



# CITY OF TAMPA

Bob Buckhorn, Mayor

CONTRACT ADMINISTRATION DEPARTMENT

Michael W. Chucran, Director

## ADDENDUM NO. 1

**DATE: August 23, 2016**

Contract 16-C-00021; Harbour Island Pumping Station Rehabilitation

Bidders on the above referenced project are hereby notified that the following addendum is made to the Contract Documents. BIDS TO BE SUBMITTED SHALL CONFORM TO THIS NOTICE.

- Item 1: Replace Section 45 Electrical, with the attached Section 45 Electrical.
- Item 2: Page W46-10, subsection W-46.21, Add after 7 the following: 8. Current measurement range— 0 to 100A, 0 to 150A, and 0 to 200A; jumper selectable.
- Item 3: Replace plan sheet nos. EG3, E6, E9, E12 and E18 with the attached plan sheet nos. EG3, E6, E9, E12 and E18.
- Item 4: Attached for reference is the pre-bid meeting sign-in sheet.

Document links: [Bid Notice](#), [Specifications](#), [Plans](#),

All other provisions of the Contract Documents and Specifications not in conflict with this Addendum shall remain in full force and effect. Questions are to be e-mailed to [ContractAdministration@tampagov.net](mailto:ContractAdministration@tampagov.net).

*Jim Greiner*

Jim Greiner, P.E., Contract Management Supervisor

## SECTION 45 – ELECTRICAL

### W-45.01 Scope of Electrical Work

The work in this section consists of furnishing all labor, materials, equipment and transportation, and performing all operations required to support the installation and commissioning of the electrical portion of the proposed Harbour Island Pumping Station Rehabilitation including, but not limited to, the following:

1. Submit working drawings, parts schedules, and cut-sheets to the Engineer.
2. Furnish and install all electrical equipment, controls, and instrumentation as shown on the Plans and described in the Specifications. This installation includes:
  - a. Remove the existing meter socket, lighting arrestor, transformer, control panel, concrete pedestal and all associated conduit and conductors, as shown on plans.
  - b. Carefully remove the existing DCR SCADA RTU cabinet mounted in the existing controls enclosure. Deliver this RTU package to the City for maintenance inventory.
  - c. Any salvageable materials, as determined by the City Electrical Engineer, shall be delivered, by the Contractor, to the Howard F. Curren AWT Plant. The Contractor shall properly dispose of all other removed equipment.
  - d. Provide and install a new electrical meter socket, lighting arrestor and grounding as shown on plans.
  - e. Prepare the site for the installation of the proposed control equipment.
  - f. Provide and install a new duplex pump control panel (PCP). The pump control panel shall contain control components, indicator lights, and SCAD RTU as shown on the plans and detailed in the specifications.
  - g. Provide and install wet well isolation junction box for Pump Motor connections.
  - h. Provide and install a new duplex motor control panel (MCP). The motor control panel shall contain circuit breakers, reduced voltage soft starters as shown on the plans and detailed in the specifications.
  - i. Provide and install wet well isolation junction box for Instrumentation and Controls connections.
  - j. Provide and install a NEMA 4X, Service Entrance Rated, Fused Double Throw Switch, as shown on plans.
  - k. Provide and Install Emergency Power Connector as shown on the plans.

- l. Reuse existing SCADA antenna mast as indicated.
- m. Provide and install area light as shown on the plans.
- n. Calibrate and adjust setpoints and all sensing devices, alarm devices, and timers. Calibrations and setpoints shall be provided in accordance with manufacturer's recommendations.
- o. Provide and install all necessary conduits and conductors as shown, specified and required.
- p. Furnish and install NEMA 4X junction boxes as shown on plans.
- q. Provide for proper grounding as shown, specified, and required.
- r. All electrical work shall be performed in accordance with 2011 edition of the National Electric Code and Chapter 5 of the City of Tampa Code.
- s. Refer to Civil/Mechanical sheets for bypass pumping requirements. If electrically driven bypass pumps are utilized. The Contractor shall coordinate all temporary electrical service requirements with Tampa Electric Company (TECO).

#### W-45.02 General Requirements

1. Codes

Any conflicts between the Specifications and Drawings or with the regulations of local codes, public utility company, or the National Electrical Code or the National Electrical Safety Code shall be promptly brought to the attention of the Engineer for clarification. All materials and work shall be in accordance with said standards.

2. Contract Documents

The drawings are generally diagrammatic not necessarily showing in detail all of the minor items and it shall not be interpreted to mean that any minor item required may be omitted. The Contractor shall make use of all the data in all of the Contract Documents and shall verify all information at the site which may influence his proposal. The Contractor shall obtain all necessary shop drawings and shall consult manufacturer's representatives during installation start-up as needed.

3. Tests

The Contractor shall provide all necessary instruments and special apparatus to conduct any test that may be required to ensure that the system is free of all improper grounds and short circuits. These tests shall be conducted in the presence

of the Engineer prior to final acceptance.

4. Guarantee

The Contractor shall submit a written guarantee to the City that all electrical work and material provided under this Contract is free from defects for a period of one year after final acceptance of the job. There will be no additional charge to the City to repair or replace any such work, which is found to be defective within the guarantee period.

5. Materials and Equipment

All materials and equipment shall be new and shall bear the manufacturer's name, date of manufacture, trade name, and the UL label. Equipment and materials shall be delivered to the site and stored in original containers, suitably sheltered from the elements, but readily accessible for inspection.

6. Operation and Maintenance Manuals

See Specific Provisions section of the Specifications.

7. Test Documentation

Test all equipment and document tests.

W-45.03 Execution of Work

All work shall be executed in a neat and workmanlike manner by experienced and capable electricians so as to present a neat installation upon completion.

Electrical work shall be coordinated so as not to interfere with or delay other construction operations.

The ends of all conduits shall be carefully reamed free from burrs after threading and before installation. All cuts shall be made square. All joints shall be made up tight. Care shall be taken to see that all control and power conduits are grounded as required by the NEC and Chapter 5 of the City of Tampa Code, Building and Construction Regulations.

