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North Carolina 27407
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WATER

Mr. Danny Briggs
City of Greensboro
Water Resources Department
2602 S. Elm-Eugene Street
Greensboro, NC 27406

Subject:
City of Greensboro, NC
Proposal for Engineering Services
Mitchell WFP Major Electrical/High Service Pumping/Parts Warehouse Improvements

Date:
August 21, 2015

Contact:
Dennis Kachmarsky

Phone:
704.996.9561

Email:
dennis.kachmarsky@arcadis-us.com

Our ref:
GRGRN104.0000

ARCADIS G&M of North Carolina, Inc.

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

Dear Mr. Briggs:

ARCADIS G&M of North Carolina, Inc. (ARCADIS) is pleased to submit our proposal to provide engineering services for the study and design for the Major Electrical/High Service Pumping/Parts Warehouse Facility Improvements at the Mitchell Water Filter Plant. This project includes three major elements as follows:

- Major Electrical Improvements
- High Service Pumping Improvements
- Parts Warehouse Facility Improvements

The project considerations and proposed scope of services are based on our meetings with the City, addressing of City comments on a previous draft scope of services and our field review of the anticipated areas of work.

Scope of Services

The proposed Scope of Services is detailed in Attachment A: Mitchell WTP Major Electrical/High Service Pumping/Parts Warehouse Facility Improvements Scope of Services.

ARCADIS proposes to complete the study and design utilizing a team of subconsultants as follows:

- S.L. King and Associates, Inc.: Electrical Design/Drafting

- J.C. Waller & Associates, PC: Site Surveying
- S&ME, Inc.: Geotechnical
- Shermin Ata, Architect, PLLC: Architectural Design/Drafting

Schedule

ARCADIS is positioned to begin work on this project immediately following written authorization and receipt of an executed agreement. ARCADIS anticipates authorization in a few months and execution of the scope of work over a subsequent 12-15 month period.

Fee Proposal

ARCADIS proposes to provide the engineering services defined in the Scope of Services (Attachment A) on a time and materials fee basis based upon a 3.20 multiplier on direct labor costs. There will be no mark-up on subconsultant costs or reimbursable expenses. The maximum fee for the stated scope of services is estimated at $1,170,000.

The estimated total fee is allocated as follows:

• Allowance for Generator Location Evaluation Study	$40,000
• Allowance for Utility Service Connection Evaluation Study	$30,000
• Fee for Major Electrical Improvements Design	$530,000
• Fee for High Service Pumping Improvements Design	$415,000
• Allowance for Parts Warehouse Facility Design	$155,000

Our proposed fee includes M/WBE participation as follows:

• S.L. King and Associates, Inc. (MBE)	$80,000	6.8%
• J.C. Waller & Associates, PC (MBE)	$14,000	1.2%
• Shermin Ata, Architect, PLLC (WBE)	$ 35,000	3.0%
Totals	$129,000	11%

We look forward to serving the City of Greensboro on these important improvements by providing the proposed engineering services. If this proposal meets your approval, please provide a Supplemental Agreement to our existing On-Call Engineering

Services Agreement for execution. Thank you again for this opportunity to serve the City.

Sincerely,

ARCADIS G&M of North Carolina, Inc.

Dennis J. Kachmarsky, PE
Project Manager

Copies:
Mr. Michael Borchers, City of Greensboro
Mr. Barry Parson, City of Greensboro
Mr. David Hamilton, ARCADIS
Mrs. Julie Taylor, ARCADIS

ATTACHMENT A
Mitchell WTP Major Electrical/High Service Pumping/ Parts Warehouse Facility Improvements
City of Greensboro, NC

SCOPE OF SERVICES
August 21, 2015

OVERALL PROJECT

This project is identified in the City's 2015-2024 Capital Improvements Program (CIP). The project is currently titled "Major Electrical Improvements project" within the CIP, but has evolved to include improvements to high service pumping, and has been combined with another CIP project, the "Parts Warehouse project". One important goal of this project is to provide "redundancy and resiliency" through implementation of these improvements.

