



Financial Management Department  
Purchasing Division  
1112 Manatee Ave W Suite 803  
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[www.mymanatee.org](http://www.mymanatee.org)

Email

February 5, 2016

TO: All Interested Bidders

SUBJECT: Invitation for Bid #16-0437DC Master Lift Station (MLS) 27A  
Emergency Generator Replacement ADDENDUM #1

**Bidders are hereby notified that this Addendum shall be acknowledged on the Bid Form and made a part of the above named bidding and contract documents.**

1. Engineer's construction cost estimate is \$484,000.
2. Sign in sheet for Information Conference is attached.
3. Reference IFB Cover page: Deadline for Clarification Requests is 5:00 P.M., February 10, 2016.
4. Inspection of the project site is a prerequisite for award (reference Bid Article C.02 Basis of Award). Schedule visit by 4:00 P.M. February 11, 2016 to ensure access. Contacts: **Nick Wagner or Ralph Braun, at 941.792.8811, extension 5377.**
5. Specifications attached for Automatic Transfer Switch (furnish and install) as referenced in Bid Form item 5: Specification Section 16108; Specification Section 16495; Specification Section 16950.
6. Revised Electrical Plans (8 pages dated 10/28/2016) are attached for the work involved with the Automatic Transfer Switch.

If you have submitted a bid prior to receiving this addendum you may request in writing that your original, sealed bid be returned to your firm. All sealed bids received will be opened on the date stated.

Bids will be received at Manatee County Purchasing, 1112 Manatee Avenue West, Suite 803, Bradenton, Florida 34205 until **February 24, 2016 at 3:00 P.M.**

Sincerely,

Melissa M. Wendel, CPPO  
Purchasing Official

/dcr

Attachments

**INFORMATION CONFERENCE: INVITATION FOR BID**  
**IFB #16-0437DC 27A Emergency Generator Replacement**  
**DATE: February 3, 2016      TIME: 10:00 AM @ Staples Room**

TELEPHONE/ EMAIL	NAME (PLEASE PRINT)	COMPANY NAME
941-749-3074 deborah.carey-reed@my manatee.org	Deborah Carey Reed	Manatee County
(41) 915-4588 jstockhouse@uicis.net	Jeff Stockhouse	UCI Construction Services, LLC
(813) 399-5086		
Curtis.thompson@ringpower.com 813-781-2629	Curtis Thompson	Ring Power Corp
Angel@HenriquezElectric.com 813-840-3500	Angel Guzman	Henriquez Electric
Gene.Richards@tawinc.com 727-431-1546	Gene Richards	TAW
Dono.McCullers@CARDNO.COM	Don McCullers	CARDNO
727-431-1598 Kelly.wehner@cardno.com	Kelly Wehner	Cardno
904-226-9668		
Santo.Marino@Zabatt.com	Santo Marino	Zabatt
William.lorenzo@mymanatee.org 941-708-7450 x7338	William Lorenzo	Manatee County
941-792-8811 X5377	Nick Wagner	Manatee County
Nick.Wagner@mymanatee.org 813-227-9190		
tthomas@tricon-eng.com	TIM THOMAS	TRICON ENGINEERING

## SECTION 16108 MISCELLANEOUS EQUIPMENT

### PART 1 GENERAL

#### 1.01 SCOPE OF WORK

- A. Furnish and install all miscellaneous equipment as hereinafter specified and/or shown on the Drawings.
- B. Installation shall be in the locations described herein and/or shown on the Drawings and/or where directed by the County's authorized personnel.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

