

**AGREEMENT SUMMARY
BROKEN ARROW MUNICIPAL AUTHORITY
BATTLE CREEK GOLF COURSE IRRIGATION PUMP STATION REPLACEMENT AND BATTLE
CREEK TANK INLET/OUTLET MODIFICATIONS**

PROFESSIONAL CONSULTANT AGREEMENT

1.0 Professional Consulting Firm:

- 1.1 Name: Carollo Engineering, Inc.
- 1.2 Telephone No.: 405-840-7785
- 1.3 Address: 211 N. Robinson, Suite 1300 North Tower,
Oklahoma City, OK 73112

2.0 Project Name/Location: Battle Creek Golf Course Irrigation Pump Station Replacement and Battle Creek Tank Inlet/Outlet Modifications. South of West Omaha Street South and East of North Elm Place.

3.0 Statement of Purpose: Provide professional engineering design services to include replacement of the irrigation pump station with a prepackaged lift station, conduct an evaluation of the pipeline feeding the irrigation pump station and inlet/outlet of the Battle Creek Tank and design improvements to the irrigation pump station suction and Battle Creek Tank inlet/outlet resulting from this evaluation.

4.0 Agreement Summary:

- 4.1 Agreement Amount: \$211,500.00
- 4.2 Agreement Time: 308 calendar days

5.0 Contract Documents and Priority: The Broken Arrow Municipal Authority (OWNER), represented by the City Manager, and the Professional Consulting firm, (CONSULTANT), identified in paragraph 1.0 agree to perform this AGREEMENT in strict accordance with the clauses, provisions, and the documents identified as below, all of which are made part of this Contract. In the event of conflict, these documents shall be interpreted in the following order:

- 5.1 AGREEMENT with corresponding Attachments;
- 5.2 Duly authorized Amendments to the AGREEMENT;
- 5.3 AGREEMENT Summary;
- 5.4 Specific project written correspondence mutually recognized; and
- 5.5 Specific project verbal instructions mutually recognized.

6.0 Agreement Approved by the Owner on: _____

**AGREEMENT
FOR
PROFESSIONAL CONSULTANT SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY
AND
Carollo Engineers, INC.**

This AGREEMENT, including Attachment A through E, between the Broken Arrow Municipal Authority (OWNER) and Carollo Engineers, Inc. (CONSULTANT);

W I T N E S S E T H:

WHEREAS, OWNER intends to replace the irrigation pump station at the Battle Creek Golf Course, improve the pump station suction conditions, and conduct inlet/outlet modifications at the existing 5MG Battle Creek Tank. located near the intersection of West Omaha Street and North Elm Place in Broken Arrow (PROJECT) for which OWNER has requested that CONSULTANT provide certain professional services as required and,

WHEREAS, CONSULTANT is qualified and capable to provide the professional services required;

NOW, therefore, in consideration of the promises contained in this AGREEMENT, OWNER and CONSULTANT agree as follows:

ARTICLE 1 - EFFECTIVE DATE

The effective date of this AGREEMENT shall be the 7 day of Aug 2019.

ARTICLE 2 - GOVERNING LAW

This AGREEMENT shall be governed by the laws of the State of Oklahoma and venue for any action concerning this Agreement shall be in the District Court of Tulsa County, Oklahoma.

ARTICLE 3 - SERVICES TO BE PERFORMED BY CONSULTANT

CONSULTANT shall perform the SERVICES described in Attachment A, Scope of Services. If construction phase services are included, the CONSULTANT shall be the OWNER'S agent and representative to observe, record and report with respect to all services that are required or authorized by the construction documents.

ARTICLE 4 – ORGANIZATION OF SUBMITTAL DOCUMENTS

CONSULTANT shall prepare the documents as described in Attachment B as part of this Agreement.

ARTICLE 5 - COMPENSATION

OWNER shall pay CONSULTANT in accordance with Attachment D, Compensation.

ARTICLE 6 - OWNER'S RESPONSIBILITIES

OWNER shall be responsible for all matters described in Attachment C, OWNER'S Responsibilities and Special Conditions.

ARTICLE 7 - STANDARD OF CARE

CONSULTANT shall perform the SERVICES undertaken in a manner consistent with the prevailing accepted standard for similar services with respect to projects of comparable function

and complexity, and with the applicable state laws, as well as the specific codes, regulations, design criteria and construction specifications adopted by the owner and other governing policies published and generally considered authoritative by CONSULTANT'S profession that are in effect at the time of performance of these SERVICES. CONSULTANT is obligated to perform professional services in accordance with the foregoing standard with respect to the laws, codes, regulations, design criteria, and construction specifications that are applicable pursuant to this AGREEMENT.

ARTICLE 8 - LIABILITY

8.1 General. Having considered the potential liabilities that may exist during the performance of these SERVICES, the benefits of the PROJECT, and CONSULTANT'S fee for the SERVICES; and in consideration of the promises contained in this AGREEMENT, OWNER and CONSULTANT agree to allocate and limit such liabilities in accordance with Article 10.

8.2 Indemnification. CONSULTANT agrees to defend, indemnify, and hold harmless OWNER, and its agents and employees, from and against legal liability for all claims, losses, damages, and expenses to the extent such claims, losses, damages, or expenses are caused by the negligent or intentional acts, errors, or omissions of CONSULTANT, its agents or employees. In the event claims, losses, damages, or expenses are caused by the joint or concurrent negligence of OWNER and CONSULTANT, or their agents or employees, then they shall be borne by each party in proportion to each entity's own negligence.

8.3 Consequential Damages. OWNER shall not be liable to CONSULTANT for any special, indirect, or consequential damages resulting in any way from the performance of the SERVICES such as, but not limited to, loss of use, loss of revenue, or loss of anticipated profits.

8.4 Survival. Upon completion of all SERVICES, obligations, and duties provided for in this AGREEMENT, or if this AGREEMENT is terminated for any reason, the terms and conditions of this Article 8 shall survive.