The **Major Electrical Improvements** are focused on eliminating the diesel engine drives for two high service pumps and restoring emergency pumping capabilities with installation of a stand-by power generating facility and associated switchgear. New electric, variable speed motors will replace the diesel engines. Replacement of the cooling water heat exchanger system and establishment of a new diesel storage/feed facility will also be necessary.

The **High Service Pumping Improvements** include installation of a new high service pump (High Service Pump No. 1) motor, drive, and associated piping systems, including seal water and vacuum priming; and replacement of High Service Pump No. 3.

The **Parts Warehouse Facility** is anticipated to be established through renovation of the second floor of the Filter Building and in the floor shop area of the Pumping Station.

MAJOR DESIGN ELEMENTS

A more detailed description of the anticipated scope of work for each of these three major design elements of the overall project is provided under each major design element as presented in the following sections. The City's desire for "redundancy and resiliency" should be reflected in the project scope. The first element listed concerns project management.

ELEMENT 1: PROJECT MANAGEMENT

Scope Understanding

ARCADIS understands that the City will concurrently move forward with detailed design of the Major Electrical Improvements, High Service Pumping Improvements and Parts Warehouse Facility. It is also understood that the entire project will be developed and implemented as one comprehensive design and bid package. Both of these statements have an impact on the project management and project development scope of work.

Design Scope

Task 1.1 – Provide overall project management of the design process including project planning, budget and schedule oversight, along with administration of the engineering Agreement.

Task 1.2 – Provide management of our subconsultant team, contract administration and monitor M/WBE goal conformance.

Task 1.3 – Arrange and manage meetings including project kick-off meeting; monthly project status meetings; workshops; coordination meetings with other consultants; subconsultant meetings; review meetings at 30%, 60%, and 90% deliverables; and special meetings as required to manage each design element.

Task 1.4 – Complete project close out activities including documentation of quality assurance and control, and program and project recordkeeping.

ELEMENT 2: MAJOR ELECTRICAL IMPROVEMENTS

Scope Understanding

The overall scope of the Major Electrical Improvements is defined as described below.

- Provide new diesel engine generator to serve existing High Service Pumps No. 4 (18.0 MGD) and No. 3 (9.5 MGD), and provide power to the Pumping Station. Sizing of the generator will take into account future loads anticipated by the City through implementation of other projects identified in long-term master planning studies and the plant residuals study. The City will provide these future loads to ARCADIS. The existing generator serving the Filter Building and Chemical Building is in good condition and will continue to serve these buildings.
- Upgrade and replace switchgear as necessary for the new generator. It is anticipated the transformers serving the high service pump electric motors will be replaced with a single transformer in close proximity to the new generator. Service voltage to the Pump Building will remain at 480 volts.
- Power monitoring will be included/integrated into the new switchgear and compatible with the existing Eaton PMCS system. Evaluate upgrades to the existing system.
- The two existing Duke Energy utility power services shall remain as requested by the City.
- Evaluate opportunities in communication and cooperation with Duke Energy, and coordinated through Steve Randall, City Energy Manager, to obtain power savings through available programs concerning energy rebates and curtailable rate structures.
- Cooling water for the new generator will be provided from the raw water supply pipe header through a new heat exchanger engine jacket water cooling system and piping. The existing heat exchange system, including all piping, will be removed. See Scope Task 2.1.
- Provide new diesel fuel storage/feed facility to support the new generator. It is anticipated the diesel storage/feed facility will be located near the northeast corner of the Pumping Station.

Concrete, emergency spill containment provisions are not anticipated as the storage tank will be double-walled.

- Perform an overview evaluation of existing Pumping Station power distribution and lighting systems to identify areas for potential upgrade or replacement.
- Provide SCADA capabilities with system improvements and coordinate with the City's SCADA integrator.
- Remove the existing diesel fuel storage/feed facilities, assuming "clean" demolition and no underlying contamination.
- Perform a field site topographic survey of the plant site for the location of the new diesel fuel storage/feed facility and possibly the site of the new generator system.
- Perform geotechnical exploration and analysis for the location of the new diesel fuel storage/feed facility and possibly the site of the new generator system.

