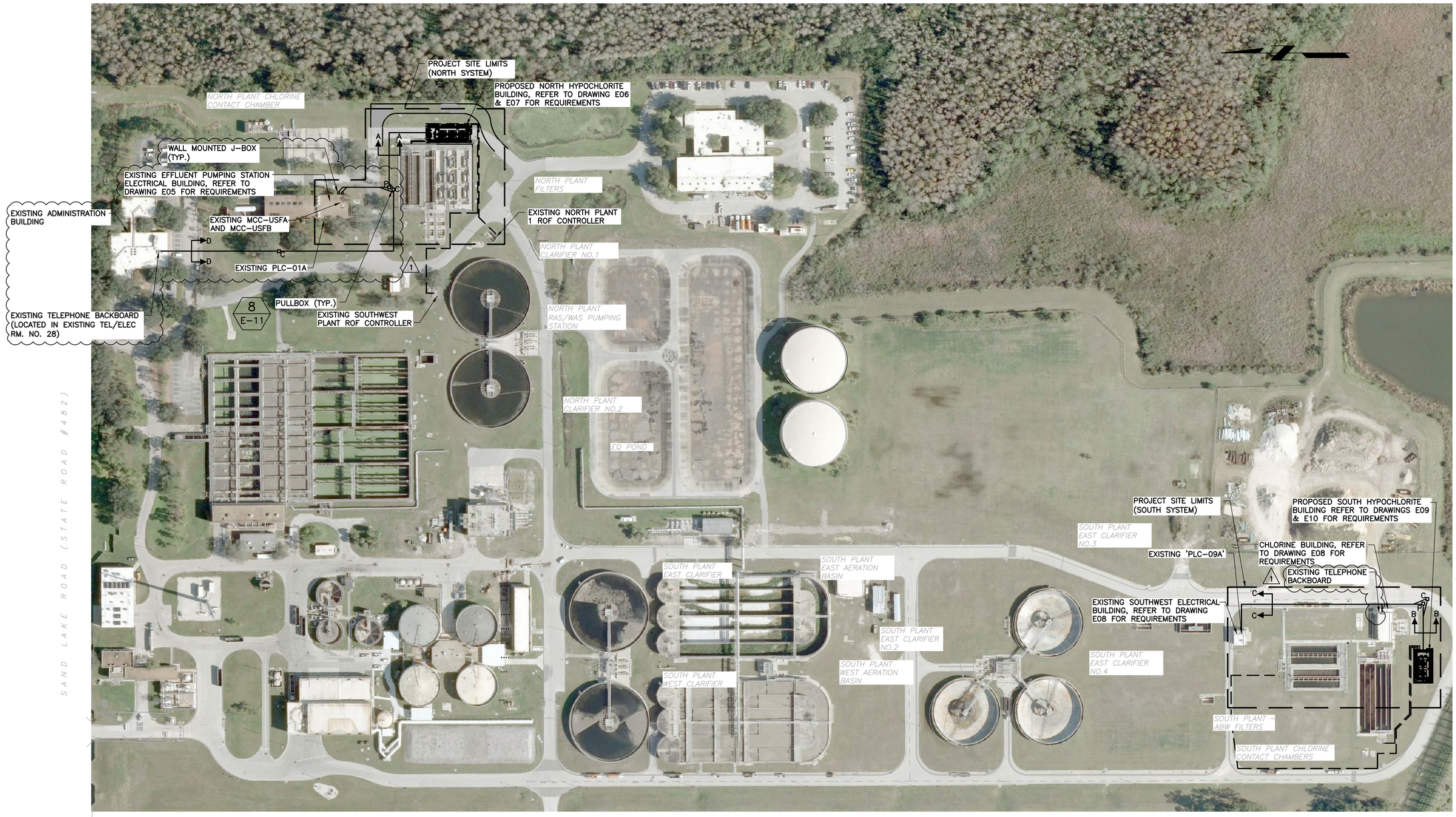
Designed DNN
Drawn RLL
Checked BRW
Reviewed BRW
Approved CIK

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
CIVIL
PAVING, GRADING, AND DRAINAGE PLAN – NORTH SYSTEM

PROJECT NO.: 110022
SCALE: NOTED
REVISION: B
DRAWING NO.: C03
SHEET NO.: 07 OF 46

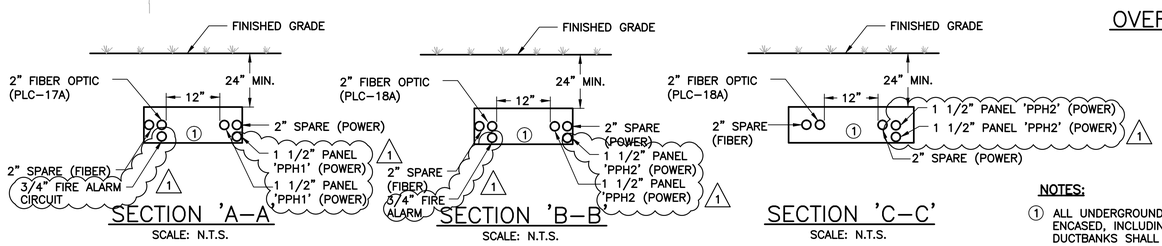
REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358

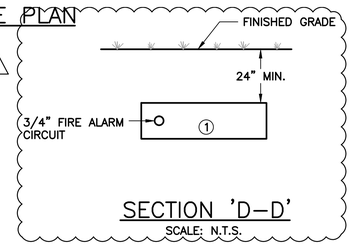


OVERALL ELECTRICAL SITE PLAN

SCALE: 1"=100'-0"

100 50 0 100'





NOTES:

1. ALL UNDERGROUND CONDUITS SHALL BE CONCRETE ENCASED, INCLUDING INDIVIDUAL CONDUITS. ALL DUCTBANKS SHALL BE DYED RED FOR SAFETY.

EDA
Electrical Design Associates
4763 SOUTH CONWAY ROAD, STE. E
ORLANDO, FLORIDA 32812
PHONE: (407) 745-5604
FAX: (407) 745-5603
C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780

ORANGE COUNTY FLORIDA

REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 5	DD
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
Lillian M. Reyes, P.E.
Florida P.E. No. 50780
Electrical Design Associates
Certificate of Authorization No. 8079
4763 South Conway Road, Suite E
Orlando, FL 32812

Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

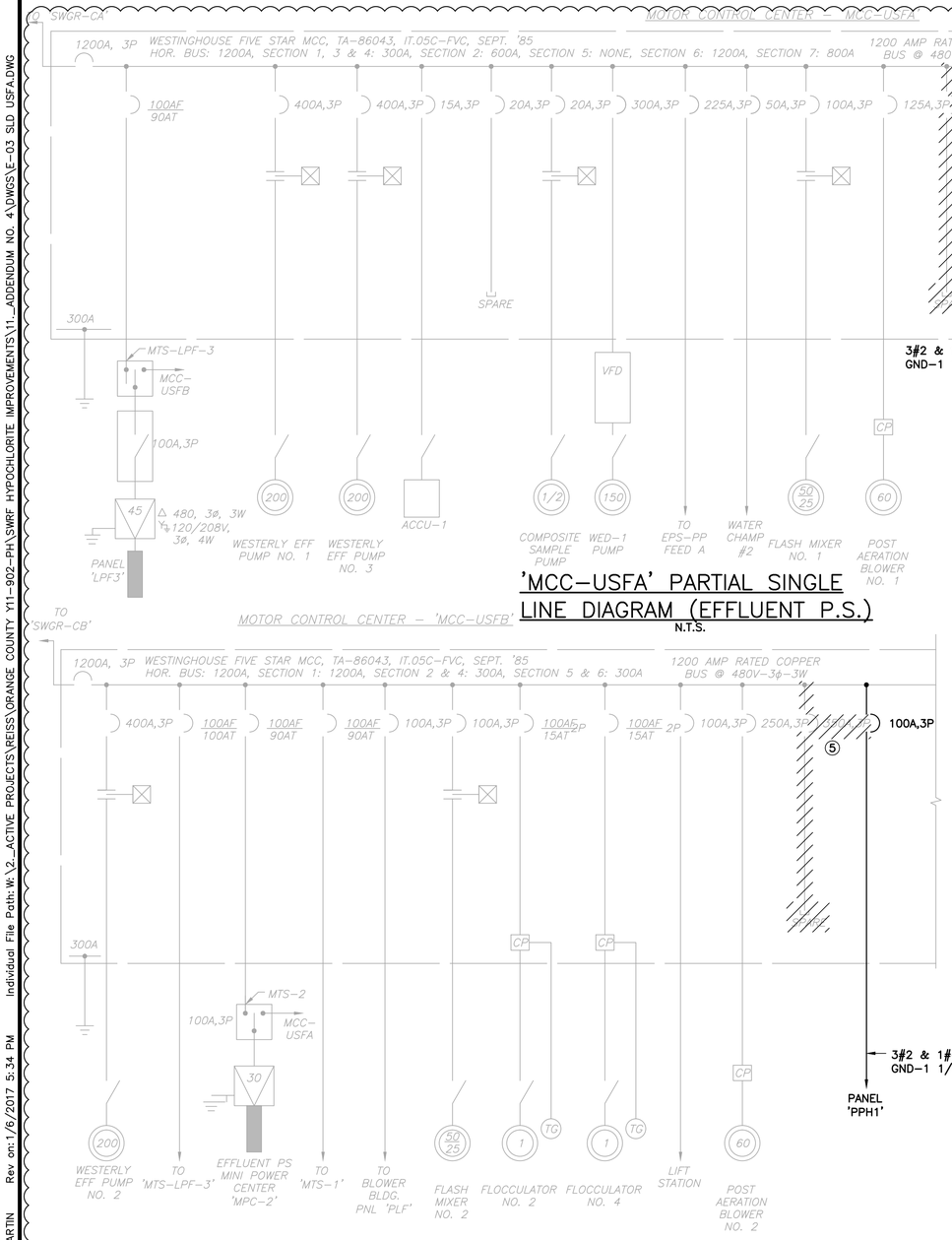
ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS

ELECTRICAL

ELECTRICAL SITE PLAN & CONDUIT SECTIONS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E02
SHEET NO.: 28 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358

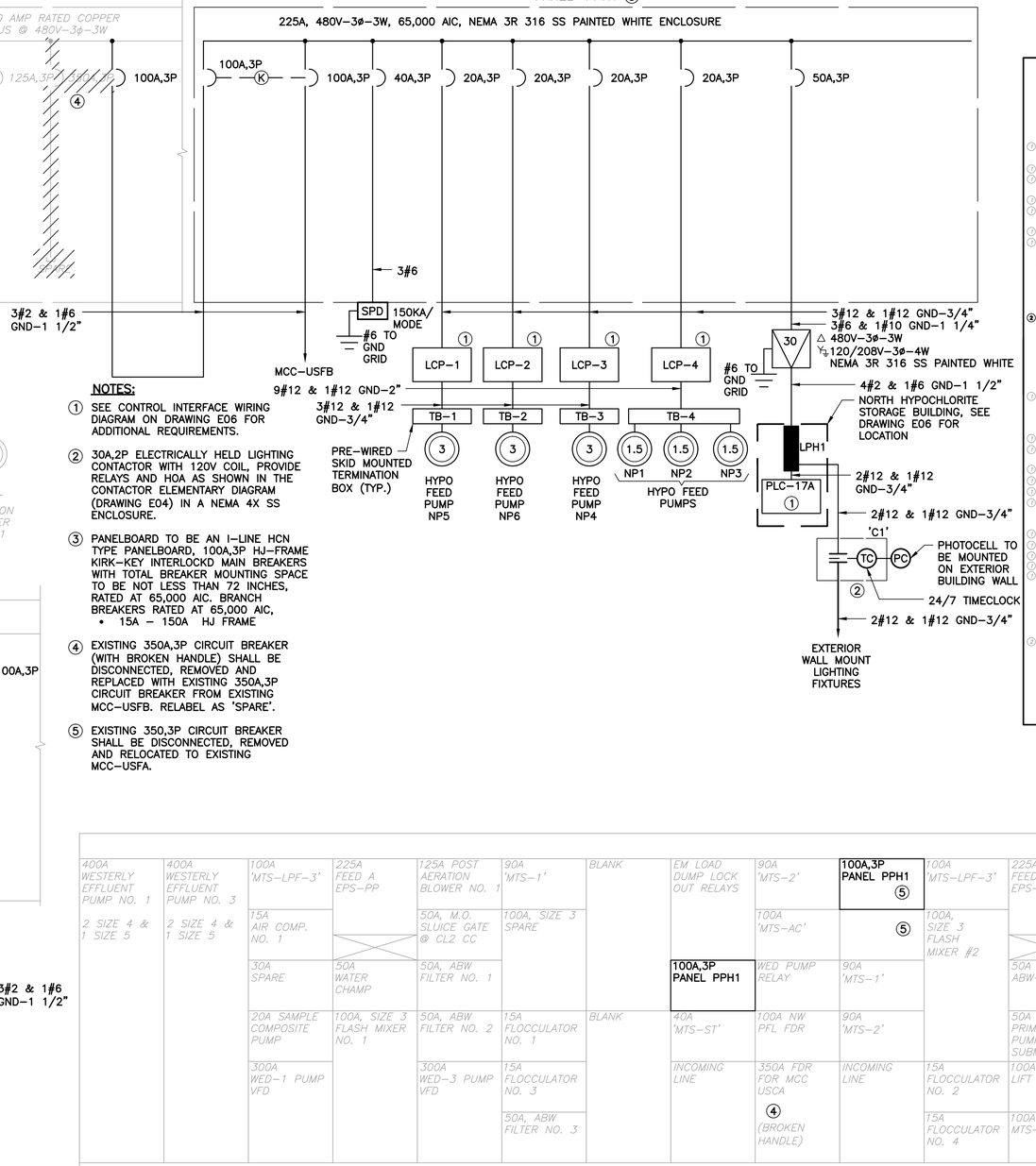


'MCC-USFA' PARTIAL SINGLE LINE DIAGRAM (EFFLUENT P.S.)

N.T.S.

'MCC-USFB' PARTIAL SINGLE LINE DIAGRAM (EFFLUENT P.S.)

N.T.S.



