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September 14, 2015

Mr. Michael M. Borchers, P.E.  
Deputy Director  
Water Resources Department  
2602 South Elm-Eugene Street  
Greensboro, North Carolina 27406

**RE: On-Call Professional Services  
Groometown and McCloud Road Booster Stations**

Dear Mr. Borchers:

Chester Engineers appreciates the opportunity to provide the attached revised scope of services for the water supply improvements at Groometown and McCloud Road Booster Stations. The scope of services for each booster station is based on the following reports:

1. Groometown Road – Preliminary Engineering Report prepared by HDR (January 2013)
2. McCloud Road – Preliminary Engineering Report prepared by HDR (May 2014) and Technical Memorandum prepared by Hazen and Sawyer (July 2013)

The proposed fee to complete Phase 1 which includes project management, design, permitting, bid and award services for both projects under one construction bid package is \$344,000 inclusive of all expenses. Breakdown of said expenses is provided below based on two on-site coordination meetings attended by the design team:

Airfare	\$3,200
Hotel Rooms	\$1,200
<u>Rental Car</u>	<u>\$200</u>
Total Expenses	\$4,600

Should you have any questions or require any additional information, please do not hesitate to contact me at (336) 544-4820 or by email at [dcraig@chesterengineers.com](mailto:dcraig@chesterengineers.com).

Respectfully,

A handwritten signature in blue ink that reads "Darnetta D. Craig".

Darnetta D. Craig, P.E.  
Senior Project Manager

Attachments – Scope of Services

cc\attach: Brian Boyd  
Barry Parsons  
Hasan Alkhayri

**CHESTER ENGINEERS (NORTH)**

*The Market Leader in Building Green Infrastructures and Economies*

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**SCOPE OF SERVICES**  
**SUPPLEMENTAL AGREEMENT FOR PROFESSIONAL SERVICES**  
**BETWEEN THE CITY OF GREENSBORO AND**  
**CHESTER ENGINEERS (NORTH CAROLINA)**  
**FOR THE GROOMETOWN TANK PROJECT**

***PROJECT DESCRIPTION***

The City of Greensboro (City) is experiencing high water age issues due to lack of demand in an existing elevated water tank located on Groometown Road. This, in turn, produces high water age in the water distribution system or Main Zone where the tank is located. In order to improve the water age in the tank and system, the City desires to construct a new booster station at the Groometown Tank location to draw water directly from the tank and discharge it back into the distribution system. The existing booster station located on High Point Road that is used to pump water within the Main Zone will be demolished and replaced by the new booster station near the Groometown Tank.

Guidance for this project is provided in a Preliminary Engineering Report (PER) prepared by HDR. Not included in the report is the City's desire to demolish (no salvage) the existing High Point Road Booster Station (HBR-BS), provide a Rotork or AUMA 'fill' valve in place of the manual valve at the existing HPR-BS, add a chlorine room in the new booster station, provide fencing for security, and provide an additional pump for redundancy. The Groometown Tank Project consists of the following:

- A building for the new booster pump station with a chlorine room (analyzer only)
- Roadway for vehicular traffic to and from the booster pump station
- Two (2) pumps for redundancy
- Piping and Valves (Check valves, pump control valves, isolation valves)
- An electric-motorized actuator for each isolation valve
- An electromagnetic flow meter (mag-meter) installed in a lockable below-grade pre-cast concrete utility vault outside the booster station building
- A surge relief valve installed in the flow meter vault
- An electrical system to operate the pumps, communication and control system, HVAC system, monorail, interior and site lighting, and all other miscellaneous

loads. A standby diesel generator connection with manual transfer switch will be provided to allow a portable generator to be connected

- Storm water BMP's for the construction site
- Permitting (ATC, S&EC, Local Permitting, and NCDOT and/or GDOT)

## ***SCOPE OF SERVICES***

The following services will be performed for the Groometown Road Booster Station:

Phase 1: This phase includes (1) Project Management, (2) Design, (3) Permitting, (4) Bid and Award, and

Phase 2 – If Authorized: This phase includes (5) Construction Administration (if authorized)

Design services will be supported by a topographical survey and geotechnical (subsurface) investigation both performed by sub-consultants. Other design services include: site/civil, process/mechanical, structural, architectural, electrical/ instrumentation and controls, and which are all performed by Chester.

### ***Project Management***

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Coordinate with the City of Greensboro, sub-consultants, and internal staff for the purposes of executing all aspects of the project. Schedule and attend 3-5 meetings (including conference calls and up to two (2) face to face meetings attended by the design team). Those meetings shall include: (1) The Kick-Off, (2) Design Review at 60%, (3) Design Review at 90%, and two optional meetings to address project issues or concerns. Prepare and provide the following: a project schedule indicating key deliverables and/or milestones, meeting minutes, responses to emails and/or phone calls within two (2) business days, and progress reports (interval specified by the City of Greensboro). Oversee and ensure the quality and timeliness of all deliverables.

### ***Design***

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The design phase will be supported by two preliminary activities and then carried out by five major disciplines. Deliverables will include: 60% Design Documents (includes drawings and specifications) with preliminary opinion of probable construction costs (OPCC); 90% Design Documents with opinion of probable construction costs; and 100% Construction Documents with final OPCC.

***Survey (performed by JC Waller & Associates)***

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A survey<sup>1</sup> of the Groometown Tank project site and adjacent streets will be performed (See attached scope of services in ATTACHMENT A). The surveyor will also include boring locations as identified by the geotechnical investigation.

***Geotechnical Investigation (performed by S&ME, Inc.)***

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The geotechnical investigation will include two (2) soil test borings to the depths of 25 feet or auger refusal (see attached scope of services in ATTACHMENT B). Exclusions are provided in the scope and below:

- Addenda to the geotechnical report to address changes or additions to the proposed project not known at the time of proposal
- Exploration of site soils using test pits.
- Restoration of grassy or landscaped areas.
- The assessment of site environmental conditions or testing for the presence of contaminants in the soil, rock, surface water or groundwater of the site.
- The monitoring of construction or testing of construction materials.

Prior to field work, two items are requested from the City:

- Access to the site, and
- Any available information regarding the presence and accurate locations of hidden or obscure man-made objects relative to field tests or boring locations.

***Site/Civil***

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The site/civil design will coordinate with all disciplines. The site/civil design will be responsible for specifying survey requirements and translating that data to produce an overall site plan (see footnote 1).that is made available to the design group. The overall site plan shall, in general, capture the Groometown Tank site, adjacent streets, above and below ground utility information, existing structures on the site, etc. The site/civil design will adhere to the preliminary findings (such as zoning and set-back requirements), in the PER prepared by HDR when developing site improvements.

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<sup>1</sup> The survey drawing and overall site plan will be used by the Department to support annexation proceedings as well. The property will be annexed as part of the Technical Review Committee (TRC) approval process.