There are, however, two aspects of the project scope that are not well defined and will require upfront evaluation prior to final design scope determination identifying the most suitable and cost effective location for the new generator and an evaluation for consolidation of the Filter Building electrical service and generator with the new generator and Pumping Station electrical service. First, the original concept was to locate the new generator inside the Pumping Station on the pump room floor where existing High Service Pump No. 2 is located. However, after further consideration of the challenges with installing and operating the new generator inside the Pumping Station, it was decided to evaluate cost and non-cost factors for locating the new generator inside versus outside the Pumping Station. The outcome of this evaluation will further determine the scope of work for the new generator.

Second, an evaluation is needed to determine the feasibility of connecting the two electric utility services at the plant site. The two services provide utility power to different areas of the WTP (Pumping Station and Filter Building) and are not currently connected. This study would determine if the project scope should include this interconnection.

Design Scope

Based on the preceding scope understanding, ARCADIS anticipates the following tasks necessary to complete the two upfront studies and detailed design for the Major Electrical Improvements portion of this project. Development of the design will include three design submittals for City review: 30% Design; 60% Design; and 90% Design.

Task 2.1 – Prepare a Generator Location Evaluation Study to evaluate the most appropriate location for the new generator, including identification and evaluation of the critical technical and implementation issues and associated cost and non-cost factors. Factors to be considered include, but are not limited to, fuel system location, building code requirements, sound attenuation, jacket water cooling system, heat generation, structural issues and exhaust penetration. Consideration would also be given to abandoning the existing heat exchanger system and using a remote radiator to cool the new generator. Submit five copies of the Draft Generator Location Evaluation Study in technical memorandum format to the City for review. Address City comments and finalize the technical memorandum.

An allowance will be established for this upfront study.

Task 2.2 – Prepare a Utility Service Connection Evaluation Study to evaluate the feasibility of interconnecting the two electric utility services, including identification and evaluation of the critical technical and implementation issues and associated cost and non-cost factors. Factors to be considered include, but are not limited to, reliability of Filter Building electrical service, use of existing 900kW generator, feasibility and operational considerations to support parallel generator operations and future improvements. Submit five copies of the Draft Utility Service Connection Evaluation Study in technical memorandum format to the City for review. Address City comments and finalize the technical memorandum.

An allowance will be established for this upfront study.

Task 2.3 – Meet with the City to review and discuss the recommendations of the Generator Location Study and Electric Utility Consolidation Study. Establish a course of action and confirm scope of design.

The following design scope assumes the original concept of improvements with the generator located inside the Pumping Station.

30% Design

Task 2.4 – Arrange and hold a Kick-Off Meeting to initiate the design, confirm scope and schedule, establish communication and coordination protocols, request information and lay-out initial design activities.

Task 2.5 – Obtain and review pertinent data from the City including, but not limited to, drawings, technical specifications, shop drawings, maintenance and repair records, reports and testing data regarding the electric service, switchgear and systems.

Task 2.6 – Perform a field assessment of the electrical power systems and diesel fuel system to document existing facilities and obtain critical dimensions to be used in the design and drawing development.

Task 2.7 – Prepare calculations for overall bus capacity, short circuit availability and generator sizing.

Task 2.8 – Evaluate electrical system components from various manufacturers to meet the anticipated design conditions and make a preliminary selection.

Task 2.9 – Prepare short circuit, arc flash and harmonic analysis to determine equipment requirements including arc flash ratings and placards.

Task 2.10 – Identify and discuss with the City's Energy Manager and Duke Energy opportunities to obtain power savings through available programs regarding energy rebates and curtailable rate structures.

Task 2.11 – Evaluate heat generation and associated heat loads in the pump room and make recommendations to address. Consider air conditioned enclosures for VFD's, relocation of VFD's and developing a separate room for the VFD's.

Task 2.12 – Prepare base drawings of the WTP site and electrical service and switchgear areas, plans and sectional plans.

Task 2.13 – Prepare preliminary demolition drawings reflecting removal of major electrical components and appurtenances.

Task 2.14 – Prepare preliminary drawings of proposed electrical service, overall electrical one-line diagram, and switchgear improvements, including siting of the new generator and diesel fuel storage/feed facility.

