

SCOPE OF WORK

CITY OF CORPUS CHRISTI OSO WASTEWATER TREATMENT PLANT BACKUP GENERATORS CITY PROJECT NO. 22108

PROJECT DESCRIPTION:

City of Corpus Christi (City) owns and operates the OSO Wastewater Treatment Plant (OSO WWTP). Oso WWTP was constructed in 1941 and is the largest wastewater treatment plant in Corpus Christi. The plant has an average annual flow capacity of 16.2 MGD and a peak flow capacity of 98 MGD. The Oso WWTP services the Oso Service Basin composed of 26 Lift stations.

The objectives of this project are to construct backup generator system to ensure normal operation and safety when the OSO WWTP is subject to heavy rainstorms and power outage. The project is funded via a combination of City funds and GLO/CDGB grant funding and per the grant requirements construction is to be finished by Nov 30th, 2029.

For the generator additions, the following assumptions related to power loading and needs, including existing and planned future loads will be used to determine the sizing and fuel requirements.

- City will provide 3 years of past metering data.
- Expansion project drawings will be provided by Ardurra on behalf of the City.
- Water Re-use project drawings will be provided by Ardurra on behalf of the City.
- The New Control Room drawings will be provided by Ardurra on behalf of the City.
- New projects currently under construction added electrical loading will have a service factor of 70% of the connected load less any identified spare loads.
- Future fourth treatment train expanding plant total treatment capacity to 26 MGD.

The scope of services for this proposal includes Basic services (Preliminary Design, Detailed Design and Bid Services) plus other Additional Services, as authorized for the following improvements. Construction Phase Administration and other related services are included in the scope and will be Invoiced under Time & Materials; the scope of service will be clarified during the construction award process.

- Addition of 2 or 3 self-contained generators with OEM enclosures to support plant operation at maximum average flow of 24 MGD including electrical load associated with the new Operations Control Center, Plant Expansion, and Water Re-use projects.
- Evaluation of natural gas and diesel generator options.
- Fuel System design for emergency generators (tanks, piping, controls, level/leak detection, or natural gas piping systems).
- Financial analysis supporting participation in ERCOT demand response programs.
- Utilization of existing Main ECR building for power connection to the generators.
- Demo the existing generators located at remote Unit PCR buildings.

SCHEDULE

Activity	Task Duration	Anticipated schedule from Notice to proceed
Notice to proceed		7/28/2026
Project Kickoff Meeting		2 weeks
Draft ELR 30% Design Submittal	16 weeks after final approval scope of work	18 weeks
Draft ELR 30% Design City Review	3 weeks*	21 weeks
Final ELR 30% Design Submittal	2 weeks	23 weeks
75% Design Submittal	16 weeks	39 weeks
75% Design Submittal City Review	3 weeks*	42 weeks
100% Design Submittal	12weeks	54 weeks
100% Draft	3 weeks*	57 weeks
100% Design Submittal City Review	City Review 3 weeks	60 weeks
Final Signed and Sealed Plan and Bid Documents	2 weeks after City Comments	62 weeks
Bidding and Construction award	12 weeks/3 months after Signed and Sealed	74 weeks
Construction Completion	84 weeks**/ 20 months after Bidding and Award	158 weeks Projected complete August 2029

*City review timeline is assumed to be a maximum of 3 weeks for each deliverable to meet grand funding schedule, if comments are received earlier, the schedule will be adjusted accordingly. ** Assumes 68-week delivery for generator.

BASIC SERVICES

1 Preliminary Design Phase

Prior to the preparation of detailed plans and specifications, the Consultant will develop a Preliminary Design (30% Design) for the required project elements. The purpose of the Preliminary Design phase is to develop an adequate definition of the project to enable the Detailed Design phase to proceed without significant changes. A prerequisite to the preparation of plans and specifications is the development of a specific Engineering Letter Report (ELR) that incorporates the project site conditions and constraints, summarizes the rationale for each major detailed design decision, and contains design criteria including process control criteria and process descriptions for each component and system incorporated into the project. The ELR and 30% design will establish the design parameters, criteria, and concepts necessary for preparation of detailed plans and specifications.

