City of Ashland
Wastewater Treatment Plant Supervisory Control and Data Acquisition System Upgrade RFQ
PWE #343.999
PM – David Gies

Proposal PP212

Contact Person:
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Response Date:
2:00 PM, December 19th, 2013
2.2.1 – PROJECT UNDERSTANDING AND APPROACH

“Demonstrate a clear and concise understanding of the scope of work being requested in this RFQ and summarize the approach and methodology proposed to meet the project requirements. Indicate any familiarity the consultant has with the City’s system. Provide a description of your management approach and quality assurance activities, including a description of your process for coordinating work with the City and your approach for minimizing errors and omissions during design and construction.”

Project Understanding

Portland Engineering, Inc. (PEI) understands that the City of Ashland (City) operates and maintains a wastewater collection system comprised of 110 miles of gravity sewer and eight (8) lift stations. In April, 2012 the City adopted a Comprehensive Sanitary Sewer Master Plan (CSSMP) that included recommendations for improvements to the City’s existing Supervisory Control and Data Acquisition (SCADA) system. After exploring various options for SCADA instrumentation and programming upgrades at the wastewater treatment plant (WWTP), the City has decided to replace the existing WWTP SCADA system with a new, fully redundant SCADA system.

During the first quarter of 2013 at the request of the City of Ashland, PEI completed a Control System Assessment for the Ashland Wastewater Treatment Plant. A short executive summary of the Assessment follows. The complete report highlighting our design effort is available upon request.

This assessment outlines the recommended phased plan to provide the City a modern, reliable control system. The plan includes the following phases:

- Phase 1 – Plant PLC Replacement
- Phase 2 – Headworks PLC Replacement
- Phase 3 – Centrifuge PLC Replacement
- Phase 4 – Filter PLC Replacement
- Phase 5 – UV PLC Replacement

Phase order can be adjusted to meet operational needs and operator identified priorities. The only restraint is completing Phase 1 during the winter operating season with the filtration system offline. The assessment considered upgrades to the Collections Telemetry and Controls Systems for future phases. PEI will staff each phase according to its criticalness to minimize down-time... around the clock if required. Each phase will be preceded by a pre-phase conference to identify and correct any existing control strategy deficiencies. The existing system is a distributed control system in that each significant subsystem has its own internal (PLC) control. The alternative is a centralized control system with one PLC and multiple remote I/O drops. There are pros and cons of each configuration. The recommended replacement system is a distributed system to obtain shorter, less intrusive outages and utilize the existing fiber optic infrastructure. All vendor systems were considered in the plan and continued conversations with the manufacturers will be completed by PEI to ensure “smart” integration of their systems.

PEI has extensive history and familiarity with the City of Ashland. We have a strong understanding of the existing WWTP SCADA system. We have provided Instrumentation and Control integration, trouble-shooting and design services for the City of Ashland WWTP since 2004. Following is a list of completed and ongoing projects at the plant:

- ’04 (E134) Hardware & Electrical Install Services
- ’05 (F112) Troubleshoot PLC Issues
- Feb ’07 (G169) Ashland Creek Level Monitoring
- Mar ’08 (H183) Telemetry Repairs & Upgrade
- Mar ’08 (H184) OI Application Cleanup
- ’07 (H209) WWTP Control & Instrumentation Services Contract
- ’08 (J105) WWTP Control & Instrumentation Services Contract
Contractors and personnel at the WWTP have done a good job maintaining the aging instrumentation & control systems, but the hardware is far past its prime. Modifications and additions to the system have been haphazardly implemented on the fly to reduce operations impact. They have not been fully documented. A large complicated control system failure is imminent.

Much of the hardware at the plant was not designed to handle large amounts of data transfer let alone, large amounts of high-speed Ethernet/IP communication. Communication failures at the plant are a fairly regular and costly occurrence. The proposed hardware is designed to handle large amounts of high-speed Ethernet/IP communications traffic.