The anticipated list of drawings, specifications, and exclusions/assumptions are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	General	Cover
4	Site/Civil	Standard Civil Details
1	Site/Civil	Erosion Control General Notes, Construction Sequence, etc.
1	Site/Civil	Existing Conditions and Demolition Plan
1	Site/Civil	Site Plan
1	Site/Civil	Site Staking & Utility Plan
1	Site/Civil	Site Grading and Drainage Plan
1	Site/Civil	Erosion Control Plan
1	Site/Civil	Water Line Piping Plan and Profile
1	Site/Civil	Storm Water Piping Plan and Profile
1	Site/Civil	Storm Water Piping Plan Details
1	Site/Civil	High Point Road Demolition Plan and Sections
1	Site/Civil	High Point Road Utility Plan and Details
1	Site/Civil	High Point Road Restoration Plan and Details
17	Total Number of Drawings for Site/Civil	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
02 30 00	Subsurface Investigation
02 40 00	Demolition and Structures Moving
31 11 00	Site Clearing and Grubbing
31 23 13	Subgrade Preparation
31 23 33	Trenching and Backfill
31 25 13	Erosion Controls
31 25 53	Sedimentation Controls

<i>Division Number</i>	<i>Description</i>
32 15 40	Crushed Stone Surfacing
32 31 00	Fences and Gates
32 92 19	Seeding
33 10 00	Water Utilities
33 30 00	Sanitary Sewerage Utilities
33 40 00	Storm Drainage Utilities
13	Total Number of Specifications for Site/Civil

### ***Exclusions/Assumptions***

- Survey of existing High Point Road Booster Station. Assume the City will provide existing as constructed drawings with all site improvements and utility information for the existing booster station.
- Relocation of any existing utilities on-site or the overhead power adjacent to the site.
- Assumes gravity storm water discharge for the site

### ***Process/Mechanical***

The process/mechanical design scope will be limited to the mechanical/ piping shown in Figures 2-1 and 2-2 from the preliminary engineering report prepared by HDR with the exception that a second pump will be included for redundancy. Underground piping beyond the building will be covered by Site/Civil.

The anticipated list of drawings and specifications are provided below.

### ***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Mechanical	Building Slab Floor Drains
2	P&IDs	Legend and Pump P&ID (Includes utility water for hose bib)
2	Piping Plan	Building and Vault Piping

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	<i>Piping Section and Details</i>	<i>Two section cuts through building and One section cut of vault</i>
1	<i>Mechanical Plumbing Standard Details</i>	<i>Standard drawings from City of Greensboro</i>
7	<b>Total Number of Drawings for Process/Mechanical</b>	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
	<b><i>Equipment Documents</i></b>
TBD	<i>Equipment: Basic Requirements</i>
TBD	<i>Monorails and Hoists</i>
TBD	<i>Pumping Equipment: Basic Requirements</i>
TBD	<i>Chemical Feed: Chlorination Unit</i>
	<b><i>Mechanical Documents</i></b>
TBD	<i>Pipe and Pipe Fittings</i>
TBD	<i>Pipe: Ductile</i>
TBD	<i>Pipe: Plastic</i>
TBD	<i>Valves</i>
TBD	<i>Gate Valves</i>
TBD	<i>Butterfly Valves</i>
TBD	<i>Check Valves</i>
TBD	<i>Miscellaneous Valves</i>
TBD	<i>Plumbing Fixtures and Equipment</i>
TBD	<i>HVAC: Equipment</i>
TBD	<i>HVAC: Ductwork</i>
TBD	<i>Instrumentation and Control For HVAC Systems</i>
TBD	<i>HVAC Systems: Balancing and Testing</i>
17	<b>Total Number of Specifications for Process/Mechanical</b>

***Structural***

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The structural design will initially provide guidance for the geotechnical investigation. Pending the results of the geotechnical investigation, the structural design will confirm whether the existing soils are suitable for the recommended slab-on-grade foundation (with monolithic turned-down perimeter wall footings) for the building. The design will provide: a foundation design for the booster pump station building and vaults, monorail structural support system, pump foundation, pipe supports and thrust blocks, vault designs for the flow meter and valves, and demolition of the existing High Point Road Booster Station.

The anticipated list of drawings, specifications, and exclusions are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Structural	Structural Steel & Concrete Notes
1	Structural	Concrete and Structural Steel Typical Details
1	Structural	Structural Key Plan
2	Structural	Structural Section & Detail Drawings
1	Structural	Demolition
6	Total Number of Drawings for Structural	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
04 22 00	Concrete Unit Masonry
03 30 00	Cast-In-Place Concrete
03 41 00	Precast Concrete
07 92 00	Joints and Sealants
	Concrete Anchorage
05 12 00	Structural Steel Framing
05 31 00	Steel Decking
05 50 00	Metal Fabrications
7	Total Number of Specifications for Structural

### ***Exclusions***

- Deep foundations are not anticipated. All structures are assumed to be on shallow footing.
- As Built drawings are not included.

### ***Architectural***

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The architectural design will prepare and provide the site/ civil design with preliminary sketches of design for building incorporating relationship to site topography and site access. The architectural design will also:

- Develop building plans, elevations, sections and details incorporating construction dimensions.
- Specify selections for materials, assemblies & finishes incorporating information from existing City of Greensboro documents to the extent feasible.
- Specify equipment selections and provide cut sheets for monorail.
- Develop, design, and specify material selections for building: (1) Plumbing assets (water, gas, sewage, floor drains, trap primers and storm drainage from building roof), and (2) Heating and ventilation systems.
- Perform building code research meeting all requirements for building permit issuance and incorporate findings into design.

The anticipated list of drawings, specifications, and exclusions are provided below.

### ***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
<i>1</i>	<i>Architectural</i>	<i>Architectural Plans with Plumbing &amp; HVAC</i>
<i>1</i>	<i>Architectural</i>	<i>Architectural Elevations &amp; Wall Sections</i>
<i>1</i>	<i>Architectural</i>	<i>Architectural Details</i>
<i>1</i>	<i>Architectural</i>	<i>Plumbing Details</i>
<i>1</i>	<i>Architectural</i>	<i>Architectural, Plumbing, &amp; HVAC Schedules</i>

1	Architectural	Architectural General and Building Permit Notes
6	Total Number of Drawings for Architectural	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
04 22 00	Concrete Unit Masonry*
05 50 00	Metal Fabrications*
05 51 00	Metal Stairs
05 52 00	Aluminum Handrails and Railings
05 54 00	Cold Formed Metal Framing
05 60 00	Aluminum Hatch
06 61 00	Rough Carpentry
07 10 00	Damp-proofing and Waterproofing
07 41 13	Standing Seam Roof Panels
07 42 13.53	Metal Soffit Panels
07 60 00	Flashing and Sheet Metal
07 71 00	Manufactured Roof Specialties
07 71 60	Crystalline Waterproofing
07 72 00	Roof Accessories
07 82 00	Board Fireproofing
07 92 00	Joints and Sealants*
08 11 13	Hollow Metal Doors and Frames
08 33 23	Overhead Coiling Door
08 71 00	Door Hardware
08 80 00	Glazing
09 29 00	Gypsum Board
09 67 23	Fluid Applied Resinous Flooring
09 96 00	Painting (High Performance Coatings)
10 44 16	Fire Extinguishers
14 62 00	Trolley Hoist/ Monorail
22 05 00	Plumbing/ HVAC General Requirements
22 10 00	Plumbing Piping Materials and Methods
22 11 13	Facility Water Distribution Piping

<i>Division Number</i>	<i>Description</i>
22 13 16	<i>Waste and Vent Systems</i>
22 14 29	<i>Sump Pumps</i>
23 11 20	<i>Natural Gas Systems</i>
23 34 00	<i>Fans</i>
23 55 33	<i>Fuel Fired Unit Heaters</i>
23 82 39.16	<i>Propeller Unity Heaters</i>
<b>34</b>	<b>Total Number of Specifications for Structural</b>

*\* Also included in Structural Specifications*

### ***Exclusions***

- Energy Code “COM-Check” analysis is not included in Building Permit Application Assistance.
- As Built drawings are not included.

