



City of Biggs
Agenda Item for the
City Council Meeting
May 13, 2014, 6:30pm

**To: Honorable Mayor
And Members of the City Council**

Date: May 6, 2014

From: Brian Martin, PE – City Engineer

Subject: Task Order No. 22 to the City Engineering Contract with Bennett Engineering Services for the Phase 1 Wastewater Improvement Project

BACKGROUND

The City's existing wastewater treatment plant is in need of upgrades to enhance its operational capabilities. To address this issue the City developed a project that includes two phases. The first project, the Phase I Wastewater Improvement Project, is the subject of this memorandum. The Phase I Wastewater Improvement Project consists of a new wet well influent pump station with submersible pumps and improvements to the headworks. The headworks improvements include a new mechanical screen and a flow meter. Other work includes an upgrade of the existing recycle pump system, the installation of automated equipment to the chlorination distribution system, upgrade of the electrical power and controls including SCADA, installation of a new backup generator, improvements to the existing operations/laboratory building and related appurtenances

The City Council authorized advertising for bids for the Phase I Wastewater Improvement Project. The bid date for the project is Thursday, May 8, 2014.

The current contract with Bennett Engineering Services includes all work up through the bidding of the project. Once bids are opened and the construction contract is awarded, we will be in the construction phase of the project. As a result, the Bennett Engineering Contract is in need of an amendment for construction management services. Bennett has prepared Task Order No. 22 for the work which has four major tasks. The tasks include Engineering Construction Assistance, Construction Inspection, State Revolving Fund Reimbursement and Compliance and SCADA System Integration. The estimated cost of this amendment is \$414,485.

The Engineering Construction Assistance Task includes engineering construction coordination, review of Requests for Information (RFI's), shop drawings and contract change orders, pre-construction meetings, start-up assistance, project close-out and preparation of record (As-built) drawings.

The Construction Inspection and Management Task includes a full time inspector, materials testing, resident engineering services, progress meetings and administrative support. It also includes geotechnical testing and observation, structural materials testing and special inspection services, preparation and processing of progress pay estimates and site meetings with the Contractor.

The SRF Reimbursement and Compliance Task includes certified payroll review, coordination of SRF and EPA on-site inspections, reimbursement requests and coordinating and meeting with SRF on the status of the project.

The SCADA System Integration Task includes preparation of as-built control drawings and control narratives, Programmable Logic Controller (PLC) programming, installation and commissioning , SCADA development, installation and commissioning and city staff training, development of project reports, project correspondence, SCADA and Control system project close out and a how-to document for launching the SCADA application from remote PCs.

FISCAL IMPACT

The City applied for and has received financing for the project through the California State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund in the amount of \$2,662,000 for planning, design and construction of the Phase I Project. When the City completes its obligations under the funding agreement the SWRCB will forgive \$1,331,000 of the project cost. The city will repay the SWRCB the remaining \$1,331,000 over a 20 year period at an interest rate of 2.1 percent.

RECOMMENDATION

It is recommended that the City Council approve Task Order Number 22 of the City Engineer Contract for Construction Management Services for the Phase 1 Wastewater Improvement Project with Bennett Engineering Services in an amount not to exceed \$414,485.00.

EXHIBIT A: Scope of Services

To AMENDMENT TO CONTRACT BETWEEN CITY OF BIGGS AND BENNETT ENGINEERING SERVICES



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Client: City of Biggs

Consultant: Bennett Engineering Services Inc

Project: WWTP Upgrades - Phase 1

Date: April 3, 2014

The City of Biggs is in the process of upgrading their existing WWTP in two Phases. Phase 1 consists of on-site upgrades to the existing facility. The Majority of Phase 1 is being funded by the State of California's State Revolving Fund (SRF). This contract amendment is to assist the City during construction of these upgrades including normal construction management and inspection services and also additional services as required by the SRF.

TASK 10 Engineering Construction Assistance

Construction assistance will consist of RFI, shop drawing, and change order review, construction meetings, and start-up assistance. Detailed log sheets including submittals, responses and other necessary information will be prepared.

Subtask 10.1 Engineering Construction Coordination

- Provide construction assistance which includes technical support and occasional site visits.

Subtask 10.2 RFI, Shop Drawing and Change Order Review

- Provide engineering review of shop drawings and submittals required by the specifications, including recommendation for approval or comment. Maintain a log sheet of all submittals and responses.
- Provide engineering level review of RFIs submitted by the Contractor. Maintain a log of all RFIs and responses.
- Review Contract Change Order (CCO) requests submitted by the contractor and prepare engineer's cost estimate for CCO work with recommendations to City. Attend City/contractor negotiations.