NOTES:

1. SEE CONTROL INTERFACE WIRING DIAGRAM ON DRAWING E06 FOR ADDITIONAL REQUIREMENTS.
2. 30A,2P ELECTRICALLY HELD LIGHTING CONTACTOR WITH 120V COIL, PROVIDE RELAYS AND HOA AS SHOWN IN THE CONTACTOR ELEMENTARY DIAGRAM (DRAWING E04) IN A NEMA 4X SS ENCLOSURE.
3. PANELBOARD TO BE AN I-LINE HCN TYPE PANELBOARD, 100A,3P HJ-FRAME KIRK-KEY INTERLOCKD MAIN BREAKERS WITH TOTAL BREAKER MOUNTING SPACE TO BE NOT LESS THAN 72 INCHES, RATED AT 65,000 AIC. BRANCH BREAKERS RATED AT 65,000 AIC,
   - 15A – 150A HJ FRAME
4. EXISTING 350A,3P CIRCUIT BREAKER (WITH BROKEN HANDLE) SHALL BE DISCONNECTED, REMOVED AND REPLACED WITH EXISTING 350A,3P CIRCUIT BREAKER FROM EXISTING MCC-USFB. RELABEL AS 'SPARE'.
5. EXISTING 350,3P CIRCUIT BREAKER SHALL BE DISCONNECTED, REMOVED AND RELOCATED TO EXISTING MCC-USFA.

'MCC-USFA' LOAD TABULATION

480V-3ϕ-3W

DESCRIPTION	LOAD	AMPACITY
PNL LPF3 VIA XFMR		= 54.13 AMPS
① EFFLUENT PUMP	1 @ 200.0 HP	= 480.00 AMPS
ACCU		= 5.00 AMPS
① SAMPLE PUMP	1 @ 0.5 HP	= 1.00 AMPS
③ WED PUMP	2 @ 150.0 HP	= 360.00 AMPS
WATER CHAMP PUMP		= 10.00 AMPS
① FLASH MIXER	1 @ 25.0 HP	= 34.00 AMPS
① POST AERATION BLOWER	1 @ 60.0 HP	= 7.00 AMPS
SLUICE GATE		= 5.00 AMPS
① ABW FILTER	3 @ 5.0 HP	= 22.80 AMPS
① FLOCCULATOR	2 @ 1.0 HP	= 4.20 AMPS
HYPO FEED PUMP	3 @ 3.0 HP	= 14.40 AMPS
HYPO FEED PUMP	3 @ 1.5 HP	= 9.00 AMPS
PNL LPH1 VIA XFMR		= 36.08 AMPS
	CONNECTED LOAD	= 1112.61 AMPS

② SERVICE ENTRANCE = 1112.61 AMPS + (0.25)(240.0) = 1172.61 AMPS

'MCC-USFB' LOAD TABULATION

480V-3ϕ-3W

DESCRIPTION	LOAD	AMPACITY
① EFFLUENT PUMP	1 @ 200.0 HP	= 240.00 AMPS
PNL MPC-2 VIA XFMR		= 36.08 AMPS
MTS-1		= 30.00 AMPS
PNL PLF		= 60.00 AMPS
① FLASH MIXER	1 @ 25.0 HP	= 34.00 AMPS
① FLOCCULATOR	2 @ 1.0 HP	= 4.20 AMPS
LIFT STATION		= 50.00 AMPS
① POST AERATION BLOWER	1 @ 60.0 HP	= 77.00 AMPS
① ABW FILTER	2 @ 10.0 HP	= 28.00 AMPS
① BACKWASH PUMPS	3 @ 20.0 HP	= 81.00 AMPS
① RECIRC LINE VALVE	1 @ 1.0 HP	= 2.10 AMPS
HVAC CP		= 50.00 AMPS
CL2 BLDG		= 100.00 AMPS
① SAMPLE PUMP	2 @ 0.5 HP	= 2.00 AMPS
① AIR COMP.	1 @ 5.0 HP	= 7.60 AMPS
① WESTERLY EFF PUMP	1 @ 50.0 HP	= 65.00 AMPS
① PANEL MPC-2		= 36.08 AMPS
③ WED PUMP	1 @ 150.0 HP	= 180.00 AMPS
	CONNECTED LOAD	= 1083.06 AMPS

② SERVICE ENTRANCE = 1083.06 AMPS + (0.25)(240.00) = 1143.06 AMPS

NOTES:

① AMPACITIES PER TABLE 430-250 OF THE NATIONAL ELECTRICAL CODE.

② SERVICE ENTRANCE MINIMUM SIZE AS PER ARTICLE 230 OF THE NATIONAL ELECTRICAL CODE.

MCC-USFA FRONT VIEW (EFFLUENT BLDG 1ST FLOOR ELECTRICAL ROOM)

N.T.S

MCC-USFB FRONT VIEW (EFFLUENT BLDG 1ST FLOOR ELECTRICAL ROOM)

N.T.S

EDA
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C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780

REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 5	DD
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
Lillian M. Reyes, P.E.
Florida P.E. No. 50780
Electrical Design Associates
Certificate of Authorization No. 8079
4763 South Conway Road, Suite E
Orlando, FL 32812

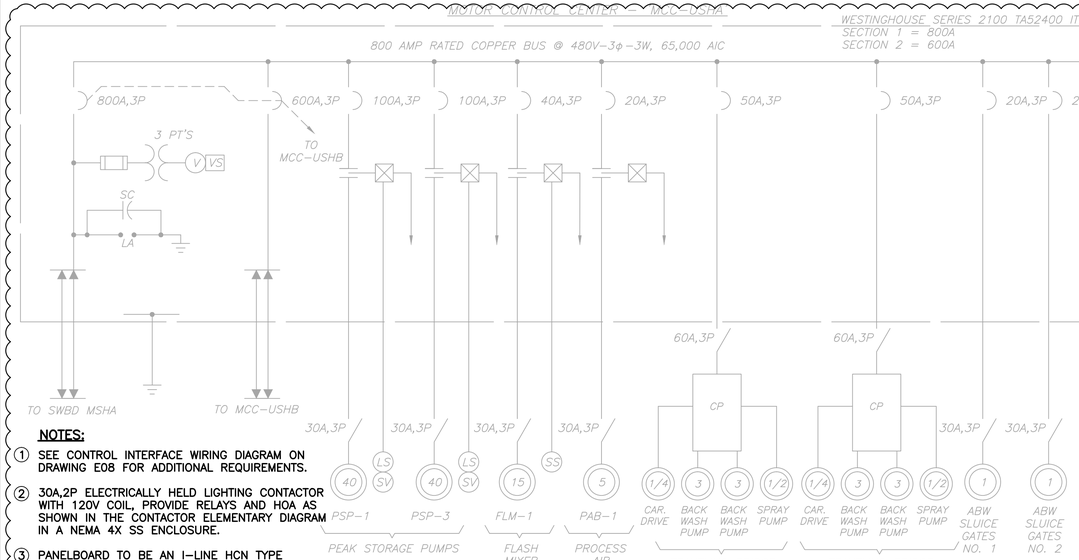
Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
ELECTRICAL
MCC-USFA & MCC-USFB SINGLE LINE DIAGRAMS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E03
SHEET NO.: 29 OF 46

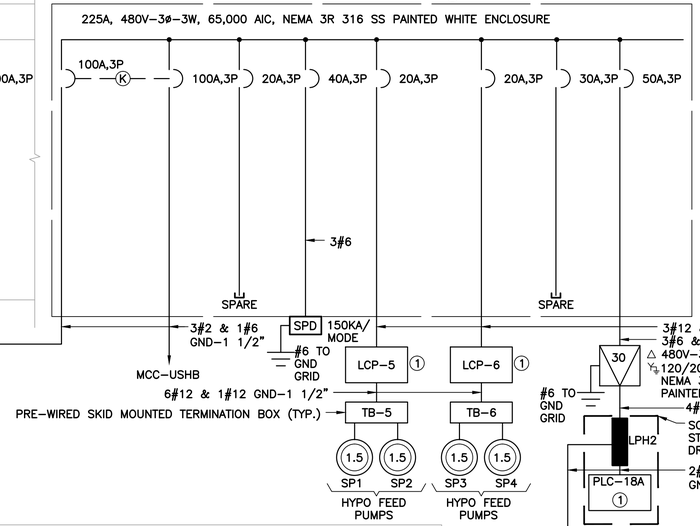
REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358

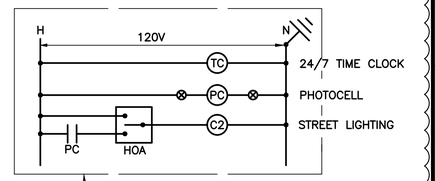


NOTES:

1. SEE CONTROL INTERFACE WIRING DIAGRAM ON DRAWING E08 FOR ADDITIONAL REQUIREMENTS.
2. 30A,2P ELECTRICALLY HELD LIGHTING CONTACTOR WITH 120V COIL, PROVIDE RELAYS AND HOA AS SHOWN IN THE CONTACTOR ELEMENTARY DIAGRAM IN A NEMA 4X SS ENCLOSURE.
3. PANELBOARD TO BE AN I–LINE HCN TYPE PANELBOARD, 100A,3P HJ–FRAME KIRK KEY INTERLOCKED MAIN BREAKERS WITH TOTAL BREAKER MOUNTING SPACE TO BE NOT LESS THAN 72 INCHES, RATED AT 65,000 AIC. BRANCH BREAKERS RATED AT 65,000 AIC,
   - 15A – 150A HJ FRAME
4. TWO BUCKETS CURRENTLY EXIST IN THIS SECTION. EXISTING 20A,3P SPARE CIRCUIT BREAKERS SHALL BE DISCONNECTED, REMOVED AND REPLACED WITH ONE BUCKET (100A,3P CIRCUIT BREAKER).

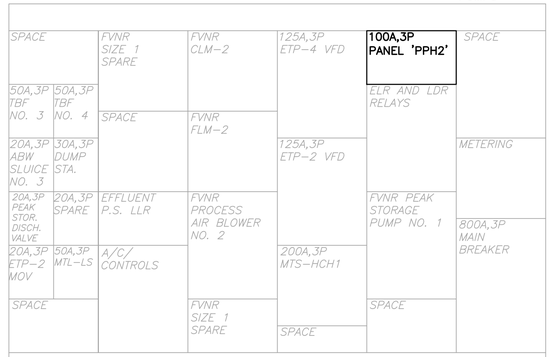
'MCC–USHA' PARTIAL SINGLE LINE DIAGRAM (SOUTHWEST ELECTRICAL BUILDING)





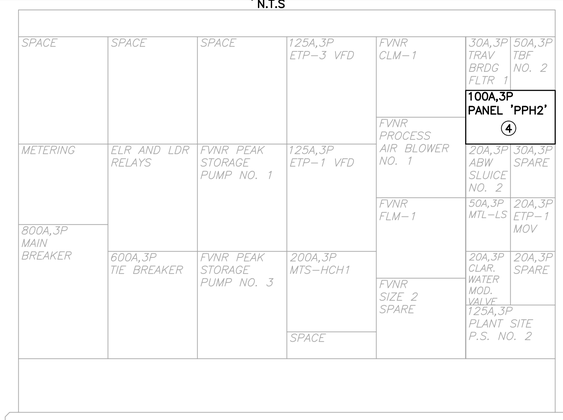
CONTACTOR ELEMENTARY DIAGRAM (TYP.)

N.T.S.



MCC–USHB FRONT VIEW (SOUTHWEST ELECTRICAL BLDG.)

N.T.S



MCC–USHA FRONT VIEW (SOUTHWEST ELECTRICAL BLDG.)

N.T.S

'MCC–USHA' LOAD TABULATION

480V–3ϕ–3W

DESCRIPTION	LOAD	AMPACITY
① FLASH MIXER	1 @ 15.0 HP	= 21.00 AMPS
① PROCESS AIR BLWR	1 @ 5.0 HP	= 7.60 AMPS
① CAR DRIVE	2 @ 0.25 HP	= 2.20 AMPS
① BACKWASH PUMP	4 @ 3.0 HP	= 19.20 AMPS
① SPRAY PUMP	2 @ 0.5 HP	= 2.20 AMPS
① SLUICE GATE	2 @ 1.0 HP	= 4.20 AMPS
① ETP–1 VALVE	1 @ 1.0 HP	= 2.10 AMPS
① CHLORINE FLASH MIXER	1 @ 15.0 HP	= 21.00 AMPS
PNL LS VIA XFMR	–	= 36.08 AMPS
① PUMP STA 2	3 @ 20.0 HP	= 81.00 AMPS
① EFFLUENT PUMP	2 @ 60.0 HP	= 154.00 AMPS
① CLARIFIED WATER VALVE	1 @ 1.0 HP	= 2.10 AMPS
① HYPO FEED PUMPS	4 @ 1.5 HP	= 12.00 AMPS
PNL LPH2 VIA XFMR		= 36.08 AMPS
	CONNECTED LOAD	= 400.76 AMPS

② SERVICE ENTRANCE = 400.76 AMPS + (0.25)(77.00) = 420.01 AMPS

'MCC–USHB' LOAD TABULATION

480V–3ϕ–3W

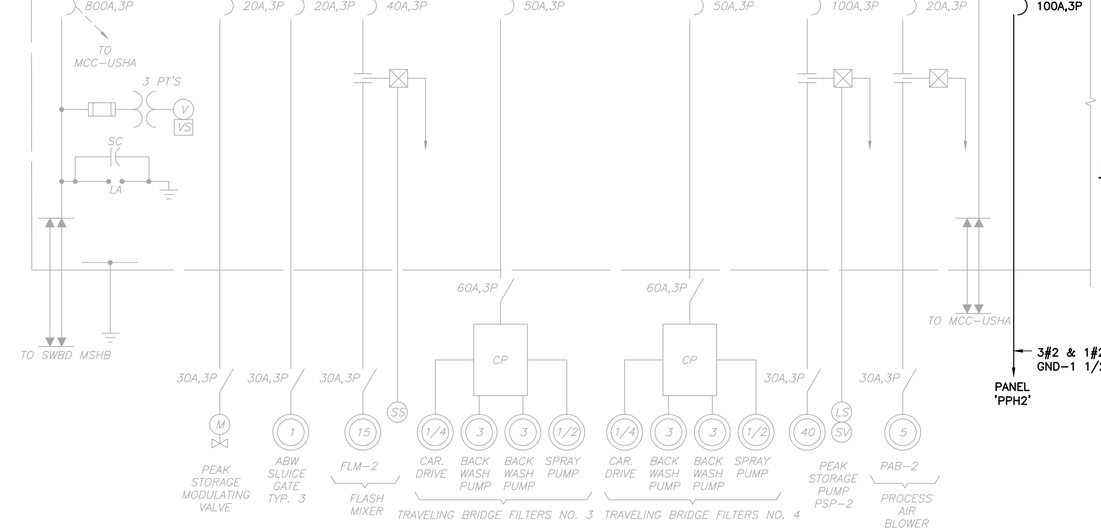
DESCRIPTION	LOAD	AMPACITY
① DISCHARGE MOD. VALVE	1 @ 1.0 HP	= 2.20 AMPS
① FLASH MIXER	1 @ 15.0 HP	= 21.00 AMPS
① PROCESS AIR BLWR	1 @ 5.0 HP	= 7.60 AMPS
① CAR DRIVE	2 @ 0.25 HP	= 2.20 AMPS
① BACKWASH PUMP	4 @ 3.0 HP	= 19.20 AMPS
① SPRAY PUMP	2 @ 0.5 HP	= 2.20 AMPS
① SLUICE GATE	2 @ 1.0 HP	= 4.20 AMPS
① ETP–2 VALVE	1 @ 1.0 HP	= 2.10 AMPS
① CHLORINE FLASH MIXER	1 @ 15.0 HP	= 21.00 AMPS
PNL HCH1	–	= 160.00 AMPS
① EFFLUENT PUMP	2 @ 60.0 HP	= 154.00 AMPS
DUMP STATION	–	= 18.00 AMPS
	CONNECTED LOAD	= 413.70 AMPS

② SERVICE ENTRANCE = 413.70 AMPS + (0.25)(77.00) = 432.95 AMPS

NOTES:

① AMPACITIES PER TABLE 430–250 OF THE NATIONAL ELECTRICAL CODE.