### ***Electrical and I&C***

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The electrical design will encompass the electrical system and associated instrumentation and controls for the Groometown Road Booster Station.

The electrical design will be responsible for sizing the electrical system to operate the pump, HVAC system, monorail, interior and site lighting and all other miscellaneous loads. The electrical design will include a connection with manual transfer switch to allow emergency power from a portable generator when utility power is interrupted. The electrical design will also provide key components to the system as specified in the PER prepared by HDR. Key components of the 480V/277V electrical system are: main distribution panelboard, manual transfer switch, main breakers for utility and generator supplies, Pump Control Panel, Motor Control Center with pump starters; power monitoring; lighting; and Closed Circuit Television (CCTV).

The anticipated list of drawings and specifications are provided on the following pages.

### ***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Electrical	One Lines
1	Electrical	Lighting Drawings and Schedules
1	Electrical	MCC/Distribution Panel Schedules
1	Electrical	Site and Power Plans (Including duct banks)
4	Total Number of Drawings for Electrical	

### ***List of Specifications***

<i>Division Number</i>	<i>Description</i>
26 01 20	Operation and Maintenance of Low-Voltage Electrical Distribution
26 01 40	Operation and Maintenance of Electrical Protection Systems
26 01 50	Operation and Maintenance of Lighting
26 05 19	Low-Voltage Electrical Power Conductors and Cables
26 05 26	Grounding and Bonding for Electrical Systems
26 05 29	Hangers and Supports for Electrical Systems
26 05 33	Raceway and Boxes for Electrical Systems
26 05 33.13	Conduit for Electrical Systems
26 05 33.16	Boxes for Electrical Systems
26 05 33.23	Surface raceways for Electrical Systems
26 05 43	Underground Ducts and Raceways for Electrical Systems
26 05 46	Utility Poles for Electrical Systems
26 05 53	Identification for Electrical Systems
26 05 73	Overcurrent Protective Device Coordination Study
26 05 83	Wiring Connections
26 06 20	Schedules for Low-Voltage Electrical Distribution
26 06 20.16	Electrical Panelboard Schedule
26 06 20.19	Electrical Motor-Control Center Schedule
26 06 20.23	Electrical Circuit Schedule
26 06 20.26	Wiring Device Schedule

Scope of Services  
 Supplemental Agreement for Professional Services  
 Between the City of Greensboro and Chester Engineers of North Carolina  
 For The Groometown Road Booster Station  
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<i>Division Number</i>	<i>Description</i>
26 06 40	<i>Schedules for Electrical Protection Systems</i>
26 06 50	<i>Schedules for Lighting</i>
26 06 50.1	<i>Lighting Panelboard Schedule</i>
26 09 16	<i>Electrical Controls and Relays</i>
26 09 17	<i>Programmable Controllers</i>
26 21 13	<i>Low-Voltage Overhead Electrical Service Entrance</i>
26 22 13	<i>Low-Voltage Distribution Transformers</i>
26 24 16	<i>Panelboards</i>
26 24 19	<i>Motor Control Centers</i>
26 27 13	<i>Electricity Metering</i>
26 27 16	<i>Electrical Cabinets and Enclosures</i>
26 27 26	<i>Wiring Devices</i>
26 28 13	<i>Fuses</i>
26 28 16	<i>Enclosed Switches and Circuit Breakers</i>
26 28 16.13	<i>Enclosed Circuit Breakers</i>
26 28 16.16	<i>Enclosed Switches</i>
26 29 13.16	<i>Reduced-Voltage Motor Controllers</i>
26 36 13	<i>Manual Transfer Switches</i>
26 41 13.13	<i>Lightning Protection for Buildings</i>
26 41 16	<i>Lightning Prevention and Dissipation</i>
26 41 23	<i>Lightning Protection Surge Arresters and Suppressors</i>
26 51 13	<i>Interior Lighting Fixtures, Lamps, And Ballasts</i>
26 56 13s	<i>Lighting Poles and Standards</i>
26 56 29	<i>Site Lighting</i>
<b>44</b>	<b>Total Number of Specifications for Electrical</b>

The electrical design will also provide instrumentation and controls design drawings, specifications, and OPCC. The instrumentation and control equipment will be provided to control and monitor the operations of the Groometown Road Booster Station. The booster station will be capable of being remotely monitored and controlled from the City's

Supervisory Control and Data Acquisition (SCADA)<sup>2</sup> system. The electrical design will include all of the following according to the PER prepared by HDR and City guidance:

- 4G wireless communications capability (IAW agreed upon telemetry design)<sup>3</sup>,
- A dedicated Pump Station Control Panel (PSCP),
- A programmable logic controller (PLC) and an operator interface Terminal (OIT),
- General instrumentation as listed in Table 2-2 of the PER by HDR,
- Control/Alarm parameters as listed in Table 2-3,
- Local and remote pump controls,
- PLC based Pump/Valve Interlock, as well as specified provisions for
- Automatic Operation plus Alarms and Automatic Shutdowns, and
- Infrastructure for security cameras and smoke alarms.

The anticipated list of drawings and specifications are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Instrumentation and Controls	P&ID's
1	Total Number of Drawings for Instrumentation and Controls	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
25 01 10	Operation and Maintenance of Integrated Automation Network Equipment
25 01 20	Operation and Maintenance of Integrated Equipment

<sup>2</sup> SCADA integration is outside the scope of this proposal and will be performed under separate contract per the City.

<sup>3</sup> Contact Brown & Caldwell for guidance on work performed at New Garden and Battleground Booster Stations.

