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December 8, 2023

Mr. Nick Bartsch
City of Visalia
Public Works Department
336 North Ben Maddox Way
Visalia, CA 93292

Subject: Water Reclamation Facility – Solids Handling Improvements Design

Dear Mr. Bartsch:

Enclosed is a Scope and Fee prepared by Carollo Engineers, Inc. (Carollo), to evaluate the City of Visalia (City) Water Reclamation Facility (WRF) to design an improved Thickened Sludge Pump Station (TWAS), additional screw press and sludge drying beds, and a new sludge holding reservoir.

Project Background

The WRF currently uses gravity belt thickeners (GBTs) to thicken waste activated sludge. These GBTs were designed to produce thickened waste activated sludge (TWAS) up to 5 percent total solids (TS). However, the plant has run into issues with the TWAS pumps tripping from too high of pressure when the TWAS is thickened to 5 percent TS. Therefore, the GBTs are operated to produce TWAS with about 2.5 percent TS, resulting in a significantly higher sludge flows being sent to the plant's digesters. Since the capacity of the digesters is currently limited by the hydraulic retention time and not the solids loading rate, this additional sludge flow being sent to the digesters directly reduces the overall digestion capacity.

Replacing the TWAS pumps with new pumps that can accommodate higher pressures would allow the GBTs to be operated as originally designed and produce TWAS with 5 percent TS. Sending less TWAS to the digesters would restore some of additional digestion capacity for accommodating additional increases in flows and loads, resulting in delaying the need for an additional digester and providing more time for the design and construction of the new digester and dewatering upgrades.

The thickening limitations causes excess flows through digestion, which requires the facility to run both dewatering screw press units under high loading periods . There is currently no additional sludge storage or redundancy on the dewatering units, should maintenance or potential failure occur on one of the dewatering units. This design will add one additional screw press, polymer tank, polymer feed pumps, and electrical equipment for a fully operational third screw press.

Due to the high influent loadings currently seen at the facility, the sludge drying beds are not large enough to keep up with the drying time needed for the biosolids. In addition, timing of sludge removal with wet weather has become difficult and resulted in higher hauling costs. The initial investigation will include an analysis of hauling costs with and without the installation of a dry sludge storage cover (for the stockpile area only) to see if constructing a covered area adds value to the City. This design will incorporate a new sludge drying bed adjacent to the existing beds to allow for handling of the additional sludge loads. The sludge beds will be designed around the 4.5 acre space adjacent to the existing beds. Design of sludge drying covers will be under a separate contract if warranted through the results of the analysis.

The WRF currently struggles with maintenance on their digesters due to the lack of redundancy for taking a digester offline. This design includes the construction of a lined sludge pond that can be utilized during the dewatering of a digester for cleaning and maintenance. The pond will be approximately 4 acres of surface area.

A summary of the project design elements are as follows:

- Design for the installation of two new sludge booster pumps needed to convey TWAS at 5% to the digesters.
- Design of a third dewatering screw press to match existing. This includes a new polymer tank, polymer pumps, electrical equipment, and conveyor modifications.
- Design of a new sludge drying beds (approximately 4.5 acres total)
- Design of a new lined sludge pond (approximately 4 acres) to allow for diverting/dewatering a digester for maintenance and approximately 1,400 linear feet of piping for dewatering.

SCOPE OF WORK

The following scope of work represents our understanding of the necessary design elements to design the new facilities as described above. These facilities include: TWAS pumping upgrades, new screw press, sludge drying bed, and digester cleaning sludge holding reservoir. The Design shall consist of CAD generated drawings and specifications covering general civil and site work improvements, structural, mechanical, electrical, instrumentation and controls. The Design shall include layouts and schematics drawn to scale, design criteria and notes showing the proposed design of all new and modified existing facilities.

TASK 1: PROJECT MANAGEMENT AND MEETINGS

Project Management will include supervision of the project team, making sure the project is adequately staffed, and communication with the City staff. This task also includes management of the project budget and schedules, preparation of a monthly progress report, and incorporating Carollo's quality management oversight and quality control to document processing and deliverables.

Meetings will be hybrid meetings or remote meetings, where Carollo staff will call in remotely. Meetings will include:

1. Project Kick-off Meeting (1 meeting) (PIC, PM, and PE onsite, other staff virtual).
2. Design update meetings (4 meetings held remotely)
3. Design workshop (60% design level)
4. Design workshop (90% design level)

Deliverables:

- Monthly progress reports, including budget and schedule updates. Meeting agendas and minutes. (All provided in PDF format).

TASK 2 - PREDESIGN

Task 2.01 – Confirm Design Elements

This task includes analysis on existing TWAS Pump Station to determine if modifications can be made to the existing pumps or if a new PS is needed. This task will include using design data and findings from the Facility/Master Plan updates to design facilities for a new screw press, preliminary sizing, design criteria, and layouts for the new sludge drying beds, and new sludge holding pond with associated pipeline. This task includes a constructability and sequencing evaluation to confirm the required project components are included to construct the new TWAS pump station and screw press train while minimizing impacts to cost and the operation of the existing pump station.