② SERVICE ENTRANCE MINIMUM SIZE AS PER ARTICLE 230 OF THE NATIONAL ELECTRICAL CODE.



'MCC–USHB' PARTIAL SINGLE LINE DIAGRAM (SOUTHWEST ELECTRICAL BUILDING)

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C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780

ORANGE COUNTY FLORIDA

REV	DATE	DESCRIPTION	BY
⚠	1/6/17	ADDENDUM NO. 5	DD
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
Lillian M. Reyes, P.E.
Florida P.E. No. 50780
Electrical Design Associates
Certificate of Authorization No. 8079
4763 South Conway Road, Suite E
Orlando, FL 32812

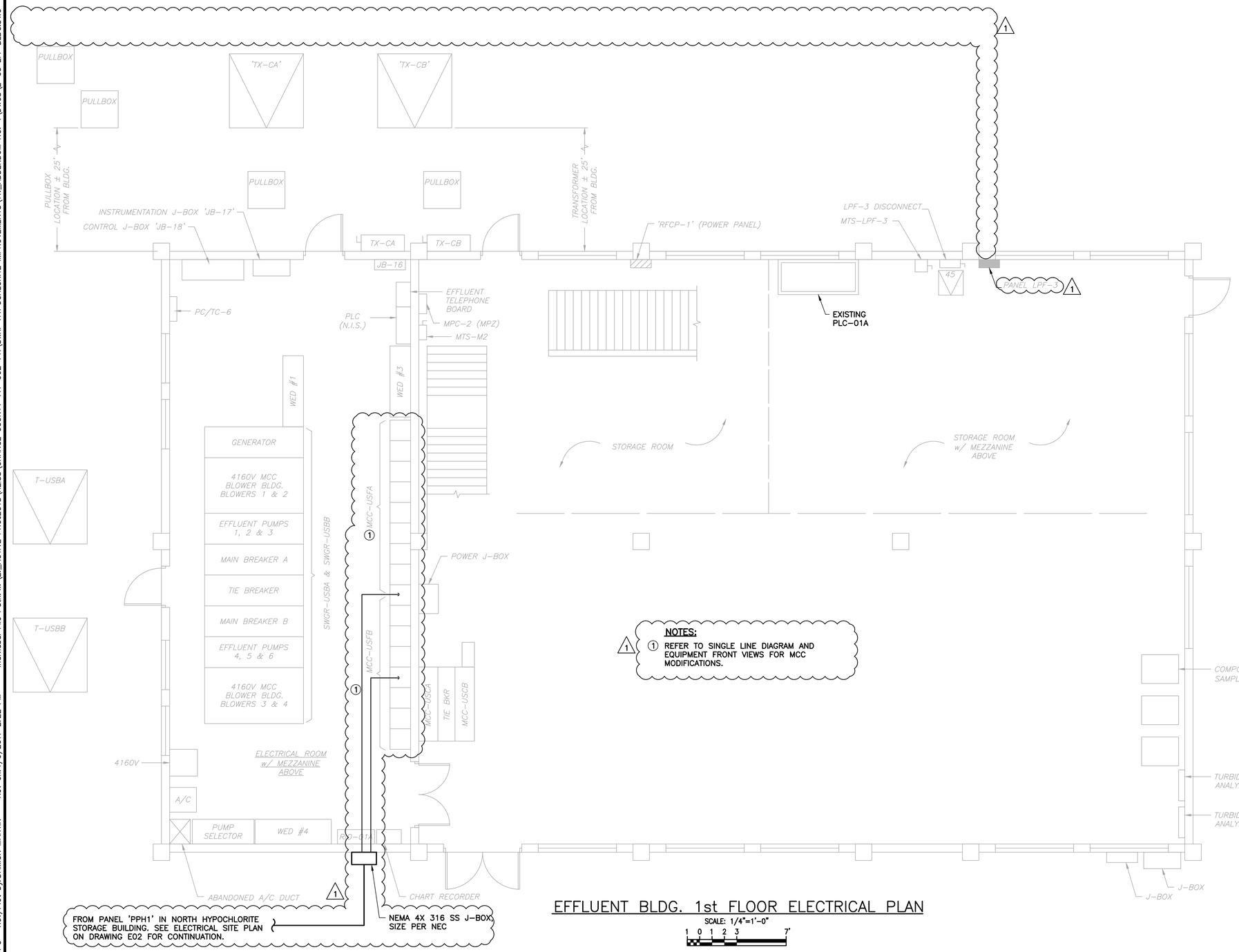
Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
ELECTRICAL
MCC–USHA & MCC–USHB SINGLE LINE DIAGRAMS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E04
SHEET NO.: 30 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679–5358



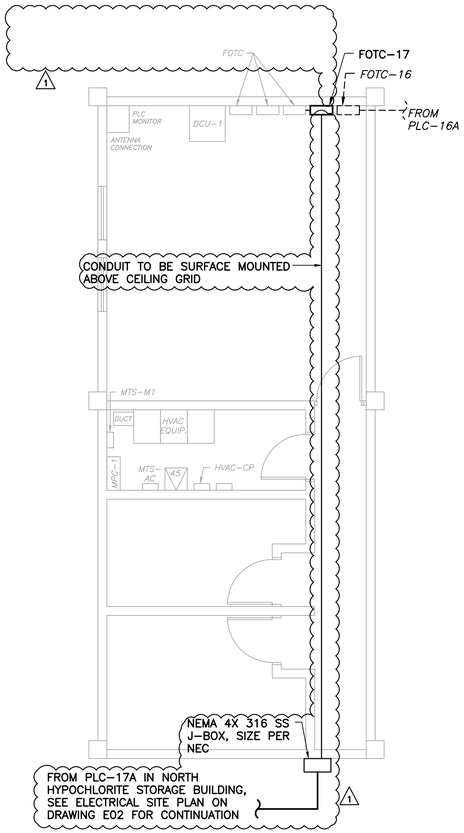
NOTES:

1. REFER TO SINGLE LINE DIAGRAM AND EQUIPMENT FRONT VIEWS FOR MCC MODIFICATIONS.

EFFLUENT BLDG. 1st FLOOR ELECTRICAL PLAN

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

1 0 1 2 3 7'



EFFLUENT P.S. MEZZANINE ELECTRICAL PLAN

SCALE: 3/16"=1'-0"

6 4 2 0 5'

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REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 5	DD
0	10/31/16	ISSUED FOR BID	RRM

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Certificate of Authorization No. 8079
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Orlando, FL 32812

Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
ELECTRICAL
EFFLUENT BUILDING 1ST FLOOR ELECTRICAL PLAN

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E05
SHEET NO.: 31 OF 46

REISS ENGINEERING, INC.
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WINTER SPRINGS, FL 32708
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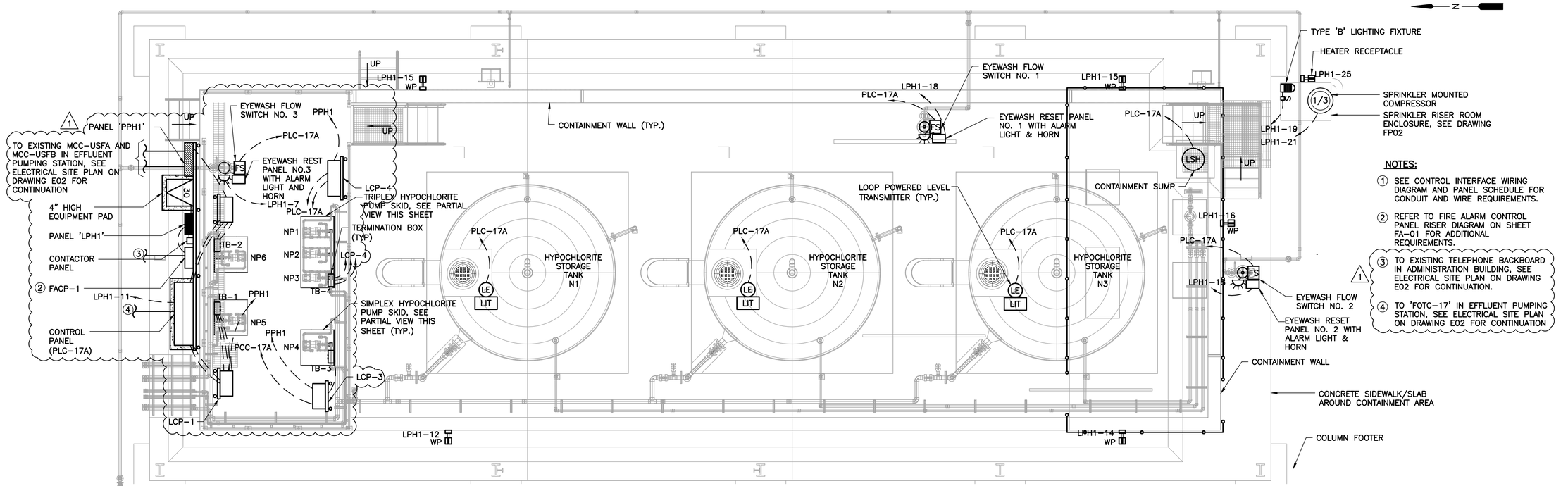


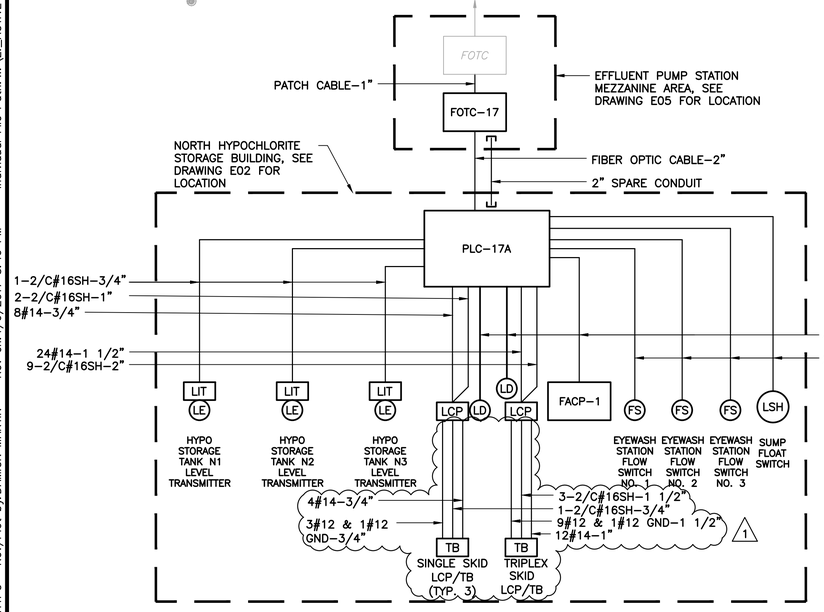
NORTH HYPOCHLORITE STORAGE BUILDING POWER PLAN

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

1 0 1 2 3 7'

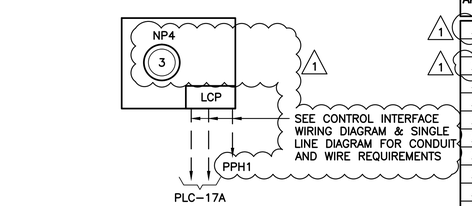
NOTES:

1. SEE CONTROL INTERFACE WIRING DIAGRAM AND PANEL SCHEDULE FOR CONDUIT AND WIRE REQUIREMENTS.
2. REFER TO FIRE ALARM CONTROL PANEL RISER DIAGRAM ON SHEET FA-01 FOR ADDITIONAL REQUIREMENTS.
3. TO EXISTING TELEPHONE BACKBOARD IN ADMINISTRATION BUILDING, SEE ELECTRICAL SITE PLAN ON DRAWING E02 FOR CONTINUATION.
4. TO 'FOTC-17' IN EFFLUENT PUMPING STATION, SEE ELECTRICAL SITE PLAN ON DRAWING E02 FOR CONTINUATION



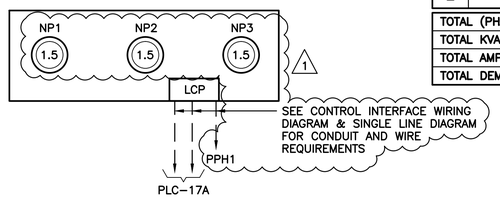
NORTH HYPO CONTROL INTERFACE WIRING DIAGRAM

N.T.S.



PARTIAL SIMPLEX HYPOCHLORITE PUMP SKID (TYP. 3)

SCALE: N.T.S.



PARTIAL TRIPLEX HYPOCHLORITE PUMP SKID

SCALE: N.T.S.

