



CITY OF TAMPA

Bob Buckhorn, Mayor

CONTRACT ADMINISTRATION DEPARTMENT

Michael W. Chucran, Director

ADDENDUM 5

August 2, 2017

Contract 17-C-00030; David L. Tippin Water Treatment Facility Lime Slaker Replacement

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: Specifications: Insert the attached Section 26 36 23 Automatic Transfer Switch.

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.

Jim Greiner

Jim Greiner, P.E., Contract Management Supervisor

SECTION 26 36 23

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.01 SCOPE

- A. Furnish all labor, materials, equipment and incidentals required to install, put into operation, and field test the Automatic Transfer Switch (ATS) and appurtenances as shown on the Drawings and specified herein. The ATS shall be dual drawout with Isolation Bypass.
- B. These Specifications are intended to give a general description of what is required, but do not cover all details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, the shop testing, and delivery and complete installation and field testing, of all materials, equipment and appurtenances for the complete units as herein specified, whether specifically mentioned in these specifications or not.
- C. For the unit, there shall be furnished and installed all necessary and desirable accessory equipment and auxiliaries whether specifically mentioned in these Specifications or not. This installation shall incorporate the highest standards for the type of service shown on the Drawings. The CONTRACTOR is responsible for field testing of the entire installation and instruction of the regular operating personnel in the care, operation and maintenance of all equipment.

1.02 DESCRIPTION OF SYSTEMS

- A. The ATS shall be rated and mounted as shown on the Drawings and shall be arranged for automatic starting and stopping, and load transfer upon failure of the normal source of power.
- B. All conduit and wire installation requirements are the responsibility of the Contractor.

1.03 REFERENCES

- A. The ATS and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and NEMA as follows:
 - 1. UL 1008-Transfer Switches
 - 2. UL 991-Test for safety related controls employing solid state devices
 - 3. NFPA 70 – National Electrical Code
 - 4. NFPA 110-Emergency Standby Power Systems
 - 5. NEMA ICS 10 – AC Transfer Switch Equipment
 - 6. IEEE 446 – Recommended Practice for Emergency and Standby Power Systems.

1.04 SUBMITTALS – FOR REVIEW/APPROVAL

- A. The following information shall be submitted to the Engineer:

1. Front view and plan view of the assembly
 2. Schematic diagram and wiring diagram
 3. Conduit space locations within the assembly
 4. Assembly ratings including:
 - a) Withstand and Closing rating
 - b) Voltage
 - c) Continuous current rating
 - d) Short-Time rating if applicable
 - e) Short-circuit rating if ordered with integral protection
 5. Cable lug sizes and type.
 6. Product Data Sheets, bill of material, and installation instructions.
- B. Where applicable, the following additional information shall be submitted to the Engineer:
1. Busway connection
 2. Connection details between close-coupled assemblies
 3. Composite front view and plan view of close-coupled assemblies

1.05 SUBMITTALS – FOR CONSTRUCTION

- A. The following information shall be submitted for record purposes:
1. Final as-built drawings and information for items listed in section 1.04
 2. Wiring diagrams
 3. Certified production test reports
 4. Installation information
 5. Seismic certification as specified
- B. The final (as-built) drawings shall include the same drawings as the construction drawings and shall incorporate all changes made during the manufacturing process.

PART 2 - PRODUCTS

2.01 AUTOMATIC TRANSFER SWITCH (ATS)

- A. The automatic transfer switch shall be a standard product of a manufacturer regularly engaged in the manufacture of automatic transfer switches for a period of at least 10 years.
- B. Subject to compliance with requirements, provide products by one of the following:
1. Cutler Hammer, Eaton Magnum
 2. ASCO
 3. Lakeshore Electric
- C. Transfer Switch Construction and General Product Requirements