Project Approach
Portland Engineering, Inc.’s (PEI) general project approach customizes integration solutions to your needs through hands-on development. We perform our engineering services with professionalism, integrity, and ethics as top priorities. We provide an essential combination of skills for any successful controls related project, including:

- A team based project approach that identifies and understands project needs, assesses and minimizes risk, manages and reduces cost, and provides a reliable and superior product;
- Commitment to the highest standards in system design and implementation, providing system standardization that improves operations and increases efficiency with a proven history of completing design/build projects on time and on budget;
- A project manager and support staff with decades of experience, dedicated to maintaining a local onsite presence, meeting all project objectives and efficiently meeting all project needs;
- A detailed and complete project analysis including assessment of existing systems, failure analysis, and a thorough investigation and understanding of all functional system requirements;
- Comprehensive project support with full spectrum engineering capabilities that will fully integrate all system components;
- Close involvement with owners and operators, early and throughout any project, to address all operational needs in a practical and effective manner and;
- Flexibility in service delivery with a proven ability to provide value though cost savings containment.

The RFQ established 4-Phases of work to include 1) Pre-Design Evaluation & Scoping, 2) Design, 3) Programming and 4) Installation. These phases will be combined with our previously completed Control System Assessment work to create the SCADA System Upgrade Memorandum.

Pre-Design Evaluation & Scoping
Much of this work has already been completed as part of the above-mentioned Control System Assessment. PEI will however take advantage of this phase to conduct the pre-execution control strategy conference. This conference will focus on the operator’s historical knowledge of and desire to change existing control strategies before implementation.

Design
Again, most of this phase has been completed, but PEI will use this phase to confirm the previous design by confirming I/O and space allocations. This phase will also include hardware procurement.

Programming
This phase will focus on efficiently transferring and modifying (as needed) the old PLC code from Telepace to RSLogix software. The Wonderware InTouch DAServers will be modified to communicate with the new PLC’s and all code will be extensively tested within the office.

- ’12 (N289) WWTP Control & instrumentation Services Contract
- Mar ’13 (N321) WWTP Control System Assessment
- May ’13 (P142) WWTP Wonderware Modernization
- ’13 (P182) WWTP Control & Instrumentation Services Contract
- Ongoing (P299) WWTP Redundant WIN-911
- Ongoing (P319) WWTP ATS PLC Replacement
- Ongoing (P322) Collections Control & Instrumentation Services Contract
**Installation**

PEI has a good working relationship with the City of Ashland electricians and looks forward to being onsite and providing installation direction during this phase. PEI will be available around-the-clock to minimize operational impacts to the plant. PEI also has a good plan to provide pre-phase wiring interface models minimizing down-time. This phase will include factory, functional and operation testing as well as operator training and documentation.

Following is a preliminary schedule describing our intent to complete the upgrade within the 24 month period.

Throughout the project PEI is committed to providing a rigorous Quality Assurance and Quality Control program. We will work with the City and management personnel on the best process for minimizing errors and omissions during the design and construction phase. As a standard PEI follows the Controls System Integrators Association best practice recommendations to complete the following tests in sequence:

- Factory Acceptance Test – Hardware and programming will be “bench” tested and documented.
- Functional Acceptance Test – All installation and I/O will be field-confirmed.
- Operational Acceptance Test – All programming will be tested under actual field conditions.

PEI is differentiated from our competitors by our commitment to understanding the underlying processes that allow us to analyze systems for risks and sources of failures and potential value added enhancement opportunities. We provide a high level of detail in all of our work to translate our knowledge into systems for our clients that are current with emerging technology. We extensively test our solutions before we install them to ensure that our systems perform as intended and are fully functional before they are commissioned. Our experience allows us to develop control systems that are reliable, understandable and maintainable; are grounded in an understanding of the City’s operational structure; and that will provide continued, long-term value to all of your process and controls related projects.
2.2.2 – PROJECT TEAM AND RESOURCES

"Describe the experience and qualifications of proposed project manager (including sub-consultant staff). Provide information regarding key staff members (including sub-consultant staff) who are anticipated to perform services. Describe team members roles, specialized expertise and relevant project experience of key staff. Indicate availability and commitment of key personnel for this project. Also, include a brief description of the proposers project resources (including new and innovative equipment, software, etc.) to be used on this project. (Any changes in the staff assigned to the project will require City approval)."