PANEL: LPH1 | **BUS:** 100 AMP | **VOLT:** 120/208V-3φ-4W
LOCATION: NORTH HYPOCHLORITE STORAGE BUILDING | **MAINS:** (100A,3P) 1 | **REMARKS:** PROVIDE SURGE SUPPRESSOR
MOUNTING: EQUIPMENT RACK | **POLES:** 30 | **A.I.C. SYMM:** 10,000

AMPS	POLE	WIRE	GND.	COND.	LOAD SERVED	BUS KVA A	B	C	BUS A B C	BUS KVA A	B	C	LOAD SERVED	WIRE	GND.	COND.	POLE	AMPS
20	1	–	–	–	SPARE	–			1 2	0.50			FIRE ALARM CNTRL PANEL	12	12	3/4"	1	20 (1)
20	1	12	12	3/4"	EXTERIOR LTG		0.45		3 4		–		SPARE	–	–	–	1	20
20	1	–	–	–	SPARE			–	5 6			–	SPARE	–	–	–	1	20
20	1	12	12	3/4"	EYEWASH RESET PNL NO.3	0.20			7 8	0.20			EYEWASH RESET PNL NO.1	12	12	3/4"	1	20
20	1	–	–	–	SPARE		–		9 10		–		SPARE	–	–	–	1	20
20	1	12	12	3/4"	PLC-17A			0.50	11 12			1.44	RECEPTACLE	12	12	3/4"	1	20
20	1	12	12	3/4"	RECEPTACLE	1.44			13 14	1.44			RECEPTACLE	12	12	3/4"	1	20
20	1	12	12	3/4"	RECEPTACLE		1.44		15 16		0.18		RECEPTACLE	12	12	3/4"	1	20
20	1	12	12	3/4"	HYPO TANK AREA LIGHTING			1.28	17 18			0.20	EYEWASH RESET PNL NO.2	12	12	3/4"	1	20
20	1	12	12	3/4"	SPRINKLER RISER ENCL LTG.	0.10			19 20	0.32			EMERGENCY LTG.	12	12	3/4"	1	20
20	1	12	12	3/4"	SPRINKLER RISER MTD. COMPRESSOR		1.00		21 22		0.32		NORMAL LTG	–	–	–	1	20
20	1	–	–	–	SPARE			–	23 24			–	SPACE	–	–	–	–	–
20	1	12	12	3/4"	RISER ROOM HEATER CKT	0.20			25 26	0.10			SURGE SUPPRESSOR	8	8	–	3	40
–	–	–	–	–	SPACE		–		27 28		0.10		–	–	–	–	–	–
–	–	–	–	–	SPACE			–	29 30			0.10	–	–	–	–	–	–
TOTAL (PHASE):						1.94	2.89	1.78		2.56	0.60	1.74						
TOTAL KVA:									11.51									
TOTAL AMPS:									31.95									
TOTAL DEMAND AMPS:									31.95									

(1) BREAKER SHALL BE PAINTED RED AND LOCKED ON THE CLOSED POSITION.

MINIMUM 40KA/MODE — SPD

EDA
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LILLIAN M. REYES, P.E.
Florida P.E. No. 50780

REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 5	DD
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
Lillian M. Reyes, P.E.
Florida P.E. No. 50780
Electrical Design Associates
Certificate of Authorization No. 8079
4763 South Conway Road, Suite E
Orlando, FL 32812

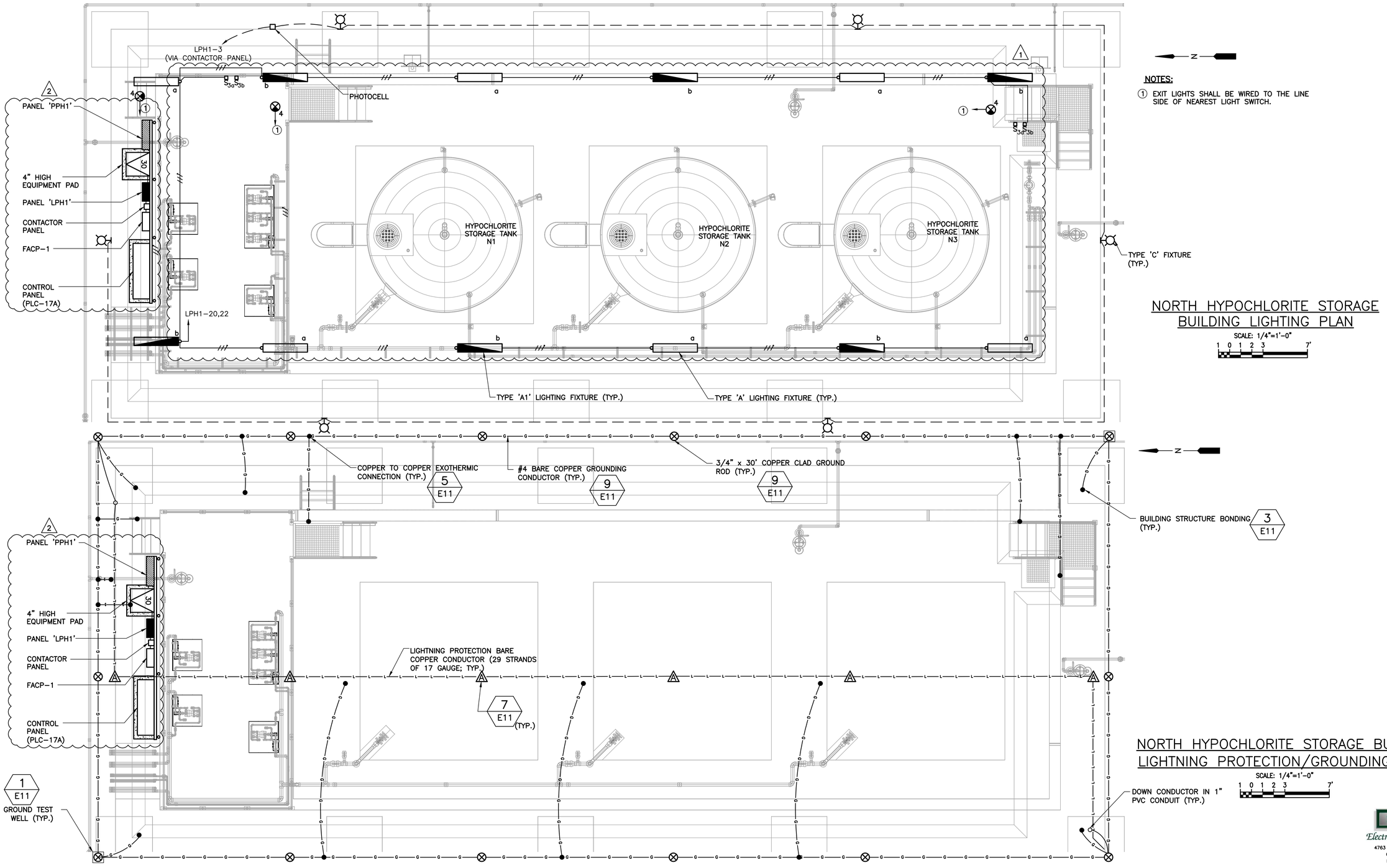
Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
ELECTRICAL
NORTH HYPOCHLORITE STORAGE BUILDING ELECTRICAL PLAN & WIRING DIAGRAMS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E06
SHEET NO.: 32 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358



NOTES:

1. EXIT LIGHTS SHALL BE WIRED TO THE LINE SIDE OF NEAREST LIGHT SWITCH.

NORTH HYPOCHLORITE STORAGE BUILDING LIGHTING PLAN

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

NORTH HYPOCHLORITE STORAGE BUILDING LIGHTNING PROTECTION/GROUNDING PLAN

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

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Florida P.E. No. 50780

REV	DATE	DESCRIPTION	BY
4	1/6/17	ADDENDUM NO. 5	DD
3	12/9/16	ADDENDUM NO. 1	DD
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
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Electrical Design Associates
Certificate of Authorization No. 8079
4763 South Conway Road, Suite E
Orlando, FL 32812

Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

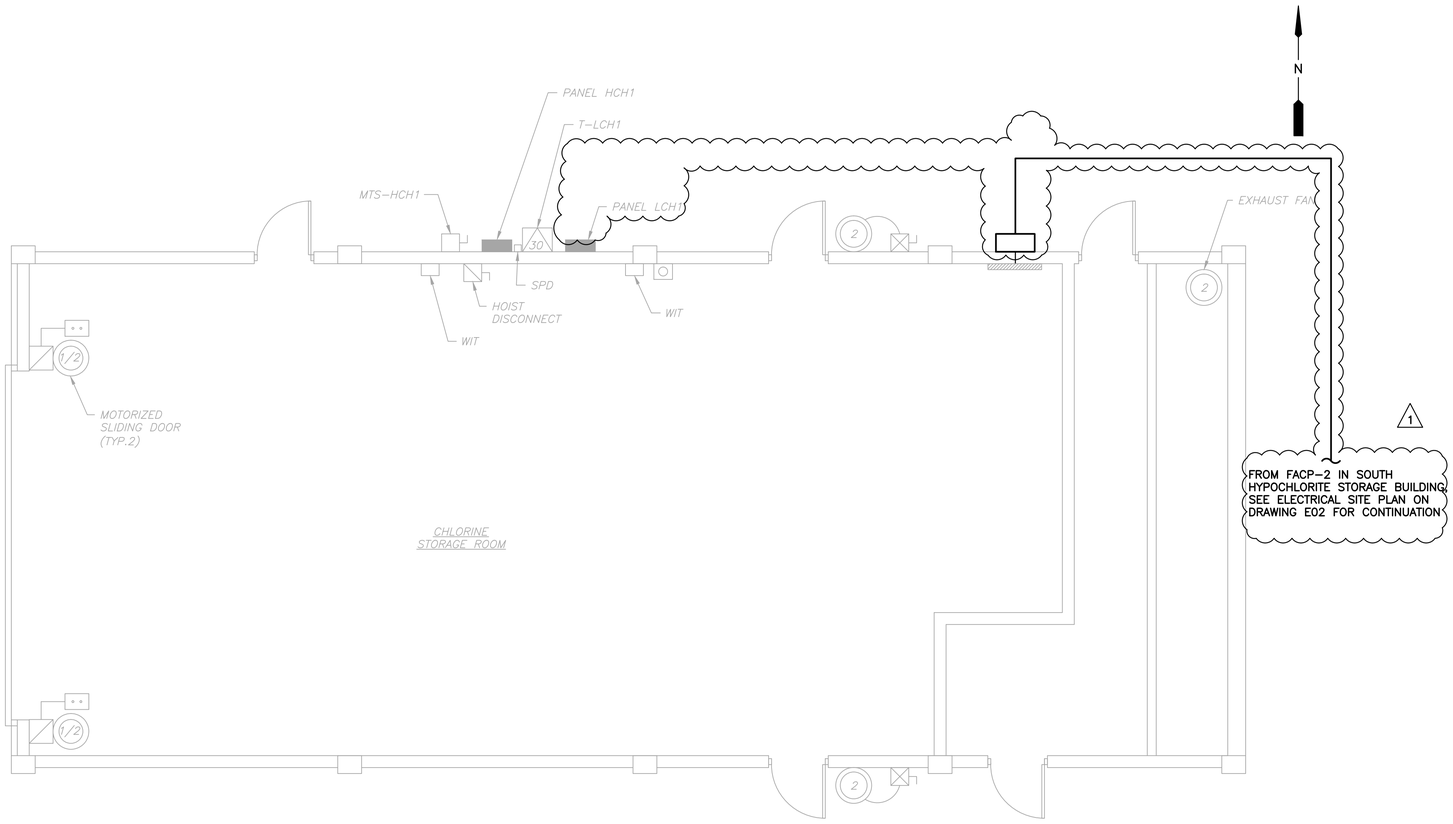
LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS

ELECTRICAL
NORTH HYPOCHLORITE STORAGE BUILDING LIGHTING & LIGHTNING PROTECTION/GROUNDING PLANS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E07
SHEET NO.: 33 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358



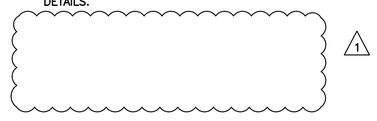
SOUTH PLANT CHLORINE BUILDING ELECTRICAL PLAN

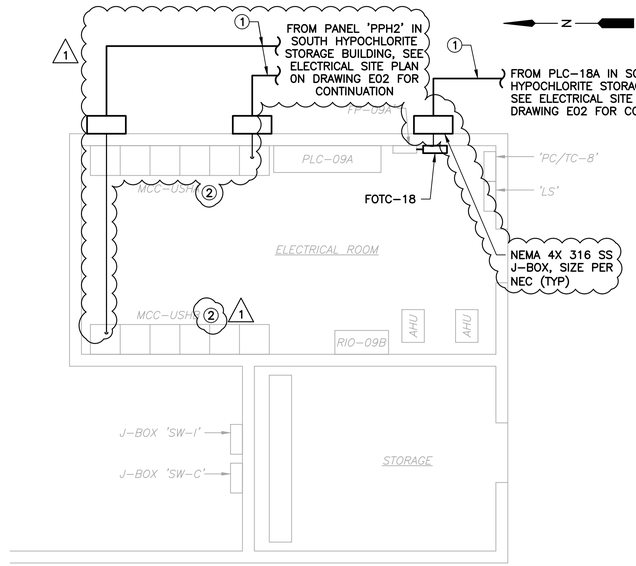
SCALE: 1/4"=1'-0"

1 0 1 2 3 7'

NOTES:

1. SEE SHEET E02 FOR CONDUIT SECTION DETAILS.





SOUTHWEST ELECTRICAL BLDG. NO. 2 ELECTRICAL PLAN

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

1 0 1 2 3 7'

NOTES:

1. SEE SHEET E02 FOR CONDUIT SECTION DETAILS.
2. SEE SINGLE LINE DIAGRAM AND EQUIPMENT FRONT VIEWS FOR MCC MODIFICATIONS.

