

CITY OF HIGH POINT

AGENDA ITEM



Title: Electrical and HVAC Improvements – Ward Plant Amendment 2

From: Terry Houk – Public Services Director
Derrick Boone – Public Services Asst. Director

Meeting Date: June 5, 2017

Public Hearing: N/A

Advertising Date: N/A
Advertised By: On-Call

Attachments: Attachment A – Scope of Services
Formal Bid Recommendation

PURPOSE:

The City has budgeted for Electrical and HVAC improvements for the Ward Water Treatment Plant and has selected Black and Veatch to perform design, permitting and bidding services for this project. This amendment is for additional service requested for replacement of obsolete programmable logic controllers (PLC) and Supervisory Control and Data Acquisition (SCADA) improvements.

BACKGROUND:

The Ward Water Treatment Plant is converting the Electrical system from 12.47 kv (not standard) to 4.16 kv (standard). This conversion is required, as parts for the 12.47 kv are not readily available, or not easy to obtain. The HVAC system (installed in 1985) is being replaced and upgraded to ensure the system is fully functional and that the laboratory maintains the desired temperature setting through out the year for testing purposes.

BUDGET IMPACT:

Funds for this project are available in the 2016-2017 Budget.

RECOMMENDATION / ACTION REQUESTED:

Public Services Requests Council approve the scope of services to Black and Veatch for Electrical Improvements to the Ward Water Treatment Plant in the amount of \$225,000.00.



BLACK & VEATCH
Building a world of difference.

BLACK & VEATCH INTERNATIONAL COMPANY

10715 DAVID TAYLOR DRIVE, SUITE 240
CHARLOTTE, NC 28262 USA
+1 704-548-8461 | www.bv.com

April 25, 2017

City of High Point
Ward Water Treatment Plant Upgrade

Project No. 190221
B&V File No. 11.1210

City of High Point
211 South Hamilton Street
High Point, NC 27261

Attention: Mr. Terry Houk, Public Services Director
Subject: Ward Water Plant Electrical and HVAC
Contract Amendment No. 2

This letter amendment covers additional services requested for the Ward Water Treatment Plant Upgrade project. The Professional Services Contract dated July 27, 2016 for the Ward Water Plant Electrical and HVAC Improvements allows changes by written amendment. This amendment covers the following additional services:

1. The Work includes replacement of obsolete programmable logic controllers (PLCs) and instrumentation and automation improvements as described in the attached Scope of Services. The additional fee associated with Amendment 2 is \$225,000. Please indicate acceptance of this proposal by signing below.

Very truly yours,
BLACK & VEATCH INTERNATIONAL COMPANY

Mike Osborne, PE
Project Manager

Accepted:

Public Services Director
City of High Point

Jeffrey Coggins, PE
Associate Vice President

Approved:

Deputy City Manager
City of High Point

AMENDMENT NO. 2
ATTACHMENT A
SCOPE OF SERVICES

Owner: City of High Point, NC
Project: Ward Water Treatment Plant Upgrades

A. PROJECT DESCRIPTION

The services to be performed by the ENGINEER under this AMENDMENT 2 consist of preliminary and detailed design for the Ward Water Treatment Plant (WTP) Supervisory Control and Data Acquisition (SCADA) Upgrades. Work included in the amendment is as specifically identified below.

Basic services to be provided by ENGINEER under this AMENDMENT are as follows:

- Phase 1 – Preliminary Design Services
- Phase 2 – Design Services
- Phase 3 – Bidding Services

Improvements included in the Construction Contract Documents prepared as part of the work of this AMENDMENT will be added to the Ward Water Treatment Plant Upgrade Project.

The Work includes replacement of obsolete programmable logic controllers (PLCs) and instrumentation and automation improvements.

The following items will be designed and specified, as applicable, for implementation under a standard design-bid-build construction package:

- New Rockwell ControlLogix PLCs to replace existing eight Rockwell PLC-5, five PLC-5 RIO, and ten SLC 5/05 PLCs, including the development of control descriptions for each process area in the plant.
- Updated control system architecture drawings
- As needed design of either 1) new PLC panels and retrofitted marshaling panels or 2) retrofits and upgrades to existing PLC panels.

Schedule. These scopes of services are anticipated to be performed as follows from execution of this Amendment No. 2:

- | | |
|--|--|
| • Phase 1 – Preliminary Design | 1 month |
| • Phase 2 – Design Services 50% Design | 3 months |
| • Phase 2 – Design Services 90%Design
Upgrades Project) | 3 months (parallel to Level 3
Upgrades Project) |

- Phase 3 – Bid Phase Services to coincide with Bid Phase Services for Upgrades Project.

Level 3 design, permitting assistance, and Bid Phase services of the original design scope of Upgrades Project (Phase 302 and 350 and permitting assistance) shall be postponed to coincide with above schedule.