PEI will manage and provide staff for this project from its Central Point office.

Josh Downs – Key Contact & Team Leader

Project Manager, Primary Point of Contact, Systems Design, Scope Development, Troubleshooting, Programming, On-Call Support, Troubleshooting

Josh Downs is a controls specialist and mechanical engineer with more than eight years of experience in control system engineering, he holds a Bachelor of Science Degree in Mechanical Engineering and is a commissioned officer in the Oregon Air National Guard. Josh has extensive experience in project management of municipal and industrial control systems. He is regularly responsible for start-up and commissioning, programming and testing PLC and HMI software, reviewing and developing P&ID, developing instrumentation, and coordinating design projects. Josh’s diversity of experience and knowledge brings added value to any controls project.

Josh has extensive experience will all the hardware and software of the existing systems at the City’s WWTP as well as those planned for the upgrade project.

Patrick Shough

Available for On-Call Support, Troubleshooting and after-hours support as needed

Pat is an Electrical Engineering Technician with extensive experience in Electrical Instrumentation, PLC based Control Systems and SCADA development.

Pat is involved in many different capacities depending on the project. His project responsibilities include operator interface engineering; equipment specification; instrumentation specification; control panel design; PLC controls configuration and system design; field engineering; wiring diagrams; project specification and scope development; field service engineering and equipment troubleshooting; testing and start-up. Pat has knowledge of I/O configurations; developing wiring diagrams; maintaining I/O database; coordinating instrument ordering; installation and wiring details and instrument configuration; and control panel design.

Jeff Bruce

PEI President – Partner Level Oversight, System Design, Development, & Programming

A Professional Engineer registered in the States of Oregon, Washington and California. Jeff has a strong background in project management, product development, food processing, chemical treatment, gas purification, and power generation. As the President of PEI, Jeff has fulfilled many roles including project management and lead engineering, with specialties in electrical control systems design and specification, technical engineering, field service and process controls engineering, SCADA equipment design standards, control and configuration, and start-up and commissioning.

Jeff has extensive experience with plant-wide simulation, start-up, and testing; data acquisition systems; operator interfacing; remote access options; autodialer configuration; PLC and network assessment; project management; controls system design, instrumentation and system integration. Jeff has experience with numerous PLC and HMI systems, integration of devices using communication protocols; has developed complex control functions for critical system; and designed telemetry systems for remote data acquisition and control over leased lines; dial-up POTS lines, hardwired networks (Cat5, blue hose, etc.) fiber-optic cables, cellular networks and radio (licensed and license-free) networks. Jeff excels at field service and troubleshooting and regularly works with Allen-Bradley, Rockwell Automation including RSVIEW, and Wonderware as well as a wide variety of other systems.
Besides the great personnel PEI employs in its Central Point and Portland office they also have an extensive professional network of manufactures/distributors support to include hardware and software support contracts that cover all facets of current and future needs at the WWTP to include:

- Allen Bradley / Rockwell Automation – Manufactures the hardware and software of the proposed replacement PLC’s as well as the vendor PLC’s currently controlling the plants Filter and Centrifuge systems.
- North Coast Electric – Local distributor of Allen Bradley / Rockwell Automation products as discussed above.
- Wonderware – Manufactures the SCADA software currently in use at the WWTP.
- CB Engineering – Distributes the hardware and software of the existing Control Microsystems PLC’s at the WWTP as well as the WIN-911 alarm annunciation software currently in use at the WWTP.