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LILLIAN M. REYES, P.E.
Florida P.E. No. 50780

REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 5	DD
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
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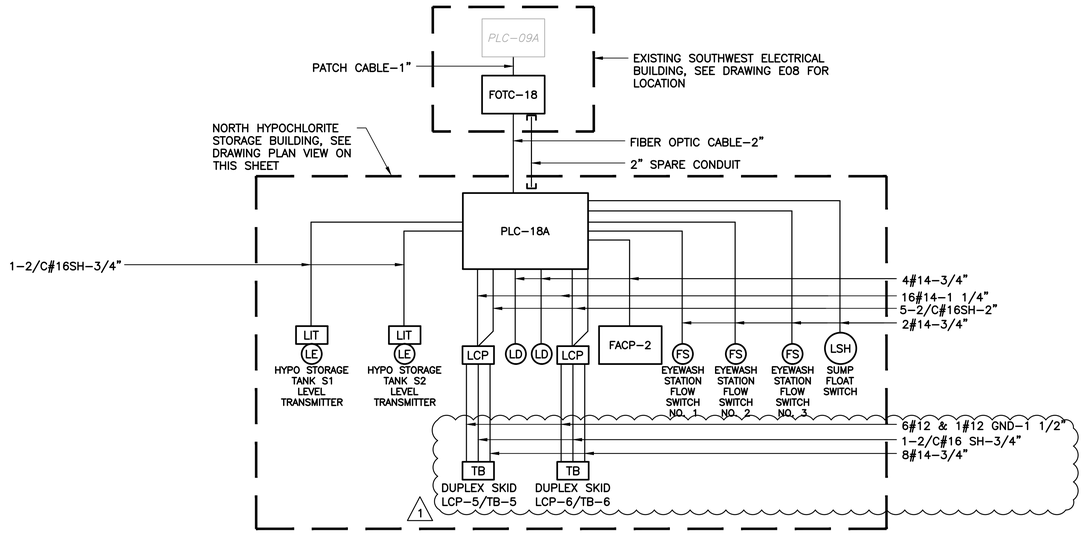
Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
ELECTRICAL
SOUTHWEST ELECTRICAL BUILDING AND SOUTH ELECTRICAL BUILDING ELECTRICAL PLANS

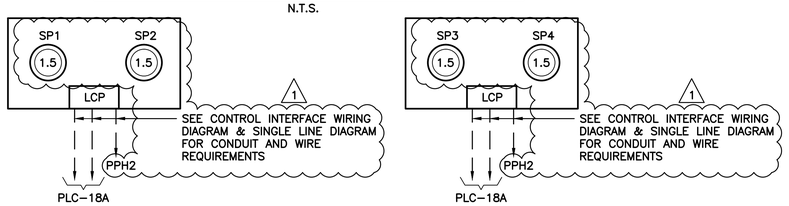
PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E08
SHEET NO.: 34 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358



CONTROL INTERFACE WIRING DIAGRAM

N.T.S.



PARTIAL DUPLEX HYPOCHLORITE PUMP SKID

SCALE: N.T.S.

PARTIAL DUPLEX HYPOCHLORITE PUMP SKID

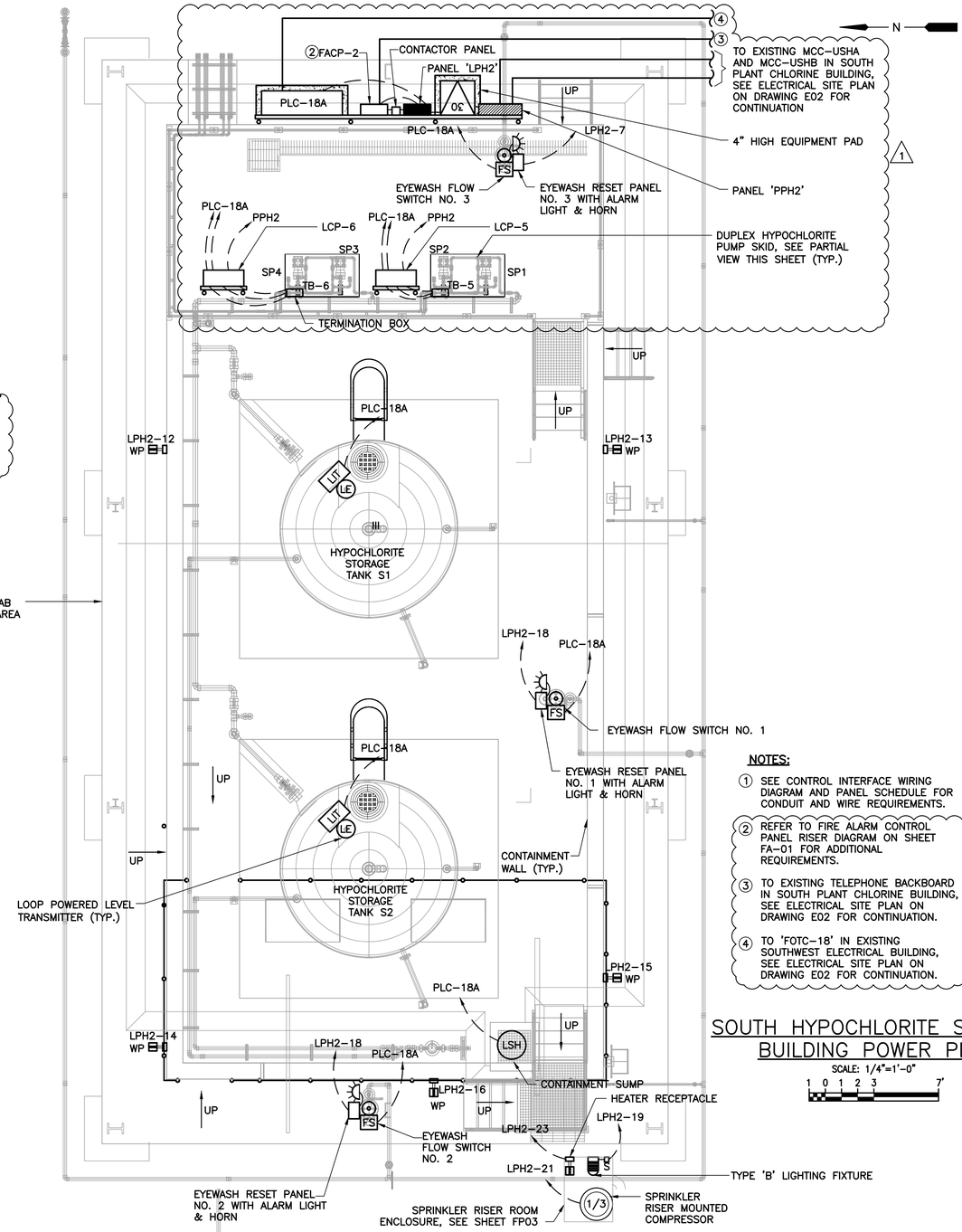
SCALE: N.T.S.

PANEL: LPH2 | **BUS:** 100 AMP | **VOLT:** 120/208V-3ϕ-4W
LOCATION: SOUTH HYPOCHLORITE STORAGE BUILDING | **MAINS:** 100A,3P (1) | **REMARKS:** PROVIDE SURGE SUPPRESSOR
MOUNTING: EQUIPMENT RACK | **POLES:** 30 | **A.I.C. SYMM:** 10,000

AMPS	POLE	WIRE	GND.	COND.	LOAD SERVED	BUS KVA A	BUS KVA B	BUS KVA C	BUS A B C	BUS KVA A	BUS KVA B	BUS KVA C	LOAD SERVED	WIRE	GND.	COND.	POLE	AMPS
20	1	–	–	–	SPARE	–			1 2	0.50			FIRE ALARM CNTRL PANEL	12	12	3/4"	1	20 (1)
20	1	12	12	3/4"	EXTERIOR LTG		0.45		3 4		–		SPARE	–	–	–	1	20 (1)
20	1	–	–	–	SPARE			–	5 6			–	SPARE	–	–	–	1	20
20	1	12	12	3/4"	EYEWASH RESET PNL NO.3	0.20			7 8	–			SPARE	–	–	–	1	20
20	1	–	–	–	SPARE		–		9 10		0.20		EYEWASH RESET PNL NO.2	–	–	–	1	20
20	1	12	12	3/4"	PLC-18A			0.50	11 12			1.44	RECEPTACLE	12	12	3/4"	1	20
20	1	12	12	3/4"	RECEPTACLE	1.44			13 14	1.44			RECEPTACLE	12	12	3/4"	1	20
20	1	12	12	3/4"	RECEPTACLE		1.44		15 16		0.18		RECEPTACLE	12	12	3/4"	1	20
20	1	12	12	3/4"	HYPO TANK AREA LIGHTING			1.28	17 18			0.20	EYEWASH RESET PNL NO.2	12	12	3/4"	1	20
20	1	12	12	3/4"	SPRINKLER RISER ENCL LTG.	0.10			19 20	0.32			EMERGENCY LTG	12	12	3/4"	1	20
20	1	12	12	3/4"	SPRINKLER RISER MTD. COMPRESSOR		1.00		21 22		0.32		NORMAL LTG	12	12	3/4"	1	20
20	1	12	12	3/4"	RISER RM. HTR. CKT.			0.20	23 24			–	SPACE	–	–	–	–	–
20	1	–	–	–	SPARE	–			25 26	0.10			SURGE SUPPRESSOR	8	8	–	3	40
–	–	–	–	–	SPACE		–		27 28		0.10		–	–	–	–	–	–
–	–	–	–	–	SPACE			–	29 30			0.10	–	–	–	–	–	–
TOTAL (PHASE):						1.74	2.89	1.98		2.36	0.08	1.74						
TOTAL KVA:								11.51										
TOTAL AMPS:								31.95										
TOTAL DEMAND AMPS:								31.95										

(1) BREAKER SHALL BE PAINTED RED AND LOCKED ON THE CLOSED POSITION.

MINIMUM 40KA/MODE — SPD



NOTES:

1. SEE CONTROL INTERFACE WIRING DIAGRAM AND PANEL SCHEDULE FOR CONDUIT AND WIRE REQUIREMENTS.
2. REFER TO FIRE ALARM CONTROL PANEL RISER DIAGRAM ON SHEET FA-01 FOR ADDITIONAL REQUIREMENTS.
3. TO EXISTING TELEPHONE BACKBOARD IN SOUTH PLANT CHLORINE BUILDING, SEE ELECTRICAL SITE PLAN ON DRAWING E02 FOR CONTINUATION.
4. TO 'FOTC-18' IN EXISTING SOUTHWEST ELECTRICAL BUILDING, SEE ELECTRICAL SITE PLAN ON DRAWING E02 FOR CONTINUATION.

SOUTH HYPOCHLORITE STORAGE BUILDING POWER PLAN

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

1 0 1 2 3 7'

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Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS

ELECTRICAL

SOUTH HYPOCHLORITE STORAGE BUILDING, SW ELECTRICAL BUILDING ELECTRICAL PLANS & WIRING DIAGRAMS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E09
SHEET NO.: 35 OF 46

REISS ENGINEERING, INC.
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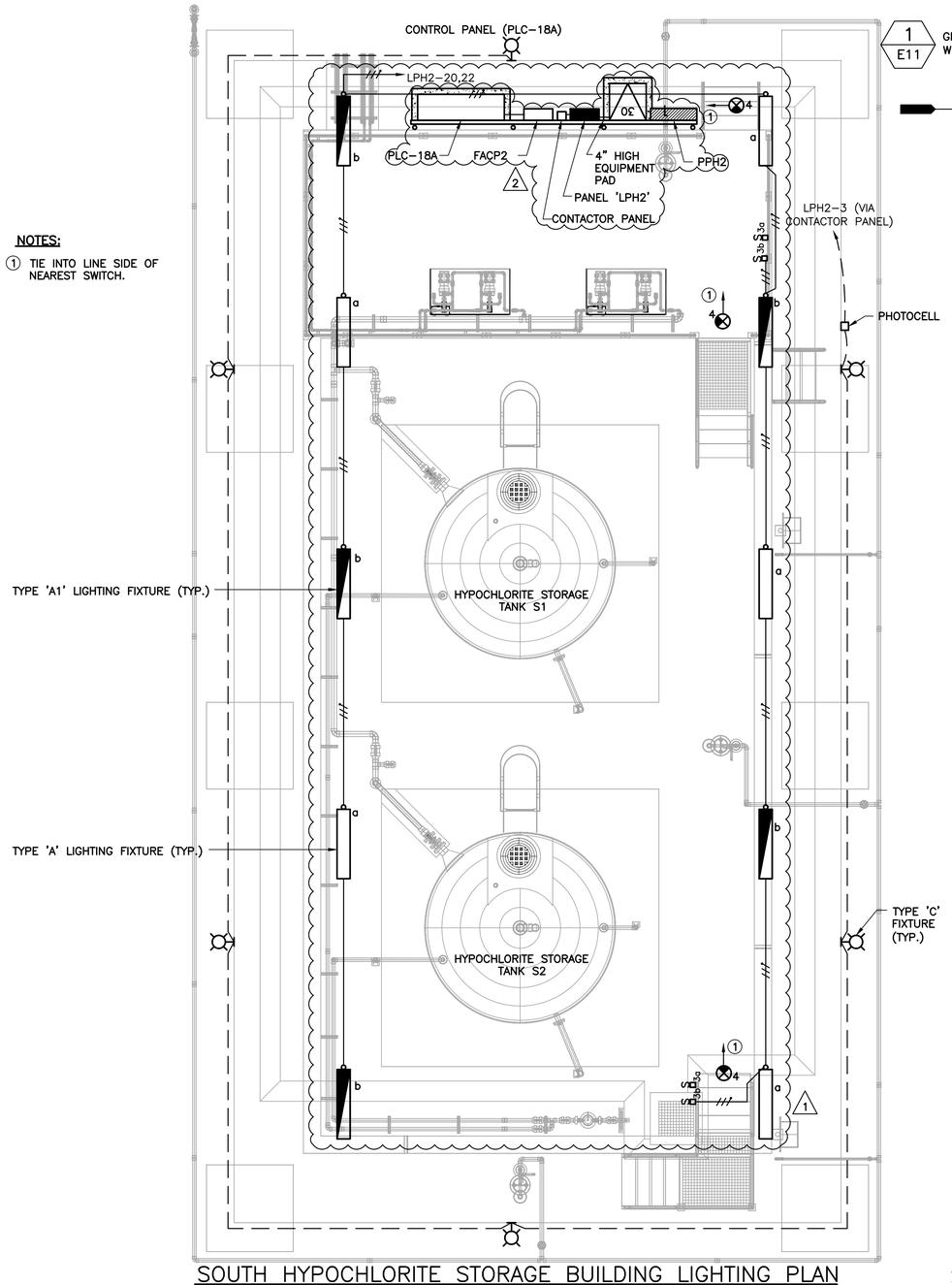
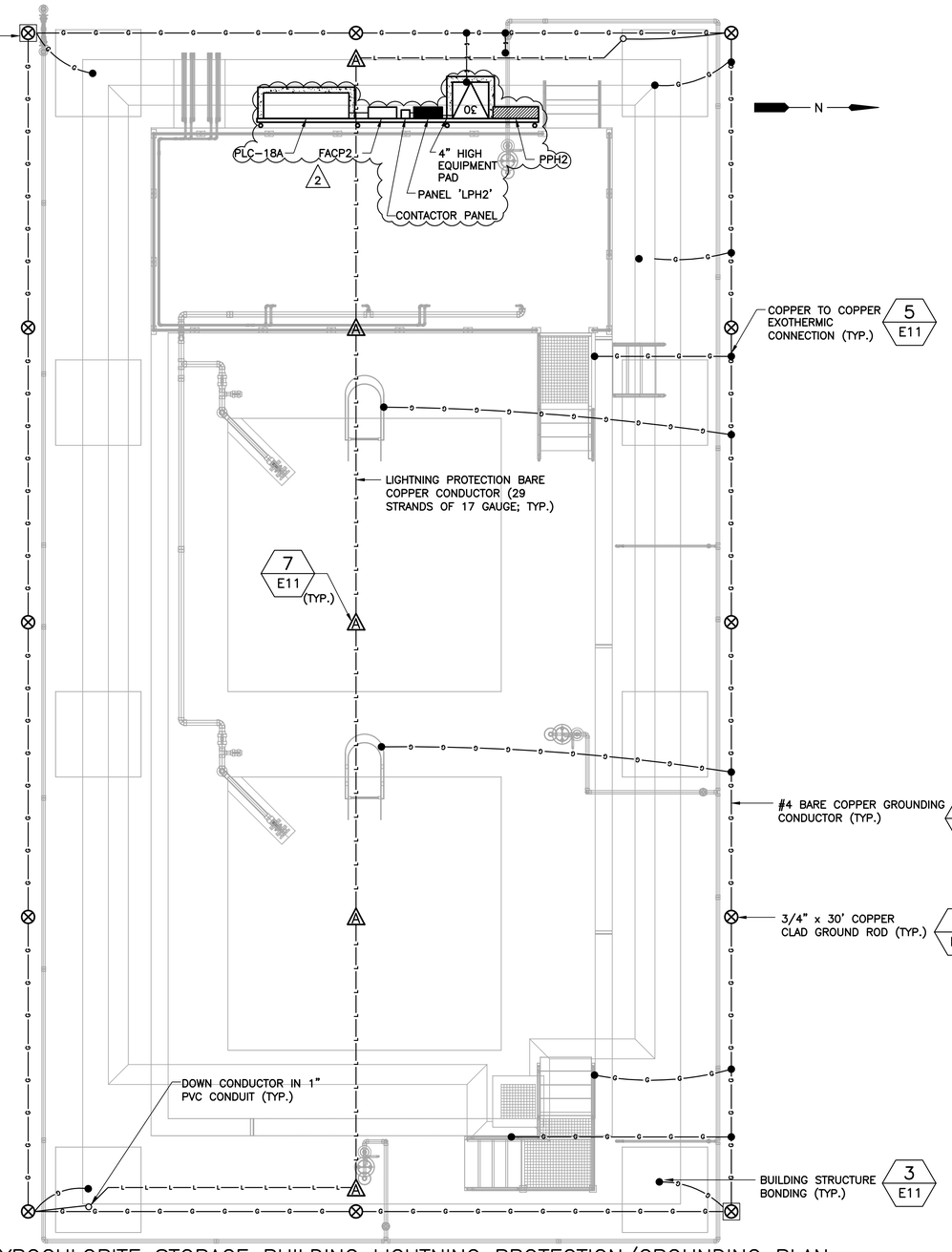
WINTER SPRINGS, FL 32708
(407) 679-5358