1. The automatic transfer switch shall be rated for continuous duty and suitable for use in emergency situations. Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp load not exceeding 30 percent of switch ampere rating, unless otherwise indicated.
2. The complete automatic transfer switch shall be listed under U.L. 1008 for use on emergency systems.
3. A neutral assembly shall be provided.
4. The automatic transfer switch shall be rated for 65,000 AIC short circuit availability. The manufacturer shall provide certification of compliance to all U.L. and NEMA Standards referred to above.
5. The automatic transfer switch shall be positively and reliably interlocked to prevent both sources from being simultaneously connected to the load unless intended.
6. The automatic transfer switch shall be mechanically held and electrically operated, energized by the source to which it is being transferred. It shall be double throw, actuated by two stored energy operators. Connection to the transfer mechanism shall be accomplished by a simple over-center toggle mechanism, which shall mechanically lock the main contacts in place. Main contacts shall be fully rated, self-wiping, and arc quenching. Separate arcing contacts with magnetic blowouts shall be provided.
7. The automatic transfer switch shall be provided with a permanently attached means to manually operate the switch without the use of special tools, devices or fixtures. The manual operating means shall provide safety to operators performing transfer under load. The manual operator shall transfer
8. The switch with the same contact-to-contact transfer speed as the electrical operator. The transfer switch shall be "Load Break" rated when manually operated. The inability to manually operate the transfer switch without first disconnecting loads will not be acceptable.
9. All cable entry area of the transfer switch shall be from the top of the enclosure. All control components and wiring shall be front accessible.
10. The switch shall have a neutral position programmable time delay between opening one source and closing the other shall be provided. This shall allow residual voltages to decay before reapplying power to the load.

D. Bypass Isolation

1. A manual bypass isolation switch shall provide isolation of the source and load power conductors to the ATS. The bypass transfer switch shall have current, voltage, and withstand ratings equal to the interconnected ATS. Transfer to bypass shall be manually initiated no-load break type transfer.

2. Positive mechanical Interlocks shall be provided for bypass isolation switch to prevent cross connection of services.
3. When provided, the automatic transfer switch and the bypass isolation switch sections shall be factory interconnected with copper buss.
4. The bypass isolation transfer switch shall be provided with a draw-out mechanism to allow access for preventive maintenance, testing or inspection. The draw-out mechanism shall provide visual indicators as to the position of the switch/breaker during the draw-out operation.

E. Automatic Transfer Switch Controls

1. Controls shall be microprocessor based and shall provide all necessary functions of the automatic transfer switch. The controller shall be equipped with a real time and date clock, battery backup, and non-volatile memory storage.
2. An HMI shall be provided containing a 16 character with automatic scrolling features for necessary data display, LCD display, LED indicating lights as specified herein, and a touch pads to allow access to the system.
3. The controller shall be equipped to accept power quality or condition signals from a variety of external relays or monitors connected to either the normal or emergency sources.
4. The controller shall store all timer and mode settings in non-volatile memory so that upon re-energizing the switch it will return to the previous position without loss of data.
5. The controller shall allow for five modes of operation: Off/Reset, Automatic, Load Test, Engine Start and Fault.
6. In the fault mode, the transfer switch shall be locked out and the reason for its failure shall be displayed on the HMI display.
7. The controller shall have complete diagnostic capabilities so that every input and output can be monitored for troubleshooting or maintenance purposes. Specifically, the transfer switch controller shall display 3-phase voltage and frequency values for both power sources. It shall also display timer functions as they execute in normal operation.
8. The controller shall have an operating range of -40°C to +85°C
9. The controller shall meet IEEE C62.41 surge test.
10. The controller shall be able to withstand unlimited power interruptions.

F. Automatic Transfer Switch Features

1. The transfer switch controller shall be equipped with no less than 6 timers as follows:
 - a) Time Delay in Neutral: Adjustable time delay to provide delay between opening the contacts on one source and closing the contacts on the other source. This shall be the programmable time delay required when the automatic transfer switch is serving inductive loads. Timer shall be field adjustable from 0 to 300 seconds, in 1-second increments.
 - b) Time Delay to Engine Start: Adjustable time delay after a failure of the Normal source before initiating an Engine-Start signal to allow for temporary short-duration fluctuations in voltage. Timer shall be field adjustable from 0 to 300 seconds, in 1-second increments.
 - c) Time Delay to Emergency: Adjustable time delay after the engine has started before transferring the load from the Normal source to the Emergency source. Timer shall be field adjustable from 0 to 300 seconds, in 1-second increments.
 - d) Time Delay to Return: Adjustable time delay after the return of Normal power before retransferring the load from the Emergency source to the Normal source. Timer shall be field adjustable from 0.0 to 60.0 minutes.
 - e) Engine Cool Down Timer: Adjustable time delay after retransferring the load from the Emergency source to the Normal source before shutting down the engine. Timer shall be field adjustable from 0.0 to 60 minutes, in 0.1-minute increments.
 - f) Minimum Run Timer: Adjustable time delay after starting engine before shutting it down. Timer shall be field adjustable from 0.0 to 60 minutes, in 0.1-minute increments.
2. A Digital Plant Exerciser shall be provided to provide for the regular automatic exercising of the Emergency Power System on a pre-selected schedule at field adjustable periods. The controller shall allow exercising with load or without load. In the event of an emergency source failure, when operating in the plant exerciser mode, the automatic transfer switch shall immediately return to the normal source, if available.
3. A Close Differential Under Voltage Relay shall be provided to continuously monitor normal voltage. The under voltage relay shall be field adjustable from 70% (seventy percent) to 100% (one hundred percent) of nominal voltage. Factory set at 90% (ninety percent) pick-up and 80% (eighty percent) dropout.
4. The transfer switch controller shall incorporate A Loss of Phase protection for both sources. In the event of the loss of phase or under voltage of the normal source, the transfer switch shall immediately be disconnected from the normal source to prevent damage to connected equipment. The transfer switch shall automatically return to service when the power problem no longer exists.