ARTICLE 9 - INSURANCE

During the performance of the SERVICES under this AGREEMENT, CONSULTANT shall maintain the following insurance:

- (1) General Liability Insurance, with a combined single limit of \$1,000,000 for each occurrence and \$1,000,000 in the aggregate;
- (2) Automobile Liability Insurance, with a combined single limit of not less than \$1,000,000 for each person, not less than \$1,000,000 for each accident and not less than \$1,000,000 for property damage; and
- (3) Professional Liability Insurance, with a limit of \$1,000,000 annual aggregate.

CONSULTANT shall furnish OWNER certificates of insurance, which shall include a provision that such insurance shall not be canceled without at least thirty (30) days written notice to OWNER. All PROJECT sub-consultants shall be required to name OWNER and CONSULTANT as certificate holders on their certificate of insurance for the PROJECT, and shall be required to indemnify OWNER and CONSULTANT to the same extent. CONSULTANT shall be held responsible to submit certificates of insurance for sub-consultants to OWNER prior to the sub-consultant's release to commence work.

ARTICLE 10 - LIMITATIONS OF RESPONSIBILITY

CONSULTANT shall not be responsible for: (1) construction means, methods, techniques, sequences, procedures, or safety precautions and programs in connection with the construction of the PROJECT; or (2) procuring permits, certificates, and licenses required for any construction unless such responsibilities are specifically assigned to CONSULTANT in Attachment A, Scope of Services.

ARTICLE 11 - LIMITATIONS OF RESPONSIBILITIES FOR ACTS OF OTHERS

CONSULTANT shall not at any time supervise, direct, control or have authority over any work performed by any employee, contractor or other agent of OWNER. CONSULTANT shall not be responsible for the acts or omissions of any employee, contractor or other agent associated with the PROJECT except for its own employees, subcontractors and other agents.

ARTICLE 12 - OPINIONS OF COST AND SCHEDULE

Since CONSULTANT has no control over the cost of labor, materials, or equipment furnished by others, or over the resources provided by others to meet PROJECT schedules, CONSULTANT'S opinion of probable costs and of PROJECT schedules shall be made on the basis of experience and qualifications as a professional. CONSULTANT does not guarantee that proposals, bids, or actual PROJECT costs will conform to OWNER'S cost estimates or that actual schedules will conform to OWNER'S projected schedules.

ARTICLE 13 - REUSE OF DOCUMENTS

All documents, including, but not limited to, drawings, specifications, and details, reports, etc. prepared by CONSULTANT pursuant to this AGREEMENT are instruments of service in respect to the PROJECT. They are not intended or represented to be suitable for reuse by CONSULTANT or others on extensions of the PROJECT or on any other project. Any reuse or adaptation without prior written verification by the OWNER for the specific purpose intended will be at CONSULTANT'S sole risk and without liability or legal exposure to the OWNER. CONSULTANT shall defend, indemnify, and hold harmless the OWNER against all claims, losses, damages, injuries, and expenses, including attorney's fees, arising out of or resulting from such reuse.

ARTICLE 14 - OWNERSHIP OF DOCUMENTS AND INTELLECTUAL PROPERTY

Except as otherwise provided herein, engineering documents, drawings, and specifications prepared by CONSULTANT as part of the SERVICES ("Documents") shall become the property of OWNER. CONSULTANT shall retain its rights in its standard drawing details, specifications, data bases, computer software, and other proprietary property. Rights to intellectual property developed, utilized, or modified in the performance of the SERVICES shall remain the property of CONSULTANT, but shall be provided to the OWNER, at no additional expense to the OWNER. Any reuse of Documents by OWNER on other projects not contemplated under this AGREEMENT shall be at the reuser's sole risk, without liability to CONSULTANT.

ARTICLE 15 - TERMINATION

This AGREEMENT may be terminated by either party upon written notice in the event of substantial failure by the either party to perform in accordance with the terms of this AGREEMENT. The non-performing party shall have fifteen (15) calendar days from the date of the termination notice to cure or to submit a plan for cure acceptable to the other party.

OWNER may suspend performance of this AGREEMENT for OWNER'S convenience upon written notice to CONSULTANT. Upon restart, an equitable adjustment may be made to CONSULTANT'S compensation, if the period of suspension has created an economic hardship for the CONSULTANT.

ARTICLE 16 - DELAY IN PERFORMANCE

Neither OWNER nor CONSULTANT shall be considered in default of this AGREEMENT for delays in performance caused by circumstances beyond the reasonable control of the non-performing party. For purposes of this AGREEMENT, such circumstances include, but are not limited to, abnormal weather conditions such as floods, earthquakes, fire; civil disturbances such as war, riots, or other civil epidemic; power outages, strikes, lockouts, work slowdowns, or other labor disturbances; sabotage; judicial restraint, and inability to procure permits, licenses, or authorizations from any local, state, or federal agency for any of the supplies, materials,

accesses, or services required to be provided by either OWNER or CONSULTANT under this AGREEMENT.

Should such circumstances occur, the non-performing party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this AGREEMENT.

ARTICLE 17 - COMMUNICATIONS

Any communication required by this AGREEMENT shall be made in writing to the address specified below:

OWNER: Broken Arrow Municipal Authority (BAMA)
485 N. Poplar Street
Broken Arrow, OK 74012
Contact: Mr. Roger D. Hughes, P.E.
Engineering Division Manager

CONSULTANT: Carollo Engineers, Inc.
211 N. Robinson, Suite 1300 North Tower
Oklahoma City, OK 73102
Contact Name: Rebecca Poole, P.E.
Project Manager

Nothing contained in this Article shall be construed to restrict the transmission of routine communications between representatives of OWNER and CONSULTANT.

ARTICLE 18 - WAIVER

A waiver by either OWNER or CONSULTANT of any breach of this AGREEMENT shall be in writing. Such a waiver shall not affect the waiving party's rights with respect to any other or further breach.