\* \* \*

**GENERAL NOTES**

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
2. ALL CONDUCTORS SHALL BE STRANDED COPPER, #12 AWG MIN. W/XHHW-2 INSULATION, UNLESS OTHERWISE NOTED.
3. ALL WIRING SHALL BE IDENTIFIED W/NUMBERS AT ALL TERMINALS AND ON WIRING DIAGRAMS.
4. VERIFY ALL MECHANICAL EQUIPMENT SIZES AND RATING PRIOR TO CONNECTING.
5. FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.
6. PLANS ARE DESIGNED IN ACCORDANCE WITH THE 5TH EDITION 2014 OF THE FLORIDA BUILDING CODE AND THE 2011 EDITION OF THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL ENSURE THAT ALL ELECTRICAL WORK PERFORMED SHALL ADHERE TO THE SAME ACCORDANCE AND ALL APPLICABLE LOCAL ORDINANCES.
7. ALL THREADED CONNECTIONS SHALL BE COATED W/ ALUMA-SHIELD ANTI-SIEZE COMPOUND MANUFACTURED BY THOMAS & BETTS (T & B) OR EQUAL.
8. ALL PANELS, DISCONNECTS, SWITCHES, AND EQUIPMENT COVERPLATES SHALL BE LABELED W/ NAMEPLATES. NAMEPLATES SHALL BE THREE-PLY PHENOLIC BLACK-WHITE-BLACK ENGRAVED THROUGH THE FIRST BLACK LAYER. LETTERING SHALL BE 0.5 CM (3/16") MIN. EDGE OF NAMEPLATE SHALL BE BEVELED 45 DEG.
9. ALL CONDUIT SHALL BE SUPPORTED AT MAXIMUM 5'-0" INTERVALS.
10. ALL CIRCUITS SHALL HAVE A PROPERLY SIZED GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT W/ POWER CONDUCTORS.
11. ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS, NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNED IN THE DRAWINGS.
12. NEATLY COIL ALL SPARE CONDUCTORS & TAPE W/ VINYL ELECTRICAL TAPE (SCOTCH 33+)
13. PROVIDE A MINIMUM OF 3'-6" CLEARANCE IN FRONT OF ALL ELECTRICAL EQUIPMENT IN ACCORDANCE W/ ARTICLE 110 OF THE NEC.
14. ALL FASTENING HARDWARE (SCREW, BOLTS NUTS ETC.) SHALL BE 316-STAINLESS STEEL. FASTENING HARDWARE CONSTRUCTED OF FERROUS MATERIAL ARE NOT ACCEPTABLE.
15. EXPOSED CONDUITS SHALL BE NON-COATED RIGID ALUMINUM CONDUIT, UNLESS OTHERWISE NOTED (UON), INSTALL PVC COATED RIGID ALUMINUM CONDUIT TO THE WET WELL, UNLESS OTHERWISE NOTED (UON).
16. DIRECT BURIED AND CONCRETE ENCASED CONDUIT SHALL BE SCHEDULE 80 PVC, UNLESS OTHERWISE NOTED. TRANSITIONS FROM ABOVE-GRADE RIGID ALUMINUM CONDUIT TO NONMETALLIC CONDUIT SHALL BE ACCOMPLISHED WITH A THREADED ADAPTER. RIGID ALUMINUM CONDUIT INSTALLED ABOVE GRADE AND EXTENDING BELOW GRADE SHALL INCLUDE THE FIRST 90° ELBOW. ALL RIGID ALUMINUM CONDUITS EXTENDING BELOW GRADE SHALL BE COATED WITH TWO COATS OF ASPHALTUM-TYPE PAINT ALONG ITS ENTIRE LENGTH BELOW GRADE AND EXTENDING 6" ABOVE GRADE OR ABOVE THE TOP OF THE FINISHED SLAB.
17. ABOVE GRADE INDOOR, AND NON-WASHDOWN AREAS, RIGID ALUMINUM CONDUIT CONNECTIONS TO CONTROL BOXES, ETC. SHALL BE MADE WITH ALUMINUM DOUBLE LOCKNUTS AND BUSHINGS. TURN DOWN ON THREADS TO SOLIDLY CONNECT RACEWAY TO BOX OR ENCLOSURE.
18. ALUMINUM WATERTIGHT HUBS (MYERS HUBS) SHALL BE USED FOR CONNECTIONS TO CONTROL BOXES, ETC. MOUNTED OUTDOORS, BELOW GRADE, OR WASHDOWN AREAS.
19. A 316-STAINLESS STEEL CHANNEL ERECTOR SYSTEM SHALL BE USED TO SUPPORT ALL CONDUITS, BOXES ETC. USE 316 STAINLESS STEEL MOUNTING HARDWARE.
20. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY TO EXECUTE THE PROPOSED INSTALLATIONS.
21. ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR THE CONTRACTORS REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
22. PULL BOXES SHALL BE INSTALLED AS NECESSARY TO FACILITATE WIRE PULLS AND AVOID EXCESSIVE PULLING TENSION ON WIRING. IN NO CASE SHALL CONDUIT LENGTHS EXCEED 150' OR THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) WITHOUT A PULL BOX. PULL BOXES SHALL BE SIZED IN ACCORDANCE WITH ARTICLE 314 OF THE NEC.
23. THE WET WELL CLASSIFICATION IS CLASS 1, DIVISION 1, GROUP D, (HAZARDOUS AREA) NEC CHAPTER 5 IS APPLICABLE FOR INTERFACING WET WELL AND THE CONTROL ENCLOSURE.
24. ALL ELECTRICAL WORK SHALL BE PERFORMED WITHIN 2011 NEC AND CITY OF TAMPA/ HILLSBOROUGH COUNTY CODES AND SHALL BE INSPECTED BY CITY OF TAMPA/ HILLSBOROUGH COUNTY ELECTRICAL INSPECTORS AS APPLICABLE.
25. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED AND AS SPECIFIED, OR AS APPROVED BY THE ENGINEER. THE PANEL BUILDER SHALL BE UL-508A CERTIFIED AND A UL LABEL SHALL BE ATTACHED TO THE INSIDE OF THE ENCLOSURE. THE DOUBLE THROW DISCONNECT MUST BE LABELED "SUITABLE FOR USE AS SERVICE EQUIPMENT."
26. THE ENCLOSURES SHALL BE NEMA 4X, THEY SHALL BE CONSTRUCTED OF MINIMUM 14 GAUGE 304SS, THEY SHALL HAVE RAL 9003 WHITE POWDER COAT AND THE CLOSING SURFACES SHALL HAVE ROLLED LIPS, PROVIDE HINGED DOORS WITH 3-POINT LATCHED AND LOCKABLE HANDLES.
27. ALL COMPONENTS TO BE MOUNTED ON PANEL USING TAPPED HOLES.
28. ALL WIRING SHALL BE COPPER, ALL CONTROL WIRING SHALL BE STRANDED XHHW-2 COPPER, MINIMUM AWG #14 AND SHALL HAVE SPADE LUG TERMINATIONS.
29. ALARM FLOAT SWITCH WILL BE SUPPLIED BY THE CITY, BUT INSTALLED BY CONTRACTOR.
30. DIMENSIONS, ITEMS, OR ELEVATIONS MARKED "\*" TO BE DETERMINED AFTER EQUIPMENT SELECTION.
31. ALL MECHANICAL CONNECTORS SHALL BE TORQUED PER NEC, UL OR MANUFACTURES SPECIFICATIONS.
32. INSTALL LAMINATED SCHEMATIC, LAMINATED DATA SHEET AND LAMINATED SOFT STARTER SETUP PARAMETERS ON BACK FACE OF THE DOOR INSIDE THE ENCLOSURE.
33. ENSURE THAT LINE CONNECTIONS TO METER SOCKET PROVIDE CORRECT MOTOR ROTATION.
34. CONDUCTORS WITHIN THE ENCLOSURE AND NOT ROUTED IN WIREWAYS, SHALL BE SECURED TO THE BACK PANEL WITH MECHANICAL FASTENERS, FASTENERS SECURED WITH ADHESIVE ARE NOT ACCEPTABLE.
35. ALL HINGED SURFACES SHALL BE GROUNDED WITH A BONDING JUMPER SECURED TO THE ENCLOSURE OR BACKPANEL.
36. THE PCSR SHALL BE MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING SERVICES INC. SCADAONE, LLC., OR REVERE CONTROL SYSTEMS. THE PUMPING STATION CONTRACTOR SHALL COORDINATE HIS EFFORTS WITH DCR, SCADAONE, OR REVERE CONTROL SYSTEMS TO ENSURE SYSTEM COMPATIBILITY. THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE DUPLEX CONTROL SYSTEM/SCADA PACKAGE, AS PROGRAMMED BY DCR, SCADAONE, OR REVERE CONTROLS - THE EXISTING PUMPING STATION DCR CONTROLS SHALL REVERT TO THE CITY AS A SPARE.
37. A WET WELL LEVEL DETECTION SYSTEM SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. THE OUTPUT SHALL BE A LINEAR 4-20ma SIGNAL WITH RANGE AND CALIBRATION SUITABLE FOR THIS APPLICATION. THE SYSTEM SHALL BE OF THE ULTRASONIC TYPE-PULSAR, INC. MODEL dB10 W/ BLACKBOX 130 TRANSMITTER. CITY INSTRUMENTATION PERSONNEL WILL ASSIST THE CONTRACTOR WITH SPECIFYING THE TRANSDUCER MOUNTING LOCATION AND CALIBRATION. THE dB10 TRANSDUCER SHALL BE MOUNTED USING A 2 1/2" x 1/4" S.S. BRACKET, SEE dB10 MOUNTING BRACKET DETAIL, SHEET E21.
38. PROVIDE 1/4" MINIMUM THICKNESS LEXAN SHIELDS OVER POWER DISTRIBUTION BLOCK AND OTHER EXPOSED CABLE TERMINATIONS.
39. XHHW-2 CONDUCTORS (3-#6 AWG + 1-#8 AWG GND. CU FOR EACH MOTOR) SHALL EXTEND FROM THE CONTROL PANEL TO ASSOCIATED HIGH VOLTAGE JUNCTION BOX. PROVIDE SEAL-OFF BETWEEN CONTROL PANEL AND JUNCTION BOX AS INDICATED. THE SHOWN SEAL-OFFS SHALL BE ALUMINUM BODY, CROUSE-HINDS, OR EQUIVALENT.
40. ALUMINUM CONDUIT SURFACE THAT IS IN CONTACT WITH SOIL OR CONCRETE SHALL BE COATED WITH TWO COATS ASPALT VARNISH (FED. SPEC. TT-V-51) EXTENDING 4" BEYOND FINAL CONTACT POINT.
41. STAINLESS STEEL HANGERS TO SUPPORT THE EXCESS LENGTH OF MOTOR CABLES SHALL BE INSTALLED IN THE WET WELL. THESE HANGERS SHALL BE LOCATED IN A SEPARATE AREA FROM THE HANGERS SUPPORTING THE PUMP CHAINS.