##### A. MOTOR CONTROL CENTER CIRCUIT BREAKER

1. To match existing equipment, the new generator ancillary equipment circuit breaker shall be a product of Square D (Schneider Electric) and shall be compatible with the existing Square D Model 6 Motor Control Center, NO SUBSTITUTIONS! Provide all components as required to provide a complete and functional unit.
2. Breaker Unit: Provide new circuit breaker unit for 24-inch (4U) space in MCC at location 6C.
3. Provide unit of the plug-in or nonremovable type in accordance with the manufacturer's standard for type and size of circuit breaker.
4. Provide plug-in unit within-plated, pressure-type line disconnecting stabs of high strength copper alloy. Hold each plug-in unit in place and arrange the units such that they can be removed or remounted readily without access to the rear of the structure.
5. Provide drip-proof and dust-tight door. Provide door with hinges and screw fasteners for holding the door closed. Fabricate door as a part of the structure and not part of the unit.
6. Equip the door with a circuit breaker operating mechanism.
7. Provide mechanical interlocks between the compartment door and circuit breaker operating mechanism to prevent opening of the door unless the breaker is in the OFF position, and to prevent closing the breaker unless the door is fully closed.
8. Provide circuit breaker operating mechanisms or handles that are padlockable in the OFF position with room for a minimum of three padlocks.
9. Provide unit having devices that are serviceable from the front, without provisions for rear access.

10. Interrupting Ratings: Provide an interrupting capacity of 42,000 rms symmetrical amperes at 480 volts. Base interrupting rating on the IEEE and NEMA Standard duty cycle for this class of equipment.
11. Provide circuit breaker trip units as follows:
  - a. Provide individual, thermal-magnetic trip unit.
  - b. Provide trip units that actuate a common tripping bar to open all poles when an overload or short circuit occurs on any one.
  - c. Provide trip elements with inverse time tripping and instantaneous tripping at about ten times the normal trip device rating.
  - d. Provide circuit breakers with trip-free handles.

**PART 3      EXECUTION**

**(NOT USED)**

**END OF SECTION**

## **SECTION 16495 - AUTOMATIC TRANSFER SWITCHES**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Furnish and install automatic transfer switch (ATS) with three (3) poles, solid neutral, rated for 400 amperes, 480Volts, withstand and close-on ratings of 42,000 RMS symmetrical amperes minimum. Automatic transfer switch shall consist of an inherently double throw power transfer switch mechanism and a microprocessor controller to provide automatic operation. Transfer switch and controller shall be the products of the same manufacturer. Transfer switch shall be open transition type.

#### **1.02 CODES AND STANDARDS**

The automatic transfer switches and controls shall conform to the requirements of:

- A. UL 1008 - Standard for Transfer Switch Equipment
- B. CSA certified to CSA 22.2 No. 178 - 1978 Automatic Transfer Switches
- C. IEC 60947-6-1 Low-voltage Switchgear and Controlgear; Multifunction equipment; Automatic Transfer Switching Equipment
- D. NFPA 70 - National Electrical Code
- E. NFPA 99 - Essential Electrical Systems for Health Care Facilities
- F. NFPA 110 - Emergency and Standby Power Systems
- G. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
- H. NEMA Standard ICS10-1993 (formerly ICS2-447) - AC Automatic Transfer Switches
- I. UL 508 Industrial Control Equipment

#### **1.03 ACCEPTABLE MANUFACTURERS**

- A. Automatic transfer switch shall be ASCO 7000 Series.

### **PART 2 - PRODUCTS**

#### **2.01 MECHANICALLY HELD TRANSFER SWITCH**

- A. The transfer switch shall be electrically operated and mechanically held. The electrical operator shall be a momentarily energized, single-solenoid mechanism. Main operators which include overcurrent disconnect devices, linear motors or gears shall not be acceptable. The switch shall be mechanically interlocked to ensure only two possible positions, normal or emergency.
- B. All transfer switch sizes shall use only one type of main operator for ease of maintenance and commonality of parts.

- C. The switch shall be positively locked and unaffected by momentary outages, so that contact pressure is maintained at a constant value and contact temperature rise is minimized for maximum reliability and operating life.
- D. All main contacts shall be silver composition. Switches rated 800 amperes and above shall have segmented, blow-on construction for high withstand and close-on capability and be protected by separate arcing contacts.
- E. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. Switches rated 800 amps and higher shall have front removable and replaceable contacts. All stationary and moveable contacts shall be replaceable without removing power conductors and/or bus bars.
- F. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- G. Where neutral conductors must be switched as shown on the plans, the ATS shall be provided with fully rated overlapping neutral transfer contacts. The neutrals of the normal and emergency power sources shall be connected together only during the transfer and retransfer operation and remain connected together until power source contacts close on the source to which the transfer is being made. The overlapping neutral contacts shall not overlap for a period greater than 100 milliseconds. Neutral switching contacts which do not overlap are not acceptable.
- H. Where neutral conductors are to be solidly connected as shown on the plans, a neutral conductor plate with fully rated AL-CU pressure connectors shall be provided.