The Consultant will provide the following services under this phase:

- 1.1 The Consultant will perform project management tasks such as managing schedule, managing deliverables on Trimble, submitting monthly invoices to City for payment during preliminary phase of the project. The Consultant will also prepare and submit monthly status reports to the City with the monthly invoice. Monthly status reports will comprise of a one-page summary of the progress to date on the project, work completed during the prior month, work anticipated to be completed during the upcoming month, and discussion of any scope, schedule, or budget issues that may need to be resolved. The level of effort is assumed to be 1-hr every week.
- 1.2 Project Kick-off Meeting
 - The purpose of the Kick-off meeting is to confirm user requirements for key elements concerning design, budget and schedule. For this, the consultant will prepare a meeting agenda and distribute it to designated City Staff prior to the meeting.
 - During the Project Kick-off Meeting the Consultant's team will take notes regarding the proceedings of the meeting. Consultant will transcribe and distribute the meeting notes into formal meeting minutes.
- 1.3 Evaluate plant backup power needs based on plant one-line diagrams and utility demand and usage data provided by the City. Load summaries will be developed. Existing utility data will be analyzed to determine plant operating load factors. Regulatory requirements will be reviewed and minimum loads requiring backup discussed with plant operations department.
- 1.4 Evaluate and provide recommendations on generator fueling system options. Natural gas and diesel generators will be considered in the evaluation.
- 1.5 Evaluate and provide recommendations for possible generator locations. Proximity to electrical buildings will be prioritized along with proximity to plant gas lines for natural gas generator options.

- 1.6 Evaluate and provide recommendations for possibility of generator system participating in ERCOT's demand response programs and perform associated financial analysis.
- 1.7 Develop preliminary Process Flow Diagrams (PFD's) for the recommended process equipment and preliminary process-mechanical drawings.
- 1.8 Develop preliminary Process and Instrumentation Diagrams (P&ID's).
- 1.9 Coordinate with the Greenwood WWTP project regarding standardization of generators and early equipment purchase package.
- 1.10 Evaluate options for routing electrical to the proposed facilities location and prepare preliminary electrical site layouts for the proposed improvements.
- 1.11 The Consultant will develop preliminary site plan layouts showing the location of proposed improvements.
- 1.12 Provide services during the design phase for process automation system development. SCADA network architecture and detailed design for integrating the new facilities into the existing SCADA system (assuming fiber-based communications) will be provided. Develop Control panel design drawings and Division 40 specifications covering general process control system requirements, SCADA integration, and network communications requirement.
- 1.13 Determine preliminary structural loadings and structural element sizing.
- 1.14 Prepare Preliminary (30%) Structural backgrounds as necessary to depict process units on mechanical drawings.
- 1.15 Determine preliminary materials of construction and architectural aesthetics.
- 1.16 Prepare preliminary opinions of probable construction costs for the pertinent design scope identified.
- 1.17 Provide regular progress meetings used to coordinate ongoing issues, discuss project status and obtain input from the City. Consultant will prepare meeting minutes and will finalize and distribute after review by the City's Staff. Up to three (3) two-hour progress meetings or site visits with utility and engineering services staff are anticipated through the Preliminary Phase.
- 1.18 Coordinate the work of all subconsultants, including leading meetings with subconsultants to coordinate completion of work and adherence to schedules. Meetings will be held every two weeks (8 meetings total; 1-hour duration) throughout the Preliminary Phase.
- 1.19 Prepare a project schedule that summarizes all the major tasks of the project and the critical path of the project. Consultant will update the project schedule as the project progresses or changes occur throughout the preliminary phase.

- 1.20 Prepare anticipated index of drawings and specifications for the detailed design phase
- 1.21 Provide a Quality Assurance and Quality Control review of preliminary drawings and ELR.
- 1.22 Identify any necessary permits that will need to be obtained by the City and Contractor.
- 1.23 Prepare and submit electronic copy of the Draft ELR that documents the analyses, approach, opinions of probable construction costs, and documents the work with text, tables, schematic-level exhibits and computer models or other applicable supporting documents as necessary.
- 1.24 Upon Draft submittal, Conduct Project review workshop with City staff to review recommendations. Prepare PowerPoint presentation, handouts, exhibits and meeting notes as necessary.
- 1.25 Assimilate all City review comments on the DRAFT ELR and submit the Final ELR (electronic copy uploaded on Trimble).

