

BOROUGH OF EBENSBURG

**REQUEST FOR PROPOSALS
TO DEVELOP, INSTALL AND
OPTIMIZE SUPERVISORY CONTROL
AND DATA ACQUISITION (SCADA)
SYSTEMS FOR THE EBENSBURG
WATER AND WASTEWATER
TREATMENT FACILITIES**

September 2016

EBENSBURG BOROUGH

300 West High Street • Ebensburg, Pennsylvania 15931

Daniel L. Penatzer, Borough Manager

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September 29, 2016

The Borough of Ebensburg is soliciting interest from qualified firms for the development, installation and optimization of Supervisory Control and Data Acquisition (SCADA) Systems for the Ebensburg water and wastewater treatment facilities.

A full description of the services requested, evaluation criteria for consultant selection, and other pertinent information are contained in the Request for Proposal documents, which can be obtained by contacting Daniel Penatzer, Borough Manager, 300 West High Street, Ebensburg, Pa 15931; 814-472-8780; or eburg@ebensburgpa.com. It is the Borough's intent to select a firm based on the information requested in the proposal documents.

Proposals must be received by Monday, October 24, 2016 at Noon at the Borough of Ebensburg Municipal Office, 300 West High Street, Ebensburg, PA 15931.

BOROUGH OF EBENSBURG
REQUEST FOR PROPOSALS
TO PROVIDE SCADA SYSTEMS

I. Purpose

The Borough of Ebensburg is soliciting interest from qualified Control System Integrators (CSI) for the development, installation and optimization of Supervisory Control and Data Acquisition (SCADA) Systems for the Ebensburg water and wastewater treatment facilities.

II. Control System Integrator Requirements

The Control System Integrator shall be regularly engaged in the detailed design, fabrication, installation, and startup of instrumentation and control systems for water and wastewater treatment facilities. Any CSI that has been subject to litigation or the assessment of liquidated damages for nonperformance on any project within the last five calendar years shall not be acceptable. Where specific manufacturers and/or models of major hardware or software products (PLC, software, network equipment, wireless equipment, etc.) are specified or proposed to be used on this project, the CSI shall have completed at least two (2) projects using that specified hardware or software. As used herein, the term "completed" shall mean that a project has been brought to final completion and final payment has been made.

Control System Integrators shall meet the following minimum qualifications:

- a. A minimum of seven (7) years of experience with at least five (5) years in water/wastewater projects
- b. References for three (3) completed projects of like size and application to the project specified herein
- c. Project bonding capacity of two million dollars (\$2,000,000)
- d. CSI must be certified by the SCADA software supplier.
- e. UL 508 certified control panel manufacturing shop. All panels shall meet UL specifications.
- f. On staff licensed professional engineer

III. Description of Project – Water Treatment Facility

The Ebensburg Water Treatment Facility has an existing SCADA, installed in 2013. This system consists of Allen Bradley PLCs that are connected to a Rockwell FactoryTalk Human Machine Interface (HMI). The water treatment facility also has a DAF control system supplied by Infilco Degremont. This system has some interconnection with the FactoryTalk system, but controls cannot be passed to the DAF system from FactoryTalk.

The new SCADA must function on a desktop work station (Application Server) compliant with the configuration requirements in Section V, below. All screens, graphics and control interfaces shall be developed with input from borough staff.

The system shall store all process data, with the capability of creating reports, graphs and charts and monitoring trends.

The DAF control system must be fully integrated with the new HMI so that controls can be performed from one portal. A WIFI access point shall be provided in the DAF room allowing staff in the DAF room to access the HMI via standard, off the shelf tablets (Android operating system), while operating the DAF.

IV. Description of Project – Wastewater Treatment Facility

The Ebensburg Wastewater Treatment facility does not currently have a SCADA. It does have an existing control system consisting of Allen Bradley PLCs that communicate through a touchscreen panel in the main control room. This system does not collect and archive any historical data or have the capability to produce reports or trend data. Remote access does not exist. The facility has two other control systems, one for the Trojan UV disinfection system and another for the Centrysis centrifuge control system. None of these control systems are interconnected currently.

The new SCADA must function on a desktop work station (Application Server) compliant with the configuration requirements in Section IV, below. Additionally, the Trojan and Centrysis systems shall be interconnected with the SCADA so that all processes at the facility can be viewed and controlled from one system. All screens, graphics and control interfaces shall be developed with input from borough staff. The system shall store all process data, with the capability of creating reports, graphs and charts and monitoring trends.