A.1. PHASE 1 – PRELIMINARY DESIGN SERVICES

- A.1.1. SCADA Upgrades Initiation Meeting/Inspections. Conduct a Project Initiation Meeting with CITY to confirm goals and objectives; to review PROJECT schedule and budget commitments; to review facilities; and to obtain records, drawings and data. Evaluate existing building space at the plant to determine adequacy of reuse. Eight (8) days are budgeted for the Project Initiation Meeting and plant field inspections.
- A.1.2. SCADA System Upgrades I&C Design Memorandum. Prepare an I&C design memorandum and preliminary drawings necessary to establish agreement on the PROJECT's scope, design parameters, performance requirements and approach for selected improvements. Said design memorandum will progress the PROJECT design to an approximate 15- to 20-percent level of completeness.

The design memorandum will generally include the following:

- Design criteria,
- Equipment tagging conventions,
- Preliminary plans showing existing and new PLC panel location
- Preliminary control system block diagrams,
- PLC list,
- Preliminary PLC input / output (I/O) list
- Equipment control summary table,
- Regulatory and code requirements, and
- Detailed design through construction schedule.

Submit an electronic copy of the draft design memorandum to CITY for review.

Deliverable: Draft Design Memorandum (electronic copy)

- A.1.3. SCADA System Upgrades Design Memorandum Review. Meet with CITY and obtain CITY's written comments on the draft design memorandum and preliminary drawings. Resolve questions and revise documents, if necessary, and submit to CITY hard and electronic copies of the sealed and signed final design memorandum.

*Deliverables: Final Design Memorandum (up to five hard copies and electronic copy)
Review meeting agenda and minutes (electronic copies)*

- A.1.4. Prepare Opinion of Probable Construction Cost. Develop an opinion of probable construction cost based on the information presented in the design memorandum. Such opinions of cost will reflect the probable cost of the PROJECT based on an approximate 15- to 20-percent level of design completeness.

The cost opinion level of accuracy presented by ENGINEER with the design memorandum will be a Class 3 or Budget Authorization or Control cost opinion in accordance with accepted industry guidelines and as defined by AACE. The Class 3 estimate is commensurate with development of the design concept to a 10- to 40-percent level; the expected accuracy on the low end will be -10 to -20 percent and the expected accuracy on the high end will be from +10 to +30 percent.

Deliverables: Preliminary Cost Opinion (electronic copy)

A.2. PHASE 2 – DESIGN SERVICES

- A.2.1. Field Inspections. Conduct a PROJECT detailed design I&C coordination meeting with CITY to confirm PROJECT goals and objectives; to review PROJECT schedule and budget commitments; to review facilities; and to obtain updates on on-going projects, including drawings and data.

- A.2.2. Quality Assurance / Quality Control. The design documents will be reviewed by ENGINEER's technical advisors or senior technical staff for quality assurance/quality control (QA/QC) purposes prior to delivery to CITY. Results of said reviews will be maintained by ENGINEER in its record files until completion of the PROJECT. The results of the QA/QC review will be incorporated into subsequent deliverables.

Deliverables: None, documentation maintained with ENGINEER's record files

- A.2.3. Detailed Design. The scope of the detailed design phase of the Work is:

1. Plans and Specifications

- a) Produce technical specifications (CSI Divisions 1 through 16, as applicable). Specifications which include software purchased by the Contractor will require that all software licenses be assigned to the CITY.

- b) Produce PROJECT drawings.

*Deliverables: 50-percent plans and specs (electronic copies)
50-percent cost opinion update (electronic copy)
90-percent plans and specs (electronic copies)
90-percent cost opinion update (electronic copy)*

Anticipated elements in each of the review stages are as follows:

50-percent Plans and Specs

- Preliminary I/O Schedule
- Electrical site plans
- Preliminary Equipment Control Descriptions and revised Control System Block Diagram
- Preliminary PLC and control panel demolition, modifications and new panel details
- Updated and new equipment and instrumentation specifications
- Electrical power plans
- Electrical one line diagrams
- Updated Opinion of Probable Construction Cost

90-percent Plans and Specs

- Updated deliverables identified in the 50-percent documents with CITY and QC comments included
- General requirements, electrical and miscellaneous specifications
- Electrical one-line diagrams, duct bank sections, and panel board schedules
- Remaining drawings and specifications
- Updated Opinion of Probable Construction Cost

ENGINEER will provide an electronic copy of interim plans and specifications to CITY for review at least one week prior to review meetings. Interim drawing deliverables will be half size. Consolidated pdf files (one file for drawings and one file for specifications) will be posted to an FTP site for file transfer to CITY staff.

The 90% drawings will be combined with the Ward WTP Upgrade drawings as a single set of documents for permitting and bidding.

1. Design Development Review Meetings. ENGINEER and CITY staff will meet four times during document development to review the progress of the design. One meeting will be held at CITY's offices prior to and when design is approximately 50-percent complete. One meeting will be held at CITY's offices prior to and when design is approximately 90-percent complete.

Deliverables: Meeting agenda and minutes (eight separate occasions)

A.3. PHASE 3 – BIDDING

Perform bid phase services in conjunction with the upgrade project as a single construction contract.