SOUTH HYPOCHLORITE STORAGE BUILDING LIGHTING PLAN

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

1 0 1 2 3 7'



SOUTH HYPOCHLORITE STORAGE BUILDING LIGHTNING PROTECTION/GROUNDING PLAN

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

1 0 1 2 3 7'

NOTES:

1. TIE INTO LINE SIDE OF NEAREST SWITCH.

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Florida P.E. No. 50780

ORANGE COUNTY FLORIDA

REV	DATE	DESCRIPTION	BY
4	1/6/17	ADDENDUM NO. 5	DD
1	12/9/16	ADDENDUM NO. 1	DD
0	10/31/16	ISSUED FOR BID	RRM

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Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

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ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS

ELECTRICAL

SOUTH HYPOCHLORITE STORAGE BUILDING LIGHTING & LIGHTNING PROTECTION/GROUNDING PLANS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: E10
SHEET NO.: 36 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
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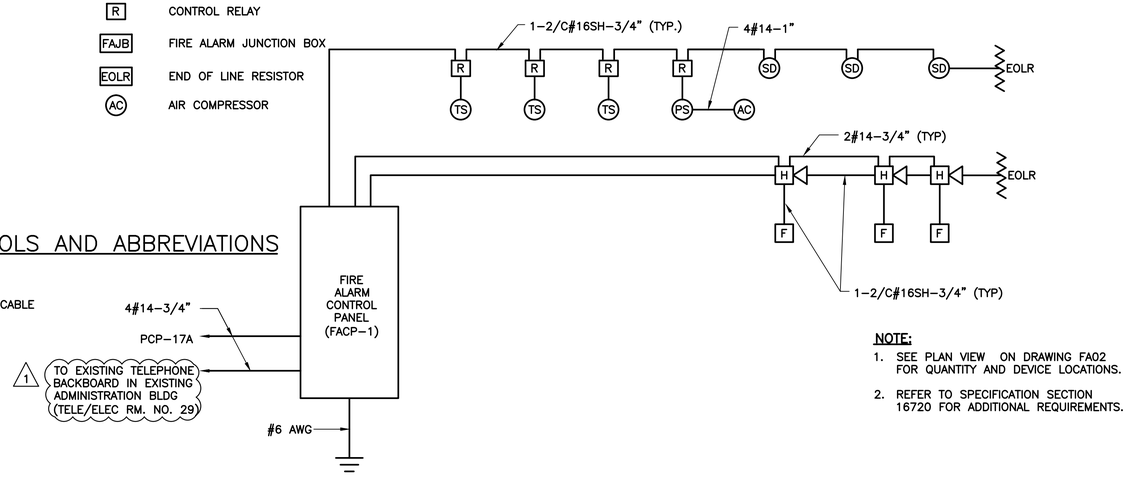
FIRE EQUIPMENT FUNCTION SYMBOLS

FACP	FIRE ALARM CONTROL PANEL	I	ISOLATION MODULE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	CR	ADDRESSABLE RELAY MODULE AS REQUIRED
H	HORN / STROBE	MX	ADDRESSABLE INPUT MODULE AS REQUIRED
L	STROBE LIGHT	R	CONTROL RELAY
F	PULL STATION	FAJB	FIRE ALARM JUNCTION BOX
SD	SMOKE DETECTOR	EOLR	END OF LINE RESISTOR
DD	DUCT DETECTOR	AC	AIR COMPRESSOR
FS	FLOW SWITCH		
TS	TAMPER SWITCH		
PS	PRESSURE SWITCH		

FUNCTION SYMBOLS AND ABBREVIATIONS

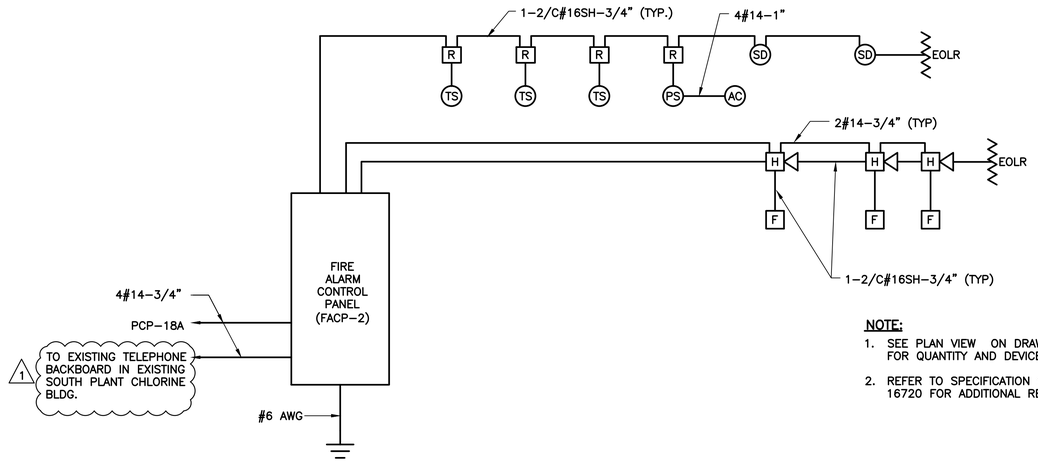
ELOR END OF LINE RESISTOR
TP TWISTED PAIR CABLE
TSP TWISTED SHIELDED PAIR CABLE
TYP TYPICAL



NOTE:

1. SEE PLAN VIEW ON DRAWING FA02 FOR QUANTITY AND DEVICE LOCATIONS.
2. REFER TO SPECIFICATION SECTION 16720 FOR ADDITIONAL REQUIREMENTS.

NORTH HYPOCHLORITE STORAGE BUILDING FIRE ALARM RISER DIAGRAM



NOTE:

1. SEE PLAN VIEW ON DRAWING FA02 FOR QUANTITY AND DEVICE LOCATIONS.
2. REFER TO SPECIFICATION SECTION 16720 FOR ADDITIONAL REQUIREMENTS.

SOUTH HYPOCHLORITE STORAGE BUILDING FIRE ALARM RISER DIAGRAM

HEIGHT REQUIREMENTS

SCALE: N.T.S.

FIRE ALARM SYSTEM NOTES:

1. PROVIDE FULLY OPERABLE ADDRESSABLE, ANALOG FIRE ALARM SYSTEM IN ACCORDANCE TO N.F.P.A. 72 2010 EDITION CODE AND ANY APPLICABLE LOCAL CODES AND ORDINANCES.
2. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ORANGE COUNTY FIRE MARSHAL.
3. PROVIDE ANNUNCIATION AS FOLLOWS:
   A. EACH DEVICE SHALL HAVE A SEPARATE ADDRESS WITH AN ENGLISH READ OUT AT THE LOCAL FIRE ALARM PANEL AND SHALL COMMUNICATE WITH THE MAIN FIRE ALARM PANEL.
4. SYSTEM SHALL BE CONTINUOUSLY SUPERVISED ELECTRICALLY AGAINST COMPONENT-FAILURE, SHALL DETECT OPEN OR SHORT WHICH MIGHT IMPAIR THE FUNCTION OF THE SYSTEM, AND SHALL BE POWER LIMITING.
5. ON ALARM INITIATION MANUAL OR AUTOMATIC, THE FOLLOWING FUNCTIONS SHALL OCCUR:
   A. SOUND ALL AUDIBLE/VISIBLE STROBE LIGHTING ALARMS IN BUILDING.
   B. INDICATE WHICH DEVICE INITIATED ALARM.
   C. ACTIVATE ALARM TO MAIN FIRE ALARM PANEL.
6. SYSTEM SHALL BE FIELD PROGRAMMABLE.
7. HORN STROBE SHALL BE AT LEAST 15 DBA ABOVE THE AMBIENT SOUND AND SHALL HAVE A DURATION OF NO LESS THAN 60 SECONDS MEASURED 5 FOOT ABOVE THE FLOOR IN THE OCCUPIED AREA. THE CONTRACTOR IS REQUIRED TO CERTIFY THE DBA LEVEL WITH AN APPROVED DBA METER PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.
8. ALL COMPONENTS SHALL BEAR UL LABEL FOR FIRE SERVICE USE AND SHALL BE COMPATIBLE.
9. BEFORE THIS INSTALLATION SHALL BE CONSIDERED COMPLETE AND ACCEPTABLE TO THE COUNTY AND ENGINEER, A COMPLETE TEST ON THE SYSTEM SHALL BE PERFORMED, AND A NFPA 72 CERTIFICATE OF COMPLETION SHALL BE RECEIVED FROM THE MANUFACTURER'S REPRESENTATIVE.
10. PROVIDE SIX (6) SETS OF POINT-TO-POINT WIRING DIAGRAMS, OWNER MANUALS, INSTALLATION INSTRUCTIONS, BATTERY CALCULATIONS, AND RECORD DRAWINGS.
11. DEALER SHALL INCLUDE AT NO CHARGE TO THE OWNER A ONE-YEAR FULL MAINTENANCE SERVICE CONTRACT TO PROVIDE ALL MANUFACTURER'S RECOMMENDED SERVICES WITH A MINIMUM OF FOUR INSPECTIONS PER YEAR. THE DEALER SHALL MAKE AVAILABLE TO THE OWNER AFTER THE FIRST YEAR AN EXTENSION OF THE CONTRACT AT THE DEALER'S REGULAR RATE.
12. SIGNALS (HORN/STROBE AND STROBES) TO BE MOUNTED AT 80" AFF. TO BOTTOM OF DEVICE TO MEET ADA.
13. PULL STATIONS TO BE MOUNTED AT 48" AFF.
14. MANUFACTURER SHALL PROVIDE A THREE YEAR WARRANTY ON ALL FIRE ALARM PARTS.

GENERAL NOTES:

1. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL CONDUIT AND CABLE REQUIREMENTS AND INSTALLATION DETAILS.
2. EACH SYSTEM SHALL BE SUPPLIED WITH ALL HARDWARE, SOFTWARE, PROGRAMMING, INTERCONNECTING CABLES, POWER SUPPLIES, WIRING, TERMINATION AND INSTALLATION FOR A COMPLETE AND WORKING SYSTEM.
3. CONTRACTOR SHALL REVIEW THE DRAWINGS OF ALL DISCIPLINES AND APPROVED SHOP DRAWINGS AND COORDINATE THE INSTALLATION OF PANELS, CONDUIT, CABLE AND TERMINATION REQUIREMENTS FOR EQUIPMENT BEING SUPPLIED AS PART OF OTHER SPECIFICATION SECTION.
4. ADJUST LOCATION OF FIRE ALARM DEVICES TO PROVIDE MAXIMUM COVERAGE AND MEET THE REQUIREMENTS OF THE LATEST CODES FOR FIRE ALARM SYSTEMS.
5. PROVIDE CONDUIT AND CABLES AS PER MANUFACTURERS REQUIREMENTS AND APPROVED SHOP DRAWINGS. CABLES SHALL BE RATED FOR THE ENVIRONMENT INSTALLED. WET LOCATION FOR ALL CABLES INSTALLED IN BELOW GRADE CONDUIT SYSTEMS. MINIMUM SIZE CONDUIT 3/4", SEE ELECTRICAL SPECIFICATIONS FOR CONDUIT APPLICATIONS.