**SCOPE OF WORK:**

1. THE SERVICE VOLTAGE TO THIS FACILITY SHALL REMAIN 277/480 VAC. 3-PHASE 4-WIRE, WYE.
2. REMOVE THE EXISTING METER SOCKET, LIGHTING ARRESTOR, TRANSFORMER, CONTROL PANEL, CONCRETE PEDESTAL AND ALL ASSOCIATED CONDUIT AND CONDUCTORS, AS SHOWN ON PLANS.
3. CAREFULLY REMOVE THE EXISTING DCR SCADA RTU CABINET MOUNTED IN THE EXISTING CONTROLS ENCLOSURE. DELIVER THIS RTU PACKAGE TO THE CITY FOR MAINTENANCE INVENTORY.
4. ANY SALVAGEABLE MATERIALS, AS DETERMINED BY THE ENGINEER, SHALL BE DELIVERED, BY THE CONTRACTOR, TO THE HOWARD F. CURREN AWTP. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER REMOVED EQUIPMENT.
5. PROVIDE AND INSTALL A NEW ELECTRICAL METER SOCKET, LIGHTING ARRESTOR AND GROUNDING AS SHOWN ON PLAN.
6. PREPARE THE SITE FOR THE INSTALLATION OF THE PROPOSED CONTROL EQUIPMENT.
7. PROVIDE AND INSTALL A NEW DUPLEX PUMP CONTROL PANEL. THE PUMP CONTROL PANEL SHALL CONTAIN CONTROL COMPONENTS, INDICATOR LIGHTS, AND SCADA RTU AS SHOWN ON THE PLANS AND DETAILED IN THE SPECIFICATIONS.
- △ 8. PROVIDE AND INSTALL WET WELL ISOLATION JUNCTION BOX FOR PUMP MOTOR CONNECTIONS.
9. PROVIDE AND INSTALL A NEW DUPLEX MOTOR CONTROL PANEL. THE MOTOR CONTROL PANEL SHALL CONTAIN CIRCUIT BREAKERS, REDUCED VOLTAGE SOFT STARTERS AS SHOWN ON THE PLANS AND DETAILED IN THE SPECIFICATIONS.
- △ 10. PROVIDE AND INSTALL WET WELL ISOLATION BOX FOR INSTRUMENTATION AND CONTROL CONNECTIONS.
11. PROVIDE AND INSTALL A NEMA 4X, SERVICE ENTRANCE RATED, FUSED DOUBLE THROW SWITCH, AS SHOWN ON PLANS.
- △ 12. PROVIDE AND INSTALL EMERGENCY POWER CONNECTOR AS SHOWN ON THE PLANS.
13. REUSE EXISTING SCADA ANTENNA MAST AS INDICATED.
- △ 14. PROVIDE AND INSTALL AREA LIGHT AS SHOWN ON THE PLANS.
15. CALIBRATE AND ADJUST SETPOINTS FOR ALL SENSING DEVICES, ALARM DEVICES, AND TIMERS. CALIBRATION AND SETPOINTS SHALL BE PROVIDED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
16. FURNISH AND INSTALL NEMA 4X JUNCTION BOXES AS SHOWN ON THE PLANS.
17. PROVIDE FOR PROPER GROUNDING AS SHOWN, SPECIFIED AND REQUIRED.
18. PROVIDE AND INSTALL ALL NECESSARY CONDUITS AND CONDUCTORS AS SHOWN, SPECIFIED AND REQUIRED.
19. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2011 EDITION OF THE NATIONAL ELECTRIC CODE AND CHAPTER 5 OF THE CITY OF TAMPA CODE.
20. REFER TO CIVIL/MECHANICAL SHEETS FOR BYPASS PUMPING REQUIREMENTS. IF ELECTRICALLY DRIVEN BYPASS PUMPS ARE UTILIZED, THE CONTRACTOR SHALL COORDINATE ALL TEMPORARY ELECTRICAL SERVICE REQUIREMENTS WITH TAMPA ELECTRIC COMPANY (TECO). ANY COSTS ASSOCIATED WITH TEMPORARY ELECTRIC POWER ARE TO BE INCLUDED IN THE LUMP SUM PRICE AND NO SEPERATE PAYMENT WILL BE MADE.

