

**NORTH CAROLINA
DURHAM COUNTY****DESIGN CONSULTANT
CONTRACT AMENDMENT**

THIS CONTRACT AMENDMENT is made and entered into this **14th day of September, 2017**, by and between the **COUNTY OF DURHAM** (hereinafter referred to as "**County**") and **BLACK & VEATCH CORPORATION** (hereinafter referred to as "**Design Consultant**").

WITNESSETH:

THAT WHEREAS, the County and Design Consultant entered into a Design Consultant contract dated January 12, 2017, for the provision of preliminary engineering design of an improved aeration method to augment existing brush aerators in one oxidation ditch at the TWWTP (FR17-832, RFQ 17-012), (hereinafter the "Original Agreement"); and

WHEREAS, the County and Design Consultant amended the Original Agreement on June 23, 2017; and

WHEREAS, the County and Design Consultant desire to amend the Original Agreement, while keeping in effect all terms and conditions of the Original Agreement not inconsistent with the terms and conditions set forth below.

NOW THEREFORE, for and in consideration for the mutual covenants and agreements made herein, the parties agree to amend the Original Agreement as follows:

1. The Term of the Original Agreement remains through **June 30, 2018.**
2. The compensation paid to Consultant shall be amended to add **One hundred seventy-five thousand and No/100 Dollars (\$175,000.00)** for a new amount not to exceed of **Two hundred thirteen thousand and No/100 Dollars (\$213,000.00).**
3. **SECURITY BACKGROUND CHECKS.** The Design Consultant is responsible for requesting and paying for criminal history checks on all individuals providing services under this contract who will be obtaining County identification badges and allowed unescorted access to County facilities. Background checks must be provided by Checkmate, Intelius, Been Verified, or be from a North Carolina State agency. The Sheriff's Office will conduct background investigations for those Design Consultant employees who will be working at the Courthouse or Detention Center. A criminal history will not automatically disqualify a Design Consultant employee from employment on a County contract unless explicitly mandated by law.

The Design Consultant will send the results of the background checks to their County point of contact who will provide them to the Durham County Security Manager. The Security Manager will individually assess and determine the degree to which the nature of a person's criminal conduct has a direct and/or specific negative bearing on a person's fitness or ability to perform contract services in Durham County buildings. The Security Manager will consult the Legal Office on any negative determinations. The Security Manager will notify the Design Consultant's County point of contact of the results of the review. A Design Consultant can appeal a negative determination by the Security Manager to the County Manager for final disposition. Appeals need to be submitted in writing to the contract point of contact within 30 days of notice of a decision to remove or deny an individual from working the County contract due to adverse information in the background check.

This information will be updated annually by the Design Consultant, 90 days prior to the renewal or extension of the contract, and submitted to their County point of contact who will provide them to the Durham County Security Manager. Personnel without a currently approved background check will have their access to those buildings restricted.

Additional background screening may be necessary at specific county buildings. The Design Consultant shall provide names of all individuals in the Design Consultant communications log and to the County Representative. This information will be reviewed annually.

For those Design Consultant employees who will be working at the Courthouse or Detention Center, the Sheriff's Office will make the security determination. The Design Consultant will provide the results of their background check to the Major for Support Services who will conduct an additional investigation and then individually assess and determine the degree to which the nature of a person's criminal conduct has a direct and/or specific negative bearing on a person's fitness or ability to perform contract services in the Courthouse or Detention Facility. A Design Consultant can appeal a negative determination to the Chief Deputy for final disposition. Appeals need to be submitted in writing to the Chief Deputy within 30 days of notice of a decision to remove or deny an individual from working the contract due to adverse information in the background check. While an appeal is pending, the employee will not be allowed access to the Courthouse or Detention Facility.

This information will be updated by the Design Consultant and submitted to the Sheriff's Office annually, 90 days prior to the renewal or extension of the contract. Personnel without a currently approved background check will have their access to those buildings restricted.