Task 2.15 – Based on preliminary selection of major electrical components, annotate and provide manufacturer cut-sheets/data sheets representing selected equipment and features.

Task 2.16 – Identify structural and mechanical support needed for the electrical improvements.

Task 2.17 – Prepare a preliminary table of contents for technical specifications using the CSI 50-Division format.

Task 2.18 – Perform an internal quality assurance review of the preliminary drawings and equipment cut-sheets/data sheets. Address comments and revise documents accordingly.

Task 2.19 – Prepare a preliminary opinion of probable construction costs for the proposed improvements.

Task 2.20 – Submit the 30% Design Package to the City for review. Five copies will be provided. Allow for a two week review period.

Task 2.21 – Meet with the City to review the 30% Design Package and discuss City comments. Address City comments and incorporate required revisions in the 60% Design submittal.

60% Design

Task 2.22 – Make final selection of electrical service and switchgear systems, as well as diesel fuel storage/feed equipment.

Task 2.23 – Further the design development of the demolition drawings with additional plans, sections, details and notes as necessary.

Task 2.24 – Further the design development of the electrical improvements; along with the drawing development with additional plans, sections, details and notes.

Task 2.25 – Develop structural and mechanical discipline designs to support the electrical and diesel fuel system improvements. Prepare preliminary drawings for each of these disciplines.

Task 2.26 – Update the technical specifications table of contents to reflect design development; prepare draft technical specifications using the CSI 50-Division format for major electrical and diesel fuel system equipment; include pre-edited standard specifications for remaining, anticipated equipment and materials for civil, structural and mechanical disciplines.

Task 2.27 – Assemble preliminary front end documents based on the City's Master Front End Division 00 and Division 01 documents for discussion and review by the City.

Task 2.28 – Identify and draft required permits for execution of the proposed work. Permits are anticipated for public water supply, air quality, building code and through the City's Technical Review Committee approval process.

Task 2.29 – Perform an internal quality assurance review of the drawings, technical specifications and front end documents. Address comments and revise documents accordingly.

Task 2.30 – Update the opinion of probable construction costs and construction project delivery schedule to reflect the design progress.

Task 2.31 - Evaluate the scope and character of the design and opinion of probable constructions costs for M/WBE opportunities and coordinate with the City's M/WBE program and manage to establish project participation goals.

Task 2.32 – Submit the 60% Design Package to the City for review. Five copies will be provided. Allow for a three week review period.

Task 2.33 – Meet with the City to review the 60% Design Package and discuss City comments. Include a discussion on Maintenance of Plant Operations (MOPO). Address City comments and incorporate required revisions in the 90% Design submittal.

90% Design

Task 2.34 – Complete all drawings and technical specifications in CSI 50-Division format.

Task 2.35 – Modify and complete City CSI Format Front End contract documents required for project bidding.

Task 2.36 – Complete all required permit applications, ready for submittal.

Task 2.37 – Perform an internal quality assurance review of the drawings, technical specifications and front end documents. Address comments and revise documents accordingly.

Task 2.38 – Complete the opinion of probable construction costs.

Task 2.39 – Submit the 90% Design Package to the City for review. Five copies will be provided. Allow for a four week review period.

Task 2.40 – Meet with the City to review the 90% Design Package and discuss City comments. Include a discussion of Maintenance of Plant Operations (MOPO). Address City comments and incorporate required revisions in the Final Design submittal.

Final Design

Task 2.41 – Finalize all drawings, technical specifications and front end documents, ready for bid advertisement.

Task 2.42 – Evaluate the scope and character of the design and opinion of probable constructions costs and construction project delivery schedule for M/WBE opportunities and coordinate with the City's M/WBE program and manage to establish project participation goals.

Task 2.43 – Deliver to the City an electronic file and five hard copies of all the design documents in a final Project Manual, ready for bidding.

ELEMENT 3: HIGH SERVICE PUMPING IMPROVEMENTS

Scope Understanding

The overall scope of the High Service Pumping Improvements is well defined as described below.