ARTICLE 19 - SEVERABILITY

The invalidity, illegality, or unenforceability of any provision of this AGREEMENT or the occurrence of any event rendering any portion or provision of this AGREEMENT void shall in no way affect the validity or enforceability of any other portion or provision of this AGREEMENT. Any void provision shall be deemed severed from this AGREEMENT, and the balance of this AGREEMENT shall be construed and enforced as if this AGREEMENT did not contain the particular portion or provision held to be void. The parties further agree to amend this AGREEMENT to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this Article shall not prevent this entire AGREEMENT from being void should a provision which is of the essence of this AGREEMENT be determined void.

ARTICLE 20 - INTEGRATION

This AGREEMENT represents the entire and integrated AGREEMENT between OWNER and CONSULTANT. It supersedes all prior and contemporaneous communications, representations, and agreements, whether oral or written, relating to the subject matter of this AGREEMENT.

ARTICLE 21 - SUCCESSORS AND ASSIGNS

To the extent permitted by Article 22, OWNER and CONSULTANT each binds itself and its successors and assigns to the other party to this AGREEMENT.

ARTICLE 22 - ASSIGNMENT

Neither OWNER nor CONSULTANT shall assign its duties under this AGREEMENT without the prior written consent of the other party. Unless otherwise stated in the written consent to an assignment, no assignment will release or discharge the assignor from any obligation under this AGREEMENT. Nothing contained in this Article shall prevent CONSULTANT from employing independent sub-consultants, associates, and sub-contractors to assist in the performance of the SERVICES. However, third party entities must comply with Article 9.

ARTICLE 23 - THIRD PARTY RIGHTS

Nothing in this AGREEMENT shall be construed to give any rights or benefits to anyone other than OWNER and CONSULTANT.

ARTICLE 24 - COMPLETION

CONSULTANT shall complete the services within the time frame outlined on Attachment E, Schedule, subject to conditions which are beyond the control of the CONSULTANT.

ARTICLE 25 - IMMIGRATION COMPLIANCE

25.1 Consultant shall demonstrate that he:

25.1.1 Has complied, and shall at all times during the term of this Contract, comply in all respects with all immigration-related laws, statutes, ordinances and regulations including without limitation, the Immigration and Nationality Act, as amended, the Immigration Reform and Control Act of 1986, as amended, and the Oklahoma Taxpayer and Citizen Protection Act of 2007 (Oklahoma HB 1804) and any successor laws, ordinances or regulations (collectively, the Immigration Laws"); and

25.1.2 Has properly maintained, and shall at all times during the term of this Contract, maintain any and all employee records required by the U.S. Department of Homeland Security ("DHS"), including, without limitation, properly completed and maintained Form I-9s for each of the Consultants employees; and

25.1.3 Has verified the employment eligibility for all employees hired on or after July 1, 2008 through DHS's E-Verify system, and shall at all times continue to verify the employment eligibility of all employees hired during the term of this Contract; and

25.1.4 Has required, and will at all times during the term of this Contract, require any sub-contractor utilized, hired or sub-contracted for by Consultant for the completion or undertaking of any duties, tasks or responsibilities under this Contract, to comply the requirements and obligations imposed by the Immigration Laws and set forth in Paragraph (I), parts (a), (b) and (c), above, with regards to each of the sub-contractor's employees.

25.2 Consultant will indemnify, defend and hold harmless City against any loss, cost, liability, expense (including, without limitation, costs and expenses of litigation and reasonable attorney's fees) demands, claims, actions, causes of action, liabilities, suits, and damages that arise from or in connection with, directly or indirectly, Consultants failure, deliberate or negligent, to fulfill its obligations and representations regarding verifying the employment eligibility of its employees and the employees of any subcontractor utilized by Contractor as set forth more fully in Paragraph 25.1 above. IN WITNESS WHEREOF, the City Manager of the City of Broken Arrow, Oklahoma has hereunto set his hand, for and on behalf of the City of Broken Arrow and the CONSULTANT has signed, or caused his name to be signed, and seal affixed by proper authority, the day and year first above written and these presents have been executed in triplicate counterparts.

IN WITNESS WHEREOF, OWNER and CONSULTANT have executed this Agreement.

OWNER:

Broken Arrow Municipal Authority

Approved as to form:

By 2 Early 4/25/19
Assistant City Attorney

CONSULTANT:

Carollo Engineers, Inc.

By Thomas O. Crowley, P.E.
Thomas O. Crowley, Vice President
Date 04/11/19

By _____
Michael Spurgeon, City Manager

(CORPORATE SEAL) if applicable

Date _____

Attest:

Attest:

By _____
Curtis Green, City Clerk

By Wayne Miller
Wayne Miller, Vice President

Date _____

Date 4/11/19

VERIFICATIONS

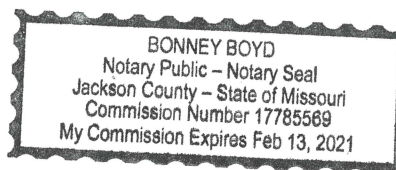
State of Oklahoma)
) §
County of Tulsa)

Before me, a Notary Public, on this 11 day of April, 2019, personally appeared Thomas O. Crowley, known to be to be the (President, Vice-President, Corporate Officer, Member, Partner, or Other): Vice President of Carollo Engineering, Inc., and to be the identical person who executed the within and foregoing instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

My Commission Expires:

Feb. 13, 2021

Bonney Boyd
Notary Public



**ATTACHMENT A
TO
AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND
CAROLLO ENGINEERING, INC. (CONSULTANT)
FOR
BATTLE CREEK GOLF COURSE IRRIGATION PUMP STATION REPLACEMENT
AND BATTLE CREEK TANK INLET/OUTLET MODIFICATIONS**

SCOPE OF SERVICES

The following scope of services shall be made a part of the AGREEMENT dated the 1st day of May, 2019.