Included in this task is a geotechnical investigation to determine updated structural requirements to meet the latest building code. Costs include coordination, investigation, and geotechnical report.

Task 2.02 - Prepare Basis of Design Report (DRAFT)

A Basis of Design Report (BODR) will be prepared to summarize the results of Task 2.01 – Confirm Design elements.

Task 2.03 - Basis of Design Workshop

A workshop to review the Basis of Design Report (DRAFT) will be chaired by CONSULTANT. The results of Task 2.01 – Confirm Design Elements will be presented and select responses to City comments reviewed. The ultimate goal of this meeting is to receive buyoff of the project components to include in final design.

Task 2.04 - Prepare Basis of Design Report (FINAL)

City comments to the Basis of Design Report (DRAFT) and input from the Basis of Design Workshop will be incorporated to prepare the Basis of Design Report (FINAL). Responses to comments will be prepared and submitted for acceptance.

Task 2 Assumptions:

- Project components to be included in final design will be finalized during the Basis of Design Workshop. Any changes in the items to be designed after this workshop will be considered additional scope and may result in budget increases.
- CONSULTANT will prepare the agenda and meeting minutes for the Basis of Design Workshop.
- Comments to technical memoranda and the Basis of Design Report (DRAFT) will be tabulated when transmitted to CONSULTANT.
- Each deliverable will be internally reviewed prior to submitting to the City.
- Geotechnical report will be required for use in the predesign and final design tasks. 2 borings assumed
- City will furnish a topographic survey from recent dewatering installation.
- City will furnish sludge pump data (including record drawings) to use for designing the new pump units.

Task 2 Deliverables:

- One (1) hard copy and one electronic pdf file of the Basis of Design Report (DRAFT) will be submitted.
- One (1) hard copy and one electronic pdf file of the Basis of Design Report (FINAL) will be submitted.
- Meeting minutes (electronic)
- Geotechnical Report

TASK 3 – FINAL DESIGN

Task 3.01 - Develop 60% Plans, Specifications, and Estimate (PS&E) Submittal Package

With the approval of the Basis of Design, the development of a 60% PS&E document submittal package will be completed under this task. This task includes the development of an estimate of probable construction costs (AACE

Class 2). Additionally, a BODR Review Comment log will be completed to log all of the City staff comments and responses from the CONSULTANT. One (1) copy of the plans, specifications, and estimate will be provided to the CIty for review. A submittal review workshop to discuss comments on the 60% PS&E submittal package will be conducted at the end of the City review period.

Task 3.02 - Develop 90% PS&E Submittal Package

Comments from the 60% review workshop will be incorporated into the 90% design deliverable. One (1) hard copy of the plans, specifications, and estimate will be provided to the City for review. A submittal review workshop to discuss comments on the 90% PS&E submittal package will be conducted at the end of the City review period.

Task 3.02 - Develop Bid Documents

Development of a Bid Document submittal package will be completed under this task. This task includes the development of an estimate of probable construction costs (AACE Class 2). Additionally, a 90% Design Review Comment log will be completed to log all City staff comments and responses from the CONSULTANT. One (1) copy of the plans, specifications, and estimate will be provided to the City for bidding.

Task 3 Assumptions:

- The design scope and associated fee estimate are based on the project elements identified under the *PROJECT BACKGROUND* section of this scope of work. Should the project elements be modified during the predesign tasks, then a modified scope of work and fee estimate will be prepared and submitted to City for review and approval prior to proceeding.
- Each deliverable will be internally reviewed with a Carollo QA/QC process prior to submitting to the City.
- Assumes one city building/planning department review.

Task 3 Deliverables:

- 60% PS&E Submittal. (one (1) hard copy (11x17 drawings) and one (1) PDF electronic file)
- 90% PS&E Submittal. (one (1) hard copy (11x17 drawings) and one (1) PDF electronic file)
- Bid Document PS&E Submittal. (one (1) hard copy (22x34 drawings) and one (1) PDF electronic file)
- 60% Comment Log with responses.
- 90% Comment Log with responses.

TASK 4 – BID PHASE SERVICES

Task 4.01 – Attend Pre-Bid Meeting

Under this task, Carollo will attend a pre-bid meeting to answer questions and discuss the overall project intent. The City will facilitate this meeting and issue meeting minutes.

Task 4.02 – Answer Bidder Questions/ Provide Addenda

This task includes providing assistance to the City during the bidding period. The scope of work includes responding to bidders' questions, preparing addenda to the contract documents during the advertisement period, and providing ongoing consultation and interpretation of the construction documents.

Task 4 Deliverables:

- Addendum as required (three assumed).

Task 4 Assumptions:

- Carollo will attend a single pre-bid meeting facilitated by the City.
- Carollo will prepare up to three addenda.

OPTIONAL TASK 5 - ENGINEERING SERVICES DURING CONSTRUCTION (ESDC)

Task 5.01 - Attend Pre-Construction Conference

Carollo will attend the pre-construction conference and answer questions as directed by the City. The City's construction manager (CM) will prepare meeting minutes. Carollo will review meeting minutes.