- Review and evaluate limitations of suction conditions in selection of new high service pumps and how they will operate in concert with existing pumps. It is our understanding that the existing suction piping for New High Service Pump No. 1 is not Hydraulics Institute (HI) compliant.
- Provide new 9.5 MGD High Service Pump No. 1 with new 600 hp motor and variable speed drive. New High Service Pump No. 1 will be located at the southwest end of the pump room floor where provisions have previously been made for its installation. Depending on location of new generator, consideration should be given to locating this new pump in the location of current High Service Pump No. 2 to avoid potentially unfavorable suction hydraulic conditions associated with the existing piping. The City has a preference for Fairbanks-Morse pumps and Allen-Bradley drives. Consideration will be given to base bidding these preferred manufacturers while allowing for alternate bids.
- Provide new suction and discharge piping, valving and flow metering for new High Service Pump No. 1.
- Demolish and remove diesel engines and support systems, as well as High Service Pumps No. 2 and No. 3.
- Provide new 9.5 MGD High Service Pump No. 3 with 600 hp motor and variable speed drive. The City has a preference for Fairbanks-Morse pumps and Allen-Bradley drives. Consideration will be given to base bidding these preferred manufacturers while allowing for alternate bids.
- Replace or rebuild the pump suction isolation valve for existing High Service Pump No. 2.

- Relocate and re-establish the pump vacuum priming system and extend system to serve High Service Pump No. 1.
- Demolish and remove the unnecessary air compressor, diesel engine starting system associated with the current diesel fuel storage/feed system; and install new, smaller compressed air system to provide service air to the workshop.
- Replace the ships ladder in the northeast corner of the pump room with stairs and landing, coordinating replacement with existing utilities.

Design Scope

Based on the preceding scope understanding, ARCADIS anticipates the following tasks necessary to complete the detailed design for the High Service Pumping Improvements of this project. Development of the design will include three design submittals for review: 30% Design; 60% Design; and 90% Design.

30% Design

Task 3.1 – Arrange and hold a Kick-Off Meeting (concurrent with Task 2.4) to initiate the design, confirm scope and schedule, establish communication and coordination protocols, request information and lay-out initial design activities.

Task 3.2 – Obtain and review pertinent data from the City including, but not limited to, drawings, technical specifications, shop drawings, maintenance and repair records, operations procedures, reports, testing data and hydraulic profiles and data regarding pump operations.

Task 3.3 – Perform a field assessment of the high service pump areas to document existing facilities and obtain critical dimensions to be used in the design and drawing development.

Task 3.4 – Review the City furnished hydraulics study of the high service pumping system to understand current and expected hydraulic performance and limitations after the new clearwell is constructed. Assess available pumping records to establish maximum-minimum-average flow conditions.

Task 3.5 – Perform hydraulic calculations to determine the expected flow and head conditions under a range of pumping scenarios for the new high service pumps. Evaluate operation of the new high service pumps with the remaining existing pumps. Assumes City will provide flow and corresponding pressure data based on City's current hydraulic model.

Task 3.6 – Perform harmonic analysis for selection of proper drive harmonic mitigation methods.

Task 3.7 – Evaluate available pumps from various manufacturers to meet the established range of pumping conditions and make a preliminary pump selection, considering Hydraulic Institutes best practices where achievable.

Task 3.8 – Develop a Technical Memorandum summarizing the high service pumping hydraulics (minimum-average-peak flows) evaluation and preliminary pump, motor and variable speed drive recommendations.

Task 3.9 – Prepare base drawings of the high service pump areas, plans and sectional plans.

Task 3.10 – Prepare preliminary demolition drawings reflecting removal of the diesel engine drives and appurtenances, as well as the air compressor system and ships ladder.

Task 3.11 – Evaluate and develop preliminary design for isolation valve replacement for existing High Service Pump No. 2, re-establishment of the vacuum priming system and downsized air compressor system.

Task 3.12 – Develop preliminary design for new suction and discharge piping, valving, and flow monitoring for new High Service Pump No. 1.

Task 3.13 – Prepare preliminary drawings of proposed high service pump improvements.

Task 3.14 – Based on preliminary selection of pump, motor and drive, as well as other major equipment items, annotate and provide manufacturer cut-sheets/data sheets representing selected equipment and features.