User: ss13 Drawing Name: K:\Wastewater\Projects\Harbour Island PS\Design\Plans\Drafting\DWG\Harbour Island PS Rehabilitation.dwg Layout - Aug 19, 2016 - 9:08am

ROMAN D. KORCHAK, P.E., #42626  
ELECTRICAL DIVISION HEAD  
WASTEWATER DEPARTMENT

No.	DATE	REVISIONS
3		
2		
△	8/19/16	REVISION I

DES: LRG  
DRN: JHJ  
CKD:  
DATE: 6/30/16

**CITY of TAMPA**  
**WASTEWATER DEPARTMENT**

**HARBOUR ISLAND PUMPING REHABILITATION**  
**GENERAL NOTES & SCOPE OF WORK**

W.O. 0000  
SHEET  
**EG3**

**KEYED NOTES:**

- ① PROVIDE AND INSTALL THREE (3) 6" X 6" X 9' REINFORCED SQUARE CONCRETE POSTS.
- △ ② PROVIDE AND INSTALL 1-5/8" X 1-5/8" 316 STAINLESS STEEL UNISTRUT WITH 316 STAINLESS STEEL HARDWARE. NOTE: INSTALL ALL BOLTS FOR UNISTRUT COMPLETELY THROUGH CONCRETE POSTS.
- △ ③ PROVIDE AND INSTALL HEAVY DUTY, DOUBLE THROW, FUSIBLE SWITCH, 3-POLE, 600 VAC, 200 AMP IN NEMA 4X TYPE ENCLOSURE, 600 VOLT, DUAL-ELEMENT, TIME-DELAY CLASS RK5 FUSES; SWITCH--EATON DT364FWK, DT200NK-NEUTRAL KIT, DS200GK-GROUND LUG KIT, DS46FK-"R" FUSE ADAPTER KIT.
- ④ PROVIDE AND INSTALL PUMP CONTROL CABINET. REFER TO DETAIL ON SHEET E7.
- ⑤ PROVIDE AND INSTALL MOTOR CONTROL CABINET. REFER TO DETAIL ON SHEET E8.
- △ ⑥ PUMP MOTOR CONNECTIONS J.B.-USED AS A DEMARCATION BOX TO PROVIDE ISOLATION BETWEEN THE WET WELL AND PUMP CONTROLS. PROVIDE AND INSTALL A 12"x12"x6" NEMA 4X, STAINLESS STEEL JUNCTION BOX WITH HINGED DOOR, WIEGMANN #BN4121206CHSS. INSTALL A STAINLESS STEEL LOUVER PLATE KIT (4.75"x 4.5") ON SIDE OF BOX TO PROVIDE NATURAL ASPIRATION, WIEGMANN #WAVK0304SSA. TERMINATIONS SHALL BE MADE USING SPLIT BOLTS. CAREFULLY TAPE CONNECTIONS TO PROVIDE A 600V INSULATION LEVEL (TYPICAL FOR EACH CONDUCTOR) SEE SHEET E19 FOR JB DETAILS.
- ⑦ PROVIDE AND INSTALL CROUSE-HINDS EYS TYPE SEALS W/CHICO COMPOUNDS.
- ⑧ REUSE EXISTING SUBMERSIBLE PUMP POWER CABLES. INTERCEPT AND EXTEND EXISTING 2" CONDUITS TO WETWELL TO INSTALL, SEE GENERAL NOTE 16, SHEET EG3.
- ⑨ PROVIDE AND INSTALL (3)-#6 XHHW-2 CU + (1)-#8 XHHW-2 CU GND + (2)-#12 XHHW-2 CU (LEAK/TEMP) IN 1" CONDUIT FOR SUBMERSIBLE PUMP POWER.
- ⑩ PROVIDE AND INSTALL (3)-#14 XHHW-2 CU + (1)-#14 XHHW-2 CU GND + (1)-3/C-#18 TWISTED SHIELDED CABLE IN 1" CONDUIT FOR FLOAT AND WET WELL LEVEL TRANSMITTER.
- ⑪ PROVIDE AND INSTALL METER SOCKET IN ALUMINUM ENCLOSURE.
- ⑫ MANUFACTURER SUPPLIED CABLES FOR FLOAT SWITCH AND WET WELL LEVEL TRANSMITTER INSTALL IN 2" CONDUIT TO WET WELL FROM JUNCTION BOX. CORE DRILL WET WELL AS NEEDED TO INSTALL, PATCH SEAL WITH APPROVED PRODUCT.
- ⑬ PROVIDE AND INSTALL 1" CONDUIT FOR ANTENNA COAXIAL CABLE REFER TO SHEET E1 FOR CONTINUATION.
- ⑭ PROVIDE AND INSTALL (3)-#2/0 THWN CU, (1)-#4 THWN NEU, AND (1)-#4 THWN CU GND. IN 2" CONDUIT.
- ⑮ PROVIDE AND INSTALL ALUMINUM CONDUIT STRAPS (TYPICAL).
- ⑯ EXISTING 2" CONDUIT TO WETWELL FOR BUBBLER. VERIFY LOCATION.
- ⑰ FOR UNDERGROUND RACEWAYS TO WETWELL THE CONTRACTOR SHALL UTILIZE PVC COATED ALUMINUM.
- ⑱ PROVIDE AND INSTALL (3)-#2/0 AWG + (1)-#4 NEU. IN 2" CONDUIT TO EXISTING TECO PAD MOUNTED TRANSFORMER. SEE SHEET ES2 FOR CONTINUATION.
- ⑲ PROVIDE AND INSTALL AN EMERGENCY CONNECTOR.
- ⑳ PROVIDE AND INSTALL (3)-#12 XHHW-2 CU + (1)# 12 XHHW-2 CU GND. IN 3/4" C.
- ㉑ PROVIDE AND INSTALL (26)-#12 XHHW-2 CU + (1)# 12 XHHW-2 CU GND. IN 1-1/4" C. FOR 120VAC CONTROL SIGNALS. REFER TO MCP TO PCP INTERCONNECTIONS WIRING DIAGRAM ON SHEET E9.
- ㉒ PROVIDE AND INSTALL (15)-#14 XHHW-2 CU + (1)-#14 XHHW-2 CU GND. IN 1" C. FOR 24V DC CONTROL SIGNALS, REFER TO MCP TO PCP INTERCONNECTION WIRING DIAGRAM ON SHEET E14.
- ㉓ PROVIDE AND INSTALL (1)-#12 XHHW-2 CU NUE. + (1)#12 XHHW-2 CU GND. IN 3/4" CONDUIT FROM MOTOR CONTROLS PANEL TO PUMP CONTROL PANEL FOR 120V POWER CIRCUIT.
- ㉔ PROVIDE AND INSTALL (3)-#2/0 THWN CU + (1)-#4 THWN NEU. IN 2" CONDUIT.
- △ ㉕ INSTRUMENTATION AND CONTROLS J.B.-USED AS DEMARCATION BOX TO PROVIDE ISOLATION BETWEEN THE WET WELL AND PUMP CONTROLS. PROVIDE AND INSTALL A 12"x12"x6" NEMA 4X, STAINLESS STEEL JUNCTION BOX WITH HINGED DOOR, WIEGMANN #BN4121206CHSS. INSTALL A STAINLESS STEEL LOUVER PLATE KIT (4.75"x4.5") ON SIDE OF BOX TO PROVIDE NATURAL ASPIRATION, WIEGMANN #WAVK0304SSA. TERMINATIONS SHALL BE MADE WITH UNDERGROUND WIRE CONNECTORS - IDEAL MODEL #60 - (TYPICAL FOR EACH CONDUCTOR). SEE SHEET E19 FOR JB DETAILS.
- ㉖ PROVIDE DUCT SEALING COMPOUND IN ALL CONDUITS EXTENDING TO THE WET WELL.
- ㉗ PROVIDE AND INSTALL (3)-#3 XHHW-2 CU + (1)-#4 XHHW-2 CU NEU + (1)-#6 XHHW-2 CU GND IN 1-1/4" CONDUIT FOR EMERGENCY CONNECTOR.
- ㉘ PROVIDE AND INSTALL A 3/4" CONDUIT TO PROPOSED AREA LIGHT, (AL), SEE SHT. E21 FOR DETAILS.
- ㉙ PROVIDE AND INSTALL A 3/4" SCHEDULE 80 PVC CONDUIT FOR #4 AWG GROUNDING CONDUCTOR.
- ㉚ PROPOSED GROUNDING CONDUCTOR. APPROVED GROUND CLAMPS SHALL BE ATTACHED TO TWO APPROVED GROUNDING RODS (MINIMUM SPACING 6'-0") GROUNDING CONDUCTOR SHALL BE AWG #4 MIN. BARE STRANDED COPPER, SEE SHEET E20 FOR DETAILS.
- ㉛ PROVIDE AND INSTALL WATER-TIGHT / DUST-TIGHT (TYP.) MYERS HUB AND UNION (TYP.).