<i>Division Number</i>	<i>Description</i>
25 01 30	<i>Operation and Maintenance of Integrated Automation Instrumentation and Terminal Devices</i>
25 05 13	<i>Conductors and Cables for Integrated Automation</i>
25 05 26	<i>Grounding and Bonding for Integrated Automation</i>
25 05 53	<i>Identification for Integrated Automation</i>
25 06 11	<i>Schedules for Integrated Automation Network</i>
25 06 30	<i>Schedules for Integrated Automation Instrumentation and Terminal Devices</i>
25 08 00	<i>Commissioning of Integrated Automation</i>
25 11 16	<i>Integrated Automation Network Routers, Bridges, Switches, Hubs, and Modems</i>
25 12 00	<i>Integrated Automation Network Gateways</i>
25 13 13	<i>Integrated Automation Control and Monitoring Network Supervisory Control</i>
25 13 19	<i>Integrated Automation Control and Monitoring Network Interoperability</i>
15 14 16	<i>Integrated Automation Application-Specific Control Panels</i>
25 15 19	<i>Integrated Automation Software for Control and Monitoring Networks</i>
25 35 13	<i>Integrated Automation Actuators and Operators</i>
25 35 16	<i>Integrated Automation Sensors and Transmitters</i>
25 37 00	<i>Integrated Automation Instrumentation and Terminal Devices for Communications Systems</i>
25 51 00	<i>Integrated Automation Control of Facility Equipment</i>
25 91 00	<i>Integration Automation Control Sequences for Facility Equipment</i>
<b>20</b>	<b>Total Number of Specifications for Instrumentation and Controls</b>

**Permitting (Performed by Dewberry Engineers Inc. and Chester)**

The PER developed by HDR provides a preliminary list of permits that are likely required for the Groometown Road Booster Station project. The following permits have been identified:

- NC Division of Land Resources, Land Quality Section Sedimentation and Erosion Control Permit (performed by Chester)
- City of Greensboro Site Plan Review and Construction Drawing Review. (Performed by Dewberry)
- Authorization to Construct from the NC Division of Water Resources, Public Water Supply Section for Booster Pump Station and Conveyance Improvements. (Performed by Dewberry)
- NCDOT encroachment agreement. (Performed by Dewberry)

See attached scope of services from Dewberry in ATTACHMENT C. Assumptions and exclusions provided in the attachment are applicable to all permits.

### ***Bid and Award***

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Chester will provide the following Bid and Award Phase services:

- Completion of the front end documents to assist the City with the completion of the Project Manual.
- Assist the City with establishing the MWBE goals for the project.
- Attend pre-bid meeting.
- Assist the City with response to questions from bidders.
- Assist the City with any required addenda.
- One field visit by PM.

### ***CONSTRUCTION PHASE ENGINEERING SERVICES***

- Review of all shop drawings
- Assist City with response to RFI's (no more than an average of three (3) per discipline)
- Required Site Inspection by Engineer
- Monthly Progress Meetings and Minutes
- Construction Inspection provided by Delon Hampton on an as-needed basis

### ***DELIVERABLES***

- 60% design documents with OPCC.
- 90% design documents with OPCC.
- 100% Construction Documents with final OPCC
- Project Manual

## **COMPENSATION**

### ***Phase 1 Services***

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The lump sum fee to perform Phase 1 services is included in the total amount stipulated in the cover letter submitted with this proposal.

### ***Phase 2 Services (if authorized)***

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The Chester Team will perform phase 2 services on a cost plus basis. Labor rates for the team are provided in ATTACHMENT D.

## **SCHEDULE**

A MS Project schedule will be submitted after a Notice to Proceed is issued. The list below provides the expected durations of the project milestones.

- Design Kick-Off Meeting: 10 days from Notice to Proceed
- Submittal of 60% design documents: 60 days from Kick-Off Meeting
- Submittal of 90% design documents: 45 days after 60% review comments
- Submittal of 100% construction documents: 20 days after 90% review comments

**ATTACHMENT A**  
**SCOPE OF SERVICES**  
**JC WALLER & ASSOCIATES**



Site Development - Infrastructure – Planners - Surveyors

*Minority owned Engineering and Survey Firm*

## **BID PROPOSAL**

April 6, 2015

Darnetta D. Craig, PE  
Senior Project Manager  
Chester Engineering  
717 Green Valley Road  
Suite 200  
Greensboro, NC 27408

**RE: City of Greensboro, Groometown Tank Project**

Dear Ms. Craig:

We are pleased to submit a Bid Proposal for providing surveying services for City of Greensboro, Groometown Tank Project.

### **SCOPE OF SERVICES**

JC Waller & Associates, PC proposes to provide the following scope of services per your survey requirements set forth below:

#### **I. General**

- A. The survey shall be performed by a surveyor:
  - a) registered in the state of the site to be surveyed.
  - b) Who shall affix his/her seal, signature, and the date to all drawings and legal descriptions submitted. Submission of electronic data shall be accompanied by a drawing containing this data in electronic image format (i.e. TIFF, PDF, etc.).
  - c) Who shall affix his/her name, address, and phone number to all drawings submitted.
  
- B. Data shall be based upon site observation and record drawings (when available). Record drawings should include, but are not limited to: utility plans, roadway plans, existing surveys, and as-builts. Reference to all applicable record drawings shall be included in the final survey document. Record drawings shall be made available to the Owner's authorized representative upon request. Specific reference to the availability of record drawings should be included on the survey.

## City of Greensboro, Groometown Tank Project

April 6, 2015

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C. It shall be the surveyor's responsibility to research and verify with local authorities and records the accuracy of all boundary information in the preparation of boundary and topographic surveys. Boundary information provided shall not be less than the "Accuracy standards for ALTA/ACSM Land Title Surveys."

D. The survey drawing sheet size shall be 22"x34". Any variation in the size of drawing sheet size must be approved by the Owner's authorized representative. The survey shall be accurately platted to a scale of 1" = 30' or other scale approved by the Owner's authorized representative. The scale selection is to be based on the most effective and comprehensive representation of the required information that can also be contained on one (1) 22x34 drawing sheet. Include north direction and basis of bearing.

E. Provide 6 signed and sealed prints of the final survey. Also provide an electronic copy of the survey via e-mail or compact disc to the Owner's authorized representative. The electronic submission of survey data shall include the digital terrain model DTM of existing topography. Acceptable DTM formats are a separate LandXML file (preferred) or 3-dimensional TIN lines included in the drawing. All point data should also be provided along with a file defining the point descriptions. Point data may also be requested, including a coordinate file in point, northing, easting, z-elevation, description (PNEZD) format.

F. Surveys found to be deficient in any of the requirements set forth in this document will be rejected with comments.

### II. Drawing

Note: All required plan information shall extend a minimum of fifty feet (50') beyond the subject property lines. Where the subject property lies adjacent to a roadway of width greater than fifty feet (50'), plan information shall include both sides of the adjacent streets.

A. Preferred orientation of plan information is to align true north with plan north.

B. Surveyor's Data

a) Show the name, address, telephone number and signature of the professional land surveyor who performed the survey, his/her official seal, signature, and registration number, the date field information was obtained, the date the completed survey was issued, and the dates of all revisions.

### II. Drawing

Note: All required plan information shall extend a minimum of fifty feet (50') beyond the subject property lines. Where the subject property lies adjacent to a roadway of width greater than fifty feet (50'), plan information shall include both sides of the adjacent streets.