4. **IRAN DIVESTMENT ACT CERTIFICATION. (Applicable only to contracts/agreements valued at \$1,000.00 or more).** DESIGN CONSULTANT by signing/executing this contract certifies that as of the date of this contract DESIGN CONSULTANT is not on the Final Divestment List as created by the State Treasurer pursuant to North Carolina General Statute 147-86.58 and in compliance with the requirements of the Iran Divestment Act and North Carolina General Statute 147-86.59. DESIGN CONSULTANT shall not utilize in the performance of this contract any subcontractor that is identified on the Final Divestment List.
5. By execution hereof, the person signing for Design Consultant below certifies that he/she has read this Contract Amendment and that he/she is duly authorized to execute this contract on behalf of the Design Consultant.
6. Except for the changes made herein, the Original Agreement shall remain in full force and effect to the extent not inconsistent with this Amendment. In the event that there is a conflict between the Original Agreement and this Amendment, this Amendment shall control.

IN WITNESS WHEREOF, the parties have expressed their agreement to these terms by causing this Contract Amendment to be executed by their duly authorized office or agent. This Contract Amendment shall be effective as of the date herein.

BLACK & VEATCH CORPORATION

DocuSigned by:
By: Jeff Coggins
EA54153A1A7D46B...
Name/Title: Jeff Coggins Associate Vice-President

DURHAM COUNTY

DocuSigned by:
By: Wendell M Davis
85D36F5761984F5...
Name/Title: Wendell Davis, County Manager

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

DocuSigned by:
George K Quick
George K Quick, Durham County Chief Financial Officer

EXHIBIT A

SCOPE OF SERVICES

Owner: Durham County
Engineer: Black & Veatch International Company
Project: Triangle Wastewater Treatment Plant Efficiency & Resiliency Improvements – Aeration System Enhancements

This Scope of Services includes engineering, bidding, and construction administrative services for the design and implementation of the improvements outlined herein and described in the Technical Memorandum dated May 2, 2017 prepared by Black & Veatch for the aeration system modifications. At the request of Durham County, the scope of services also includes in-kind replacement of the equipment (brush aerators (rotors), submersible mixers, and wall pump), and updating the existing arc flash model, based on the implemented improvements, as described herein. Black & Veatch will provide engineering services defined herein for the project. Black & Veatch can also provide the supplemental services described herein authorized by the Owner under a written Task Order which will include a description of the scope along with a fee and schedule.

PROJECT DESCRIPTION

This project includes the installation of a diffused aeration system for oxidation ditch no. 2 consisting of two 125 horsepower rotary lobe positive displacement blowers with a manually controlled variable frequency drive and two membrane disc diffuser grids, each comprised of 720 diffusers. The blower will be powered from the main electrical building and include a local ON/OFF disconnect switch. The installation of an additional submersible mixer downstream of the diffused aeration grid to ensure the biological solids is kept in suspension. Additional work includes the removal of residual sludge and debris from oxidation ditch no. 2 by the contractor, the repair of the expansion joint for oxidation ditch no. 2, in-kind replacement of the existing equipment (brush aerators, submersible mixer, and wall pump) for oxidation ditch no. 2, and updating the existing arc flash model based on the new equipment additions. The Scope of Services for this project includes the following task:

- Task I Projection Implementation and General Administration
- Task II Permitting
- Task III Basic Design Services
- Task IV Bidding and Award
- Task V Construction Contract Administration
- Task VI Resident Field Representation
- Task VII Update Arc Flash Model
- Task VII Supplemental Services

The scope of work includes civil, mechanical, structural, and electrical services associated with the design and construction of the Project.

I. **PROJECT IMPLEMENTATION AND GENERAL ADMINISTRATION**

A. **Develop Detailed Project Schedule**

1. A detailed Project Schedule will be developed for all engineering activities during the design phase and the construction phases of the Project. The Project Schedule will be reviewed with the Owner and finalized, with copies sent to Owner. The Project Schedule will be developed using Microsoft Project software.
2. The Project Schedule will be updated and reviewed at each major milestone with the Owner.