5. To protect against regenerative voltages under a single-phasing condition, the transfer switch controller shall be equipped with a fault output terminal interconnected to a 24Vdc shunt trip, integral to the transfer switch and with built-in time delay that functions to disconnect the utility source from the load, should the emergency power source fail to start. The transfer switch shall automatically return to utility service when the power problem no longer exists.
6. Transfer switch controller shall include data logging feature to provide troubleshooting aid to field technicians.
7. Transfer switch assembly shall include 5 year warranty, inclusive of parts and labor.
8. A single-phase frequency and voltage-sensing relay shall be provided for protection against transferring to the Emergency source until the emergency source has reached both operating frequency and voltage.
9. A Customer Relay Interface Board shall be provided to allow customer interface to the transfer switch controls. All interfaces shall be voltage free contacts rated 10 amps at 120 Vac. The following interface points shall be made available.
 - a) Engine start contacts consisting of one normally open and one normally closed contact.
 - b) Switch Position contacts consisting of two normally open and two normally closed contacts.
 - c) Trouble contacts consisting of one normally open and one normally closed contacts.
10. Light Emitting Diode (LED) pilot lights shall be provided on the HMI panel to indicate the following conditions:
 - a) Normal Source Available
 - b) Normal Switch Closed
 - c) Emergency Source Available
 - d) Emergency Switch Closed
 - e) System not in Automatic (Flashing light)
11. A Maintenance Disconnect switch shall be provided to disconnect control circuitry from line for maintenance purposes.
12. A momentary Load Test Switch shall be mounted inside the enclosure for ease of servicing. This switch shall cycle the transfer switch through a complete transfer to emergency and retransfer to normal.
13. A Keypad Enable Switch shall be mounted inside the enclosure, which will inhibit use of the HMI operator interface.
14. An Override Pushbutton shall be provided, mounted on the inside of the enclosure to bypass the Time Delay to Return Timer.

15. Surge Protection Devices: Surge Protection Devices shall be provided on both the Normal and Emergency sources. All surge protection devices shall be integral to the ATS.
16. Overcurrent Protection: Overcurrent protection shall be provided on the (Normal or Emergency) source with “tripped” indication on the HMI panel.
17. Auxiliary Contacts Source Available: Dry contacts consisting of two normally open and two normally closed contacts shall be provided to indicate source available.

G. Enclosure

1. The automatic transfer switch shall be enclosed in a NEMA ICS 250, NEMA 1 steel enclosure, unless otherwise shown on the drawings.
2. The automatic transfer switch shall be free standing, front and side accessible. The ATS enclosure shall be limited to a maximum dimension of 64 inches in width by 60 inches in depth.

H. Source Quality Control

1. Factory test components assembled switches and associated equipment to ensure proper operation. Check transfer time and voltage, frequency and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

PART 3 - EXECUTION

3.01 SERVICES

- A. Furnish the services of a competent and experienced MANUFACTURER'S field service technician who has complete knowledge of proper operation and maintenance of the equipment for a period of not less than two (2) days in two separate visits to inspect the installed equipment, supervise the initial test run, and to provide instructions to the plant personnel. The first visit will be for checking and inspecting the equipment after it is installed.
- B. At least one (1) of the two (2) days shall be allocated solely to the instruction of plant personnel in operation and maintenance of the equipment. This instruction period shall be scheduled at least ten days in advance with the OWNER and shall take place during plant start-up and acceptance by the OWNER.
- C. Three final copies of operation and maintenance manuals specified must be delivered to the ENGINEER prior to scheduling the instruction period with the OWNER.
- D. A three (3) year extended warranty shall be provided to the Owner from the date of initial start-up.

END OF SECTION

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