2 Detailed Design Phase.

Upon completion of the preliminary phase, the Consultant will:

- 2.1 Continue to perform project management tasks such as managing schedule, managing deliverables on E-builder, submitting monthly invoices to City for payment during detailed design phase of the project. The Consultant will also prepare and submit monthly status reports to the City with the monthly invoice. Monthly status reports will comprise of a one-page summary of the progress to date on the project, work completed during the prior month, work anticipated to be completed during the upcoming month, and discussion of any scope, schedule, or budget issues that may need to be resolved. The level of effort is assumed to be 1-hr every week.
- 2.2 Provide updated schedule with each submission of each design deliverable.
- 2.3 Coordinate the work of all subconsultants and design team, including leading of meetings with subconsultants to coordinate completion of work and adherence to schedules. Meetings will be held every two weeks (up to 20 meetings total; 1-hour duration) throughout the Detailed Design Phase.
- 2.4 Provide Quality Assurance/Quality Control (QA/QC) measures to ensure that all submittals of the interim and final complete plans and complete bid documents with specifications accurately reflect the percent completion designated and do not necessitate an excessive amount of revision and correction by City.
- 2.5 Develop a construction sequence plan to communicate sequencing requirements to the Contractor before bidding. The purpose of the plan is to provide the Contractor a sequence to perform their construction activities in such a manner that allows for continuous operation of all essential plant facilities to meet demands throughout the

- construction period. The Consultant will evaluate sequencing alternatives based on cost and impacts to plant operations, coordination and review of the developed alternatives with plant staff. A preferred alternative will be finalized and included in the contract documents. The goal is to ensure the continuation of operations at the plant while maintaining the plant's capability to treat water. The Consultant will include in the construction documents a separate specification for testing, training, and facility start-up as applicable (Included as T&M).
- 2.6 Coordinate with City IT Department for SCADA programming that will be provided by City IT Department. One four (4) hour workshop Webex meeting will be held for coordination. Meeting minutes will be provided regular progress meetings to coordinate ongoing issues, discuss project status and obtain input from the City. Up to three (3) one-hour progress meetings with utility and engineering services staff are anticipated through the design phase.
 - 2.7 Prepare construction plans in City standard format for the work identified in the approved ELR to a 75% level of completion.
 - 2.8 Prepare construction (technical) specifications in City standard format for the work identified in the approved ELR to a 75% level of completion.
 - 2.9 Construction Permits required during design will be provided by City.
 - 2.10 Development of Opinion of Probable Construction Cost (OPCC) per plans and specification to a 75% level.
 - 2.11 Furnish one (1) set of the interim 75% submittal (electronic uploaded on Trimble using City Standards as applicable) to the City staff for review and approval purposes with estimates of probable construction costs. City will distribute the submittal documents to the franchise utilities. Submit the required plan executive summary, project checklist & drawing checklist which will identify and summarize the project by distinguishing key elements and opinion of probable project costs.
 - 2.12 Attend a 75% Review Meeting coordinated by the City. Bath will provide a brief presentation highlighting key decisions, items of the project.
 - 2.13 Assimilate all review comments, as appropriate and, upon Notice to Proceed, update 75% plans and prepare additional sheets as necessary to complete the plans to 100% level of completion.
 - 2.14 Update 75% specifications and add sheets to complete the plans to 100% level of completion.
 - 2.15 Prepare City Standard Front-end documents and Bid Tab to a 100% level of completion.
 - 2.16 Update the Opinion of Probable Construction Cost (OPCC) to achieve a 100% level of completion.

- 2.17 Provide one (1) set of the 100% plans and bid documents (electronically uploaded on Trimble using City Standards as applicable) to the City staff for review and approval purposes with revised estimates of probable costs. Plan executive summary, project checklist and plan checklist.
- 2.18 Attend a 100% Review Meeting coordinated by the City. Bath will provide a brief presentation highlighting key decisions, items of the project.
- 2.19 Assimilate all review comments as appropriate and, upon Notice to Proceed, update 100% plans to a final level.
- 2.20 Update 100% specifications to final level of completion based on City comments.
- 2.21 Update City Standard Front documents to a final level of completion. Coordinate with City's procurement department as necessary.
- 2.22 Update the Opinion of Probable Construction Cost (OPCC) based on City comments.
- 2.23 Provide final signed and sealed plans and bid documents (electronic and 1 hard copy using City Standards as applicable) to the City staff for project advertisement. Update plan executive summary and prepare project checklist and plan checklist. Said bid documents henceforth become the shared intellectual property of the City of Corpus Christi and the Consultant.