Task 3.15 – Identify structural, mechanical and electrical support needed for the high service pump improvements.

Task 3.16 – Prepare a preliminary table of contents for technical specifications using the CSI 50-Division format.

Task 3.17 – Perform an internal quality assurance review of the hydraulics technical memorandum, preliminary drawings and equipment cut-sheets/data sheets. Address comments and revise documents accordingly.

Task 3.18 – Prepare a preliminary opinion of probable construction costs for the proposed improvements.

Task 3.19 – Submit the 30% Design Package to the City for review. Five copies will be provided. Allow for a two week review period.

Task 3.20 – Meet with the City (concurrent with Task 2.21) to review the 30% Design Package and discuss City comments. Address City comments and incorporate required revisions in the 60% Design submittal.

60% Design

Task 3.21 – Finalize hydraulic calculations and make final selection of new high service pumps, motors and drives. Update and finalize the Technical Memorandum.

Task 3.22 – Further the design development of the demolition drawings with additional plans, sections, details and notes.

Task 3.23 – Further the design development of the high service pump suction and discharge piping, valving and flow monitoring, including instrumentation; along with drawing development with additional plans, sections, details and notes.

Task 3.24 – Develop structural, electrical and mechanical discipline designs to support the high service pump improvements. Prepare preliminary drawings for each of these disciplines.

Task 3.25 – Update the technical specifications table of contents to reflect design development; prepare draft technical specifications for major process mechanical/equipment; include pre-edited standard specifications for remaining, anticipated equipment and materials for civil, structural, electrical and mechanical disciplines.

Task 3.26 – Identify and draft required permits for execution of the proposed work. Permits are anticipated for public water supply, building code compliance, and through the City's Technical Review Committee approval process.

Task 3.27 – Perform an internal quality assurance review of the drawings, technical specifications and front end documents. Address comments and revise documents accordingly.

Task 3.28 – Update the opinion of probable construction costs to reflect the design progress.

Task 3.29 – Submit the 60% Design Package to the City for review. Five copies will be provided. Allow for a three week review period.

Task 3.30 – Meet with the City (concurrent with Task 2.33) to review the 60% Design Package and discuss City comments. Address City comments and incorporate required revisions in the 90% Design submittal.

90% Design

Task 3.31 – Complete all drawings and technical specifications in CSI 50-Division format.

Task 3.32 – Complete all required permit applications, ready for submittal.

Task 3.33 – Perform an internal quality assurance review of the drawings and technical specifications. Address comments and revise documents accordingly.

Task 3.34 – Complete the opinion of probable construction costs and construction project delivery schedule.

Task 3.35 – Submit the 90% Design Package to the City for review. Five copies will be provided. Allow for a four week review period.

Task 3.36 – Meet with the City (concurrent with Task 2.40) to review the 90% Design Package and discuss City comments. Address City comments and incorporate required revisions in the Final Design submittal.

Final Design

Task 3.37 – Finalize all drawings and technical specifications, ready for bid advertisement.

Task 3.38 – Deliver to the City an electronic file and five hard copies of all the design documents in a final Project Manual, ready for bidding.

ELEMENT 4: PARTS WAREHOUSE FACILITY

Scope Understanding

The City originally intended to construct a Parts Warehouse at the Mitchell WTP in the area currently occupied by the diesel fuel storage facility. The new Parts Warehouse was intended to store and inventory new, used and rebuilt water treatment plant equipment and materials, as well as store and manage the inventory of parts and supplies routinely needed. The building was tentatively established at 7,500 sf (approximately 50' x 150') with a partial mezzanine level.

Upon further consideration, the City will establish a modified Parts Warehouse Facility on the second floor of the Filter Building. The City has determined that storage of some equipment, materials and supplies intended for the new Parts Warehouse could be stored at the Townsend WTP, as well as at the Repair Shop and Parts Storage areas available at the Pumping Station at the Mitchell WTP. Therefore, the City will proceed with design to renovate the second floor of the Filter Building for a Parts Warehouse Facility.

An allowance will be established for the design of the Parts Warehouse Facility.