B. **Project Meetings**

1. Conduct a project initiation meeting to clarify Owner's requirements for the Project and determine an overall project schedule. In addition, the meeting will be used to discuss Durham County front end documents, and clarify any material requirements, design standards, and requirements by Owner that must be accounted for in the detailed design.
2. Conduct periodic meetings with the Owner, as described herein, to discuss Project status. A total of 2 meetings are anticipated during the design phase; one at the 50% milestone deliverable and a second meeting at the 100% milestone to address questions and finalize the contract documents. In addition, bi-monthly conference calls will be set-up with the Owner to provide progress updates and address any questions or clarify requirements.
3. Prepare and distribute the minutes for meetings. Minutes will include a detailed list of decisions made and necessary actions.

C. **Project Administration.** Engineer will perform project administration activities throughout life of Project. The following will be included:

1. Maintain a project filing system throughout life of Project to use for storage and retrieval of Project documents.
2. Prepare monthly invoices for Engineer's services in format acceptable to Owner.
3. Maintain a project cost accounting system throughout life of Project.
4. Provide Project Cost Trend Reports at project review meetings. Trend Reports shall include a concise summary of unanticipated and Owner-requested changes to the scope of work and cost of each item. If scope changes are made, the fee will be reviewed and adjusted as necessary and acceptable to both Owner and Engineer.

II. PERMITTING

A. Permitting

1. For the design phase, provide assistance to Owner in obtaining permits and approvals from federal, state, and local agencies and from utility companies. Owner will pay for all permit fees. The following permits and approvals are anticipated:
 - Authorization to Construct from NCDWQ, Division of Water Resources
 - Level 1 Site Plan Review, Durham City-County Planning Department
 - Building Permit, Durham City-County Inspections Department
2. Black & Veatch will be responsible for submitting permit applications, and responding to regulatory agencies regarding permit associated with this scope of work inclusive of attending any regulatory meetings, as may be necessary to discuss the work covered under their scope of services.
3. Regulatory Meetings. Assistance will include the following:
 - a. Preparation of applications, exhibits, and supporting documentation as necessary for Owner's execution and submittal.
 - b. Furnishing additional information about the design.
 - c. Communicating with agencies as necessary. A total of two meetings are anticipated.

III. BASIC DESIGN SERVICES

- A. General. Design services will be conducted in two phases (50% milestone and 100% milestone) and focused on developing the front end documents, technical specifications, and drawings. The technical memorandum submitted on May 2, 2017 developed during preliminary engineering will serve as the basis for the detailed design. The contract documents developed as part of the basic design services will include the following activities:
1. Prepare detailed drawings and specifications Contract Documents for the proposed construction work and for the materials and equipment required.
 2. Arrange for 2 formal project review meetings with Owner to review the design; one at 50% design development and a second meeting at 100% design development.
 3. The front-end documents will be comprised of Durham County's front-end documents modified by Black & Veatch with consent from the Owner, based on the scope of work.
 4. Design drawings will be developed using a 22" x 34" format using Black & Veatch standard border.
 5. As part of the Basic Design Services, the Engineer shall produce interim documents for the purpose of review by Owner's staff and Engineer's quality control. The interim documents shall serve as milestones wherein certain features shall be fixed after a period of Owner

review. The purpose of the interim documents and fixing certain features will be to communicate the design progress and avoid later revisions that would impact design efficiency and Project cost and schedule. Changes made after fixing features will be considered Additional Services. Interim submittals will include specifications and construction drawings.

6. The documents shall be prepared for selection of private construction contractors on a competitive bid basis, in accordance with North Carolina State bidding laws. Contracts will be arranged for single prime construction.
7. Conduct internal quality control and constructability reviews at Project milestones.
8. Prepare an opinion of probable construction cost at 50% and 100% milestones.