Subtask 10.3 Pre-Construction Meetings

Facilitate one site Pre construction meeting. Minutes will be prepared and made available to the city and contractor.

Subtask 10.4 Start-up Assistance / Close Out / Record Drawings

- This item shall include engineering level design monitoring of flows and pressures, evaluating set points, and other engineering level oversight.
- Coordinate with City operations staff and contractor for startup and commissioning..
- Finalizing and coordinating a final punchlist and walk through.

- Verifying and finalizing contractor provided Record Drawings

Task 10 Deliverables:

- Responses to Submittals and RFIs with Detailed Log Sheet
- Review and make recommendations for Contract Change Orders
- Record Drawings

Task 10 Assumptions:

- One (1) final construction review site visit/punch list for electrical systems will be required
- Meetings and site visit totals include visits by sub-consultants
- Construction staking will be provided by the contractor
- BEN|EN assumes a total of 8 change order requests for the project.

TASK 11 Construction Inspection & Management

Subtask 11.1 Inspection and Testing

Provide a fulltime inspector while work is underway. Bennett Engineering will conduct construction management, materials testing, and resident engineering services through the duration of the project. A Resident Engineer is anticipated for 2 days each week: one day for progress meetings and one day for project and administrative support, and an inspector will be on site daily for the duration of the project.

Subtask 11.2 Geotechnical Testing and Observation

Provide geotechnical testing and observation services during site grading and utility trench backfill operations to verify conformance with the project geotechnical report, plans, and specifications. We anticipate the following scope of services:

- Attend a pre-construction meeting, as requested.
- Sample native soils for laboratory testing.
- Test and approve import soil fill (if required) and aggregate materials.
- Observe preparation of fill and/or equipment pad areas.
- Observe foundation excavations to verify proper dimensions and bearing conditions.
- Test and observe utility trench backfill operations for various onsite underground utilities.

Upon completion of grading, we will issue a letter stating our opinion of compliance of the earthwork with the plans, specifications, and geotechnical report.

Subtask 11.3 Structural Materials Testing and Special Inspection Services

We anticipate the following scope of materials testing and special inspection services:

- Review concrete mix design(s).
- Verify reinforcing steel mill certificates and placement inspection.
- Verify cast-in-place bolt placement.
- Observe concrete placement and cast, transport, cure and test concrete cylinders.
- Inspect post-installed anchors.

Throughout construction, prepare daily field reports stating compliance with the approved plans and specifications. Services will be provided on both a continuous and periodic basis,

depending on task. This will require the Project Inspector to provide sufficient notification when these portions of construction are beginning so that we can be present to provide services.

It should be noted that estimating a fee requires us to assume the time required for each work item to be completed, which is dependent on contractor efficiency, size of the crews, the weather, or other items beyond our control. Billing will only be for the actual time and materials spent on the project. *If field conditions arise which require a significant modification to the assumed scope of our services and which would require an increase to our estimated fee, we would not proceed with the additional work without first obtaining a verbal, and subsequent written, authorization.*

Subtask 11.4 Prepare and Process Progress Pay Estimates

Contractor pay estimates will be reviewed for consistency with progress of project. Project billings and retention will be tracked

Subtask 11.5 Site Meeting(s) with Contractor

Schedule and coordinate site meetings with the design engineer, contractor, RE and any other necessary personnel to discuss issues and schedule. Meeting also include pre-construction meeting. The RE will attend weekly construction meets through the 180 day project. The design engineer will attend as needed meetings and has assumed 9 meetings through the duration of the project.

Task 11 Deliverables:

- Daily inspection logs

Task 11 Assumptions:

- Only first round of testing will be provided. Retesting of failed testing will be additional services to the city and should be paid by the contractor as specified in the contract specifications.

TASK 12 SRF Reimbursement and Compliance

Subtask 12.1 Payroll Review and Contractor Audit

Review all certified payroll from contractor. Verify compliance with federal and California laws including Davis Bacon prevailing requirements. Certified payroll will be verified with onsite inspectors' daily logs for accuracy.

Subtask 12.2 SRF Inspections

Coordinate and facilitate inspections by SRF or EPA, including site visits during construction, financial audits and/or daily logs.

Subtask 12.3 Reimbursement Requests

Prepare monthly requests to the SRF for reimbursement of funds. Budget will be tracked throughout construction and updates will be provided to City on monthly basis.