1.0 PROJECT UNDERSTANDING

BACKGROUND

In 2012, in conjunction with the City of Tulsa, the City of Broken Arrow converted from free chlorine to utilizing chloramines as a secondary disinfectant. In 2015, ODEQ adopted a more stringent position than the EPA for disinfectant residual, requiring a minimum total chlorine of 1.0 mg/L at the most distant locations (OAC:252:631-3-3) within the distribution system and a minimum total chlorine of 2.0 mg/L at the point of entry to the distribution system.

In 1998, the City of Broken Arrow, OK installed a 5 Million Gallon (5MG) ground storage tank, commonly called the "Battle Creek" tank, to store water taken from the City of Tulsa at the extreme northern area of the distribution system. The City of Broken Arrow, OK has two pressure zones: a main pressure zone operating at a HGL of 911 ft and a high pressure zone operating at a HGL of 1,010 ft. In recent years, the 5MG Battle Creek tank, operating in the main pressure zone, experienced several incidents of loss of residual which has caused significant operational difficulties.

In 2018 the Broken Arrow Municipal Authority (BAMA) contracted with Carollo Engineers, Inc., to;

1. Update and calibrate a hydraulic model of the northern main pressure zone to determine if hydraulic restrictions in and around the tank may be causing excessive water age within the tank.
2. Develop a Computational Fluid Dynamics Model of the tank to assess the ability of tank cycling and/or the current PAX mixer to reduce water age within the tank.
3. Develop short term and long term recommendations to reduce the nitrification potential within the tank.

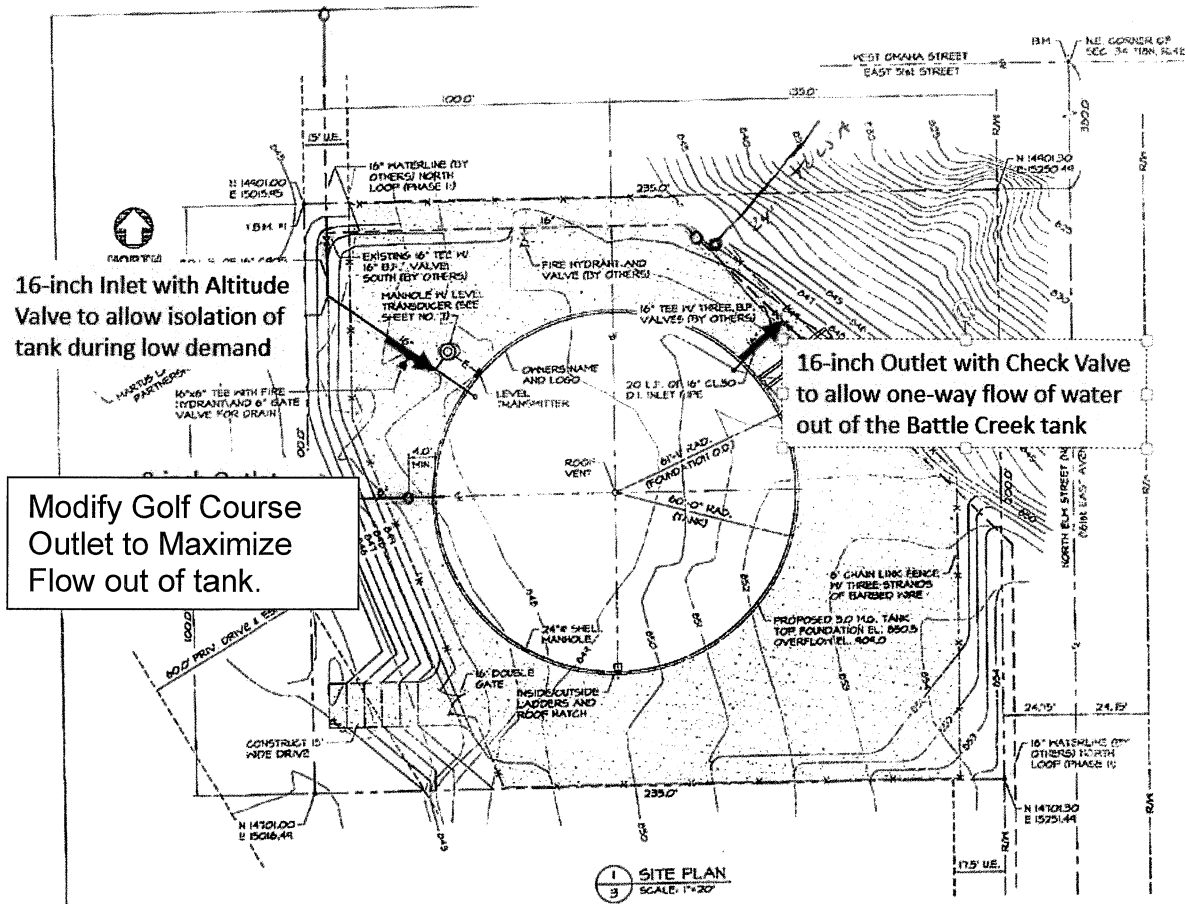
The results of the analysis indicated the following:

1. Nitrification observed within the Battle Creek tank is not caused by excess ammonia or a low chloramine residual at the source (i.e. water treatment plant).
2. The loss of residual issue with the Battle Creek tank does not seem to be confined to higher water temperature/lower demand (fall) conditions, meaning that other factors may be more influential on nitrification than water temperature.

3. The corrosion of the tank interior is problematic and is likely causing the tank to be more susceptible to the sustained growth of the organisms causing nitrification.
4. Utilizing the level fluctuations alone, the tank turnover rate is extremely low compared to the industry standards. Given this, and the large volume of the tank, it is likely that tank turnover rate is the primary culprit.
5. BAMA realized that tank turnover rate was an issue and installed a PAX Mixer in 2017 to increase mixing and prevent stratification of the tank. Since subsequent loss of residual did occur, it is likely that this mixing is ineffective.

Potential short-term solutions included the following:

1. Reconfigure the Tank Inlet and Outlet to provide a means to isolate the inlet from the outlet of the tank using check valves and Pressure Regulating (altitude) Valves.
2. Increase the ability of the golf course and the High Pressure Zone pump station to increase the withdrawal rate directly from the tank outlet. Provide automated valves to facilitate operations.