The following is a more detailed discussion of the activities including in the Basic Design Services for each phase of the Project along with anticipated deliverables and decision.

- B. Detailed Design. Detailed design will be conducted in two phases and will be focused on the development of technical specifications, front end documents and drawings for improvements at oxidation ditch no. 2 and submersible pump drain system to serve the three existing oxidation ditches, as described in this scope of services. Updating the existing arc flash model will be conducted at substantial completion during the construction phase of the project.

The following items will be included within the scope of design:

- a. Design of two 125 horsepower rotary lobe blower rated for 1,500 scfm served by a manually controlled variable frequency drive from the main electrical building installed on the oxidation ditch walkway with a local ON/OFF disconnect.
- b. Two EPDM fixed membrane disc diffuser grids, each comprised of 720 diffusers.
- c. Schedule 10, 304 stainless steel air piping equipped with manually operated butterfly valves and pressure gauges.
- d. Two manually operated variable frequency drives located inside the main electrical building, as shown in Figure 4-1 of the technical memorandum submitted by Black & Veatch dated May 2, 2017.
- e. Removal of residual sludge and debris within the oxidation ditch.
- f. Repair and sealant of concrete expansion joint using a hypalon strip, as described in the technical memorandum submitted by Black & Veatch on May 2, 2017.
- g. An additional submersible mixer installed downstream of the diffused aeration grid.
- h. In-kind replacement of the existing oxidation ditch no. 2 equipment consisting of three brush aerators, submersible mixers, and a wall pump.
- i. Updating the existing arc flash model based on the equipment additions outlined above.

- C. 50% Design Submittal. The intent of the 50% design submittal activities will be to advance the civil/mechanical/structural/electrical design to clearly convey the scope for review by the Owner and expedite the delivery process from 50% to 100% design.

1. The 50% Design Submittal Activities will include:

- a. Develop mechanical layout and section views of the diffused aeration system, excluding mechanical details. Layout and section views will depict blower and diffused aeration grid locations, and horizontal and vertical alignment of aeration piping.
- b. Plan view to indicate in-kind equipment replacement.
- c. Plan and section view of additional submersible mixer downstream of the diffused aeration grid.
- d. Define extent of structural repair work required for the expansion joint, depicted on the mechanical drawing of the oxidation ditch. Provide a detail for repair of the expansion joint.
- e. Develop electrical site plan, power distribution plan, and layout for variable frequency drives. Electrical site plan will depict the alignment for the electrical conduit from the main electrical building to the blowers located at the oxidation ditch.
- f. Perform a constructability review.
- g. Develop draft front end documents inclusive of bid form.
- h. Develop draft technical specifications using a 16 Division CSI format.
- i. Prepare an engineer's opinion of probable construction cost.
- j. Conduct an internal quality control review of the contract documents prior to submission to Owner.
- k. Conduct a meeting with Owner to review documents and address comments.
- l. Engineer's quality control and Owner's review comments shall be addressed, as part of the 100% submittal.

2. The following 50% design submittal deliverables are anticipated:

- a. Front-end documents with technical specifications.
- b. Contract drawings, excluding design details.
- c. Engineer's opinion of probable construction cost.

- D. 100% Design Submittal. The objective of the 100% design submittal will be to finalize the contract documents incorporating Owner's comments from the 50% design submittal.

1. The 100% Design Submittal Activities will include:

- a. Finalize mechanical, electrical, and structural drawings inclusive of details to convey the scope of work.