Scope Item Assumptions:

- Meetings:
 - Kick off, 30% review meeting, 75% review meeting and 100% review meeting will be held in person at OSO WRP with TEAMS option. Rest of progress meetings will be held on TEAMS
 - CCW and Engineering Services Staff will attend progress meetings.
 - Consultant's staff working on the project will remotely dial in by phone as necessary.
- The City staff will:
 - Designate an individual to have responsibility, authority, and control for coordinating activities for the Project.
 - Provide the budget for the Project specifying the funds available for the construction contract, the project will be modified based on OPCCs and Bid Openings as required.
- City's standard specifications, standard detail sheets, standard, special provisions, and forms for required bid documents are all available on the City Website under Engineering Services. City will assist as needed if additional documents or updated information are required. Additional features such as site physical security, building physical security or building access controls are not included in the scope currently and can be added as an additional service if requested by the City.
- Power system studies (Short circuit, coordination, arc flash) using SKM or ETAP software are not included. Preliminary short circuit calculations will be performed

to ensure equipment ratings are more than anticipated short circuit values. Complete power system studies are anticipated to be provided by the installing contractor during the construction phase of the project or may be contracted with Bath Group once contractors' equipment submittals are provided.

3 Bid Phase

The Consultant will:

- 3.1 Perform project management tasks such as managing schedule, managing deliverables on Trimble, submitting monthly invoices to City for payment during bid phase. The Consultant will also prepare and submit monthly status reports to the City with the monthly invoice. Monthly status reports will comprise of a one-page summary of the progress to date on the project, work completed during the prior month, work anticipated to be completed during the upcoming month, and discussion of any scope, schedule, or budget issues that may need to be resolved. The level of effort is assumed to be 1-hr every week.
- 3.2 Attend in person pre-bid meetings and provide a brief discussion on the project scope and key project construction items.
- 3.3 Review all pre-bid questions and submissions concerning the bid documents and prepare, in the City's format, for the Engineering Services' approval, a response form for posting on CivCast.
- 3.4 Assist the City in preparing addenda and make revisions to plans and specifications as necessary. Revisions shall be made in a timely manner to maintain project bid schedules.
- 3.5 Attend bid opening.
- 3.6 Assist the City in reviewing bids and bidder references for completeness, balance of bid items, and responsiveness, and prepare a tabulation of bid prices. Bath Group will provide a letter of recommendation within 2 weeks of the bid opening date.
- 3.7 Assimilate all addenda changes and issue a set of conformed contract documents to the City and Contractor.

Scope Item Assumptions:

- The effort for bid phase is based on traditional design-bid-build contract award strategy typically adopted by the City. Effort for alternate bid strategy is not included in this proposal.
- The City staff will:
 - Designate an individual to have responsibility, authority and control for coordinating activities for reviewing bids and the construction contract award.
 - Provide the budget for the project specifying the funds available for the construction contract.

- Provide the City's updated standard specifications, standard detail sheets, standard and special provisions and forms for required bid documents.
- All coordination with bidding documents will be distributed through CivCast.
- Advertise the projects for bidding, maintain a list of prospective bidders, for all bid documents, issue (with assistance of Engineer) any addenda, prepare and supply bid tabulation forms, and conduct bid opening.
- Receive the Consultant's recommendation concerning bid evaluation and recommendation and prepare agenda materials for the City Council concerning bid awards.
- Prepare, review, and provide copies of the contract for execution between the City and the Contractor.
- This Scope of Services does not include time for the Consultant to assist the City in the event of bid protests.