All control panel fabrication will be completed at our preferred UL508 panel-shop, Electro Pac, Inc. PEI has sole-sourced all UL508 work to Electro Pac for almost 20 years.

PEI also has a good professional relationship with Brian Paul formerly of Quality System Integration. Brian has provided extensive network support at the WWTP and will be included in the control system improvements when appropriate.

2.2.3 – RELATED PROJECT EXPERIENCE

“Include descriptions of similar projects. Include schedule and cost information, change orders, project outcomes and customer feedback received (if any). Include reference (name, title, phone, email).”

Portland Engineering Inc. (PEI) has provided a broad range of services as both primary and sub contractor to a number of municipal facilities in the Southern Oregon region and greater Portland metropolitan area. To ascertain the limited space available in this RFQ response we will focus on projects of similar scope executed out of the Southern Oregon Office.

Ashland WWTP Control System Assessment ($4,800, on-time, no change orders)
PEI was recommended to and sought-out by the City of Ashland’s Wastewater Treatment Plant management to repair and analyze their aging SCADA hardware and software. PEI provided emergency response to get their system functioning and provided a thorough phased improvement plan. The existing hardware at the plant consists of an Ethernet and Modbus Control Systems network to include SCADAPacks, SCADAPack 32’s and SCADAPack 100’s as well as Allen Bradley SLC 5/05’s and ControlLogix platforms. The HMI software was Wonderware InTouch version 9.1. The phased improvement plan included replacing the Control Microsystems PLC’s and upgrading the HMI software. PEI was able to help the City save a large amount of software costs by taking advantage of the Wonderware Modernization program. PEI continues to provide extensive control system support to the City of Ashland with an anticipated Fall ‘13 start on the control systems improvement plan.

PEI Contact – Josh Downs
Customer Contact – David Gies, Wastewater Systems Supervisor, (541) 552-2335 / giesd@ashland.or.us

Medford Regional Water Reclamation Facility Service ($10,000 – $20,000/Year)
PEI has provided planned and emergency support for the MRWRF’s extensive Instrumentation and Control Systems since 2009. The MRWRF has issued RFQ’s similar to this and selected PEI as its system integrator of record.

PEI Contact – Josh Downs & Pat Shough
Customer Contact – Ed Sturtevant, Process Control Supervisor, (541) 774-2754 / ed.sturtevant@cityofmedford.org

Lakeside WWTP Improvements ($263,961, on-time, $12,204 change orders)
PEI provided the equipment and inter site communication control systems for the Waste Water Treatment Plant and North Site Improvements project. This project consisted of modifications to the existing treatment plant including alterations to the treatment units for denitrification, temporary sludge storage and modifications to the chlorine contact basins; development of the new North Site including a 280,000 gallon digester, a 250,000 gallon reclaimed water storage tank, and an equipment building and monitoring of the existing airport irrigation system. PEI provided patch panels and media converters for the
fiber optic communication between the three sites, ten control panels, ten Allen Bradley PowerFlex 700 variable frequency drives (combined 435 Hp) communicating via Ethernet, four Allen Bradley PanelViews and four Allen Bradley SLC 5/05 PLCs with 110 points of I/O. All aspects of the control system were completed by PEI to include procurement, panel and control design, instrument configuration, PLC programming, startup and training.

PEI Contact – Jeff Bruce & Josh Downs
Customer Contact – Ardith Lewis, Chief Plant Operator – (541) 759-2909 / a.lewis@cityoflakeside.org

Shady Cove WWTP Improvements ($68,989, on-time, $1,122 change orders)
PEI provided all Instrumentation and Controls for the Retrofit and upgrade of the existing WWTP to 2.0 MGD capacity. A single Allen Bradley SLC 5/05 PLC was provided. The SCADA system installed was a Wonderware graphical interface application with multiple topics for monitoring vendor furnished PLCs. Key components of the project included interfacing a new influent pump station, new cylindrical fine screen, conversion of aeration basins and digesters to fine bubble diffusers, new 50’ diameter second clarifier, new RAS/WAS pump station, new tertiary filter basin and package filter equipment, new dechlorination pump station and injection system, new plant water system, new potable water system, retrofit of existing office/laboratory building and all appurtenant improvements. The package filter was provided with a vendor furnished PLC which PEI interfaced status of key events into the Wonderware Application.