SCOPE:

1. PROVIDE AND INSTALL FIRE ALARM SYSTEMS AS SHOWN ON THE PLANS AND SPECIFICATIONS.
2. PROVIDE ALL HARDWARE, SOFTWARE AND PROGRAMMING REQUIRED FOR COMPLETE AND WORKING SYSTEMS.
3. PROVIDE AND INSTALL ALL PANELS, DEVICES, POWER SUPPLIES, CONDUIT, CABLE AND TERMINATIONS AS REQUIRED FOR COMPLETE AND WORKING SYSTEMS.
4. THE FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH THE COUNTY AND THE FIRE MARSHALL AND SHALL MEET THE REQUIREMENTS OF EACH OFFICE. CONTRACTOR SHALL INCLUDE IN HIS BID ALL HARDWARE AND SOFTWARE REQUIRED FOR U.L. CERTIFICATION OF THE SYSTEM.

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REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 4	DD
0	10/31/16	ISSUED FOR BID	RRM

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Designed DD
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LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
FIRE ALARM
NORTH & SOUTH HYPOCHLORITE STORAGE BUILDING
FIRE ALARM RISER DIAGRAMS, LEGEND & NOTES

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO. FA01
SHEET NO.: 42 OF 46

REISS ENGINEERING, INC.
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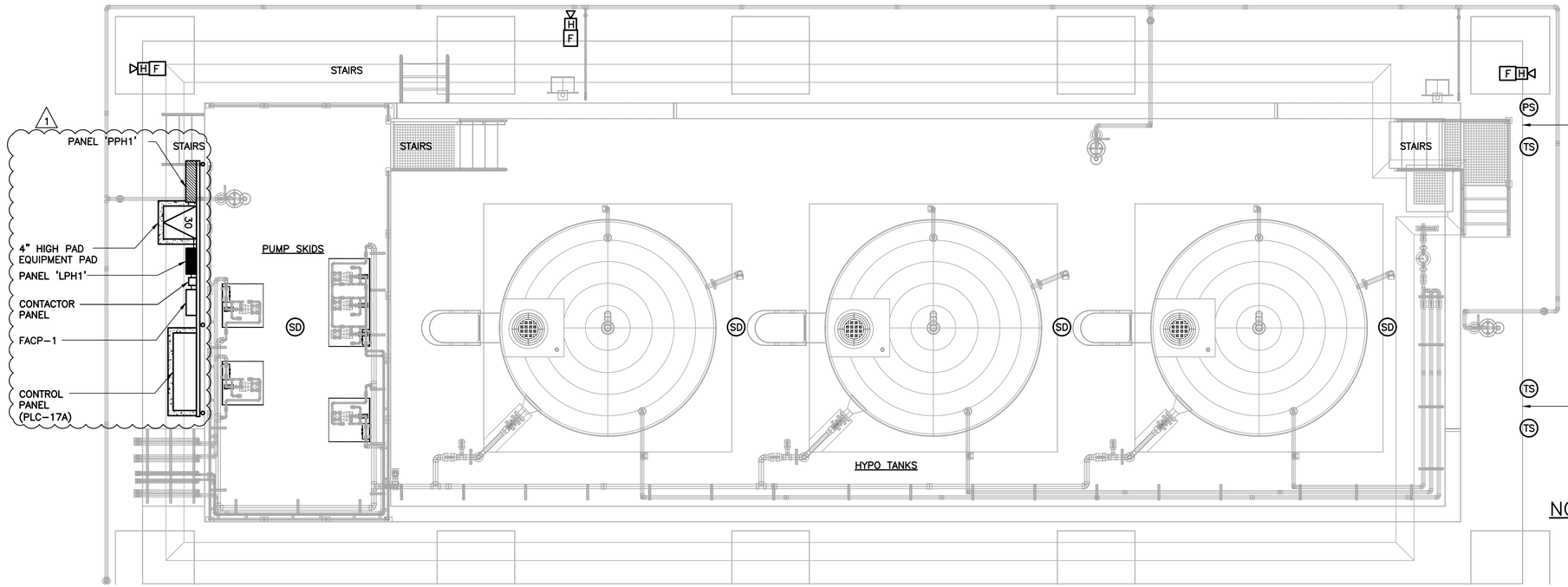


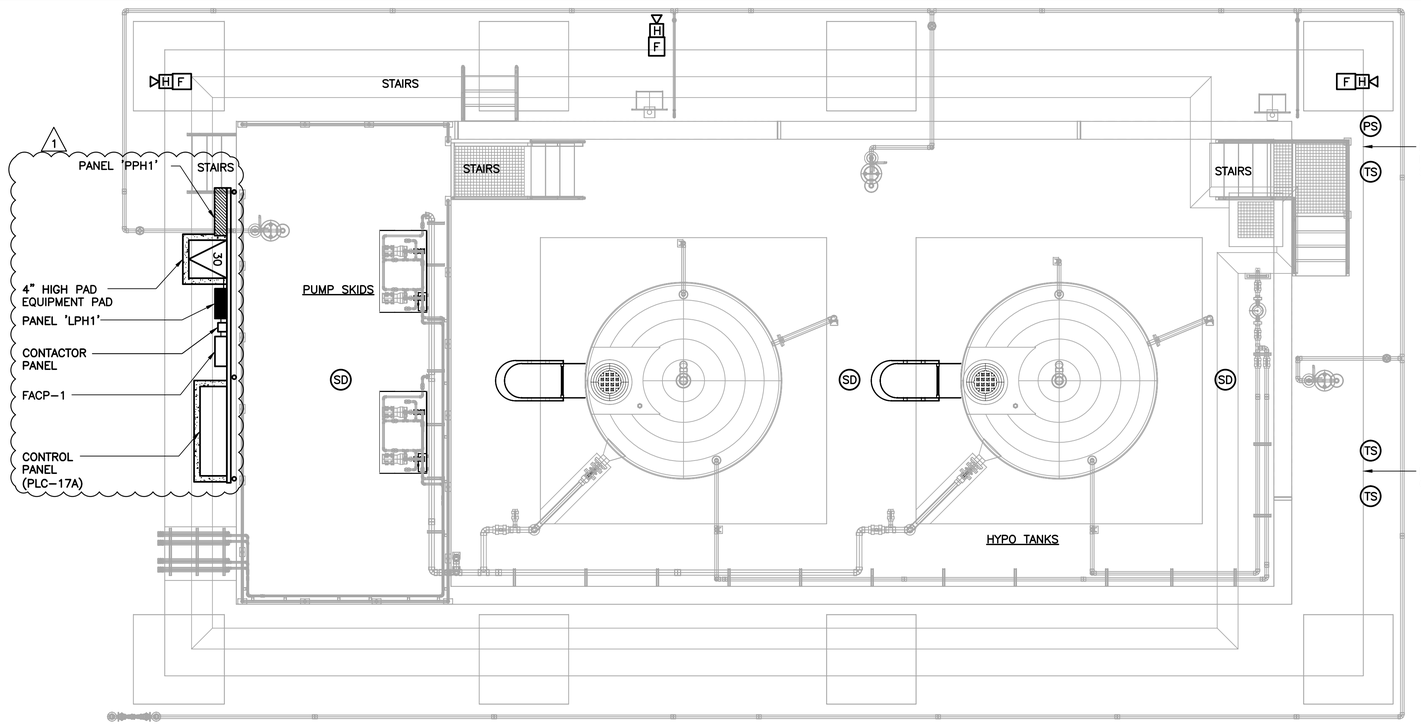
NOTES:

1. SEE DRAWING FA01 FOR CONDUIT AND WIRE REQUIREMENTS.

NORTH HYPOCHLORITE STORAGE BUILDING FIRE ALARM PLAN

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

1 0 1 2 3 7'



NOTES:

1. SEE DRAWING FA01 FOR CONDUIT AND WIRE REQUIREMENTS.

SOUTH HYPOCHLORITE STORAGE BUILDING FIRE ALARM PLAN

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

1 0 1 2 3 7'

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ORANGE COUNTY FLORIDA

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Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS

FIRE ALARM

NORTH & SOUTH SODIUM HYPOCHLORITE STORAGE BUILDING FIRE ALARM PLANS

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO.: FA02
SHEET NO.: 43 OF 46

REISS ENGINEERING, INC.
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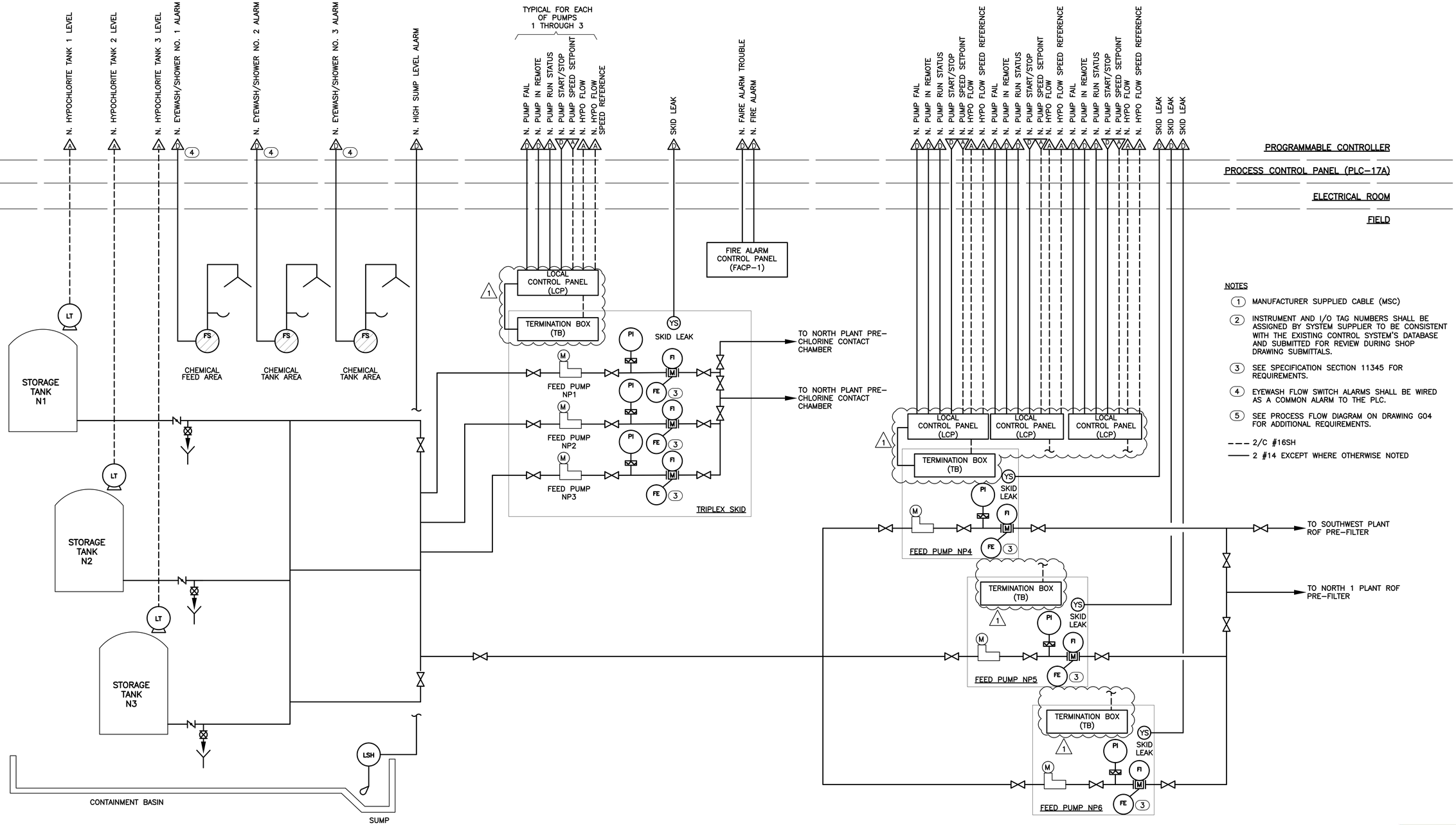
WINTER SPRINGS, FL 32708
(407) 679-5358



NORTH SODIUM HYPOCHLORITE STORAGE & FEED SYSTEM

N.T.S.

NOTES

1. MANUFACTURER SUPPLIED CABLE (MSC)
2. INSTRUMENT AND I/O TAG NUMBERS SHALL BE ASSIGNED BY SYSTEM SUPPLIER TO BE CONSISTENT WITH THE EXISTING CONTROL SYSTEM'S DATABASE AND SUBMITTED FOR REVIEW DURING SHOP DRAWING SUBMITTALS.
3. SEE SPECIFICATION SECTION 11345 FOR REQUIREMENTS.
4. EYEWASH FLOW SWITCH ALARMS SHALL BE WIRED AS A COMMON ALARM TO THE PLC.
5. SEE PROCESS FLOW DIAGRAM ON DRAWING G04 FOR ADDITIONAL REQUIREMENTS.