FOR USE WITH SHEETS EI THRU E5

User: ss13 Drawing Name: K:\WasteWater Projects\Harbour Island PS\Design\Plans\Drafting\DWG\Harbour Island PS Rehabilitation.dwg Layout: Aug 19, 2016 - 9:16am

ROMAN D. KORCHAK, P.E., #42626  
ELECTRICAL DIVISION HEAD  
WASTEWATER DEPARTMENT

No.	DATE	REVISIONS
3		
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△	8/19/16	REVISION I

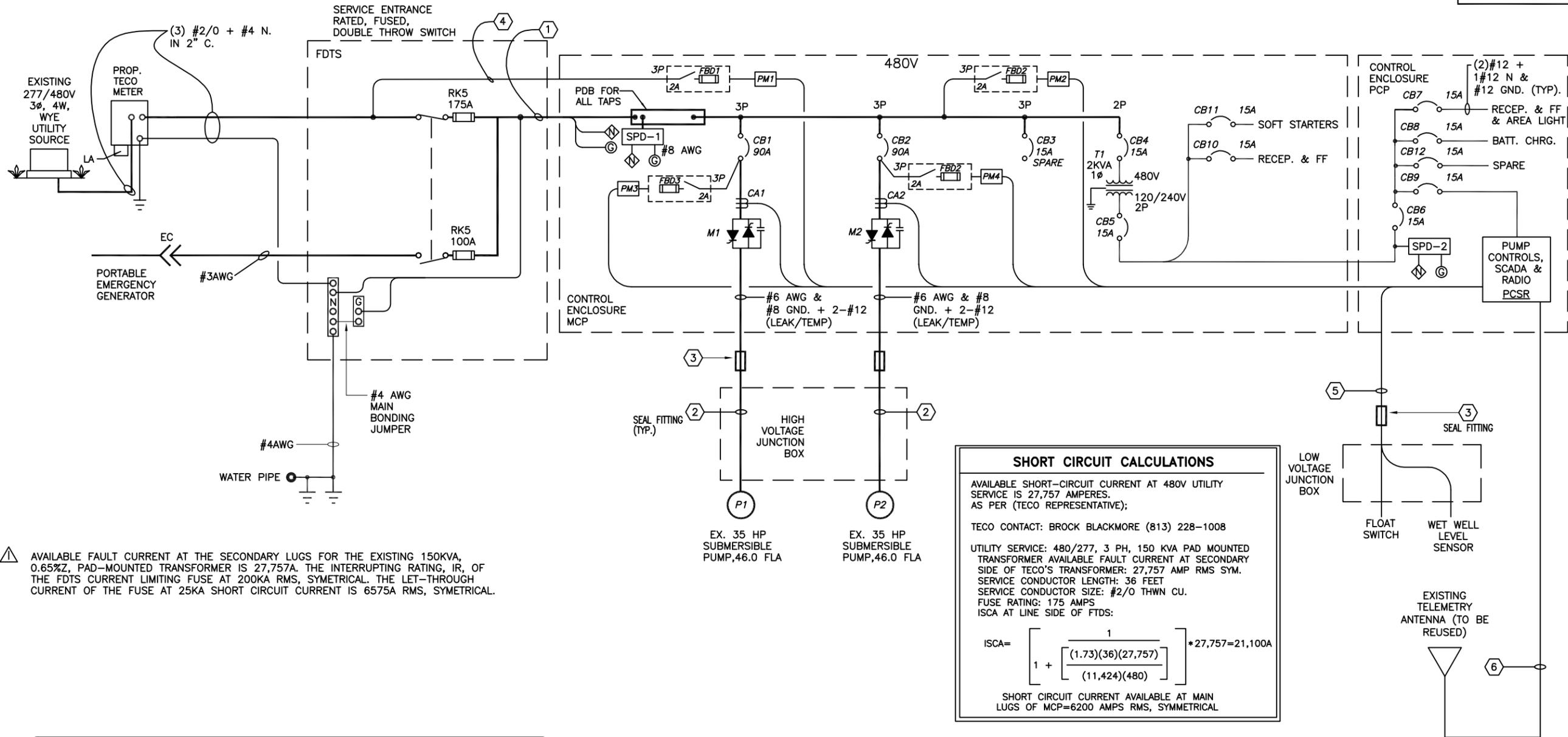
DES: LRG  
DRN: JHJ  
CKD:  
DATE: 6/30/16

**CITY of TAMPA**  
**WASTEWATER DEPARTMENT**

**HARBOUR ISLAND PS REHABILITATION**  
**KEYED NOTES**

W.O. 0000  
SHEET  
**E6**

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▲ AVAILABLE FAULT CURRENT AT THE SECONDARY LUGS FOR THE EXISTING 150KVA, 0.65%Z, PAD-MOUNTED TRANSFORMER IS 27,757A. THE INTERRUPTING RATING, IR, OF THE FDTS CURRENT LIMITING FUSE AT 200KA RMS, SYMMETRICAL. THE LET-THROUGH CURRENT OF THE FUSE AT 25KA SHORT CIRCUIT CURRENT IS 6575A RMS, SYMMETRICAL.