- b. Finalize front-end documents and technical specifications incorporating Owner review comments from the 50% design submittal and vendor review comments related to the mechanical and electrical equipment.
 - c. Update engineer's estimate of probable construction cost.
 - d. Conduct an internal review contract documents prior to submission to the Owner.
- 2. The following 100% Design Submittal deliverables are anticipated:
 - a. Final draft contract documents.
 - b. Updated engineer's estimate of probable construction cost.
- 3. The status of the Work at the end of the 100% should be the following:
 - a. Incorporate Owner's comments.
 - b. Submit contract documents with permit applications to regulatory agencies, as described in Section II, Permitting of this Scope of Services

IV. BIDDING AND AWARD

- A. Black & Veatch shall perform the following services related to Bidding and Award.
 - 1. Assist Owner in advertising for the construction project; maintain a record of prospective bidders to whom Contract Documents have been issued; attend and conduct pre-bid conference; and receive and process deposits for Contract Documents. Receive payments for construction Contract Documents from potential bidders. Black & Veatch will retain all payments to offset reproduction costs.
 - 2. Conduct, at a date and time selected by the Owner, a pre-bid conference. Provide meeting minutes to be distributed to all plan holders by addendum.
 - 3. Prepare addenda as appropriate to interpret, clarify or further define the Contract Documents. Addenda will be issued on behalf of Owner.
 - 4. Consult with and advise Owner to determine the acceptability of substitute materials and equipment proposed by Contractor(s) when substitution prior to the award of contracts is allowed by the Contract Documents.
 - 5. Attend and conduct the bid opening(s) and prepare certified bid tabulation sheets. Evaluate bids or proposals and assemble contracts for construction, materials, equipment and services. Assist Owner in contract award process.

V. CONSTRUCTION CONTRACT ADMINISTRATION

- A. Black & Veatch shall perform construction administration services for the Project. By performing these services, Black & Veatch shall not have authority or responsibility to supervise, direct, or control the Contractor's work or the Contractor's means, methods, techniques, sequences, or

procedures of construction. Black & Veatch shall not have authority or responsibility for safety precautions and programs incident to the Contractor's work or for any failure of the contractor to comply with laws, regulations, rules, ordinances, codes, or orders applicable to the Contractor furnishing and performing the Work as included in the construction contract between Owner and Contractor. Nothing herein shall be construed to release Black & Veatch from liability for failure to properly perform duties undertaken by Black & Veatch, his employees, subcontractors, agents, consultants and assigns in this Agreement and the Contract Documents. Black & Veatch will have overall responsibility to Owner for administration of Project. The following services which will be performed as part of this contract:

1. Preconstruction Conference and Monthly Progress Meetings. Black & Veatch will schedule and attend one preconstruction conference and six monthly progress meetings, and other meetings with Owner and Contractor when necessary, to review and discuss construction procedures and progress scheduling, engineering management procedures, and other matters concerning the Project. Black & Veatch will preside at the preconstruction conference and monthly construction progress meetings and record and distribute minutes of the meetings.
2. Contractor Submittal and Shop Drawing Review. Black & Veatch will review, with reasonable care and for conformity to the construction Contract Documents and for Engineer's acceptance, shop drawings, O&M manuals, and other data submitted by the Contractor as required by the construction Contract Documents. Engineer's review shall not relieve the Contractor of any of his contractual responsibilities. Such reviews shall not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions and programs incident thereto. Engineer's review of subsequent re-submissions due to the Contractors' failure to provide all previously requested corrected data or additional information will be considered Supplemental Services. The construction Contract Documents will require the Contractor to reimburse the Owners for these Supplemental Services.
3. Request for Information and Change Orders. Black & Veatch will interpret construction Contract Documents when requested by Owner or the Contractor. Evaluate and respond to requests for information (RFI) from Contractors. Black & Veatch will provide documentation and administer the processing of change orders, including applications for extension of construction time. Evaluate the cost and scheduling aspects of all change orders and, where necessary, negotiate with the Contractor to obtain a fair price for the Work. Said negotiation shall be subject to the approval of Owner. Unusually complex or unreasonably numerous claims is covered in Supplemental Services
4. Contractor's Construction Schedule. Black & Veatch will evaluate the Contractor's construction schedule, activity sequences, and construction procedures as applicable to Owner's ability to keep existing facilities in operation and coordination with work being conducted by Owner and for compliance with specific scheduling requirements included in the Construction Documents.
5. Contractor's Monthly Payment Requests. Black & Veatch shall review and process the Contractor's monthly payment requests, and forward to Owner if appropriate. Black &

Veatch's review shall be for the purpose of making a full independent mathematical check of the Contractor's payment request. Black & Veatch is responsible for verifying the quantities of work which are the basis of the payment requests and for determining whether the progress of the Work is consistent with the requirements of the construction schedules submitted by the Contractor at the time of the Contractor's payment requests. Nothing herein shall confer liability upon Black & Veatch for Contractor's completion of the project according to the Contract schedule.

6. **Conformed Documents.** Upon completion of the Project, Black & Veatch shall revise the construction Contract Drawings to conform to the construction records. Submit AutoCAD Drawing files on electronic CD and five hard print copies of Drawings to Owner for the Project.
7. **Project Completion.** Upon substantial completion of the Project, Black & Veatch shall review the construction work and prepare punch-lists of those items to be completed or corrected before final completion of the Project. Submit results of the inspections to Owner and the Contractor. Upon completion or correction of the items of work on the punch-lists, Black & Veatch shall conduct final project review to determine if the Work is completed. Provide written recommendations concerning final payments to Owner, including a list of items, if any, to be completed prior to making such payment.

VI. CONSTRUCTION CONTRACT ADMINISTRATION

A. Resident project representation (RPR) will be provided by Black & Veatch for the Project. RPR services have been included for the Project as indicated below:

- 1-Part Time Resident (6 months) visiting the site two times per week

Any additional RPR services above these amounts will be completed as a supplemental service. The RPRs will observe the Contractor's work and perform the services listed below. The RPR shall not have responsibility for the superintendence of construction site conditions, safety, safe practices or unsafe practices or conditions, operation, equipment, or personnel other than employees of the Construction Administrator. This service will in no way relieve the Contractor of complete supervision and inspection of the Work or the Contractor's obligation for complete compliance with the Drawings and Specifications. The Contractor shall have sole responsibility for safety and for maintaining safe practices and avoiding unsafe practices or conditions. Specific services to be performed by the Construction Administrator's RPR are listed below and shall be all inclusive of the project.

1. Conduct onsite observations of the general progress of the Work to assist Construction Administrator in determining if the Work is proceeding in accordance with the construction Contract Documents.
2. Construction Administrator's RPR shall serve as Owner's liaison with the Contractor when the Contractor's operations affect Owner's onsite operation.
3. Obtain from Owner additional details or information when required at the jobsite for proper execution of the Work.

4. Advise the Contractor or its superintendents immediately of the commencement of any work requiring a shop drawing or sample submission if the submission has not been accepted by Construction Administrator.
5. Monitor changes of apparent integrity of the site (such as differing subsurface and physical conditions, existing structures, and site-related utilities when such utilities are exposed) resulting from construction-related activities.
6. Observe pertinent site conditions when the Contractor maintains that differing subsurface and physical conditions have been encountered, and document actual site conditions. Review and analysis of the Contractor's claims for differing subsurface and physical conditions are supplemental services.
7. Review the Contractor's construction sequence and traffic control plans for all construction work undertaken simultaneously.
8. Verify that the Contractor has contacted utilities in the general construction area and advised them of Contractor's schedule. Assist in coordinating scheduling of utility activities to minimize conflicts with Owner's activities.
9. Establish and furnish the Contractor with necessary baselines and control points which will be used as datum for the Work. Actual construction staking will be done by the Contractor.
10. Visually inspect materials, equipment, and supplies delivered to the worksites. Reject materials, equipment, and supplies which do not conform to the construction Contract Documents.
11. Coordinate onsite materials testing services during construction. Copies of testing results will be forwarded to Owner for review and information. Laboratory and field testing services during construction will be provided and paid for by Owner.
12. Observe field tests of equipment, structures, and piping, and review the resulting reports, commenting to Construction Administrator, as appropriate.
13. Meetings, Reports, and Document Review and Maintenance:
 - a. Identify work which is known to be defective, or which fails any required inspections, tests, or approvals, or has been damaged prior to final payment; and advise whether the Work should be corrected or rejected, or should be uncovered for observation, or requires special testing, inspection, or approval.
 - b. Record date of receipt of shop drawings and samples. Receive samples which are furnished at the site by the Contractor.
 - c. During the course of the Work, verify that specified certificates, operation and maintenance manuals, and other data required to be assembled and furnished by the Contractor are applicable to the items actually installed; review and deliver this material to Owner prior to final acceptance of the Work.
 - d. Maintain marked sets of Drawings and Specifications at the jobsite based on data provided by the Contractor. This information will be combined with information from the record documents maintained by the Contractor, and a master set of documents conforming to construction records will be provided to the Owner at the conclusion of the project.
 - e. Review certificates of inspections, tests, and related approvals submitted by the Contractor as required by laws, rules, regulations, ordinances, codes, orders, or the Contract Documents (but only to verify that their content complies with the requirements of, and the results certified indicate compliance with, the Construction

Contract Documents). This service is limited to a review of items submitted by the Contractor and does not extend to a determination of whether the Contractor have complied with all legal requirements.

g. Maintain a diary or logbook of events, including the following information:

- Days the Contractor worked on the jobsite.
- Contractor and subcontractor personnel on jobsite.
- Construction equipment on the jobsite.
- Observed delays and causes.
- Weather conditions.
- Data relative to claims for extras or deductions.
- Daily activities.
- Observations pertaining to the progress of the Work.
- Materials received on jobsite.

The diary or logbook shall remain the property of Construction Administrator.

14. Assistance in Certification of Substantial Completion:

- a. Before Construction Administrator issues a Certificate of Substantial Completion, submit to the Contractor a list of items observed to require completion or correction.
- b. Assist in conducting final inspection in the company of Program Owner and the Contractor, and prepare a final list of items to be completed or corrected.
- c. Verify that all items on the final list have been completed or corrected prior to acceptance.

VI. UPDATE ARC FLASH MODEL

- A. General. Black and Veatch is proposing to use Southeastern Consulting Engineers to update the existing arc flash model. Work under this portion of the scope will include updating the single line diagram of the facilities impacted by the equipment additions and performing arc flash calculations to determine incident energy levels. The determined incident energy levels will be used to define risk and personnel protection equipment (PPE) requirements. The arc flash assessment will be based on NFPA-70E, Standard for Electrical Safety in the Work Place.
- B. The following activities will be included as part of the arc flash analysis:
 1. Data will be collected for the new equipment additions and include; name plate data, short circuit duty ratings, types and sizes of protective devices, conductor sizes and lengths for feeders and branch circuits.
 2. Update facility one model in SKM Power Tools software.
 3. Calculate impedances using circuit sizes and configurations, transformer nameplate data, generator nameplate data, and source impedance data.

4. Determine system operating modes and conditions that can impact short circuit currents and arc flash hazard energy levels.
5. Perform an arc flash hazardous analysis to determine arc flash energy levels, arc flash protection boundaries, and personnel protective equipment (PPE) requirements.
6. Review protective device coordination to determine arc flash hazard energy levels that can be reduced.
7. Update previous arc flash report to include new equipment additions.
8. Create arc flash labels for new equipment.

VII. SUPPLEMENTAL SERVICES

A. Black & Veatch agrees to perform supplemental services as requested by Owner. When the need for such services is identified, the Black & Veatch will prepare a written Task Order which will include a scope, fee, and schedule; and submit Task Order to Owner for approval. If approved, Miscellaneous Supplemental Services will be performed upon receipt of written authorization from Owner.