--- 2/C #16SH
—— 2 #14 EXCEPT WHERE OTHERWISE NOTED

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Reviewed DD
Approved LMR

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ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
INSTRUMENTATION & CONTROLS
NORTH SODIUM HYPOCHLORITE STORAGE P&ID

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO. I02
SHEET NO.: 39 OF 46

REISS ENGINEERING, INC.
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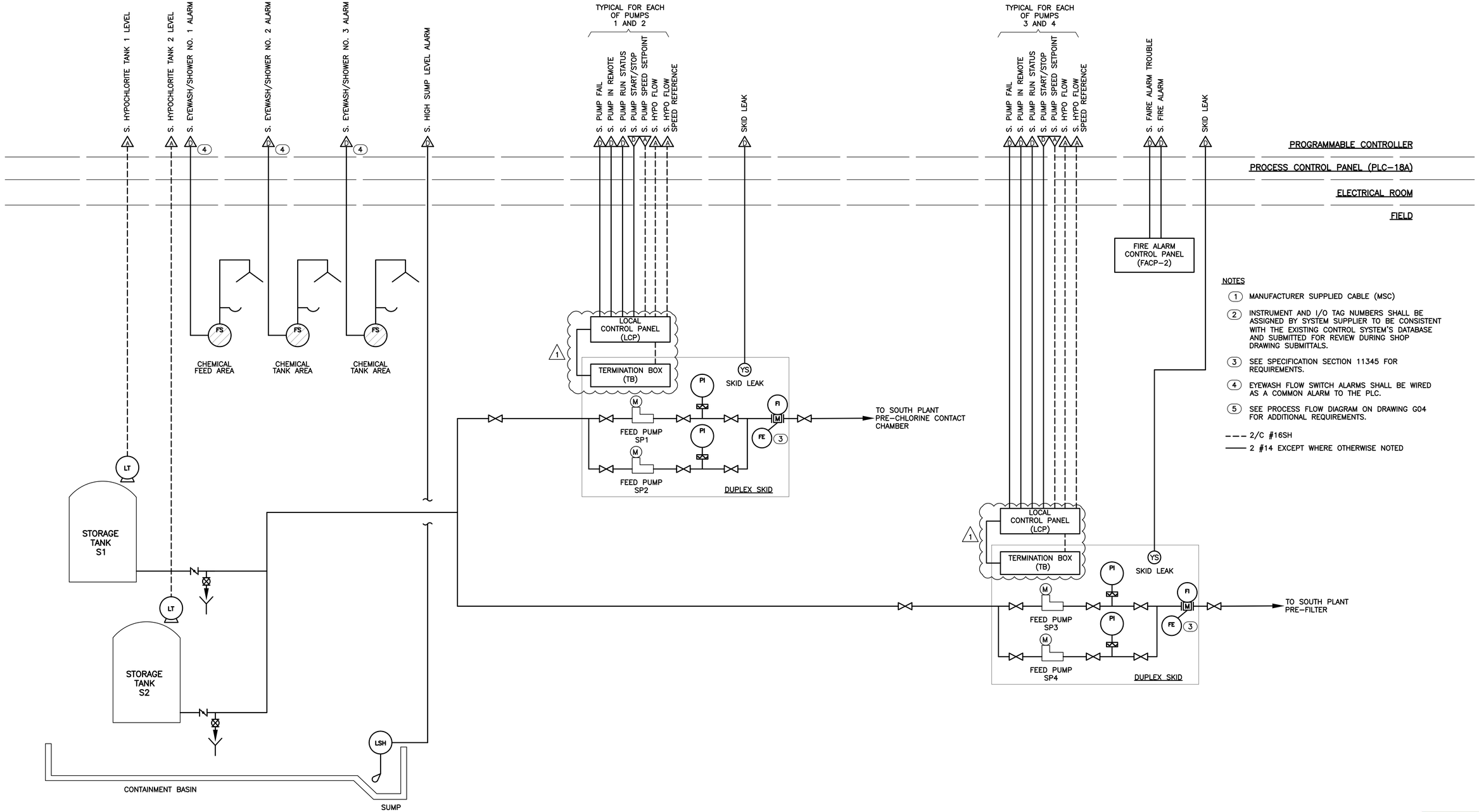

SOUTH SODIUM HYPOCHLORITE STORAGE & FEED SYSTEM

N.T.S.

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Florida P.E. No. 50780
Electrical Design Associates
Certificate of Authorization No. 8079
4763 South Conway Road, Suite E
Orlando, FL 32812

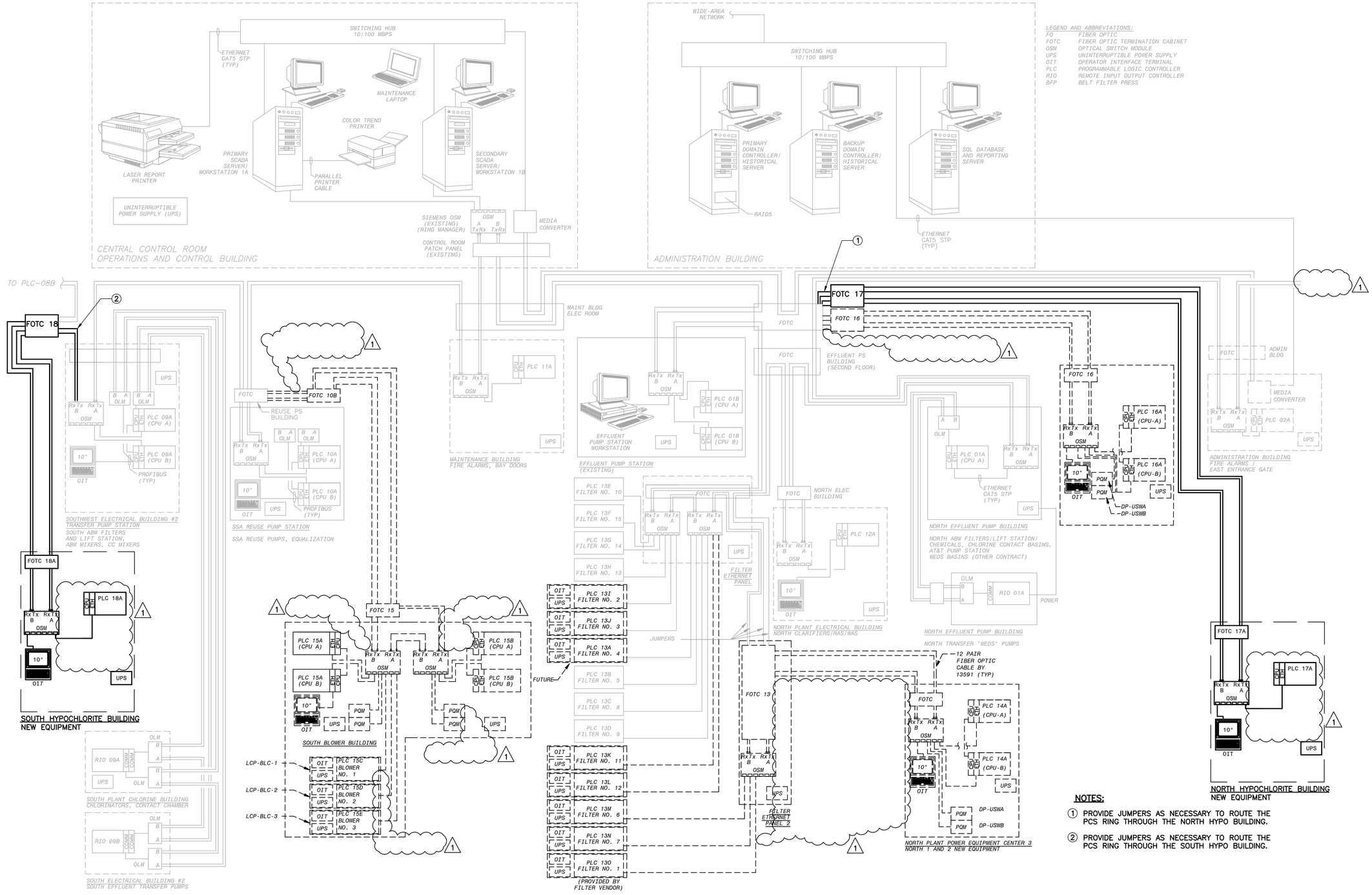
Designed DD
Drawn RRM
Checked LMR
Reviewed DD
Approved LMR

LINE IS 1" AT FULL SIZE

ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
INSTRUMENTATION & CONTROLS
SOUTH SODIUM HYPOCHLORITE STORAGE P&ID

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO. I03
SHEET NO.: 40 OF 46

REISS ENGINEERING, INC.
1016 SPRING VILLAS PT
WINTER SPRINGS, FL 32708
(407) 679-5358



NOTES:

1. PROVIDE JUMPERS AS NECESSARY TO ROUTE THE PCS RING THROUGH THE NORTH HYPO BUILDING.
2. PROVIDE JUMPERS AS NECESSARY TO ROUTE THE PCS RING THROUGH THE SOUTH HYPO BUILDING.

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C.O.A. No. 8079
LILLIAN M. REYES, P.E.
Florida P.E. No. 50780

REV	DATE	DESCRIPTION	BY
1	1/6/17	ADDENDUM NO. 5	JRN
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
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Florida P.E. No. 50780
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Designed DD
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ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS
INSTRUMENTATION & CONTROLS
SYSTEM NETWORK DIAGRAM

PROJECT NO.: 110022
SCALE: NOTED
REVISION: 0
DRAWING NO. I04
SHEET NO.: 41 OF 46

REISS ENGINEERING, INC.
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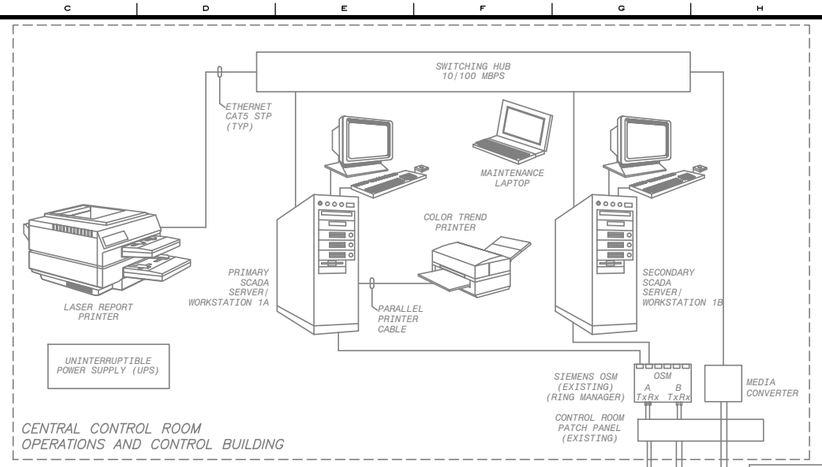
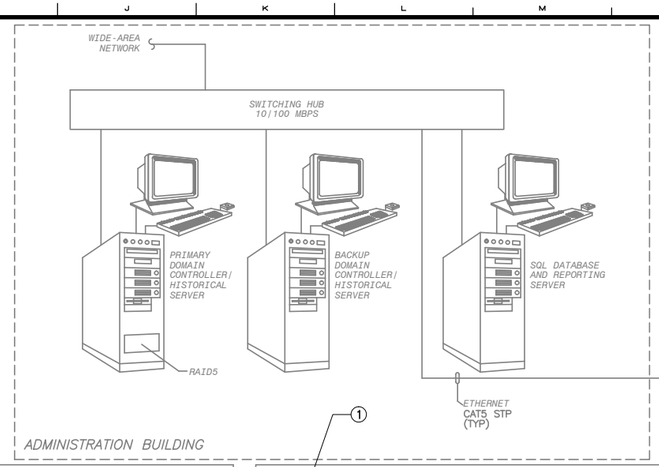
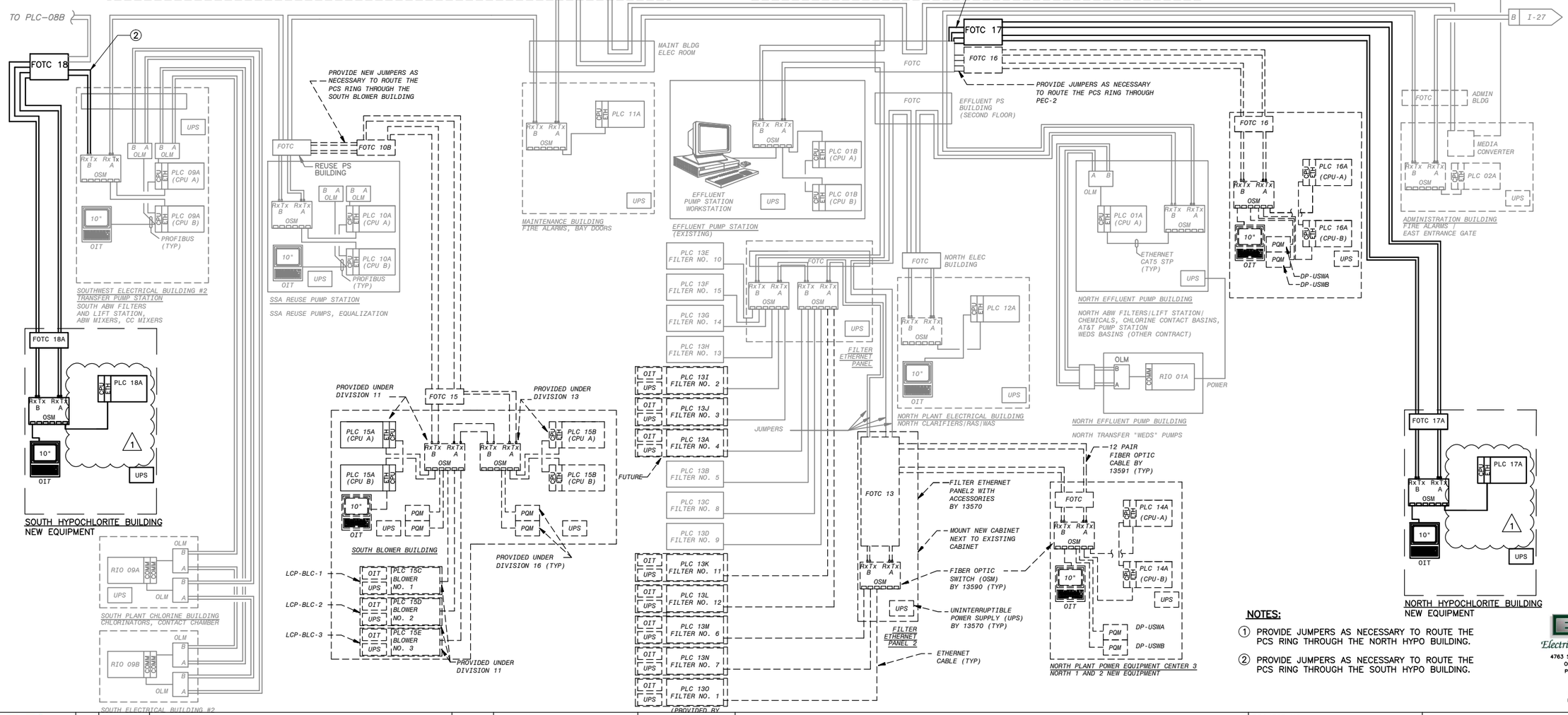




LEGEND AND ABBREVIATIONS:

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
BFP	BELT FILTER PRESS



NOTES:

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2. PROVIDE JUMPERS AS NECESSARY TO ROUTE THE PCS RING THROUGH THE SOUTH HYPO BUILDING.

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REV	DATE	DESCRIPTION	BY
1	1/3/17	ADDENDUM NO. 3	JRN
0	10/31/16	ISSUED FOR BID	RRM

Issue Certification
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ORANGE COUNTY UTILITIES
SWRF HYPOCHLORITE STORAGE AND FEED SYSTEMS

INSTRUMENTATION AND CONTROLS

SYSTEM NETWORK DIAGRAM

PROJECT NO.: 110022
SCALE: NOTED
REVISION: B
DRAWING NO.: 104
SHEET NO.: 41 OF 46

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