## 2.02 MICROPROCESSOR CONTROLLER

- A. The controller's sensing and logic shall be provided by a single built-in microprocessor for maximum reliability, minimum maintenance, and the ability to communicate serially through an optional serial communication module.
- B. A single controller shall provide twelve selectable nominal voltages for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to  $\pm 1\%$  of nominal voltage. Frequency sensing shall be accurate to  $\pm 0.2\%$ . The panel shall be capable of operating over a temperature range of -20 to +60 degrees C and storage from -55 to +85 degrees C.
- C. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance. Sensing and control logic shall be provided on multi-layer printed circuit boards. Interfacing relays shall be industrial grade plug-in type with dust covers. The panel shall be enclosed with a protective cover and be mounted separately from the transfer switch unit for safety and ease of maintenance. The protective cover shall include a built-in pocket for storage of the operator's manuals.
- D. All customer connections shall be wired to a common terminal block to simplify field-wiring connections.
- E. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:



1. EN 55011:1991 Emission standard - Group 1, Class A
2. EN 50082-2:1995 Generic immunity standard, from which:
3. EN 61000-4-2:1995 Electrostatic discharge (ESD) immunity
4. ENV 50140:1993 Radiated Electro-Magnetic field immunity
5. EN 61000-4-4:1995 Electrical fast transient (EFT) immunity
6. EN 61000-4-5:1995 Surge transient immunity
7. EN 61000-4-6:1996 Conducted Radio-Frequency field immunity

## 2.03 ENCLOSURE

- A. The ATS shall be furnished in a Type 1 enclosure.
- B. All standard and optional door-mounted switches and pilot lights shall be 16-mm industrial grade type or equivalent for easy viewing & replacement. Door controls shall be provided on a separate removable plate.

## PART 3 - OPERATION

### 3.01 CONTROLLER DISPLAY AND KEYPAD

- A. A four line, 20 character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the serial communications input port. The following parameters shall only be adjustable via DIP switches on the controller:
  1. Nominal line voltage and frequency
  2. Single or three phase sensing
  3. Operating parameter protection
  4. Transfer operating mode configuration (Open transition, Closed transition, or Delayed transition)

All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

### 3.02 VOLTAGE, FREQUENCY AND PHASE ROTATION SENSING

- A. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as % of nominal unless otherwise specified):

<u>Parameter</u>	<u>Sources</u>	<u>Dropout / Trip</u>	<u>Pickup / Reset</u>
Undervoltage	N&E, 3 $\phi$	70 to 98%	85 to 100%
Overvoltage	N&E, 3 $\phi$	102 to 115%	2% below trip
Underfrequency	N&E	85 to 98%	90 to 100%
Overfrequency	N&E	102 to 110%	2% below trip
Voltage unbalance	N&E	5 to 20%	1% below dropout

- B. Repetitive accuracy of all settings shall be within  $\pm 0.5\%$  over an operating temperature range of -20°C to 60°C.

- C. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via serial communications port access.
- D. The controller shall be capable (when activated by the keypad or through the serial port) of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).
- E. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases, frequency, and phase rotation.
- F. The controller shall include a user selectable algorithm to prevent repeated transfer cycling to a source on an installation which experiences primary side, single phase failures on a Grounded Wye - Grounded Wye transformer which regenerates voltage when unloaded. The algorithm shall also inhibit retransfer to the normal (utility) source upon detection of a single phasing condition until a dedicated timer expires, the alternate source fails, or the normal source fails completely and is restored during this time delay period. The time delays associated with this feature shall be adjustable by the user through the controller keypad and LCD.