Provide in-plant communication networks linking all the existing control panels to the Main Office/New SCADA Server Room. The communication link shall be by way of Wireless Ethernet Radios. The CSI shall provide all communication components (radios, network switches, patch panels, patch cords, etc.) and CSI supplied control panels, as required for the network communication connection as shown on any contract drawings and specified herein.

V. SCADA Application Servers (Primary and Secondary)

The desktop workstations at each plant will have the following capabilities:

- a. Processor: Intel Core i7-6700 Processor (8M Cache, up to 4.00 GHz)
- b. Operating System: Windows 10 Professional 64
- c. Recovery Media: Windows 10 Pro Recovery DVD Coupon WorldWide
- d. Tower Style unless specified otherwise
- e. 400W Power Supply
- f. Memory: 16GB DDR4 2133 UDIMM
- g. NVIDIA GeForce GT 720 1GB DP High Profile
- h. Graphic Connections: HDMI or Display Port
- i. First Hard Drive: 180GB Solid State Drive, 2.5", SATA3, OPAL2.0 – Capable (NO RAID)
- j. Second Hard Drive Tray: Second 1TB HDD (NO RAID)

- k. Dual 1GB Network Interface Cards
- l. Optical Drive: DVD Recordable
- m. Speakers: Internal Speaker
- n. Optical Mouse
- o. Full-size Keyboard
- p. Two (2) 23" LED Monitors
- q. Microsoft Office Home and Business 2016 or latest version
- r. Warranty services 3 Years Onsite
- s. Shall be Lenovo or approved equal
- t. An Alarm Modem compatible with the supplied SCADA Server and its operating system to allow for remote alarm notifications. Alarm modem shall be Multitech's ZPX series or approved equal.

VI. SCADA Software

The HMI Software shall be based upon Trihedral's VTSCADA and shall be the current version at the time of supply. One year of maintenance and support shall be provided by the manufacturer. SCADA software at each plant, shall be fully redundant to each other as hot standby systems for data and operational changes.

All licenses shall be in the name of the Borough. The HMI shall meet the following requirements:

Primary Server (Water Treatment Plant)

- a. 1,000 Tag Development License
- b. 1,000 Tag Historian
- c. Alarm Dialing Capabilities
- d. Minimum of 5 Internet Clients

Secondary Server (Wastewater Plant)

- a. 1,000 Tag Runtime License
- b. 1,000 Tag Historian
- c. Alarm Dialing Capabilities

VII. Uninterruptible Power Supplies (UPS)

UPS units will be provided for each Application Server. The UPS units shall be tower units and shall provide power to Servers, monitors, modems, switches, alarm dialers provided under this specification. The UPS units meet the following requirements:

- a. Unit shall be line interactive with 120 VAC sine wave output, auto voltage regulation and unattended shutdown capability.
- b. Indications shall be provided for UPS and power conditions including line power, battery power, overload, voltage regulation and battery low/replace status.
- c. Unit shall include field replaceable battery modules.
- d. Unit shall provide minimum 20-minute battery backup on location power failure. Loading calculations shall be submitted to confirm UPS sizing.

- e. UPS, as a minimum shall be equal to Tripplite OMNI Series or approved equal.
- f. Provide with 1-year manufacturer warranty.

VIII. Access Points

The Power Over Ethernet (POE) Access Point for the DAF shall meet the following requirements:

- a. 5GHz and 2.5GHz operation range
- b. WPA and WPA2 wireless security encryption
- c. Web page based configuration
- d. The units shall be EnGenius and the model shall be submitted for approval.
- e. Provide Ethernet CAT5e / CAT6 surge protection with (2) RJ-45 connections, (1) for equipment side and the other (1) for field. Manufacturer shall be Phoenix Contact or approved equal.
- f. The CSI shall supply enough Access Points to provide adequate coverage based on the specifications and contract drawings.
- g. An Installation detail shall be submitted for approval

IX. Firewall and VPN Requirements

The system shall be supplied with a Next Generation Firewall Appliance (NGFW) to secure the connection between the network control system and the customer supplied internet access points. All communications between the network control system and the customer supplied internet access point shall pass through the NGFW devices. The NGFW shall be configured by the Contractor to prevent all incoming and outgoing traffic except for authorized remote access by the customer's employees and representatives. This configuration shall be done according to current network control system cyber security guidelines and best practices. Prior to configuring the NGFW and other equipment in the network control system the CSI shall perform a customer and site specific risk assessment and shall use this as a guideline for implementation to mitigate all risks which are likely to occur and have a major impact on the system. The NGFW shall meet the following requirements:

- a. At least three (3) copper Ethernet ports capable of 1Gbps throughput, and which can be configured so that any traffic between any or all ports can be restricted or allowed according to the configuration of the device.
- b. If the NGFW is equipped with multiple LAN side ports and is configured to switch traffic between those ports without exposing the connected devices to the WAN then it shall be permitted to use the NGFW as a switch in the network control system if appropriate.
- c. If the NGFW is equipped with 802.11 wireless networking this feature shall be disabled.
- d. The NGFW shall be equipped with a protocol aware stateful deep packet inspection type firewall able to discriminate between the traffic allowed on the system and traffic not allowed on the system.
- e. The NGFW shall also be equipped with VPN capability to provide additional security for remote access

- f. If licensing or maintenance subscription is required to maintain the protection level of the NGFW the Systems Integrator shall be responsible for paying all associated fees through the end of the warranty period. The Systems Integrator shall coordinate all maintenance and upgrades with the System Supervisor (Owner) and customer's IT representative.
- g. The CSI is responsible for establishing a site to site VPN communication link to any and all primary and secondary servers that fall outside of the Local Area Network (LAN).
- h. Firewall shall be Cisco ASA-5506-X or approved equal

X. Cyber- Security Threat Mitigation

Prior to commissioning of any network connectivity that provides remote access to either plant, the CSI must prepare and present a Cyber-Security Prevention plan of action according to current industry standards and best practices. This plan should; identify any vulnerabilities, provide staff training to reduce cyber risks, identify plan of action to insure ongoing maintenance and over all cyber security prevention.

XI. Industrial Ethernet Radios

The CSI shall provide radios for communication to the remote RTUs that are not currently connected to the main control rooms at each plant. These radios shall be FCC approved unlicensed Ethernet Radios manufactured by:

- a. CalAmp
- b. GE MDS
- c. ESTEEM
- d. Schneider electric

The CSI is responsible for selecting a path for the radios that provides an unobstructed link between any sending/receiving pair of antennas. Antenna heights and radio powers must be in accordance with FCC guidelines.

The radios must meet the following requirements

- a. Radios, peripheral hardware and software selection must be capable of delivering a polling rate of less than 2 seconds per site with a data fail error of less than 10% over 100 consecutive calls to each individual site. The 2-second polling rate time constraint begins with the initial poll from the master and ends with a complete, valid reply from the RTU.
- b. Antennas shall be properly matched to the selected data radios and be one of two types. 1) Omni (Multi- Directional), 2) Yagi (Uni-Directional).
- c. The System Supplier/Integrator shall be responsible for obtaining all FCC approvals where applicable. The System Supplier/Integrator shall adhere to all regulations set by the National Electric Code and the Federal Communications Commission (FCC).
- d. Radios shall be supplied with a 3 year Warranty with the CSI serving as a single source agent for Warranty issues

XII. Interoperability of Systems

Each system at each treatment facility shall be capable of allowing full data and configuration backups and remote access to the respective SCADA system at the other facility. An integrated alarm system shall be included allowing text, phone and/or e-mail alarms to selected staff. The system shall have the capability of configuring individual user access, passwords and access levels.

XIII. Scope of Services

The selected firm will be expected to perform the following tasks relative to the response to the request for proposals.

- 1) Visit and inspect the water treatment and wastewater treatment facilities to develop a full and complete understanding of the existing control systems.
- 2) Develop a SCADA system for each facility that incorporates as much of the existing PLCs, field instruments and process equipment as possible.
- 3) Meet with selected staff to determine their preference for screen content and design, and incorporate those desires into the final product.
- 4) Install and optimize the SCADA systems so that the new SCADA systems are completely operational.
- 5) Connect each of the two plant SCADA systems over secure VPN so that operations at each location can be monitored from either location, with real time backups and redundancy.
- 6) Provide training to selected staff on the operation of the SCADA systems.

XIV. System Components

The new SCADA systems shall include ALL required hardware, work stations, monitors, firewalls, radios and associated equipment, software, development of all graphics, wiring, installation and optimization necessary to make the new SCADA systems fully functional.

XV. System Maintenance

The selected firm must describe its capability for responding to maintenance issues, whether on-line, in person or both. Include details of any included maintenance, and how maintenance is proposed in long term.

XVI. Training

One 8-hour day of training shall be provided at each facility; two days total. All training shall be included in pricing.

XVII. Sole Point of Contact

The sole point of contact for inquiries concerning this request for proposals is:

Daniel Penatzer, Borough Manager
300 West High Street
Ebensburg, Pa 15931
814.472.8780
dlpen@ebensburgpa.com

Firms should not contact other staff or the facilities directly. All requests for site visits shall be coordinated with the Borough Manager.