PURPOSE

The purpose of project is as follows:

1. Design a replacement irrigation pump station consisting of a prepackaged pump station mounted on a CIP foundation parallel to the existing irrigation pump station. Pump station design capacity will meet irrigation needs and maximize the potential for drawdown of the Battle Creek Tank.
2. Evaluate two (2) inlet/outlet configuration scenarios for the Battle Creek Tank and recommend capital improvements.

3. Design capital improvements for the reconfiguration of the tank inlet and outlet to create the desired inlet and outlet conditions under which the existing PAX mixer becomes effective in reducing water age.
4. Design capital improvements for the improvement to the golf course pump station and suction piping to increase flow capacity directly out of the Battle Creek Tank from golf course pumping operations.

CONSULTANT understands that the OWNER has retained their professional services in order to evaluate and prepare preliminary design documents for 1) replacement of the irrigation pump station 2) modification of the pipeline supplying the pump station to pull directly from the Battle Creek Tank to minimize tank water age during the times the golf course is utilizing the pump station and 3) modification of inlet/outlet of the Battle Creek Tank. These documents shall include, but not be limited to, the following: preliminary engineering report with results of condition assessment of existing facilities, recommendations for repair, replacement and/or upgrade of facilities, and opinion of probable cost.

CONSULTANT understands that the OWNER has retained their professional services in order to prepare engineering documents for the design of a replacement prepackaged pump station, suction piping improvements, and inlet/outlet of the Battle Creek Tank. These documents shall include, but not be limited to, the following: construction plan detailing the intent of the project; standard details and standard drawings associated with the project specifics; construction specifications, general conditions, special conditions, and opinion of probable cost.

Furthermore, CONSULTANT understands that the design for the rehabilitation of the Battle Creek tank will be conducted by HUB engineering and CONSULTANT should provide any drawings and specification verbiage necessary for HUB to include the interior tank inlet/outlet modification in the overall rehabilitation contract documents.

2.0 BASIC SCOPE OF SERVICES

The following Scope of Services describes the CONSULTANT's work associated with the study, design, and construction related to replacement of the Battle Creek Golf Course Pump Station and Battle Creek Tank Inlet/Outlet for the Broken Arrow Municipal Authority (OWNER). Part 100 of the project is comprised of the project administration and preliminary design for the storage tank rehabilitation. Part 200 of the project provides for the development of plans and specifications associated with the design, plans, specifications, and contract documents for storage tank rehabilitation for bidding purposes. Part 300 of the project provides for engineering services during bidding and construction of the designed improvements. Parts 300 will be provided as additional services to be authorized separately.

Part 100 - PROJECT MANAGEMENT AND PRELIMINARY DESIGN

Scope of Service Work Parts

The CONSULTANT's Scope of Services shall consist of the following Parts:

- Part 100 – Project Management
- Part 110 – Data Collection
- Part 120 – Preliminary Design Memorandum

Part 100 – Project Management

- 100.1 Prepare project work plan and distribute to project personnel. The work plan will include the project purpose and objectives, scope of services, an organization chart, project delivery schedule, and project flow chart.

- 100.2 Progress Reports. Provide OWNER with monthly progress reports that identify what work has been performed during the month and an itemized listing of work that will be anticipated in the upcoming month. These reports will be delivered as part of the monthly progress payment request.
- 100.3 Meetings. Conduct project meetings throughout the study to inform the OWNER and City staff on the progress, issues, and recommendations of the Study. CONSULTANT will conduct all meetings in presentation format with meeting minutes provided by CONSULTANT within fourteen (14) calendar days of the meeting conclusion. These meetings and workshops are described further as follows:
- 100.3.1 Preliminary Design Review Meeting:
Conduct a meeting to review the preliminary design memorandum, cost opinion, and estimated construction schedule for the work.
- 100.3.2 Design Workshop:
CONSULTANT shall conduct a workshop during the final design of the storage tank rehabilitation to solicit OWNER staff comments regarding the 50 percent plans and specifications for the project.
- 100.3.3 Agenda and Meeting Minutes:
The agenda for each meeting will be delivered to the OWNER no less than three days in advance of the meetings. The CONSULTANT will record the meeting activities, action items, and decisions, in meeting notes that will be delivered to OWNER. The workshops will be held at the completion of major milestones within the study.
- 100.4 Project Schedule. Maintain a project schedule for the management of the project. Each part identified in the scope of services will be included in the project schedule. The project schedule will be updated monthly and delivered to OWNER as part of the monthly status report.
- 100.5 Maintain Action Item and Decision Logs. Create and maintain throughout the project an Action Item and Decision Log.

Part 110 – Data Collection

- 110.1 Review Past Project Documentation. The CONSULTANT will collect and review historic documentation including plans, specifications, and inspection reports.
- 110.2 Surveying. Surveying will be completed for the project as necessary to establish horizontal and vertical control tied to the State Coordinate System.
- A topographic and boundary survey will be completed to produce a base map of 0.5 foot contours on the existing pump station site.
- 110.3 Easement and Legal Description: CONSULTANT will provide legal description for the purposes of securing an easement for the new prepackaged lift station for the irrigation system at the Battle Creek Golf Course.

Part 120 –Preliminary Design Memorandum

General:

Perform preliminary evaluation to provide location and sizing of prepackaged irrigation pump station, size and configuration of suction pipeline, and recommended configuration of the tank inlet/outlet.

Deliverables:

CONSULTANT will provide the following deliverables:

- Six (6) hard copies and one (1) electronic copy of the DRAFT Preliminary Design Memorandum.
- Six (6) hard copies and one (1) electronic copy of the FINAL Preliminary Design Memorandum.