PEI Contact – Jeff Bruce & Josh Downs
Customer Contact – Kevin James, Wastewater Superintendent, (541) 878-3322 / williamkevinjames@gmail.com

Ashland Pump Stations Telemetry ($22,124, on-time, no change orders)
PEI provided hardware, installation and system integration for the UHF licensed radio telemetry system for 6 existing pumping sites and one master at the WWTP. The project required incorporating the new master radio into the existing WWTP PLC controls and providing new displays for the Wonderware SCADA application. The Existing Wonderware network was modified to include the data collected for each site. The existing SCADAAlarm was modified to provide for discrete autodialing on alarms for either high level or loss of radio communication to any of the remote sites if the alarms were not acknowledged by an operator through Wonderware. PEI provided a field radio survey for each site and provided all licensing documents for FCC licensing. All communications were shop tested prior to installation.

PEI Contact – Jeff Bruce
Customer Contact – David Gies, Wastewater Systems Supervisor, (541) 552-2335 / giesd@ashland.or.us

Cave Junction Pump Stations Telemetry ($29,535 on-time, no change orders)
PEI provided hardware, installation and system integration for the UHF licensed radio telemetry system for 2 pumping sites and one master at the WWTP. The project required a new MTU PLC at the WWTP and new displays for the Wonderware SCADA application. The Existing Wonderware network was modified to include the data collected for each site. The existing ANTX autodialer was modified to provide annunciation of alarms for either high level or loss of radio communication to either of the remote sites if the alarms were not acknowledged by an operator through Wonderware. PEI provided licensing documents for FCC licensing.

PEI Contact – Jeff Bruce
Customer Contact – Mike Bollweg, Lead Operator, (541) 592-4590 / cityofcjwwtp@cavenet.com
A few of our many customer testimonies as they apply to this RFQ:

“I have worked with Portland Engineering, Inc. on numerous projects utilizing Control Microsystems PLCs. These projects have been both grassroots constructions and retrofit projects at existing facilities. In all cases, Portland Engineering, Inc. has performed admirably and professionally in achieving project objectives and serving the owner’s best interest. I am familiar with some of these projects and recognize that they have been technically challenging in communicating with various controllers and protocols. Portland Engineering, Inc. worked diligently with the technical support group at Control Microsystems as well as other manufacturers to resolve the communication issues. Several of these difficult handshaking projects utilized the powerful SCADA capabilities to integrate Control Microsystems PLCs directly with Allen Bradley and Modicon PLCs. Portland Engineering, Inc. has utilized Control Microsystems with both the visual display operator interfaces provided by Control Microsystems as well as third party PC based operator interfaces. They have also utilized the broad capabilities of Control Microsystems PLCs in various telemetry networks including radio and leased line communications. This letter is a recommendation for Portland Engineering, Inc. in integrating Control Microsystems PLCs”. – Mark Fusick, Account Manager, CB Engineering Pacific, Inc.

“We use Portland Engineering, Inc. located just down the street from our WWTP. I started working with them when I was employed with the City of Ashland. I would strongly recommend them for your SCADA work. There local guys are very good and work in a professional manner. The main office is located in Portland but we are fortunate enough to have a local branch here in Medford. Any problems the local guys might have is networked through the Portland branch, which is rare. If you have any questions contact Jeff Bruce with PEI @ 541.664.6200. I think you would be very pleased with the outcome.” – Terry Birch, Operator, Medford Regional Water Reclamation Facility.