B. CITY'S RESPONSIBILITIES

CITY will furnish the following items:

- B.1.1 Provide access to the Ward WTP for field investigations by ENGINEER.
- B.1.2 Provide available information pertinent to the assignment, including previous reports, specifications, operation and maintenance records and any other data relative thereto. Provide said information within fourteen (14) calendar days of receipt of a written request by ENGINEER.
- B.1.3 The CITY hereby commits to review periods for interim deliverables of no more than fourteen (14) calendar days from receipt of deliverables from ENGINEER. CITY shall provide consolidated written review comments to ENGINEER within that period. The schedule shall be extended one day for each additional day beyond the fourteen (14) calendar day review period.
- B.1.4 CITY's project manager will provide the services of at least one (1) CITY employee who has the right of entry to and knowledge of the existing facilities.
- B.1.5 CITY's project manager will coordinate the scheduling of meetings between the CITY's management, engineering and operations and maintenance groups and the ENGINEER.

C. SUPPLEMENTAL SERVICES

- 1. P&IDs for process areas unrelated to the upgraded PLCs are not included as part of the SCADA system upgrade.
- 2. Creation of new, or updating of existing loop drawings are not included as part of the design services.
- 3. Design does not include the addition of new instrumentation.
- 4. I/O list development is based on As-Built drawings provided by the City. Field verification of the I/O list for work not directly related to the replacement/upgrade of the PLCs described in this Scope of Services is not included.
- 5. Design does not include replacing or upgrading the SCADA system servers, I/O servers, historians, operator workstations, network switches or HMI software.
- 6. Design does not include replacement of existing or installation of new fiber optic SCADA network.
- 7. Design does not include any field wiring to existing or new PLC panels from existing instruments.
- 8. Instrumentation and SCADA work at any of CITY's Water Distribution System maintained facilities is excluded from this AMENDMENT.

9. Procurement assistance to CITY for CITY-procured SCADA hardware and software is excluded. The Construction Contract Documents prepared by ENGINEER will be structured to include necessary SCADA hardware and software required for the PROJECT that the Contractor must provide.
10. Any Work requested by CITY that is not included in one of the line items listed in any other phase will be classified as supplemental services.

AMENDMENT 2

ATTACHMENT B

Owner: City of High Point
Project: Ward Water Treatment Plant Upgrades

COMPENSATION

For services covered by this Contract, the Owner agrees to pay Engineer as follows:

- A. For items included in Amendment 2 Attachment A – Scope of Services, a lump sum amount of \$225,000.
- B. For Supplemental Services, Owner and Engineer will negotiate a written amendment to this Agreement for the additional services.
- C. Engineer will submit to Owner invoices for Services performed over a monthly period. Owner agrees to pay Engineer's invoice upon receipt. Invoices will be in Engineer's standard format.



**FORMAL BID RECOMMENDATION
REQUEST FOR COUNCIL APPROVAL**

DEPARTMENT: **Public Service - Ward Water Treatment Plant**

COUNCIL AGENDA DATE: **June 5, 2017**

BID NO.: **17-121212** CONTRACT NO.: DATE OPENED:

DESCRIPTION:

Electrical and HVAC improvements for Ward Water Treatment Plant. Amendment 2 is to address the control system and the HMI interface.

PURPOSE:

Ward Water Treatment plant is converting the Electric system from 12.47 kv to 4.16 kv. HVAC ssystem is being replaced and upgraded, existing system was installed in 1985.

COMMENTS:

RECOMMEND AWARD TO: **Black & Veatch** AMOUNT: **225,000.00**

JUSTIFICATION:

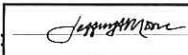
Black & Veatch is already conducting work at Ward Water Treatment Plant.

ACCOUNTING UNIT	ACCOUNT	ACTIVITY	CATEGORY	BUDGETED AMOUNT
421779	527105	421141026620	40207	225000.00
TOTAL BUDGETED AMOUNT				

DEPARTMENT HEAD: **Terry Houk** Digitally signed by Terry Houk
DN: cn=Terry Houk, o=City of High Point, ou=Public Services, email=terry.houk@highpointnc.gov, c=US
Date: 2017.05.16 08:44:26 -0400 DATE: **May 16, 2017**

The Purchasing Division concurs with recommendation submitted by the **Public Services** and recommends award to the lowest responsible, responsive bidder **Black & Veatch** in the amount of \$ **225,000.00**.

PURCHASING MANAGER: **Erik Conti** Digitally signed by Erik Conti
DN: cn=Erik Conti, o=City of High Point, ou=Public Services, email=erik.conti@highpointnc.gov, c=US
Date: 2017.05.16 14:33:59 -0400 DATE: **May 16, 2017**

Approved for Submission to Council
FINANCIAL SERVICES DIRECTOR:  Digitally signed by Jeffrey A. Moore
DN: cn=Jeffrey A. Moore, o=City of High Point, ou=Financial Services Director, email=jfmoore@highpointnc.gov, c=US
Date: 2017.05.18 16:24:29 -0400 DATE: **May 18, 2017**

CITY MANAGER: **Greg Demko** Digitally signed by Greg Demko
DN: cn=Greg Demko, o=High Point, ou=High Point, email=greg.demko@highpointnc.gov, c=US
Date: 2017.05.18 16:24:29 -0400 DATE: **May 18, 2017**