Assumptions:

- 1) The existing, calibrated model will be utilized for the inlet/outlet modification scenarios.
- 2) No more than two (2) inlet/outlet configurations will be analyzed.
- 3) The ENGINEER will be able to obtain pumping records, tank level records, and other data necessary for operational analysis of the existing golf course pump station to confirm model extended period simulations.
- 4) It is assumed that data can be supplied electronically and, at a minimum, the electronic format will consist of a searchable PDF.
- 5) Existing pump station will be replaced.
- 6) OWNER will provide CONSULTANT will pumping records data indicating the irrigation needs at the Battle Creek Golf Course pump Station.

Subtasks:

Task 1.1.2.1 Prepare Draft Technical Memorandum

ENGINEER will prepare a draft technical memorandum summarizing the investigations and recommendations for the irrigation pump station, suction piping and inlet/outlet configuration. The Technical memorandum will include the following:

- a) Executive Summary
- b) Introduction
 - (1) Purpose
 - (2) Scope
- c) Irrigation Pumping Assessment
 - (1) Recommended sizing and configuration of Irrigation pump station
 - (2) Recommended alternatives
- d) Battle Creek Tank Inlet/Outlet Configuration
 - (1) Alternatives Development
 - (2) Alternatives Analysis
- e) Conclusions and Recommendations
 - (1) Estimated project Cost
 - (2) Estimated Project Schedule

Task 1.1.2.2 Prepare Final Technical Memorandum

Following review of the draft technical memorandum by City Staff, ENGINEER will provide a summary table indicating city comments and ENGINEER response to comments. ENGINEER will provide a final technical memorandum. Specific subtasks in completing the preliminary design report include:

PART 200 - FINAL DESIGN

Deliverables

Specific deliverables associated with the design drawings and specifications include the following:

- a) Interim Review Design Plans
 - Eight (8) Half Size Sets of Drawings and Specifications
 - One (1) Electronic Copy PDF
 - Preliminary Cost Estimate
- b) Final Review Design Plans
 - Eight (8) Half Size Sets of Drawings and Specifications
 - One (1) Electronic Copy PDF
 - Updated Preliminary Cost Estimate
- c) Final Construction Documents (engineering plans and specifications) ready for advertisement and bid.
 - One (1) Full Size Set of Drawings and Specifications
 - One (1) Half Size Set of Drawings and Specifications
 - One (1) Electronic Copy PDF
 - Final Estimate on Bid Form

Preliminary Drawing List

The preliminary drawing list for this contract is included in Exhibit B. These drawings represent the best estimate of the anticipated work at the time of this Agreement and it is recognized that this list will undergo changes and refinements as the project progresses.

Assumptions

The following assumptions are utilized in the preparation of Final plan services.

1. There will be two progress submittals: an intermediate submittal and final submittal.
2. The project will not require funding from the State Revolving Loan Program.
3. The project will include both the tank inlet and outlet improvements and the golf course pump station and pipeline improvements in one project.

4. 5MG Tank Site:

- a) The inlet/outlet configuration will provide a pressure regulating valve (PRV) on the inlet to control tank level and a check valve to provide a dedicated outlet to the tank.
- b) The PRV and Tank outlet check valve vaults will be precast concrete with a dedicated sump pump.
- c) No new electrical power will be required at the 5MG Tank site. The existing electrical power panels will be utilized.
- d) No new PLC will be required at the 5MG tank site, the existing PLC will be utilized for monitoring of check valve position and altitude valve open/closed status.

5. Golf Course Pump Station:

- 1) The new pump station will be a prepackaged lift station with VFD's mounted on a slab on grade, Cast in place concrete foundation. No deep foundations will be required.
- 2) The existing 8-inch golf course pipeline will require a new 12-inch pipeline or a parallel 8-inch pipeline to improve suction conditions.
- 3) The approximate length of the pipeline from the 5 MG Battle Creek tank to the golf course pump station is 2,500 feet.
- 4) The scale of the pipeline plant and profile drawings will be 1:20 horizontal and 1:5 vertical.
- 5) Surge analysis or pipe stress analysis of the golf course pump station will not be required.
- 6) Environmental analysis and/or 404 permitting will not be required for the pipeline alignment.

Task 2.1 – Project Delivery and Communication

Task 2.1.1 External Design Project Meetings:

Subtask 2.1.1.1 – Interim Design Workshop

Topic: Interim Review Engineering Plans

Engineer will conduct a workshop with OWNER to review and discuss design drawings, specifications, and construction cost opinion. Interim review plans will be submitted in electronic format (PDF) only.

Subtask 2.1.1.2 – Final Design Workshop

Topic: Final Review Engineering Plans

Engineer will conduct a workshop with OWNER to review and discuss design drawings, specifications, and construction cost opinion. Final review plans will be submitted in electronic format (PDF) only.

Task 2.1.2 Internal Design Project Meetings and Workshops

Internal discipline coordination meetings will be conducted every two (2) weeks during the 6-month design of the construction contract.

Task 2.2 – Geotechnical Investigations

The Engineer will be responsible for the development of the scope of the investigations for the geotechnical firm, determining the depth and locations for borings, and review and commenting on the draft geotechnical report. One (1) boring is assumed for this task.

Task 2.3 – Final Field/Site Surveying and Potholing

Surveying will be completed for the project as necessary to establish horizontal and vertical control tied to the State Coordinate System. A minimum of two survey control monuments will be placed at judiciously selected locations at the Battle Creek tank and golf course sites.

A topographic and boundary survey will be completed to produce a base map of 0.5 foot contours on the existing 5MG site (See Exhibit A). LIDAR data supplemented with periodic point surveys to verify contours will be conducted along the proposed pipeline alignment.

Engineer will develop a potholing plan to identify and locate tie-in locations and major site utilities in the area of the proposed new facilities. Engineer will be responsible to conduct potholing to uncover utilities and survey the location and depth of these utilities. Engineer will arrange and pay for potholing services. For cost purposes, five (5) potholes using hydrovac equipment to a depth of five (5) feet are assumed for this task.

Subtask 2.4 –Utility Coordination

ENGINEER will obtain the latest GIS and utility maps for the area along the proposed alignment and develop a utility contact table for the potential identification and relocation of utilities. Utility table will include utility names, contact phone numbers, and email addresses for each utility.