A. Preferred orientation of plan information is to align true north with plan north.

## City of Greensboro, Groometown Tank Project

April 6, 2015

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### B. Surveyor's Data

- a) Show the name, address, telephone number and signature of the professional land surveyor who performed the survey, his/her official seal, signature, and registration number, the date field information was obtained, the date the completed survey was issued, and the dates of all revisions.
  - b) Provide a legend for all abbreviations and symbols used on the plat/survey.
  - c) Certify the survey to the Owner.
- C. The title block information shall indicate, as completely as possible:
- a) City, borough, town or township
  - b) State
  - c) County
  - d) Nearest adjacent street or roadway intersection
  - e) Mailing address, if available
  - f) Date of survey completion
  - g) Scale of drawing

### D. Legal - Items (a) through (f) below shall be organized in a list or table to the side of the plan. All other items may be addressed directly on the plan.

- a) Note the location of the site benchmark(s) on the survey and include a note as to which vertical datum was referenced (e.g., NAVD 88).
- b) Include a vicinity map indicating the location of the site and its relationship to surrounding streets and highways, particularly those streets or highways along the frontage(s) of the subject property. North orientation of the vicinity map shall always align to plan north, regardless of the orientation of the survey drawing.
- c) Indicate the zoning classification for the subject property.
- d) Show the legal owner's name and address, and tax assessor's or Auditor's parcel number for the subject property.
- e) Show the area of the property in both square feet and acres. When relevant to clarify the portion of the property legitimately available for use, identify area quantities with and without street right of ways.
- f) Show owner's names and addresses, and the existing zoning classification of all adjoining properties.
- g) Show the street address.
- h) Show all monumentation, and indicate whether found or set. Include details pertaining to condition, size, and material of each, per state standards.

### E. Identify streets, roads, highways, adjacent business mall entrances, safety zones, and medians within fifty feet (50') of the subject parcel property lines. Show all of the following for the entire width of the right-of-way:

- a) Road Name
- b) Route Numbers
- c) Width and type of pavement
- d) Direction of traffic
- e) Medians

## City of Greensboro, Groometown Tank Project

April 6, 2015

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- f) Lane restrictions
- g) Curb cut locations (both sides of street)
- h) All striping (including lanes, stop bars, cross walks, etc.)

### F. Dimension the following on the survey:

- a) Edge of roadway pavement or face of curb to the centerline of right of way.
- b) Property boundary, or right of way, to the centerline of right of way.
- c) Show points where limited access begins or ends. If the street, road or highway is going to be altered, show proposed changes, including proposed grades and indicate when such alterations are scheduled to be constructed.

### G. Boundary Information Required

- a) Show any variation between dimensions given in recorded instruments (plats or deeds) and actual measurements, as found, in the field. Label the length and bearings of all property lines and/or lease lines. Where curvature exists, show the radius, arc length, central angle, chord bearing, and chord distance.
- b) The basis of bearings used on the survey shall be noted on the survey (i.e., National Plane Coordinate System, State Plane Coordinate System, Deed Book Reference, etc.).
- c) If the property is made up of two or more parcels.
  - (1) Indicate lot divisions, as well as the entire property boundary outline;
  - (2) Give lot and block numbers;
  - (3) Show all monuments used to determine property lines, including those not within the subject parcel.
  - (4) Set permanent markers at all corners per state and/or local code.
  - (5) Indicate type and location of markers used on drawing.
  - (6) Attach flags to all corner markers, if possible.
  - (7) Where existing monuments do not exist, monument all boundary corners and interior changes in lot line direction or as specified per state boundary requirements. Where it is not possible to set a monument at a corner, a reference monument of the same quality shall be set and noted on the survey.
- d) Show and dimension all possible encroachments and note as such.
- e) Indicate the distance to the nearest intersecting street.
- f) Show and describe all building, parking, and sign setback lines and any other restriction lines, such as easements, buffer yards, etc., both existing and proposed, as established by local authorities. Indicate the width, extent and nature of each.

## III. Topographic Requirements

- A. Show and label any existing features or improvements on subject property and adjacent properties within fifty feet (50') of subject property boundary lines, including, but not limited to:
  - a) Buildings (include finished floor elevation, material, use and height) - include basement grades, notable improvements, such as cisterns, wells, gas taps, utility service lines, walks, drives, fences, etc. Indicate whether slab or basement.

## City of Greensboro, Groometown Tank Project

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- b) Sidewalks
- c) Public Transportation Stops
- d) Poles
- e) Signs (identify type, height and approximate dimensions of sign)
- f) Trees
- g) Retaining Walls
- h) Ramps
- i) Curb Cuts
- j) Fences
- k) See Utility Survey Requirements for additional items to be shown on survey.

B. Show any ditches, channels, culverts or headwalls on, or within fifty feet (50') of the site. Show the direction of flow, top of slope and toe of slope. Include a description of the channel lining.

C. Show any existing ponds and/or storm water detention facilities. Include all outlet information (risers, etc.).

D. Locate all shrubs and trees over 3" caliper at waist height and determine species (at a minimum, all trees and shrubs shall be classified as deciduous or evergreen).

E. Show all existing pavement markings and parking spaces on the site and street.

F. Give size and elevation of all basements or pits, if any such structures exist on the subject property.

G. Indicate party walls and their condition. Note any party wall agreement of record.

H. Include a clearly described "benchmark" with elevation accurate to 1/100th of a foot. Establish a minimum of one (1) benchmark tied to an appropriate (USGS/NGS or City/County) vertical datum, on or near the subject property. Every effort should be made to establish a semi-permanent benchmark without setting a spike in a utility pole. Multiple benchmarks may be required. The surveyor shall provide benchmarks in accordance with local AHJ requirements or one (1) benchmark per two (2) acres, whichever is greater. Note the location of the site benchmark on the plan view.

I. Indicate if the property includes any delineated wetlands area and show location, if applicable. Include any setback or buffer information.

J. If a site accepts surface drainage from adjacent properties, specify the tributary area by acreage, and note surface cover, such as asphalt, grass, gravel, etc. All areas that drain onto the site should be surveyed. Contact engineer prior to proceeding if the area to be surveyed is extensive and results in additional fee.

K. Show contour elevation intervals:

## City of Greensboro, Groometown Tank Project

April 6, 2015

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- a) At one-foot (1') elevation increments.
- b) Highlight contours at five-foot (5') elevation intervals with heavier line weight than the one-foot contours.
- c) Error shall not exceed one-half (1/2) the contour interval.

L. Show elevations at all property corners, along all boundary lines at twenty-five foot (25') intervals (minimum), and at least fifty feet (50') into any adjacent property.

- a) Vertical error for spot elevations shall not exceed 0.04 feet (1/2").