### SHORT CIRCUIT CALCULATIONS

AVAILABLE SHORT-CIRCUIT CURRENT AT 480V UTILITY SERVICE IS 27,757 AMPERES. AS PER (TECO REPRESENTATIVE);

TECO CONTACT: BROCK BLACKMORE (813) 228-1008

UTILITY SERVICE: 480/277, 3 PH, 150 KVA PAD MOUNTED TRANSFORMER AVAILABLE FAULT CURRENT AT SECONDARY SIDE OF TECO'S TRANSFORMER: 27,757 AMP RMS SYM. SERVICE CONDUCTOR LENGTH: 36 FEET SERVICE CONDUCTOR SIZE: #2/0 THWN CU. FUSE RATING: 175 AMPS ISCA AT LINE SIDE OF FDTS:

$$ISCA = \left[ 1 + \frac{1}{\frac{(1.73)(36)(27,757)}{(11,424)(480)}} \right] * 27,757 = 21,100A$$

SHORT CIRCUIT CURRENT AVAILABLE AT MAIN LUGS OF MCP=6200 AMPS RMS, SYMMETRICAL

ELECTRICAL SERVICE LOAD SUMMARY					
480 VAC, 3Ø, 4W					
LOAD	CONNECTED	DEMAND	APPROX. PHASE CURRENTS		
			L1	L2	L3
EX. PUMP #1	38.2 KVA	38.2 KVA	46.0 A	46.0 A	46.0 A
EX. PUMP #2	38.2 KVA	38.2 KVA	46.0 A	46.0 A	46.0 A
PUMP CONTROL PANEL	2.0 KVA	2.0 KVA	0.0 A	4.0 A	4.0 A
<b>TOTAL</b>	<b>78.4 KVA</b>	<b>78.4 KVA</b>	<b>92.0 A</b>	<b>96.0 A</b>	<b>96.0 A</b>

- ### ONE LINE DIAGRAM NOTES:
- ① PROVIDE AND INSTALL 3-#2/0 + 1-#4 NEUTRAL + 1-#4 GND IN 2" CONDUIT, REFER TO DETAILS ON SHEET E2.
  - ② EXISTING SUBMERSIBLE PUMP POWER CABLE IN EXISTING 2" CONDUIT.
  - ③ PROVIDE SEAL FITTING, REFER TO DETAIL ON SHEET E2.
  - ④ REFER TO NOTES ON SHEET E6 FOR PHASE MONITORING SIGNALS REQUIRED FROM NEW FUSED DOUBLE THROW DISCONNECT SWITCH TO PUMP CONTROL PANEL.
  - ⑤ PROVIDE 2" CONDUIT FROM NEW PUMP CONTROL CABINET TO WET WELL FOR FLOAT SWITCH AND LEVEL SENSOR CABLES. REFER TO DETAILS ON SHEET E2.
  - ⑥ PROVIDE 1" CONDUIT FROM NEW PUMP CONTROL CABINET TO EXISTING TELEMETRY ANTENNA MAST FOR NEW COAX CABLE, REFER TO DETAIL ON SHEET E21.