Task 2.5 Preparation of Drawings (Plans) for Project Construction

Engineer will prepare construction documents (plans, specifications, and related information) to allow bidding and subsequent construction of the improvements to the tank inlet/outlet piping and golf course pump station, generally as summarized in the preliminary design.

Task 2.6 - Design and Preparation of Project Specifications

Engineer will complete the engineering design and prepare specifications to include the following:

- (1) Division 00 - Bidding Requirements, Contract Forms, General Conditions, and Supplementary Conditions,
- (2) Division 01 - General Requirements, and
- (3) Divisions 02 through 17 - Technical Specifications.

Included in these specifications will be a description of known constraints on the Contractor's construction sequencing plan that identifies the requirements of the contractor to allow uninterrupted distribution of water at the minimum levels prescribed by the specifications.

Task 2.7 – Prepare Estimates of Probable Construction Costs

Engineer will prepare an estimate of probable construction costs at the interim and final design submissions.

PART 300 – ENGINEERING SERVICES DURING BIDDING AND CONSTRUCTION

Task 3.1 – Bidding Assistance Phase

Upon receiving the written Notice to Proceed, the Consultant shall perform the following tasks in accordance with the schedule provided in Attachment E:

- 1 Assist the Owner, as requested, in advertising the Project for bids for construction.
- 2 Conduct a pre-bid conference, if requested by Owner.
- 3 Serve as the technical question point of contact during bidding and, if required, draft any necessary addenda to clarify Contract documents.
- 4 Prepare bid tabulation, if requested, and provide recommendation for award.

Task 3.2 – Construction Services Phase

This phase may be negotiated with the CONSULTANT upon request of the OWNER.

Task 3.3 – Project Close-Out Phase

This phase may be negotiated with the CONSULTANT upon request of the OWNER.

ADDITIONAL SERVICES

Additional Services in the contract require OWNER Authorization in Advance. If authorized in writing by CITY Staff, Engineer shall furnish or obtain from others Additional Services of the types listed below. These services will be paid for by Owner as indicated in a Task Order.

Exhibit A - PROJECT SITE AREA

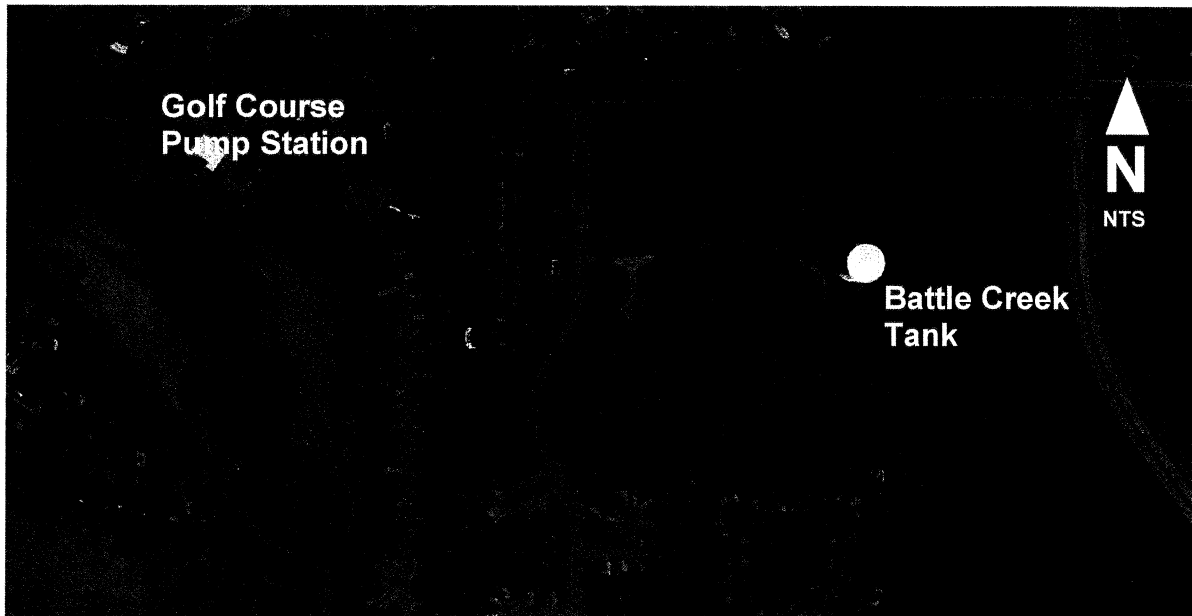


Exhibit B - PRELIMINARY DRAWING LIST

Area			No.	Description
GENERAL				
00	-	G	01	Cover Sheet
00	-	G	02	Location and Area Map
00	-	G	03	List of Drawings
00	-	G	04	Site Plan and location Designator
00	-	G	05	General Legends and Symbols
00	-	G	06	Design Criteria and Process Schematic
00	-	G	07	General Structural Notes
00	-	G	08	General Mechanical Notes
00	-	G	09	General Civil Notes
BATTLE CREEK (5 MG) STORAGE TANK INLET/OUTLET				
20	-	C	01	Tank Civil Plan
20	-	C	02	PRV and Check Valve Vault Plan and Section
20	-	C	03	Civil Details
20	-	E	01	Tank Electrical Site Plan
20	-	E	02	Electrical Riser Diagram and Details
20	-	N	01	Process and Instrumentation Drawing
GOLF COURSE IMPROVEMENTS				
10	-	C	01	CIVIL KEY PLAN
10	-	C	02	Plan and Profile I
10		C	03	Plan and Profile II
10		C	04	Plan and Profile III
10		C	05	Pipeline Details
30	-	M	01	Pump Station Demolition Plan and Sections
30	-	M	02	Pump Station Plan
30	-	M	03	Pump Station Sections and Details
30-	-	E	01	Pump Station Electrical Plan
30	-	N	01	Pump Station P&ID
30	-	SM	01	Structural and Mechanical details

Additional services will be provided only after separate, written authorization by the OWNER.