Task 5.02 - Review Contractor's Submittals

This task will include review and comment on the acceptability of contractor's submittals for the City. Carollo will review and respond to product and shop drawing submittals provided by the contractor and forwarded by the CM. Review comments will be returned to the CM for processing and distribution to the contractor and other parties. 100 submittals are budgeted.

Task 5.03 - Respond to Requests for Information (RFIs)

Carollo will respond to contractor's RFIs. This scope also assumes the CM will consider and evaluate the validity of the RFIs, questions, and modification requests prior to forwarding them to Carollo. Per the RFP, 50 RFIs are budgeted.

Task 5.04 - Attend Construction Meetings and Site Visits

Carollo will attend bi-weekly construction meetings (teleconference anticipated), conduct site visits (a total of ten site visits budgeted) to monitor construction progress, and remain available to expedite resolutions to project challenges.

Task 5.05 - Review Proposed Change Orders

Carollo will review changes in project scope and/or schedule, as requested by the CM. Carollo's scope of work will include review of the contractor-furnished supporting information; discussions with contractor and CM in the field; and preparation of technical documents—including supplemental drawings, specifications, etc.—to assist the CM with the preparation of change orders.

Task 5.06 - Provide Record Drawings

The contractor is required to provide the City and CM with a final set of marked-up design drawings. After substantial completion, Carollo will review the final version of the contractor's as-built drawings compiled by the CM. Carollo will then prepare a set of record drawings based on the contractor's mark-ups in electronic format and deliver the electronic documents to the City. Record drawings will be prepared using Carollo's standard record drawing format.

Task 5 Assumptions:

- Budgeted up to 100 submittals
- Budgeted up to 40 RFI's
- Budgeted up to 5 change order requests.

TIME OF PERFORMANCE

The completion of the design and bid support services will be performed within 12-months from the notice to proceed.

LEVEL OF EFFORT

The project design elements (Task 1 through Task 4) above will be completed for a lump sum fee of six hundred and eighty-three thousand, six hundred dollars ($683,600). Task 5- Engineering Services During Construction is estimated at two hundred and three thousand, six hundred dollars ($203,600) and will be negotiated prior to the award of bid.

We appreciate the opportunity to provide this scope and fee for this emergency project. Please reach out for any questions or negotiation on this proposal.

Sincerely,
CAROLLO ENGINEERS, INC.

Ryan Sellman, PE
Principal-in-Charge

Reace Fisher, PE
Project Manager

Attachments: Fee Proposal, Fee Schedule

CAROLLO ENGINEERS, INC.
FEE SCHEDULE

As of January 1, 2024
California

	Hourly Rate
Engineers/Scientists	
Assistant Professional	$214.00
Professional	232.00
Project Professional	270.00
Lead Project Professional	312.00
Senior Professional	343.00
Technicians	
Technicians	186.00
Support Staff	
Document Processing / Clerical	149.00

Subconsultant	cost + 10%
Other Direct Cost	cost + 10%
Expert Witness	Rate x 2.0

This fee schedule is subject to annual revisions due to labor adjustments.

FEE

WATER RECLAMATION FACILITY - SOLIDS HANDLING IMPROVEMENTS PROJECT
CITY OF VISALIA

December 7, 2023

Task	Task Description	Total Cost [1,2]
Task 1: Project Management and Meetings		
1.1	Project Management and Meetings	$37,200
	Task 1 Total Costs:	**$37,200**
Task 2: Predesign		
2.1	Confirm Desing Flows and Finalize Project Elements	$66,400
2.2	Prepare Basis of Design (Draft)	$49,800
2.3	Basis of Design Workshop	$11,200
2.4	Prepare Final Basis of Design	$20,300
	Task 2 Total Costs:	**$147,700**
Task 3: Final Design		
3.1	Develop 60% PS&E Submittal Package	$126,900
3.2	Develop 90% PS&E Submittal Package	$227,800
3.3	Develop Bid Documents	$94,400
	Task 3 Total Costs:	**$449,100**
Task 4: Bid Support Services		
4.1	Attend Pre-bid Conference	$6,400
4.2	Answer Bidder Questions	$23,100
4.3	Bid Adenda (3)	$20,100
	Task 4 Total Costs:	**$49,600**
	Design Subtotal	**$683,600**
OPT Task 5: Engineering Services During Construction (To Be T&M)		
5.1	Attend Pre-Construction Conference	$6,000
5.2	Review Contractors Submittals	$78,300
5.3	Respond to Requests for Information	$41,200
5.4	Attend Construction Meetings and Site Visits	$18,500
5.5	Review Proposed Change Orders	$15,200
5.6	Provide Record Drawings	$44,400
	Task 5 Total Costs:	**$203,600**
	Total Project Costs:	**$887,200**

Notes:

1. Budget is based on an estimated level of effort based on our interpretation of the project requirements based on initial discussions with the Owner. The final scope can be negotiated with the Owner to meet their needs.
2. Geotechnical investigation based on two borings. Team to confirm number of borings and associated costs.
3. Budget is based on a 12-month completion schedule.