ROMAN D. KORCHAK, P.E., #42626  
ELECTRICAL DIVISION HEAD  
WASTEWATER DEPARTMENT

No.	DATE	REVISIONS
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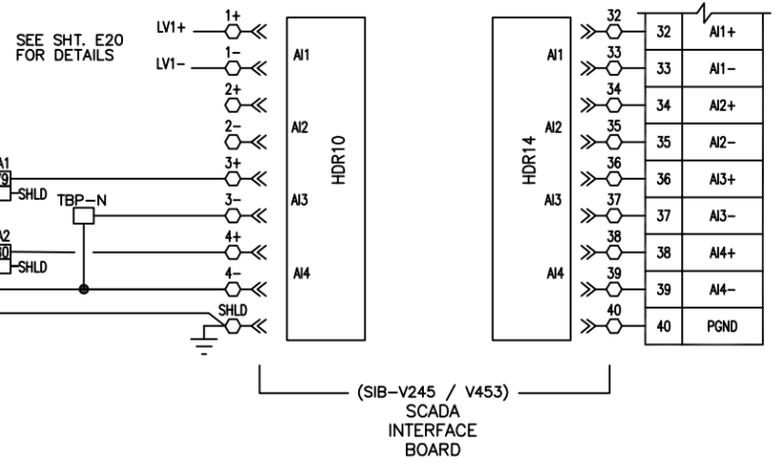
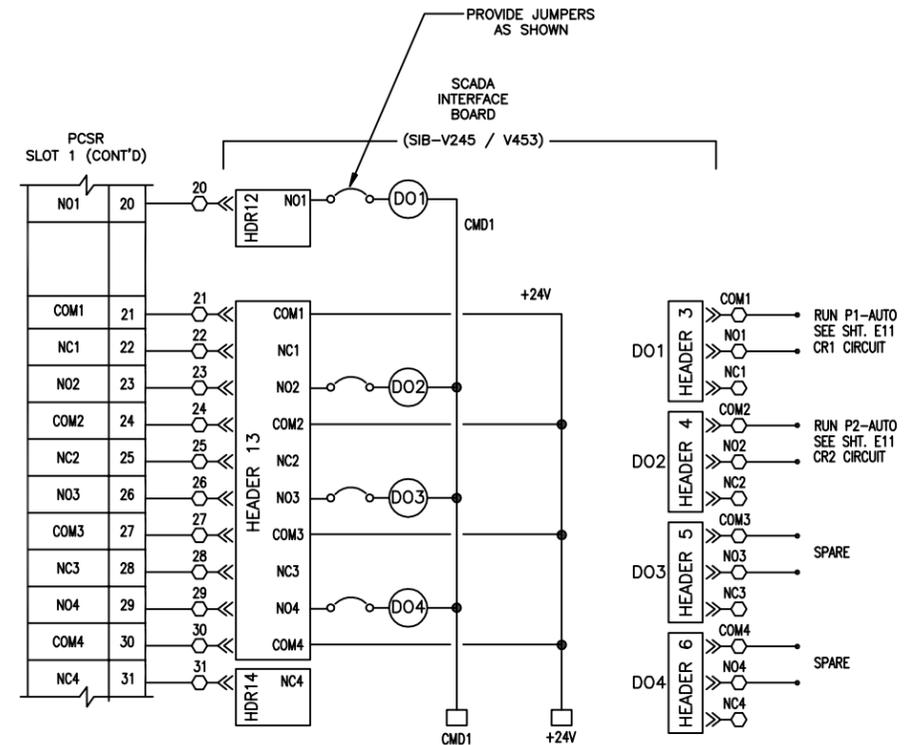
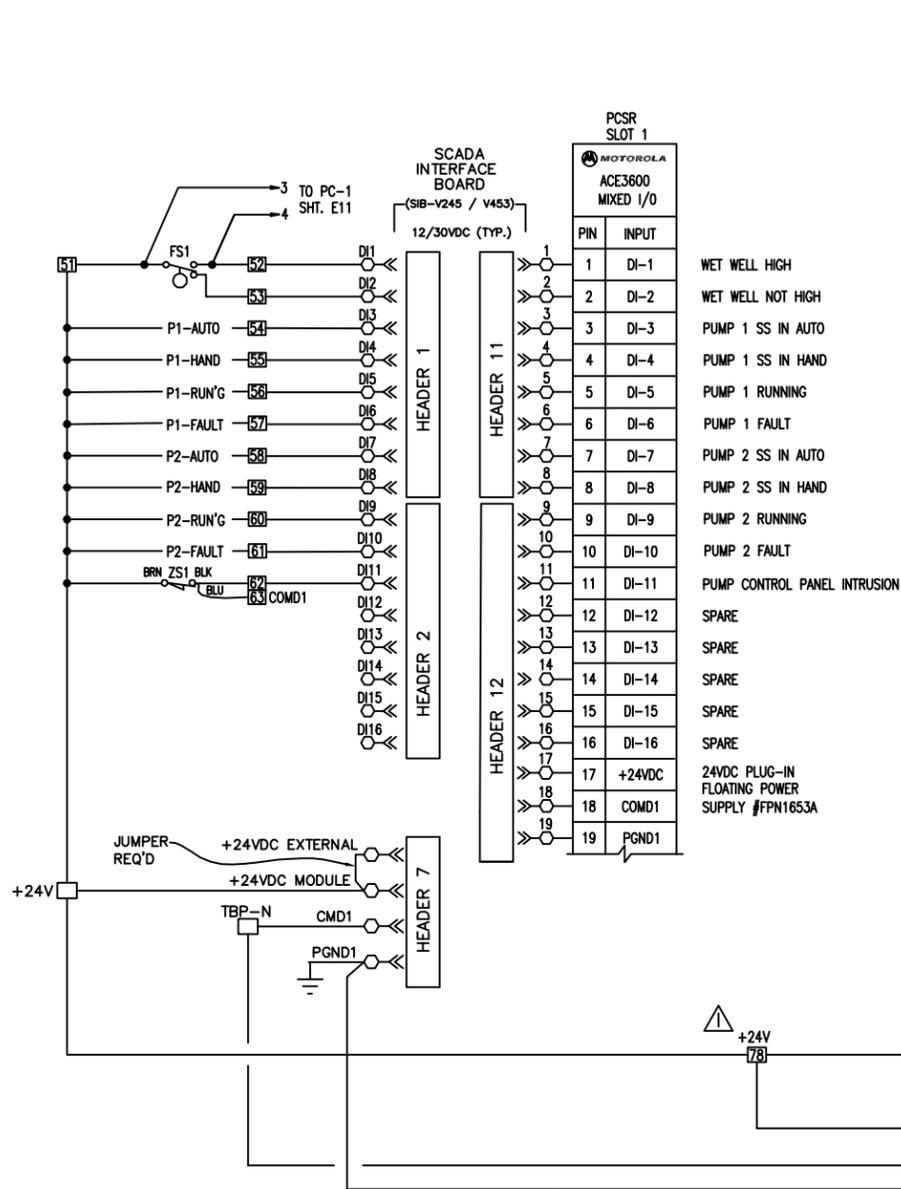
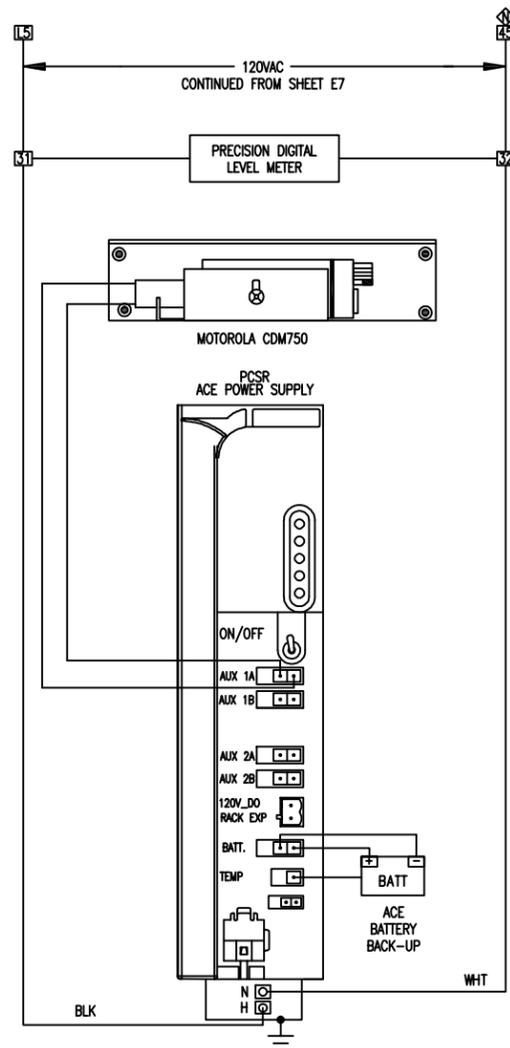
DES: LRG  
DRN: JHJ  
CKD:  
DATE: 6/30/16

**CITY of TAMPA**  
WASTEWATER DEPARTMENT

HARBOUR ISLAND PS REHABILITATION  
ONE LINE DIAGRAM

W.O. 0000  
SHEET  
**E9**

User: ss13 Drawing Name: K:\WasteWater Projects\Harbour Island PS Rehabilitation.dwg Layout: Aug 19, 2016 - 9:04am



- TERMINALS ON ACE I/O MODULE (GENERAL)
- TERMINALS IN PUMP CONTROL PANEL
- ⊗ TERMINALS IN MOTOR CONTROL PANEL

ROMAN D. KORCHAK, P.E., #42626  
ELECTRICAL DIVISION HEAD  
WASTEWATER DEPARTMENT

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DATE: 6/30/16

**CITY of TAMPA**  
WASTEWATER DEPARTMENT

HARBOUR ISLAND PS REHABILITATION  
ELECTRICAL SCHEMATIC (3 OF 4)  
PUMP CONTROL PANEL

W.O. 0000  
SHEET  
**E12**

User: ss13 Drawing Name: K:\WasteWater Projects\Harbour Island PS\Design\Plans\Drafting\DWG\Harbour Island PS Rehabilitation.dwg Layout: Aug 19, 2016 - 9:04am