4 Construction Administration Phase (Time & Materials)

The Consultant will:

- 4.1 Participate in pre-construction meeting conference with City and selected Contractor Engineer will introduce project team members, establish protocol and lines of communication, review project goals and objectives, gather all available documents pertinent to the project, and review the scope of work, and schedule. Participation in pre-construction meeting is anticipated to be in person and provide a recommended agenda for critical construction activities and elements impacting the project, meeting minutes will be provided.
- 4.2 Engineer will attend monthly construction progress meetings with the City and selected contractor to discuss aspects of the project tasks presently underway, review progress, project schedule and upcoming issues. These meetings will generally be about an hour in duration. The appropriate engineering team members shall attend the meetings to discuss pertinent issues. Engineer will prepare draft meeting minutes within seven business days to submit to the City for review and distribution to its participant entities. Final minutes will be issued after incorporating review comments. The overall duration of the construction is anticipated to be twelve (12) months to substantial completion and two (2) more months to final acceptance. Participation in monthly construction progress meetings is anticipated to be virtual (via Webex).
- 4.3 In conjunction with monthly progress meetings, Engineer will make periodic site visits to observe, as an experienced and qualified design professional, the progress and quality of the various aspects of Contractor's work. Such visits and observations by Engineer are to include spot checking, selective review, and similar methods of general observation of the work based on Engineer's exercise of professional judgment. Based on information obtained during such visits and such observations, Engineer shall endeavor to determine in general if such work is proceeding in accordance with the Contract Documents and Engineer shall keep City informed of the

progress of the work. Six (6) site visits during the duration of the construction are anticipated.

- 4.4 Perform project management and contract administration duties similar to those in the previous phases, throughout construction.
- 4.5 Review Contractor submittals and operation and maintenance manuals for conformance to Contract Documents.
- 4.6 When requested by the City, assist in addressing Request for Information (RFI) submitted by the Contractor.
- 4.7 When requested by the City, assist with the development of Request for Proposals (RFPs) and Change Orders (COs). Additionally, Bath will assist with the evaluation of the Contractor's response to RFP and COs.
- 4.8 If requested by the City, review and interpret field and laboratory tests.
- 4.9 Provide interpretations and clarifications of the Contract Documents for the Contractor and authorize required changes, which do not affect the Contractor's price and are not contrary to the general interest of the City under the Contract as requested by the Owner's Authorized Representative (OAR).
- 4.10 Provide interpretations and clarifications of the plans and specifications for the Contractor and recommendations to the City for minor changes which do not affect the Contractor's price and are not contrary to the general interest of the City under the Contract as requested by the OAR.
- 4.11 Attend pre-final inspection with City staff, provide punch list items to the City's Construction Engineers for Contractor to complete prior to final inspection.
- 4.12 Attend final inspection with City staff, provide punch list items to the City's Construction Engineers for Contractor completion, and provide the City with a Certificate of Completion for the Project upon successful completion of the Project.
- 4.13 Review Contractor-provided construction "red-line" drawings. Prepare Project Record Drawings and provide a reproducible set and electronic file (both PDF and AutoCAD r.14 or later) within one (1) month of receiving the Contractor's red-line drawings. All drawings shall be CADD drawn using dwg format in AutoCAD, and graphics data will be in .dxf format with each layer being provided in a separate file. Attribute data will be provided in ASCII format in tabular form. All electronic data will be compatible with the City GIS system. The Record Drawings should incorporate the Contractor's red-lines and identify all changes made during construction. The Drawing Cover and each sheet should be clearly identified as the Record Drawing and should indicate the basis and date.
- 4.14 The City staff will:
 - a) Prepare applications/estimates for payments to Contractor.
 - b) Conduct the pre-final and final inspection with the Engineer.

5 Additional Services

This section defines the scope of additional services that may only be included as part of this contract if authorized by the Director of Engineering Services. A/E may not begin work on any services under this section without specific written authorization by the Director of Engineering Services. Fees for Additional Services are an allowance for potential services to be provided and will be negotiated by the Director of Engineering Services as required. The A/E shall, with written authorization by the Director of Engineering Services, perform the following:

5.1 Generator Selection and Options

Lead times for backup power generators have significantly increased over the years and with ongoing large scale datacenter projects across the nation, the major generator vendors published lead times could potentially put the project schedule at risk and jeopardize grant funding availability.

- Early in the project, Bath Group will investigate options for generators which meet the OSO project requirements and define the generator specifications and standards. Bath Group will investigate generators which are compatible with other projects and the City's installed generation fleet. Additionally, Bath Group will evaluate the use of natural gas, diesel, and combined fuels for generator options.
- Bath Group will work with vendors and suppliers to determine delivery durations and identify options which are within the project schedule.
- Bath Group will provide a preliminary financial analysis of enrolling the new generations and the City's participation in ERCOT demand response programs.