Subtask 12.4 Meetings and Coordination

Coordinate and meet with SRF as needed throughout the course of the project. We will attend meetings and phone calls with SRF regarding funding during construction. SRF will be informed in writing on various items:

- The award of the prime construction contract.
- Initiation of construction.

- Notifications due to potential unforeseen/delinquent occurrences.
- Any changes to the scope.
- If work is ceased for more than thirty (30) days.
- Any potential time extensions for the completion of construction date (90 days before the construction end date).

Subtask 12.5 Reports and Responsibilities

Comply with and review Contractor and Subcontractors work to comply with any and all federal and state laws, rules and guidelines. Prepare and deliver necessary reports to the SR as described in the approved agreement 13-810-550 for project C-06-5544-110 with the State, such as:

- As-needed reports.
- Quarterly reports.
- DBE Utilization Report.
- Project Completion Report.

Task 12 Deliverables:

- Monthly reimbursement requests
- Reports to SRF

Task 12 Assumptions:

- The City of Biggs will pay all electrical connection fees and charges
- Four (4) SRF/EPA inspections for the duration of construction
- Four (4) hours per week of coordination meetings and phone calls during construction
- BEN|EN assumes through the SRF agreement that audits are not required. Time for audits will be negotiated with the city as additional services.

TASK 13 SCADA System Integration

Subtask 13.1 Control Drawings & Control Narrative

Create a set of drawings for SCADA based on what is available from MCC in the WWTP Operations Building. It is anticipated that making minor modifications to each motor control bucket in order to facilitate connectivity to the PLC. The hardware for modifications will be provided by the Contractor and per the project specifications. A Control Narrative document containing process descriptions, alarm lists, and setpoints for the equipment contained Influent Pump Station and WWTP. Consensus with the City on the Control Narrative prior to programming the PLCs or developing the SCADA application will be required prior to commencing. The Control Narrative will be our go-by for the rest of the project.

Subtask 13.2 PLC Programming, Installation & Commissioning

Program in ladder logic per the written and approved Control Narrative in RSLogix 5000 software from Rockwell Automation. All of the code written will be thoroughly documented and become property of the City of Biggs. The City will own the developed programs and will have full flexibility to solicit support from any number of system integrators. The Contractor will provide a copy of the programming software per spec and ControlPoint Engineering will install it on the SCADA PC. CP-100 will be fabricated by the Contractor per spec. The integrator will be responsible to program the PLC inside of CP-100 and work with the

Contractor to verify and test functionality of all field instrumentation and motor controls tied to CP-100.

Fabricate the backpanel of CP-200 to match the general look and feel of CP-100. The Contractor will provide all of the hardware for CP-200 per spec. We will be responsible to program the PLC inside of CP-200 and verify all field instrumentation and motor controls tied to CP-200.

Subtask 13.3 SCADA Application Development, Installation & Commissioning

Setup and configure Ignition® software from Inductive Automation on a new PC provided by the Contractor per spec. In addition, one (1) Apple® iPad tablet will be provided by the Contractor and configured by ControlPoint Engineering for use with the Ignition® software. Develop the SCADA application in the latest version of Ignition® software, providing the following features:

- OPC Tags (up to 500 tags).
- Screens (up to 5 process windows, 5 setpoint windows, and 5 misc. windows).
- Trends (up to 5 custom trend windows).
- Alarms (up to 5 alarm configuration windows).
- Autodialer Alarms (up to 25 discrete and 10 analog alerts; notification via phone call, text, or email).

The SCADA application will be tested alongside operations to ensure a fully-functional system as outlined in the Control Narrative. We will coordinate with the City's IT Department or Representative to establish a secure remote/outside connection to the SCADA PC.

Subtask 13.4 Training, Reports, Project Correspondence & Closeout Activities

Provide an informal training class onsite with City staff. We will compile final project reports, as-built drawings of CP-200 and the Control Narrative, copies of the PLC programs and SCADA Applications, and a brief how-to document for launching the SCADA application from remote PCs.

Task 13 Deliverables:

- Site Plan for review
- Backup power memo

Task 13 Assumptions:

- Contractor will purchase RSLogix 5000 PLC Programming Software
- Contractor will purchase Ignition® Software
- Contractor will purchase Ignition® Training
- First year technical support by Ignition® Technical Support will be purchased by the Contractor
- Contractor will provide PCs or iPads
- Contractor will provide Network Switches
- Contractor will provide Wireless Routers
- Firewall Devices are not required
- Contractor to provide all Software Licenses
- Technical support after the project has been accepted by the City will be an additional cost

INITIALS:
