

Ms. Monica Jarrett
Project Manager
City of Greensboro
Water Resources Department
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Greensboro, NC 27406

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North Carolina 27407
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Subject:
Greensboro, North Carolina
Incinerator Ash Press Replacement Design
PROPOSAL FOR ENGINEERING SERVICES

WATER

Date:
July 24, 2017

Dear Ms. Jarrett:

Contact:
Dennis Kachmarsky

Arcadis G&M of North Carolina (Arcadis) is pleased to submit this proposal to provide engineering for the design, bidding, construction administration and resident project representation services for the City's Incinerator Ash Press Replacement project for the T.Z. Osborne Water Reclamation Facility (WRF). Our understanding of the project and project definition is based on our initial scoping meeting of May 20, 2017 and subsequent meeting on June 22, 2017. Our scope of services and associated engineering fee are centered on the project definition that follows.

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Arcadis G&M of North Carolina, Inc.

NC Engineering License # C-1869
NC Surveying License # C-1869

PROJECT DEFINITION

- Replace the existing rotary fan press to dewater incinerator ash slurry with a belt filter press as selected by the City. The belt filter press will be located in the existing Dewatering Building. Provisions will be made for a future belt filter press. Also included in the design is consultation during a City-run pilot test of a representative belt filter dewatering press.
- Relocate the existing rotary fan press near the centrifuges in the Dewatering Building for use in dewatering biosolids.

SCOPE OF SERVICES

The Scope of Services which follows is based on the project definition.

Arcadis proposes to utilize the following sub-consultant for execution of this project.

- CRITEK Engineering Group (MBE): Quality Assurance Reviews and Resident Project Representation Services.

The engineering services to be performed are outlined in the following tasks.

Task A: Project Management and Meetings

- A.1 Provide overall management of the design, bidding and construction phases and our subconsultant team; project planning, budget and schedule oversight; and administration of City and sub-consultant agreements. Arrange and manage all meetings including workshops.
- A.2 Coordinate this project with the Ash Clarifier project through meetings, information exchanges and consultation.

Task B: Pilot Testing Assistance

- B.1 Review belt filter press (BFP) pilot testing proposal/set-up for a single manufacturer's unit.
- B.2 Make one site visit to observe the operation of the pilot testing press, as well as the testing protocol.
- B.3 Review and analyze pilot testing performance data for use in establishing design basis for the press.

Task C: Basis of Design

- C.1 Arrange and hold a project Kick-off Meeting.
- C.2 Obtain and review City provided information, drawings, records, shop drawings, etc.
- C.3 Coordinate sending ash slurry samples to other BFP equipment vendors and evaluate results of bench testing.
- C.4 Work with BFP manufacturers on development of equipment sizing, design features, materials and terms for performance.
- C.5 Review and incorporate field measurements of the ash slurry dewatering area.
- C.6 Develop base drawings (City to furnish drawings in ACAD of existing facilities).
- C.7 Perform a preliminary building code review of the project work areas (not the entire building) of the Dewatering Building.
- C.8 Prepare a Basis of Design technical memorandum and submit to the City for review.
- C.9 Meet and review the Basis of Design with the City, address comments and finalize.

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Task D: 50% Design Development

- D.1 Develop demolition drawings reflecting removal of major process mechanical equipment; piping and pumping systems; electrical systems; and ancillary work.
- D.2 Develop design drawings for process mechanical equipment; piping and pumping systems.
- D.3 Develop supporting discipline designs for electrical (including arc flash assessment and ratings), heating and ventilation, structural and I/C.
- D.4 Develop design for ancillary systems to be incorporated into the design such as grating replacement, door replacement and painting as required.
- D.5 Prepare preliminary technical specifications in CSI 50-Division format for work components.
- D.6 Assemble preliminary front end documents based on City's Master Division 00 and Division 01 documents.
- D.7 Identify and draft required permits for execution of proposed work. Permits are only anticipated for building code compliance.
- D.8 Prepare an Opinion of Probable Construction Costs based on the 50% Design.
- D.9 Perform an internal Quality Assurance Review of the 50% Design Documents, address comments and update documents.
- D.10 Submit 1 electronic (.pdf) and 3 hard copies of the 50% Design Documents to the City for review. Allow for a two-week review period.
- D.11 Address City comments and incorporate required revisions into the Design Documents.
- D.12 Evaluate the scope and character of the construction project for MWBE opportunities.

Task E: 90% Design Development

- E.1 Complete all drawings and technical specifications in CSI 50-Division format.
- E.2 Hold an Interactive Design Workshop with the City to work through final design items.
- E.3 Modify and complete City CSI Front End contract documents required for bidding the project work.
- E.4 Complete all permit applications, ready for submittal.
 - Submit final design documents for building code review.
 - Address review comments and revise design documents as necessary.
 - Any necessary review fees will be the responsibility of the City.
- E.5 Perform an internal Quality Assurance Review of drawings and Project Manual, including technical specifications and front end documents. Address comments and revise documents accordingly.

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- E.6 Update the Opinion of Probable Construction Costs and develop a construction schedule.
- E.7 Submit 1 electronic (.pdf) and 3 hard copies of the 90% Design Submittal for City review. Allow for a two-week review period.
- E.8 Meet with the City to review the 90% Design Submittal and discuss City comments. Address City comments and incorporate revisions into the Final Design Submittal.

Task F: Final Design

- F.1 Finalize all drawings, technical specifications and front end documents, ready for bid advertising.
- F.2 Re-evaluate the scope and character of the construction project and Opinion of Probable Construction Costs for MWBE opportunities.
- F.3 Deliver to the City an electronic (.pdf) file and 3 hard copies of the Final Design Documents and Final Opinion of Probable Construction Cost.

Task G: Bidding Phase

- G.1 Manage a Pre-Bid Conference, which will include a PowerPoint presentation of the project.
- G.2 Prepare and assist with addenda, as necessary, to clarify the design.
- G.3 Respond to questions and inquiries during the bidding phase.
- G.4 Attend the bid opening.

Task H: Construction Administration

The following assumes a 9-month construction period.

- H.1 Attend Pre-Construction Meeting and monthly Progress Meetings (9 anticipated) throughout the construction phase.
- H.2 Provide the City with monthly project status reports and reports from periodic progress meetings.
- H.3 Make routine visits to the site throughout the anticipated nine (9) month construction period and observe construction to determine in general if Contractor's work is proceeding in accordance with the Contract Documents. Arcadis will communicate with the City any construction related deficiencies in the work or deviations from the contract documents when observed and make recommendations for addressing. Arcadis will not, during such visits or as a result of such observations of Contractor's work in progress, supervise, direct or have control over Contractor's work, nor will Arcadis have authority over or responsibility for the means, methods, techniques, sequences or procedures of construction selected by Contractor, for safety precautions and programs incident to Contractor's work, or for any failure of Contractor to comply with Laws and Regulations applicable to Contractor's furnishing and performing the Work. Accordingly, Arcadis neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform its Work in accordance with the Contract Documents.

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- H.4 Review and respond to shop drawing submittals from Contractor.
- H.5 Review partial and final pay applications and provide recommendations based on a review of work progress by our resident project representative.
- H.6 Assist the City in issuing clarifications and interpretations of the Contract Documents and Field Orders authorizing minor variations from the requirements of the Contract Documents as necessary.
- H.7 Assist with resolving construction-related issues and conflicts as requested.
- H.8 Recommend Change Orders and Work Change Directives to City as appropriate, and prepare Change Orders and Work Change Directives.
- H.9 Evaluate and determine the acceptability of substitute or "or-equal" materials and equipment proposed by Contractor as allowed by the Contract Documents.
- H.10 Recommend special inspections or tests of Contractor's work when deemed appropriate. Review all certificates of inspections, tests, and approvals required by Laws and Regulations or the Contract Documents as requested. Arcadis' review of such certificates will be for the purpose of determining that the results certified indicate compliance with the Contract Documents and will not constitute an independent evaluation that the content or procedures of such inspections, tests, or approvals comply with the requirements of the Contract Documents. Arcadis shall be entitled to rely on the results of such tests.
- H.11 Attend and document start-up of process mechanical equipment.
- H.12 Perform a final review of the construction to determine if the completed Work of the Contractor is acceptable so that Arcadis may confirm the City's recommendation for final payment to the Contractor. Provide a notice that the Work is acceptable to the best of Arcadis' knowledge, information and belief and based on the extent of the services performed and furnished by Arcadis under this Agreement.
- H.13 Provide substantial completion and final completion documentation and other milestone or close-out documentation as requested.
- H.14 Prepare and furnish digital (.pdf and .dwg) files and hardcopy Record Drawings (one reproducible mylar copy and three paper copies) showing appropriate record information based on Project annotated record documents received from Contractor.

Task I: Resident Project Representative Services During Construction

Arcadis will provide a Resident Project Representative (RPR) for construction observation services on an as-needed basis (an average of 16 hours per week) during construction. Arcadis intends to utilize the services of CRITEK Engineering Group for RPR services. The Arcadis RPR will:

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- I.1 Review the progress schedule, schedule of Shop Drawing and sample submittals, and schedule of values prepared by the Contractor and consult with Arcadis and the City concerning acceptability.
- I.2 Attend meetings with the Contractor, such as preconstruction conferences, progress meetings, job conferences, and other project related meetings.
- I.3 Serve as Arcadis' liaison with the Contractor, working principally through the Contractor's superintendent and assist in understanding the intent of the Project Contract Documents; and assist Arcadis in serving as the City's liaison with the Contractor when the Contractor's operations affect the City's on-site operations. Assist in obtaining from the City additional details or information, when required for proper execution of the work.
- I.4 Advise Arcadis and the Contractor of the commencement of any work requiring a Shop Drawing or sample if the submittal has not been processed by the City.
- I.5 Review Work as follows:
 - a. Conduct on-site observations of the work in progress to assist Arcadis in determining if the work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Arcadis whenever the RPR believes that any work will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged or does not meet the requirements of any inspection, test, or approval required to be made; and advise Arcadis of work that the RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment, and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that the Contractor maintains adequate records thereof; observe, record and report to Arcadis appropriate details relative to the test procedures and startups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Arcadis.
- I.6 Report to Arcadis when clarifications and interpretations of the Contract Documents are needed and transmit to the Contractor clarifications and interpretations as issued by Arcadis.
- I.7 Consider and evaluate the Contractor's suggestions for modifications in Drawings or Specifications and report them, with recommendations, to Arcadis. Transmit to the Contractor and City, in writing, decisions as issued by Arcadis.
- I.8 Maintain records and prepare reports as follows:
 - a. Maintain orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all work change directives,

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addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract, Arcadis' clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing submittals received from and delivered to Contractor and other Project-related documents.

- b. When on site prepare a daily report recording Contractor hours on the job site, weather conditions, data relative to questions of work change directives, change orders or changed conditions, list of job site visitors, daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures; and send copies to Arcadis and City.
 - c. Record names, addresses and telephone numbers of all Contractors, subcontractors, major suppliers of materials and equipment, City staff involved in the construction, and other service companies involved in the construction.
 - d. Furnish Arcadis periodic reports and photographs as required of progress of the work and of the Contractor's compliance with the progress schedule and the schedule of Shop Drawing and sample submittals.
 - e. Consult with Arcadis in advance of scheduled major tests, inspections or start of important phases of the work.
 - f. Draft proposed change orders and work change directives, obtaining backup material from the Contractor and recommend to Arcadis change orders, work change directives and field orders. Negotiate changes in cost and time as warranted.
 - g. Report immediately to Arcadis and the City upon the occurrence of any known accident or safety violation.
- I.9 Review applications for payment with the Contractor for compliance with the established procedure for their submission and forward them with recommendations to the City, noting particularly the relationship of the payment requested to the work completed and materials and equipment delivered at the site.
- I.10 During the course of the work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by the Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to Arcadis for review and forwarding to the City prior to final payment for the work.
- I.11 Provide the following Contract Completion Services:
- a. Before the City issues a Certificate of Substantial Completion, submit to the Contractor and City a list of observed items requiring completion or correction.
 - b. Conduct a final inspection in the company of Arcadis, the City, and the Contractor and prepare a final list of items to be completed or corrected.

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- c. Observe that all items on the final list have been completed or corrected and make recommendations to Arcadis and the City concerning acceptance and issuance of the Notice of Acceptability of the Work.
- I.12 The Resident Project Representative's Limitations of Authority are as listed below. The Resident Project Representative:
- a. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items), unless authorized by Arcadis or the City.
 - b. Shall not exceed limitations of Arcadis' authority as set forth in this agreement or the Contract Documents.
 - c. Shall not undertake any of the responsibilities of the Contractor, Subcontractors, Suppliers or Contractor's superintendent.
 - d. Shall not advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents, or assume any control over any aspect of safety precautions and programs incident to Contractor's work.
 - e. Shall not advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the work.
 - f. Shall not accept Shop Drawing or sample submittals from anyone other than the Contractor.
 - g. Shall not authorize the City to occupy the Project in whole or in part.
 - h. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Arcadis.

RESPONSIBILITIES OF THE CITY

It is our understanding that the City will be responsible for the following:

1. Furnish available information pertinent to the project to allow Arcadis to provide the scope of services contained herein. As-built drawings for the areas of work, system hydraulic information, and other necessary data.
2. Permit review fees and inspection fees will be the responsibility of the City.
3. Provide personnel to identify and open electrical panels.
4. Provide field information and measurements as requested by Arcadis.
5. Provide payment for independent third-party services as needed such as construction testing services and inspections.
6. Arrange safe access onto the plant site for Arcadis to perform the scope of services. Arcadis staff will follow City of Greensboro or Arcadis safety requirements, whichever are stricter, when on site.
7. Provide, as required for the project, accounting, financial, insurance, or legal advisory services to address issues that the City requires, or Arcadis reasonably requests and the City agrees to.

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8. The City will give prompt notice to Arcadis when the City becomes aware of any environmental condition (hazardous or otherwise), or other developments that effect the scope or schedule of services provided by Arcadis.
9. Advise Arcadis of associated project issues as they arise, such as change in scope or schedule.

FEE PROPOSAL

Arcadis proposes to provide the engineering services defined in our proposed Scope of Services for a Total Fee of \$407,000.

This total fee is allocated as follows:

<u>Lump Sum Fees</u>	<u>Total</u>	<u>Arcadis</u>	<u>CRITEK</u>	
Base Design Fee	\$245,000	\$235,700	\$9,300	
Bidding Phase	\$ 15,000	\$ 15,000	-	
<u>T&M Fees (Not To Exceed)</u>	<u>Total</u>	<u>Arcadis</u>	<u>CRITEK</u>	
Construction Administration	\$ 64,000	\$ 64,000	-	
Resident Project Representation	\$ 83,000	_____	<u>\$ 83,000</u>	
		\$314,700	\$92,300	(MBE @ 22.7%)

This proposal and its contents shall not be duplicated, used or disclosed — in whole or in part — for any purpose other than to evaluate the proposal. This proposal is not intended to be binding or form the terms of a contract. The scope and price of this proposal will be superseded by the contract. If this proposal is accepted and a contract is awarded to Arcadis as a result of — or in connection with — the submission of this proposal, Arcadis and/or the client shall have the right to make appropriate revisions of its terms, including scope and price, for purposes of the contract. Further, client shall have the right to duplicate, use or disclose the data contained in this proposal only to the extent provided in the resulting contract.

Ms. Monica Jarrett
Incinerator Ash Press Replacement
July 24, 2017

The contract maximum fee will not be exceeded without prior authorization by the City.

Arcadis proposes to provide the noted T&M engineering services according to the terms of the existing On-Call Services Agreement on a time & materials basis with a 3.2 multiplier on direct labor, plus expenses at a 1.0 multiplier.

We look forward to assisting the City of Greensboro in providing these services. If this proposal meets your approval, please provide a Supplemental Agreement to our existing Agreement for Professional Services for execution. We and our sub-consultant team thank you again for this opportunity.

Sincerely,

Arcadis G&M of North Carolina, Inc.



Dennis J. Kachmarsky, PE

Project Manager

Copies:

Elijah Williams, City of Greensboro

Mike Borchers, City of Greensboro

Julie Taylor, Arcadis

David Hamilton, Arcadis

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