**ATTACHMENT B
TO
AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND
CAROLLO ENGINEERING, INC. (CONSULTANT)
FOR
BATTLE CREEK GOLF COURSE IRRIGATION PUMP STATION REPLACEMENT
AND BATTLE CREEK TANK INLET/OUTLET MODIFICATIONS**

ORGANIZATION OF SUBMITTAL DOCUMENTS

The following list of submittal documents shall be made a part of the AGREEMENT dated the 7th day of May, 2019.

The following documents shall be submitted as deliverables for the project:

- Preliminary Design Memorandum
- Final Design Memorandum
- Draft Contract Documents (Plans and Specifications)
- Final Contract Documents (Plans and Specifications)
- Bid Recommendation

**ATTACHMENT C
TO
AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND
CAROLLO ENGINEERS, INC. (CONSULTANT)
FOR
BATTLE CREEK GOLF COURSE IRRIGATION PUMP STATION REPLACEMENT
AND BATTLE CREEK TANK INLET/OUTLET MODIFICATIONS**

OWNER'S RESPONSIBILITIES AND SPECIAL CONDITIONS

The following list of special OWNER'S responsibilities and contract special conditions shall be made a part of this AGREEMENT dated the 7th day of May, 2019.

1.0 OWNER'S RESPONSIBILITIES

- 1.1 OWNER shall furnish to CONSULTANT all available information pertinent to the PROJECT including previous reports and any other data relative to design and construction of the PROJECT, which CONSULTANT shall be entitled to use and rely upon;
- 1.2 OWNER shall furnish to CONSULTANT all public utility information available relative to the design and construction of the PROJECT, which CONSULTANT shall be entitled to use and rely upon.
- 1.3 OWNER shall furnish to CONSULTANT list of codes adopted by the municipality as well as subdivision regulations, design criteria and construction standards and specifications that may be pertinent to the design and construction of the PROJECT;
- 1.4 OWNER shall be responsible for all permit fees and for all reproduction costs associated with the bidding of the final approved construction documents required for the construction of this PROJECT;
- 1.5 OWNER shall be responsible for all land/easement acquisition costs and filing of the required legal documents, if necessary; and
- 1.6 OWNER shall examine all studies, reports, sketches, estimates, specifications, plan drawings, proposals, and other documents presented by the CONSULTANT and render in writing decisions pertaining thereto within a reasonable time so as not to delay the SERVICES of the CONSULTANT.

2.0 SPECIAL CONDITIONS

- 2.1 None

**ATTACHMENT D
TO
AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND
CAROLLO ENGINEERING, INC. (CONSULTANT)
FOR
BATTLE CREEK GOLF COURSE IRRIGATION PUMP STATION
REPLACEMENT AND BATTLE CREEK TANK INLET/OUTLET
MODIFICATIONS**

COMPENSATION AND ADDITIONAL SERVICES

The following compensation shall apply as described in Attachment D and shall be made a part of the AGREEMENT dated the 2nd day of May, 2019.

1.0 BASIC COMPENSATION

The basic compensation for the Professional CONSULTANT to perform all duties and responsibilities associated with the Scope of Services as described in Attachment A shall be in accordance with the following payment breakdown:

- 1.1 Preliminary Design Phase Payment: The OWNER shall pay the CONSULTANT a Lump Sum amount of **\$ 52,500** for the completion of the Preliminary Design Phase. This amount includes all labor, material, overhead, and profit associated with the Scope of Services.
- 1.2 Final Design Phase Payment: The OWNER shall pay the CONSULTANT a Lump Sum amount of **\$ 153,500** for the completion of the Final Design Phase. This amount includes all labor, material, overhead, and profit associated with the Scope of Services.
- 1.3 Bid Assistance Phase Payment: The OWNER shall pay the CONSULTANT a Lump Sum amount of **\$ 5,500** for the completion of the Bid Assistance Phase. This amount includes all labor, material, overhead, and profit associated with the Scope of Services.
- 1.4 Construction Services Phase Payment: To be negotiated at a later date, at the request of the OWNER.

Total Basic Compensation for Tasks 1.1 through 1.3 is **\$211,500.00.**

1.5 Additional Services -

AS. 1 –Additional Potholes \$2,500/pothole at 5 potholes:	\$11,000
AS.2 – Additional Geotechnical Borings: \$6,500/boring at 2 borings:	\$13,000

2.0 REPRODUCTION

All charges for reproduction shall be included in Basic Compensation Fee of the Professional CONSULTANT. No separate payment will be made for these expenses.

3.0 MILEAGE

All charges for mileage shall be included in the Basic Compensation of the Professional CONSULTANT. No separate payment will be made for these expenses.

4.0 DIRECT COSTS

All direct costs shall be included in the Basic Compensation of the Professional CONSULTANT. No separate payment will be made for these expenses.

5.0 ADJUSTMENT CLAUSE

The rates and costs described in this AGREEMENT shall not be revised annually, unless mutually agreed upon by both parties.

**ATTACHMENT E
TO
AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND
CAROLLO ENGINEERS, INC. (CONSULTANT)
FOR
BATTLE CREEK GOLF COURSE IRRIGATION PUMP STATION
REPLACEMENT AND BATTLE CREEK TANK INLET/OUTLET
MODIFICATIONS**

PROJECT SCHEDULE

The following schedule shall be made a part of the AGREEMENT dated the 7th day of May, 2019.

1.0 Design & Bidding Phase: 308 Calendar Days

Task	Description	Duration	Total Duration from Notice to Proceed (NTP)
120	Preliminary Design Memorandum	12 weeks	12 weeks
	Owner Review of Preliminary Design Memorandum	2 weeks	14 weeks
210/220	Preparation of Interim (50%) Drawings and Specifications	16 weeks	30 weeks
	Preparation of Final Drawings and Specifications	8 weeks	38 weeks
300	Bidding Services	6 weeks	42 weeks