XVIII. Schedule

This project is expected to be awarded in October-November. Completion of the project is expected no later than February 28, 2017.

XIX. Addresses of Facilities

Ebensburg Municipal Office
300 West High Street
Ebensburg, Pa 15931
814.472.8780

Ebensburg Water Treatment Facility
309 Tanner Street
Ebensburg, Pa 15931

Ebensburg Wastewater Treatment Facility
291 Trout Lane
Ebensburg, Pa 15931

XX. Submittal Requirements

Qualified firms interested in performing the work described in this request for proposals should submit the following information.

- A. Letter of transmittal.
- B. Qualifications of your firm and staff proposed to perform the work on this project.
- C. Identify the specific staff member to be assigned as primary representative, office address of that staff person, and include resumes of that staff member and others to be directly involved in the work.
- D. A list of similar projects for which SCADA systems have been designed and installed. Confine this list to only those projects that have involved the same staff proposed to be assigned to our project. Provide contact information for those operations/projects.
- E. Experience with Allen Bradley, Centrysis, Rockwell, FactoryTalk, Infilco Degremont, Trojan and other components of the existing system to be incorporated into the new SCADA system.
- F. Clearly indicate which components of the existing control systems are to be utilized with the new SCADA system, and list all components that are to be purchased new.
- G. Lump sum cost of proposed SCADA.
- H. Limit the total length of your proposal to a maximum of ten (10) pages, including cover letter.

- I. Submit only a single copy of your proposal.
- J. Proposals must be submitted no later than Noon on Monday, October 24, 2016 to:

Daniel Penatzer, Borough Manager
300 West High Street
Ebensburg, Pa 15931

- K. Questions related to your submission should be directed to Daniel Penatzer, Borough Manager at dlpen@ebensburgpa.com.
- L. Any cost incurred by the firm in preparation, transmittal or presentation of any proposal or material submitted in response to this request shall be borne by the firm.

XXI. Firm's Obligation

By submitting a bid proposal, the firm certifies that it has read and fully understands all of the requirements included in the RFP for the SCADA systems and that it is fully informed as to the nature, scope and location of work to be performed, and the type of equipment necessary for successful performance of the systems. No additional allowances will be made because of lack of knowledge of these conditions.

All firms shall visit the premises involved in the bid proposal to check and observe all conditions and requirements, or make whatever examination and investigation which they deem necessary to acquaint themselves with the physical conditions, and will be held to have made such visits and examinations before submitting their bid proposals.

It is the responsibility of the firm to ascertain if any components of the specifications are unsafe and that if any unsafe or poorly designed criteria are contained herein that they be thoroughly explained to the Borough in the bid proposal. Minor details of system design are left to the discretion of the firm, who shall be solely responsible for the design of all features.

XXII. Cost

All proposal costs shall be complete including all charges for labor, travel, living expenses, warranties, documentation, insurance, deliveries, testing, service materials, tools, furnishings, and any other charges involved in supplying complete SCADA systems.

XXIII. Prime Contractor Responsibilities

The selected firm will be required to assume responsibility for all services offered in their proposal whether or not the selected firm produces them. If the service is to be provided by a sub-contractor, the sub-contractor must be identified in the response, and all questions contained in Section XX above shall apply to the sub-contractor. The Borough will consider the selected firm to be the sole point of contact with regard to contractual matters.

The selected firm is solely responsible for all designs, equipment, materials and services proposed. The Borough's review of the bid proposal shall not be construed as acceptance of any defects or error contained therein, nor shall it in any way lessen the firm's responsibility to propose completely operational systems.

XXIV. Selection Criteria

The following criteria will be evaluated during the selection process.

- A. Overall quality of proposal.
- B. Firm's qualifications and experience.
- C. Firm's expressed understanding of existing systems at both facilities.
- D. Recommendations of previous clients.
- E. Capability to meet time schedules.
- F. Cost

Firms may be required to make an oral presentation of their bid proposal. Such presentations provide an opportunity for the firm to clarify the bid proposal to ensure thorough mutual understanding.

XXV. Selection Process

It is the Borough's intent to select a firm based on the information requested.

The Borough intends the selection process to proceed as follows, however, reserves the right to modify the schedule as necessary.

Release RFP	September 29, 2016
Deadline for Clarifications	October 20, 2016
Proposals Due	October 24, 2016
Selection Finalized	October 24, 2016

The Borough, at its sole discretion, reserves the right, for any reason and at any time, to reject any or all bid proposals, to waive any informalities and/or irregularities, to negotiate the terms and specifications for the project, to modify any part of the request, to issue a new request for proposals, and to make a final selection in a manner which best serves the interests of the Borough.