### 3.03 TIME DELAYS

- A. An adjustable time delay of 0 to 6 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes by providing an external 24 VDC power supply.
- B. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
- C. Two time delay modes (which are independently adjustable) shall be provided on re-transfer to normal. One time delay shall be for actual normal power failures and the other for the test mode function. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
- D. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.
- E. A time delay activated output signal shall also be provided to drive an external relay(s) for selective load disconnect control. The controller shall have the ability to activate an adjustable 0 to 5 minute time delay in any of the following modes:
  - 1. Prior to transfer only.
  - 2. Prior to and after transfer.
  - 3. Normal to emergency only.
  - 4. Emergency to normal only.
  - 5. Normal to emergency and emergency to normal.
  - 6. All transfer conditions or only when both sources are available.
- F. All time delays shall be adjustable in 1 second increments, except the extended parallel time, which shall be adjustable in .01 second increments.



- G. All time delays shall be adjustable by using the LCD display and keypad or with a remote device connected to the serial communications port.

### 3.04 ADDITIONAL FEATURES

- A. A three position momentary-type test switch shall be provided for the *test / automatic / reset* modes. The test position will simulate a normal source failure. The reset position shall bypass the time delays on either transfer to emergency or retransfer to normal.
- B. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
- C. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of one contact, closed when the ATS is connected to the normal source and one contact closed, when the ATS is connected to the emergency source.
- D. LED indicating lights (16 mm industrial grade, type 12) shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).
- E. LED indicating lights (16 mm industrial grade, type 12) shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and emergency sources, as determined by the voltage sensing trip and reset settings for each source.

The following features shall be built-in to the controller, but capable of being activated through keypad programming or the serial port only when required by the user:

- F. Provide the ability to select "commit/no commit to transfer" to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
- G. An inphase monitor shall be provided in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The inphase monitor shall be specifically designed for and be the product of the ATS manufacturer. The inphase monitor shall be equal to ASCO Feature 27.
- H. The controller shall be capable of accepting a normally open contact that will allow the transfer switch to function in a non-automatic mode using an external control device.
- I. Engine Exerciser - The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to seven different exercise routines. For each routine, the user shall be able to:
  - 1. Enable or disable the routine.
  - 2. Enable or disable transfer of the load during routine.
  - 3. Set the start time, .
    - time of day
    - day of week
    - week of month (1st, 2nd, 3rd, 4th, alternate or every)
  - 4. Set the duration of the run.

At the end of the specified duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. A 10-year life battery that supplies power to the real time clock in the event of a power loss will maintain all time and date information.

The following feature shall be built - into the controller, but capable of being activated through keypad programming or the communications interface port.

Note: The transfer switch will operate in a non-automatic mode with this feature activated.

- J. Terminals shall be provided for a remote contact which opens to signal the ATS to transfer to emergency and for remote contacts which open to inhibit transfer to emergency and/or retransfer to normal. Both of these inhibit signals can be activated through the keypad or serial port.
- K. System Status - The controller LCD display shall include a "System Status" screen which shall be readily accessible from any point in the menu by depressing the "ESC" key a maximum of two times. This screen shall display a clear description of the active operating sequence and switch position. For example:

Normal Failed  
Load on Normal  
TD Normal to Emerg  
2 min 15s

Controllers that require multiple screens to determine system status or display "coded" system status messages, which must be explained by references in the operator's manual, are not permissible.

- L. Self Diagnostics - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input signals to the controller which may be preventing load transfer commands from being completed.
- M. Data Logging - The controller shall have the ability to log data and to maintain the last 99 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory:

#### 1. Event Logging

- a. Data and time and reason for transfer normal to emergency.
- b. Data and time and reason for transfer emergency to normal.
- c. Data and time and reason for engine start.
- d. Data and time engine stopped.
- e. Data and time emergency source available.
- f. Data and time emergency source not available.

#### 2. Statistical Data

- a. Total number of transfers.
- b. Total number of transfers due to source failure.
- c. Total number of days controller is energized.
- d. Total number of hours both normal and emergency sources are available.

## **PART 4 - ADDITIONAL REQUIREMENTS**

### **4.01 WITHSTAND AND CLOSING RATINGS**

- A. The withstand and closing ratings of the ATS, with any overcurrent device shall be 42,000 RMS symmetrical amperes minimum.
- B. The ATS shall be UL listed in accordance with UL 1008 and be labeled in accordance with that standard's 0.025 and 0.05 second, time based ratings. ATSs which are not tested and labeled with time based ratings and have series, or specific breaker ratings only, are not acceptable.