1. Meetings with local, state, or federal agencies to discuss the Project unless specifically included in the scope of services herein.
2. Special consultants or independent professional associates requested or authorized by Black & Veatch not included in the scope of services herein.
3. Geotechnical or surveying services. It is anticipated surveying and geotechnical efforts for the MCCPS project will be sufficient for the Project.
4. Assistance with bid protests and re-bidding.
5. Revision of designs, drawings, and specifications to incorporate changes arising from Value Engineering review.
6. Regulatory permitting and construction administration and inspection services beyond those included in this scope of services.
7. Supplemental engineering work required to meet the requirements of regulatory or funding agencies that become effective subsequent to the date of this Agreement.
8. Operations and maintenance manual and operations training and startup assistance unless specifically included in the scope of services herein.
9. Warranty correction assistance by Engineer.
10. RPRs overtime and RPRs services in excess of the amounts indicated herein.

EXHIBIT B**BASIS OF COMPENSATION**

Owner: Durham County (Owner)
 Engineer: Black & Veatch International Company (Engineer)
 Project: Triangle Wastewater Treatment Plant Efficiency & Resiliency Improvements – Aeration System Enhancements

Compensation for the services included in Attachment A shall be on a billable hourly rate basis using the rates in the following Billable Hourly Rate Schedules. Total amount of all billings shall be on hourly rate with a not to exceed amount of \$175,000.

BILLABLE HOURLY RATE SCHEDULE**YEAR 2017**

(Effective through 12/31/2017)

Black & Veatch Staff

Principal	\$260
Director	\$240
Project Manager	\$190
Senior Process Specialist	\$215
Process Specialist	\$165
Junior Process Specialist	\$145
Resident Engineer	\$155
Senior Engineering Manager	\$215
Engineering Manager	\$175
Project Engineer	\$175
Engineer 05	\$165
Engineer 04	\$155
Engineer 03	\$145
Engineer 02	\$135
Engineer 01	\$125
CAD Technician	\$105
Office Administrator/Finance	\$110
Project Admin.	\$65

All rates shall be subject to annual adjustment on January 1 of each year.

The billable hourly rates include computer, telephone, miscellaneous copying, postage, and subsistence.

The following expenses are reimbursable work items and will be billed at cost plus 10%.

1. Bulk reproduction of documents.
2. Charges for review of drawings and specifications by government agencies, if any.
3. Vehicular transportation costs at the rate established by the Internal Revenue Service.
4. Airline tickets, meals and lodging with out-of-town travel.

EXHIBIT C
PROJECT SCHEDULE

Owner: Durham County
Engineer: Black & Veatch International Company
Project: Triangle Wastewater Treatment Plant Efficiency & Resiliency Improvements – Aeration System Enhancements

It is recognized the schedule for the project is highly dependent on timing of available information and timely decisions by the project team. As such Black & Veatch will organize its work to perform the services within the time constraints and if impacted by issues outside their control will update Durham County of the impact to the overall schedule for approval before adjusting the project schedule. A detailed project schedule will be presented in the project initiation meeting for Durham review and approval. Engineer shall update the schedule as necessary to reflect changes in tasks and information. It is anticipated the final project schedule will be developed based on a design duration of 4 months and a total project duration of 10 months.



North Carolina
Durham County

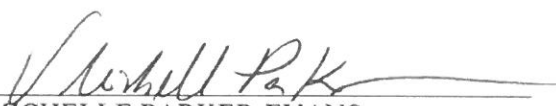
CERTIFICATION

I, V. Michelle Parker-Evans, the duly appointed and qualified Clerk of the Durham County Board of County Commissioners, do hereby certify that the foregoing is a true and correct copy of:

Board of County Commissioners approved to authorize the County Manager to amend the existing design consultant contract with Black & Veatch International Company (FR# 17-832) for Aeration System Enhancements for the Triangle Wastewater Treatment Plant in the amount of \$175,000, bringing the total contract amount to \$213,000.

IN WITNESS, WHEREOF, I have hereunto set my hand and affixed the official seal of Durham County, this 28th day of August, 2017.




V. MICHELLE PARKER-EVANS
County Clerk to the Board of County Commissioners