M. Show elevations on a maximum grid interval of twenty-five feet (25') for parcels two (2.0) acres and less, fifty feet (50') for parcels larger than two (2.0) acres. If the topography of the land has any significant features or drastic changes of grade, that would not be accurately reflected by the specified grid, show spot elevations at any grade break and/or change in slope:

- a) Along the centerline of roads
- b) Retaining walls (top and both sides)
- c) Along all curbs (top and flowline)
- d) Culverts
- e) Sidewalks
- f) Edge of pavement

### IV. Utility Requirements

A. All utility information listed in this section is required to be shown on the survey. The base price of the survey shall include utility information based on public utility location service field markings, field observation of utility structures and record plans. The surveyor shall include a separate quote for alternate means of locating any utilities in the absence of record plans and field evidence. These alternate means may include the use of surface geophysical methods and/or minimally intrusive excavation.

B. Indicate on the survey or, if location is beyond survey limits, describe the location of the nearest usable:

- a) Domestic and fire protection water service
- b) Natural gas service
- c) Sanitary sewer
- d) Storm sewer
- e) Electric service
- f) Telephone service
- g) Cable TV service (if available)

Utilities, that are not available to the subject property should be noted on the survey drawing and the nearest connections, within practical distances up to one thousand feet (1,000'), should be given.

C. Show on the survey all utilities, their approximate location, size and, where possible, any taps or laterals (with their sizes). Show all of the following on the site and within fifty feet (50') of the property line:

## City of Greensboro, Groometown Tank Project

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a) Sewer Structures (storm inlets, storm/sanitary manholes): show top of rim and invert elevations of all structures on or adjacent to subject property, including the nearest upstream and downstream structures, even if located more than fifty feet (50') beyond the subject property. Indicate the material and size of pipe for all connected sewers, and the direction of flow for all pipes.

b) Water and gas curb boxes

c) Utility poles (give pole number and ownership)

d) Street markers

e) Utility lines serving adjacent properties, where such lines encroach upon the required survey area. Indicate whether overhead or underground.

f) Underground Storage Tanks

g) Septic Tanks

h) Wells

i) Drain field locations

D. Electrical, telephone and traffic signal wiring: show utility lines, conduits and boxes.

a) Underground

b) Above ground (indicate height above grade)

E. Gas: indicate mains, pressure, material of piping and meter location.

F. Water: indicate service and fire mains, including nearest fire hydrants up and down street property line. Indicate pressure, material of piping and meter location.

a) Show all water valves on or adjacent to the parcel.

b) Show any existing water wells on subject property or adjacent lots within fifty feet (50') of the property boundary.

G. Miscellaneous: show the following on the survey.

a) Show the location of all traffic signals, control boxes and support poles and/or traffic signs inside the subject property and within fifty feet (50') of the property boundary.

b) Show all existing light poles on the site, in the adjacent public right of way, or within fifty feet (50') of the property boundary. Include the height and type of pole.

c) Show the location of all underground storage tanks including all associated ports, monitoring wells and manways (if applicable).

## City of Greensboro, Groometown Tank Project

April 6, 2015

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### SCHEDULE OF FEES

JC Waller proposes to provide the services indicated under the **SCOPE OF SERVICES** for Six Thousand-Five Hundred & 00/100 Dollars (\$6,500.00).

The following is a rate schedule for additional surveying services:

Office computations/drafting.....	\$75.00/per hour
Two man crew.....	\$150.00/per hour
Three man crew.....	\$180.00/per hour
Robotic Station.....	\$180.00/per hour
PLS consultation.....	\$100.00/per hour

### Invoicing and Payment Terms:

Invoicing will occur on a monthly basis in accordance with the progress of the project. The CLIENT agrees that all invoices submitted by JC Waller & Associates, PC will be paid promptly by the CLIENT or within thirty (30) days of receiving the invoice, whichever occurs first. For projects on which JC Waller & Associates, PC is a sub-consultant, the prime consultant "CLIENT" agrees to pay JC Waller & Associates, PC within 10 days after the prime consultant has received payment.

### SPECIAL CONDITIONS

The following special conditions shall apply to the technical services to be provided on this project.

1. JC Waller & Associates, PC will remain available to provide additional services not include in the **SCOPE OF SERVICES** at the request of the Client.
2. The location of underground utilities not visible at time of survey will not be surveyed unless specified by the client and are *not included* in the **SCOPE OF SERVICES**.
3. Services, such as materials and travel mileage, *are included* in the **SCOPE OF SERVICES**.
4. We will provide services in a timely and efficient manner and will keep you informed of the job status and any necessary changes. If for any reason a change in this Proposal becomes necessary, you will be notified by a written Scope Change Request from the project manager. After the date of this Proposal Letter, changes in the scope of work caused by governing codes or client revisions may require a schedule and/or fee change. You will be notified of any such changes by a Scope Change Request.
5. The above **SCOPE OF SERVICES** does not include site design services. Should the Client determine that these services are required; JC Waller & Associates, PC will negotiate a fee to provide this service.
6. JC Waller & Associates, PC represents that we are protected by Workers Compensation, General Liability and Professional Liability Insurance Policies which it deems reasonable and adequate. JC Waller & Associates, PC shall furnish certificates of insurance upon request. The

**City of Greensboro, Groometown Tank Project**

April 6, 2015

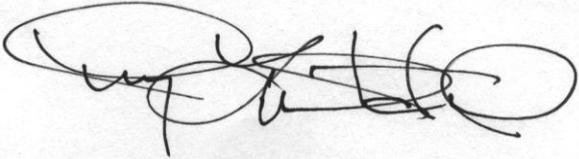
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CLIENT is responsible for requesting specific inclusion or limits of coverage that are not presented in JC Waller & Associates, PC Insurance, the cost of such inclusion or coverage increases, If available, will be at the expense of the CLIENT.

7. For all contracts \$10,000.00 or more, JC Waller & Associates, PC total liability to the CLIENT for any and all claims whatsoever for professional acts, errors, or omissions and for any and all causes including negligence, strict liability, breach of contract, or breach of warranty, injuries, damages, claims, losses, expenses, or claim expenses (including reasonable attorney's fees), shall be limited to available insurance proceeds. For contracts with a contract sum of less than \$10,000.00, JC Waller & Associates, PC total liability to the CLIENT for any and all claims whatsoever for professional acts, errors, or omissions and for any and all causes including negligence, strict liability, breach of contract, or breach of warranty, injuries, damages, claims, losses, expenses, or claim expenses ( including reasonable attorney's fees), shall be limited to the amount of fees paid by the CLIENT to JC Waller & Associates, PC for services performed under the contract. It is specifically understood and agreed that in no case shall JC Waller & Associates, PC be required to pay an amount in Damages disproportional to JC Waller & Associate, PC's culpability, or any share of any amount levied to recognize more than the actual economic damages, subject to any limitations of liability and indemnification provisions contained in this PROPOSAL.
8. We have provided two (2) originals of this Proposal for your review and approval. Please sign both original of the Proposal as your acknowledgement and acceptance of the above-mentioned terms and conditions. Please return an original to our office and retain an original for your records.

I look forward to working with you on this project and others in the future.