Design Scope

Task 4.1 – Arrange and hold a Kick-Off Meeting (concurrent with Task 2.4) to initiate the design, confirm scope and schedule, establish communication and coordination protocols, request information and program initial design activities.

Task 4.2 – Obtain and review pertinent data from the City including, but not limited to, drawings, shop drawings and reports.

Task 4.3 – Perform a site inspection and document dimensions of the second floor of the Filter Building.

Task 4.4 – Perform a desk-top structural review of the second floor slab using record drawing information.

Task 4.5 – Meet with the City to establish the specific requirements for the Parts Warehouse Facility based on City identified equipment, material and supplies to be stored on the second floor of the Filter Building and in the Pumping Station.

Task 4.6 – Establish the conceptual footprint required for the intended use for equipment, materials and supplies storage and management, as well as providing a restroom and establishing a segregated room for the polymer feed system.

Task 4.7 – Perform a building code review, including a preliminary review meeting with the City Building/Permitting Department with respect to the intended use of the space.

30% Design

Task 4.8 – Finalize space programming and develop architectural floor plan schematics.

Task 4.9 – Develop preliminary structural, mechanical and electrical design drawings and outline technical specification requirements.

Task 4.10 – Finalize Building Code analysis.

Task 4.11 – Perform an internal quality assurance review of the 30% Design documents. Address comments and revise documents accordingly.

Task 4.12 – Meet with the City to review the 30% Design and discuss City comments. Address City comments and incorporate required revisions in the 60% Design submittal.

60% Design

Task 4.13 – Develop dimensional, architectural floor plans, elevations and sections.

Task 4.14 – Define assemblies, doors, windows, and finishes; as well as building design elements, including shelfing and fencing. Prepare preliminary technical specifications.

Task 4.15 – Further develop structural, mechanical and electrical design drawings and technical specifications.

Task 4.16 - Perform an internal quality assurance review of the 60% Design documents. Address comments and revise documents accordingly.

Task 4.17 – Meet with the City to review the 60% Design and discuss City comments. Address City comments and incorporate required revisions in the 90% Design submittal.

90% Design

Task 4.18 – Develop complete architectural construction drawings and technical specifications.

Task 4.19 – Develop complete structural, mechanical and electrical design drawings and technical specifications.

Task 4.20 – Develop City CSI Format Front End contract documents required for project bidding.

Task 4.21 – Complete required Building Permit applications for submittal.

Task 4.22 – Perform an internal quality assurance review of the 90% Design documents. Address comments and revise documents accordingly.

Task 4.23 – Meet with the City to review the 90% Design and discuss City comments. Address City comments and incorporate required revisions in the Final Design submittal.

Final Design

Task 4.24 – Address City Building Department comments.

Task 4.25 – Finalize all drawings, technical specifications and front end documents, ready for bid advertisement.

Task 4.26 – Prepare an opinion of probable construction cost and construction project delivery schedule.

Task 4.27 – Deliver to the City an electronic file and five hard copies of the design documents in a final Project Manual, ready for bidding.

SUBCONSULTANT TEAM

ARCADIS proposes to complete the design of the overall project utilizing the following subconsultants.

- S.L, King and Associates, Inc.: Electrical Design and Drafting: DESIGN ELEMENT 2 and 4 MBE
- J.C. Waller & Associates, PC: Site Surveying: DESIGN ELEMENT 2 MBE
- S&ME, Inc.: Geotechnical: DESIGN ELEMENT 2
- Shermin Ata, Architect, PLLC: Parts Warehouse Facility Design and Drafting: DESIGN ELEMENT 4 WBE

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, pump curves and other necessary data.
2. Permit review fees will be the responsibility of the City.
3. Selecting interior systems and features of the Parts Warehouse Facility for storage and other functions in a timely manner in consultation with ARCADIS.
4. Provide personnel to identify and open electrical panels.

5. Provide payment for independent third-party services as needed (and pre-approved). It is unlikely that any third-party services will be required for this project.
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.
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.

SUBSEQUENT PROJECT PHASES

Bidding phase, construction administration and resident project representation services can be provided to assist the City in implementation of this project under a separate proposal at the time these services are required.