“This letter will serve as a recommendation for Portland Engineering, Inc. (PEI) for their professional services as a Wonderware Control Systems Integrator. I have worked alongside PEI for many years now, and attest to the highest level of competency and integrity they possess throughout all of their projects. They work hard for their customers, always in their best interests, and always providing top quality service and the best product for their clients needs. PEI has done outstanding work involving very difficult technical issues, integrating our products creatively into unusual and complex systems. Portland Engineering Inc. has my utmost confidence and support.” – Larry Claussen, Account Manager, ISS Wonderware

“Joshua Downs has played an integral part here at the City of Ashland’s Waste Water Treatment Facility’s SCADA improvement and development. Mr. Downs first responded to an emergency situation for us last year, and was able to remedy the situation in short order. For the past several months Josh has been indispensable. He has been a pleasure to work with, bringing his attention to detail to every project. His communication and people skills are excellent, and he has some very innovative ideas. I can highly recommend Mr. Downs for the opportunity that you have available. He is well suited to the challenges it provides. Josh is a talented young man, and everyone here wishes him all the best and we intend to continue to utilize his exceptional skill set. If you need any additional information, please contact me.” – Greg Whittenburg, Chief Operator, City of Ashland WWTP

“I wanted to let you how much Josh is appreciated here at the Medford Water Reclamation Facility. His work is high quality and professional. He trouble shoots issues intelligently and efficiently and has shown a knack for anticipating what is needed above and beyond. Often an improvement to our operation will be discovered and implemented because of his abilities. He also interacts well with our staff which is invaluable in exchanging information and finding solutions.” – Ed Sturtevant, Process Control Supervisor, Medford Regional Water Reclamation Facility
A few of our many professional references:

Medford Regional Water Reclamation Facility
Ed Sturtevant – Process Control Supervisor
(541) 774-2754

Wonderware PacWest
Kevin Flieger – Account Executive
(541) 250-1706

Big Rock Community Service District
Mike Wiley
(707) 218-8250

Keith Consolidated, Inc.
Bill Keith – Owner
(541) 830-8678

Cave Junction WWTP
Mike Bollweg – Lead Operator
(541) 287-0041

City of Ashland, WWTP
Greg Whittenburg – Lead Operator WWTP
(541) 488-5348

Ferndale WWTP
Steve Coppini – Chief Wastewater Plant Operator
(707) 786-9694

PacifiCorp Energy – North Umpqua Hydro
Jeffery Brown – Senior Operator
(541) 498-2606

Rogue Valley Sewer Services
Wade Denny, PE – District Engineer
(541) 664-6300

Slayden Construction, Inc.
Jeff Wall – Project Manager
(503) 769-1969

North Coast Electric
Steven Kyser – MCC Specialist
(541) 343-7701

City of Rogue River
Tom Ferrell – WTP Operator
(541) 660-2007

2.2.4 – RESPONSIVENESS

“This criterion relates to how quickly the consultant can respond to City’s requests/inquiries. The Proposer must demonstrate how time will be managed, describe Proposer’s office locations and how they can cost-effectively complete this project. Include a description of how the Consultant will provide services from a remote location (if applicable). Describe how proposer intends to ensure responsiveness during design, construction and subsequent ongoing support services.”

For this project PEI is committed to providing a comprehensive, onsite presence with the most up-to-date training services, rapid maintenance services, and emergency response support. We are able to provide immediate emergency support and response if necessary. We are committed to completing projects in a timely manner with an emphasis on efficiency and value. PEI has two main offices, located in Portland, Oregon and Central Point, Oregon. Our nearest office is approximately 20 miles away from the City and we are able to provide an emergency onsite response within one hour.

Should PEI be selected to partner with the City of Ashland on this project there will be no need for remote support outside of troubleshooting on the telephone. PEI has historically been available and responded to the Ashland WWTP after-hours, on weekends and holidays. Our customers are pleasantly surprised by our depth, availability and responsiveness.

ADDENDA
PEI acknowledges the receipt of the following addenda: No Addenda Found.