Sincerely,



Terry L. Westendorf, PLS

*Acknowledgement & Acceptance:*

\_\_\_\_\_  
*SIGNATURE*

\_\_\_\_\_  
*DATE*

\_\_\_\_\_  
*PRINT NAME & TITLE*

**ATTACHMENT B**  
**SCOPE OF SERVICES**  
**S&ME, INC.**



April 24, 2015

Chester Engineers  
717 Green Valley Road, Suite 200  
Greensboro, North Carolina 27408

Attention: Ms. Darnetta Craig, P.E.  
Senior Project Manager

**Reference: Proposal for Subsurface Exploration**  
Proposed Groometown Road Booster Station  
3902 Groometown Road  
Greensboro, North Carolina  
S&ME Proposal No. 13-1500198

Dear Ms. Craig:

We are pleased to present this proposal to perform geotechnical services for the proposed Groometown Road Booster Station in Greensboro, North Carolina. This proposal describes our understanding of the project, discusses the intended scope of services, outlines the project schedule, and presents the associated compensation for our services. Our Agreement for Services (AS-071) is attached and incorporated as part of this proposal.

## **PROJECT INFORMATION**

Project information has been obtained from the following sources:

- An e-mail from Darnetta Craig, P.E. with Chester Engineers to Kasey McWhorter, P.E. with S&ME on April 16, 2015 which included an electronic pdf copy of the Preliminary Engineering Report, dated January 24, 2013, prepared by HDR Engineering, Inc.
- Review of aerial photography and ground surface elevations of the subject site available on the Guilford County GIS website.

The Groometown Road Booster Station is proposed to be constructed immediately southeast of the existing elevated water tank at 3902 Groometown Road in Greensboro, North Carolina. The Preliminary Engineering Report indicates the booster station will be a one-room, single-story structure supported on a slab-on-grade foundation with monolithic turned-down perimeter wall footings with approximate plan dimensions of 34 feet by 28 feet. The structure is planned to consist of load bearing masonry walls and a standing seam metal roof. The building will house a single floor-mounted electric pump, 12 inch piping, and associated equipment. An overhead monorail will be located above the pump. Relatively light equipment loads are anticipated.

Structural loads were not available, however based on the proposed construction, we anticipate wall loads of 5 kips per foot or less. We understand that the finished floor of the structure will essentially match the existing ground surface. An underground 8-foot

by 10-foot precast concrete vault is planned immediately east of the booster station for flow metering and surge relief. The depth of this vault is not known at this time. The bottom of the vault is anticipated to be less than 8 feet below the existing ground surface.

Underground 12-inch diameter water lines tying the booster station to the existing water system are planned to enter the building from the northeast. Pipe depths are not known at this time. We anticipate excavations for the new underground water lines will be less than 8 feet below existing grade.

The planned station site is located between the existing water tower and the old Groometown Road alignment. The existing ground surface is covered with grass and landscaping trees, is essentially level, and is accessible from the water tower service drive. Based on the water distribution schematic shown on the Preliminary Engineering Report, existing buried water lines are not anticipated in the vicinity of the proposed booster station footprint. Additional public utilities may exist within the proposed development area.

A proposal to perform a subsurface exploration has been requested for use in the planning, design, and construction of the proposed booster station. The site appears to be accessible to truck mounted drilling equipment without the need for clearing.

## **DISCUSSION**

The purpose of our work is to explore subsurface conditions within the planned booster station footprint and develop geotechnical recommendations for use in the planning, design, and construction of the proposed development. Based on our experience, we anticipate site subsurface conditions will consist of residual soils derived from weathering of underlying bedrock.

S&ME plans to perform 2 Standard Penetration Test borings within the booster station footprint to depths of 25 feet or auger refusal. Borings that encounter auger refusal at depths less than 10 feet (or in existing fill) will be offset once to determine the extent and competency of refusal materials. S&ME will measure ground water depths encountered in the borings at termination of drilling.

S&ME will notify North Carolina's 811 service to have member underground utilities field marked across the site prior to performance of our field work. S&ME will also review utility drawings made available to us by others to confirm that proposed boring locations are offset from existing utilities shown.

## **SCOPE OF SERVICES**

S&ME proposes to offer the following Basic Services as part of this proposal:

- Contact NC 811 to field mark member underground utilities in the vicinity of the planned soil test boring(s).
- Field layout of boring(s) by measuring distances and approximating right angles from existing site features or using GPS equipment.
- Mobilization of a truck or ATV-mounted drill rig to the site.
- Performance of two (2) soil test borings to depths of 25 feet or auger refusal (50 linear feet budgeted).
- Perform one offset boring for each boring that encounters refusal within 10 feet of the ground surface, or in existing fill.
- Measure groundwater levels within each boring at completion of drilling (if any).
- Backfill boreholes and install a hole closure device near the ground surface.
- Stratification of the boring soil samples by a geotechnical professional.
- Limited laboratory testing including natural moisture contents, Atterberg limits, and grain size distribution.
- Evaluation of the subsurface conditions encountered in light of the proposed development.
- Preparation of an engineering report summarizing our understanding of the proposed construction, exploration, regional geology, subsurface conditions, and recommendations. Recommendations will address:
  - Shallow foundation recommendations.
  - Total and differential settlements.
  - Difficult to excavate materials and groundwater (if encountered).
  - Suitability of site soils for use as structural fill.
  - Lateral earth pressure parameters for design of below-grade structures.
  - Site grading recommendations.
  - Floor slab support.
  - Seismic Site Class.

NOTE: This proposal is solely intended for the basic services as described above in the scope of services. The scope of services may not be modified or amended, unless the changes are first agreed to in writing by the client and S&ME. Use of this proposal and corresponding reports is limited to the above-referenced project and client. No other use is authorized by S&ME.

## **CLIENT RESPONSIBILITIES**

The scope of services, fee, and project schedule are contingent upon the following responsibilities being fulfilled:

- Client will be responsible for providing access to the site.
- The client will also provide information about the presence and accurate locations of hidden or obscure man-made objects relative to field tests or boring locations if

available. We request that this information be provided to us prior to the proposed field work.

## **EXCLUDED SERVICES**

Without attempting to be a complete list or description of services excluded from this proposal and not performed by S&ME, the following services are specifically excluded:

- Addenda to the geotechnical report to address changes or additions to the proposed project not known to us at the time of this proposal.
- Exploration of site soils using test pits.
- Replanting or replacement of grass or landscaped areas damaged during performance of soil test borings.
- Environmental site assessment. The assessment of site environmental conditions or testing for the presence of contaminants in the soil, rock, surface water or groundwater of the site is beyond the proposed scope of geotechnical services.
- Construction phase services. The monitoring of construction or testing of construction materials is beyond the proposed scope of geotechnical services.

If any of the above excluded services are required, please contact us so that we can modify this proposal or prepare a proposal for additional services.

## **COMPENSATION**

We will perform the Scope of Services described in this proposal for a lump sum fee of \$3,500. If we conclude that additional services are necessary based on the subsurface conditions encountered, we will confer with you. We will not proceed with additional services that incur additional costs without your permission.