### **4.02 TESTS AND CERTIFICATION**

- A. The complete ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.
- B. The ATS manufacturer shall be certified to ISO 9001:2008 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001:2008

### **4.03 SERVICE REPRESENTATION**

- A. The ATS manufacturer shall maintain a national service organization of company-employed personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.
- B. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.

**END OF SECTION**

## **SECTION 16950 TESTS AND INSPECTIONS**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. The CONTRACTOR shall arrange for all inspections required by the local authority having jurisdiction. Approval of the installation by any such local authority shall not relieve the CONTRACTOR of any portion of his responsibility for adequate performance of the completed installation.

#### **1.02 SUBMITTALS**

- A. The CONTRACTOR shall furnish at least two copies of test records to the ENGINEER. At the completion of all tests specified herein and any others required to make operational all equipment, all records shall be viewed by the CONTRACTOR, then transmitted directly to the ENGINEER. All prints shall be corrected and verified for corrections of in-field changes by the CONTRACTOR prior to submittal.

### **PART 2 PRODUCTS (Not Used)**

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. After completion and prior to being energized, the electrical installation shall be tested to the extent necessary to demonstrate that all systems are complete and ready for operation. The CONTRACTOR shall notify the ENGINEER and the OWNER for the final inspection prior to energizing the system.
- B. The CONTRACTOR shall furnish all necessary test equipment to satisfactorily perform all tests specified herein or required by applicable codes and standards.

#### **3.02 TESTING**

- A. The CONTRACTOR shall test all wire, cable, equipment, and systems installed or connected under the Agreement to assure proper installation, settings, connection, and functioning in accordance with the Drawings, Specifications and the manufacturer's recommendations.
- B. When conducting tests the CONTRACTOR shall:
  - 1. Include all tests and inspections recommended by the equipment manufacturer and applicable Codes and Standards.
  - 2. Include any additional tests required by the ENGINEER that he deems necessary because of field conditions to determine that equipment, material, and systems meet the requirements of the Specifications.

3. Maintain in quadruplicate a written record of all tests showing date, personnel conducting tests, equipment or material tested, tests performed, manufacturer and serial number of testing equipment and results.
- C. Tests to be accomplished as a minimum are as follows:
1. Control Panels/Panelboards: provide temporary power source to all control/power circuits and check for proper operation prior to energizing equipment served.
  2. Wires and Cables:
    - a. The 600-volt insulated cables shall be factory tested prior to shipment in accordance with IPCEA standards for the insulation specified.
    - b. The following 600-volt wires and cable shall be tested after installation but before final connections are made up:
      - i. All feeders from motor control centers to motors 10 horsepower and larger.
      - ii. All feeders from variable speed drive units.
      - iii. All feeders from motor control centers to lighting panels and dry-type transformers.
    - c. For the above listed cables, a test voltage of 500 volts ac shall be applied for a period of 1 minute between all conductors in the same conduit, and between each conductor and ground.
    - d. All tests shall be made at the Contractor's expense, and certification of the tests shall be submitted to the Engineer. If any failures occur during the tests, the Contractor shall replace the cable.
  3. Motor Test: Motor rotation will be checked by momentary energizing of motor. Correction of rotation shall be made by changing leads on the motor. Motors shall only be energized in the presence of a representative of the OWNER. Phase rotation shall be checked for both the normal and generator source of power.
  4. Check phase rotation on all bussing. Phasing shall be A-B-C, left to right, top to bottom, front to rear, as viewed from the front.
- D. CONTRACTOR shall be responsible for any damage to equipment or material due to improper test procedures or test apparatus handling, and shall replace or restore to original condition any damaged equipment or material.
- E. CONTRACTOR shall furnish and use safety devices such as rubber gloves and blankets, protective screens, barriers, and danger signs to adequately protect and warn all personnel in the vicinity of the tests.

**3.03 DEMONSTRATION OF COMPLETED ELECTRICAL SYSTEMS**

- A. Upon the completion of the installation and testing, the CONTRACTOR shall demonstrate and familiarize representatives of the OWNER with the system.

**END OF SECTION**