### PARTS SCHEDULE (CONTINUED)

SYMBOL	NAME	PART				REMARKS
		MAKE	TYPE	MODEL OR CAT. #	RATING	
PCSR	PLC BASED PUMP CONTROLLER, SCADA, AND RADIO SYSTEM	MOTOROLA CORP.	DUPLEX PUMP CONTROLLER BASED ON ACE 3600 PROGRAM CONTROLLER	ACE 3600 W/ UHF RADIO CDM 750, 403-512 MHz PART #: F7564	1-AC POWER SUPPLY 85-264V W/ BAT CHARGER PAR #: V261	COORDINATE EFFORT W/ SCADA INTEGRATOR
	SLOTS 1 & 2	MOTOROLA CORP.	2-MIXED I/O AUXILIARY INTERFACE WILKERSON BOARD PART #: SIB V245/ V453	1-40 WIRE CABLE W/TB HOLDER 3M PART #: V358	1- ACE CPU3640 PART #: V446	1- 10.0 Ah BATTERY PART #: V328
	1-3 I/O SLOT FRAM PART #: V103	1-20 PIN TB HOLDER KIT PART #: V158	1- 14x 14 METAL CHASSIS PART #: V214	2-ACE MIXED I/O MODULE-16DI, 4DO(EE), (4)±20mA ANALOG IN PART #: V245 W/ 24VDC PLUG-IN, FLOATING POWER SUPPLY # FPN1653A	1-40 PIN TB HOLDER KIT PART #: V153	
	10.0 Ah BATT.					
PM1, PM2, PM3, PM4	3-PHASE POWER MONITOR	ATC DIVERSIFIED ELECTRONICS	8 PIN PLUG-IN	SUA-440-ASA	440 VAC	W/ OPTIONAL 5-SEC RELEASE AND DIN RAIL SOCKET
PDB	PWR DIST. BLOCK	ILSCO	THREE POLE	PDB-16-2/0-3	600 V, 175 AMP	W/ LEXAN COVER
FBD1, 2, 3, 4	FUSE BLOCK / DISCONNECT	ALLEN BRADLEY	THREE PHASE- HIGH INTER. CAP.	1492-FB3C30-L	600 VAC, 200KAIC	W/ BUSSMANN KTK-R-2 FAST ACTING, REJECTION FUSES
BATT.	BATTERY	POWERSONIC	ABSORBENT GLASS MAT (AGM)	PS-1270 F2	12 VOLT, 7.0 AH	W/ 0.25" x 0.032" TABS
BATT. CHR.G.	BATTERY CHARGER	DELTRAN CORP.	BATTERY TENDER	WATERPROOF 800	120VOLT, 800 mADC	QUALIFICATION, BULK, & FLOAT CHARGING
PC-1	BACKUP PUMP CONTROLLER	WILKERSON	DUPLEX LIFT STATION	DR1920	10 AMP CONTACTS	DIN RAIL MOUNTING
FL	FLOAT SWITCH	ANCHOR SCIENTIFIC	SPDT	S20NONC	10 A @ 120 V	PROVIDED BY THE CITY INSTALLED BY CONTRACTOR
FTB1, 2	FUSED TERMINAL BLOCKS	PHOENIX CONTACT		UK 5-HESI	PROVIDE 1, 2, & 5A FUSES	PROVIDE COOPER BUSSMAN GDB SERIES FUSES
SLD1, SLD2	PUMP MONITORING UNIT	XYLEM		MINI-CAS 120	10A AT 240V AC	
BWR	BATTERY WALL RECEPTACLE	HUBBELL	DUPLEX W/GFI	GF5262	120V AC, 15A GFI	W/ALUMINUM OUTLET BOX AND COVER
PCP	PUMP CONTROL PANEL ENCLOSURE	HOFFMAN	NEMA 4X, 3P LATCH, 42"x36"x12"	42"x36"x12" SS	304 SS, POWDER COATED WHITE	3P LATCH W/STOP KIT. EXTERNAL FINISH DURABLE RAL 9003 WHITE POWER COAT.
PP	ENCLOSURE PANEL	HOFFMAN	39" X 33", STEEL	A42P36	STEEL, 12 GAUGE	
NB1, 2	NEUTRAL DISTRIBUTION BLOCK	BUSSMAN	SINGLE POLE	16220-1	600V, 175A	
F1	PROCESS METER	PRECISION DIGITAL	4 DIGIT, 1.2" DISPLAY	PD765-6X3-00		PROVIDE 4-20mA OUTPUT
ALS	AREA LIGHT SWITCH	HUBBELL	SINGLE-POLE	HBL1221	277V, 20A	
SPD-2	SURGE PROTECTION DEVICE TYPE 3	PHOENIX CONTACT	3 CONDUCTOR SYSTEM (L, N, G)	2856812	120V, 25A	
FDTS	FUSED DOUBLE THROW DISCONNECT SWITCH	EATON	SERVICE ENTRANCE RATED, HEAVY DUTY	DT364FWK	DT200 NK NEUTRAL KIT DS200 GK GROUND KIT DS46 FK ADAPTOR KIT	TIME DELAY CLASS RK5 FUSES (3) EDISON ECSR175 (3) EDISON ECSR100 (PROVIDE (3) SPARES FOR EA.)
MS	METER SOCKET	MILBANK	7 TERMINAL	UAP9701-X-QG-HSP	600 VAC, 200 AMP	ALUMINUM CONSTRUCTION
EC	EMERGENCY CONNECTOR	CROUSE & HINDS	ARKTITE	AREA10415-S22 W/ BACK BOX, ANGLE ADAPTER, 1-1/2 HUB AND SPRING COVER	600V 100 AMP	
LA	LIGHTNING ARRESTER	GENERAL ELECTRIC	TRANQUELL	9L15ECC001	650V	

**NOTES:**

1. ALARM FLOAT SWITCH WILL BE SUPPLIED BY WWD AND INSTALLED BY CONTRACTOR.
2. DIMENSIONS, ITEMS, OR ELEVATIONS MARKED "\*" SHALL BE DETERMINED AFTER EQUIPMENT SELECTION.

ROMAN D. KORCHAK, P.E., #42626  
ELECTRICAL DIVISION HEAD  
WASTEWATER DEPARTMENT

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**CITY of TAMPA**  
WASTEWATER DEPARTMENT

HARBOUR ISLAND PS REHABILITATION  
PARTS SCHEDULE (SHT. 2 OF 2)

W.O. 0000

SHEET

E18

E-Mail to Register as a Plan Holder and E-Mail All Questions to; ContractAdministration@tampagov.net

Sign-In Sheet  Please Print

City of Tampa, Contract Administration Department

	Name	Organization	E-Mail OR Phone
1	Jody Gray	Tampa Contract Administration Dept.	jody.gray@tampagov.net
2	SYED LAEED ALI	LAEDALI AND ASSO.	LAEDALI@HOTMAIL.COM
3	Ralph Philbrook III	Ralph Philbrook III LLC	philbrook3llc@aol.com
4	Bob Robinson	Carl Hankins Inc	bobr@chrsesinc.com
5	ROMAN KORCHAK	C.O.T. WW ELEC ENG	ROMAN.KORCHAK@TAMPA.GOV.NET
6	Lashonda Green	C.O.T. WW ELEC	Lashonda.green@tampagov.net
7	CARMEN RODRIGUEZ	C.O.T. CAD	carmen.fodrigueza@tampagov.net
8	Donna Pettis	Rex Farlow Construction	donna.pettis@gmail.com
9	Rex Farlow	"	rfarlowconstruction@gmail.com
10	Rob Conkel	"	"
11	Rick Morriss	COT / CAD	_____
12	Jake Hstmbak	COT / CAD	_____
13	JACK FERRAS	COT / WW	JACK.FERRAS@TAMPA.GOV.NET
14			
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