5.2 Windstorm Certification

The Contractor will coordinate with subconsultant (Ardurra) and shall prepare and submit the WPI-1 form in accordance with the requirements of the Texas Department of Insurance (TDI) for Windstorm acceptance of the project work. Contractor shall prepare and submit WPI-2 form to the Texas Department of Insurance upon completion of construction for TDI's review and subsequent issuance of the WPI-8 Windstorm Certificate.

5.3 Testing and Training Plan, Start-up Services

The Consultant will develop generator and switchgear testing plans required to demonstrate functional operation of the new generators. The Consultant will provide technical support and onsite staff to assist in the coordination of the testing by the OEM. Consultant will review and make recommendations for approval or rejection of all NETA and Functional Testing. The level of effort is assumed to be 40 hours in office and 40 hours onsite.

5.4 Topographic Survey

The Consultant will coordinate with subconsultant (Ardurra) to provide existing survey reports for the project based on recent survey and as-built drawings recently completed on the expansion project. Survey services are limited to collection of existing site documentation data, identification any additional data, and assembling into the design package, The Consultant will utilize the existing topographic survey location of all major features of the project, drainage (limited to sheet flow), and grading. The level of effort is assumed to be 20 hours. An allowance of \$30,000 will be utilized if additional field survey is required.

5.5 Geotechnical Investigation

The Consultant will coordinate with subconsultant (Ardurra) to provide latest geotechnical reports from recent projects. The Consultant will utilize existing subsurface geotechnical investigations as required to support the design of the new facilities and will coordinate this effort with the Structural Engineer. The level of effort is assumed to be 20 hours. An allowance of \$25,000 will be utilized if additional field and engineering investigation is required.

5.6 SUE

The Consultant will coordinate with subconsultant (Ardurra) to provide Subsurface Utility Engineering (SUE) reports for the project based on recent SUE completed on the expansion project. Subsurface Utility Engineering services are limited to collection of existing site documentation data, identification of potential conflicts, and assembling into the design package. The level of effort is assumed to be 20 hours. An allowance of \$30,000 will be utilized if additional field and engineering investigation is required.

The Consultant will provide the following services:

- Sub Surface Utility Location and Data Recording will be based on record drawing and recent SUE efforts completed on the recent expansion project.
- Coordinate with Texas 811 and City to determine the approximate location of underground utilities to be exposed.
- Collect and record field data.
- Update project construction plans.

5.7 Permitting Support

Depending on the size and operation of the selected generator plant, an air permit maybe required. The Consultant will provide permitting support for the generator installation which includes, New Source Review air permit qualifying permit by rule (PBR) under 30 TAC Section 106.511 emergency and standby engines or TCEQ Air Quality Standard Permit for Natural Gas Electric Generating Units and EPA 40 CFR Part 63, Subpart ZZZZ. An allowance of \$15,000 will be utilized for this effort if a permit is required.

2 Warranty Phase Services (Not included)

FEE

The proposed not-to-exceed contract amount for each task is as follows:

Task	Fee	Billing Type
Task 1 – Preliminary Design	\$ 226,668	Lump Sum
Task 2 – Detail Design	\$ 212,883	Lump Sum
Task 3 – Bid Phase	\$ 27,898	Lump Sum
Task 4 – Construction Admin	\$ 114,039	Time and Materials
Basic Services Total	\$ 581,489	
Additional Services		
Task 5.1 – Generator Selection and Options Analysis	\$20,000	Lump Sum
Task 5.2 – Windstorm Certificate	\$ 10,000	Lump Sum
Task 5.3 – Testing, Training Plan, Start-up	\$ 18,000	Lump Sum
Task 5.4 – Topographical Survey	\$ 30,000	Allowance
Task 5.5 – Geotechnical Investigation	\$ 25,000	Allowance
Task 5.6 – SUE	\$ 30,000	Allowance
Task 5.7 – Permitting Support	\$ 15,000	Allowance
Additional Services Total	\$ 148,000	
Total New Work	\$ 729,489	

Invoices will be submitted to the City on a monthly basis as a percentage complete based on project progress (for lump sum) and based on hours and expenses charged to the project (T&M). Invoices will be provided with a cover letter summarizing the actions and meetings performed during the invoice period.