## **SCHEDULE**

We will proceed with the project upon authorization and receipt of signed authorization. S&ME will complete the field exploration services, finalize our recommendations, and issue the report within 3 to 4 weeks following authorization. Verbal updates and preliminary recommendations can be provided during the course of the work.

## **AUTHORIZATION**

An Agreement for Services (Form Number AS-071) is attached and is incorporated by reference as a part of this proposal. Please indicate your acceptance of our Agreement for Services by signing the form and returning to our office. Upon receipt of the signed Agreement, we will execute, return to you, and proceed with the performance of our services.

If you elect to accept our proposal by issuing a purchase order, then please specifically reference this proposal number and date. Your purchase order will be an acceptance of our Agreement for Services and an authorization to proceed with the performance of our services. The terms and conditions included in any purchase order shall not apply, as our agreement is for services that are not compatible with purchase order agreements.

**If this proposal is transmitted to you via e-mail, and if you choose to accept this proposal by e-mail, your reply e-mail acceptance will serve as your representation to S&ME that you have reviewed the proposal and the associated Agreement for Services (AS-071) and hereby accept both as written.**

**CLOSING**

S&ME appreciates the opportunity to be of service to you. If you have questions regarding this proposal, or if we may be of further assistance, please contact us.

Sincerely,

**S&ME, Inc.**



Finley Lloyd, P.E.  
Project Manager



Matt Moler, P.E.  
Senior Engineer

Attachment: Agreement for Services (AS-071)

**ATTACHMENT C**  
**SCOPE OF SERVICES**  
**DEWBERRY ENGINEERS INC.**

April 21, 2015

Ms. Darnetta D. Craig, PE  
Senior Project Manager  
Chester Engineers (North Carolina) Inc.  
717 Green Valley Road, Suite 232  
Greensboro, NC 27408

**RE: Proposal for Professional Services  
Groometown Road Booster Pump Station Permitting  
3902 Groometown Road, Greensboro, NC**

Dear Ms. Craig.

Dewberry Engineers Inc. (Dewberry) submits our proposal to assist with permitting the City of Greensboro (City) Groometown Road Booster Pump Station project to help minimize water age in the 1010 pressure zone.

**Understanding of Project**

Dewberry's understanding of the project as outlined below:

- A Preliminary Engineering Report (January 24, 2013) has been completed that developed a preliminary booster station layout, documented the flow and head conditions provided by the City, and developed a preliminary cost estimate with schedule for design, permitting, and construction.
- A new booster pump station (approximately 1750 gpm @ 15 ft TDH) is proposed for the Groometown Elevated Water Storage Tank site at 3902 Groometown Road.
- The new piping is proposed as 12-inch.
- The design will include one booster station building, one valve vault and one meter vault.
- The Design will be completed by Chester Engineers (North Carolina) Inc.
- Preliminary layout indicates less than one-acre land disturbance, outside of stream buffer zones, outside wetland boundaries and outside of floodplain boundary.
- The High Point Road Booster Station will be demolished.

**Understanding of Scope**

Dewberry proposes to assist with the permitting of the Groometown booster station project as outlined below. Tasks associated with this scope include the following:

- Dewberry will attend all project meetings to facilitate proper communication and execution of project.
- Dewberry will prepare a permits memo and Draft permit applications and descriptions of fees to be delivered with the 60% design package for review.
- Dewberry will attend all review meetings.
- Dewberry will prepare 90% permit application package with request for permit application fees and applicant signature. Permit application package to be delivered with 90% design package.
- Dewberry will revise/modify permits as applicable following 90% review, however if no revisions are necessary then final permits will be submitted to the applicable agency following completion of 100% design submittal.
- Permits anticipated based upon preliminary design memo are:
  - Guilford County Site Plan Review and Construction Drawing Review.
  - Authorization to Construct from the NC Division of Water Resources, Public Water Supply Section for Booster Pump Station and Conveyance Improvements
  - NCDOT encroachment agreement.
- Dewberry will prepare all the maps, tables and notification (if any) to adjoining landowners.
- Permit fees will be requested from the City for the associated fee at 90% design level.

### **Budget**

The lump sum budget to permit the design of the booster station is \$6,700.

Application fees will be requested from City of Greensboro, Water Resources Department prior to submittal and are not included in the Dewberry budget.

### **Additional Services**

Any item not contained in the scope of services or outlined as Exclusions will be deemed as Additional Services. Additional Services will be provided if requested by Chester Engineers (North Carolina) Inc. at the Standard Hourly Billing Rates (Attachment A).

### **Exclusions**

Based upon our knowledge of the current plant operations, Dewberry does not propose the following within this proposal:

- Permit application fees
- Stormwater Pollution and Prevention Plan (SWPPP)
- Stormwater Management Plan
- Spill Prevention and Response Plan

- Survey Services

**Terms and Conditions**

Dewberry Engineers Inc. Standard Terms and Conditions are contained in Attachment B which is attached to this proposal and incorporated into it by reference. Please review the attached Terms and Conditions.

Please execute one original copy of this proposal as acceptance of professional engineering services. Should you have any questions or comments, please call our office at (919) 881-9939. We appreciate this opportunity to serve Chester Engineers (North Carolina) Inc.

Sincerely,

Dewberry Engineers, Inc.

Larry W. Mitchell, P.E.  
Project Manager

Enclosures: Attachment A-Hourly Billing Rates  
Attachment B-Standard Terms and Conditions

The scope of services, terms, and conditions of this Letter Agreement are accepted.

---

Print/Type Individual Firm or corporate Name

---

Signature of Authorized Representative

Date

---

Print/Type Name of Authorized Representative

Dewberry is an equal opportunity employer and as such complied with Section 202 of Executive Order 11246 as amended.

**ATTACHMENT D**  
**LABOR RATES**

## CHESTER ENGINEERS 2015 CHARGES FOR PROFESSIONAL CONSULTING SERVICES (C5)

The charges for any services provided by Chester Engineers consist of: (1) an hourly billing rate for any professional staff member actively working on a project; (2) reimbursement of direct expenses; (3) reimbursement of subcontractor's and other special costs; (4) use and rental charges for equipment; and (5) laboratory analyses. Invoices covering these charges and expenses will be submitted for payment on a monthly basis (except for subcontractor invoices which will be billed as received); unless some other arrangement has been agreed upon.

Hourly billing rates for various classifications of Chester Engineers personnel are indicated below and are subject to annual revision:

<u>STAFF CLASSIFICATIONS</u>	<u>HOURLY RATES</u>
STAFF ENGINEER/SCIENTIST	\$107.00
ENGINEER/SCIENTIST I	116.00
ENGINEER/SCIENTIST II	122.00
SENIOR ENGINEER/SCIENTIST	129.00
PROJECT ENGINEERS/SCIENTIST	148.00
SENIOR PROJECT ENGINEERS/SCIENTIST	170.00
PROJECT/TECHNICAL MANAGER	191.00
SENIOR PROJECT/TECHNICAL MANAGER	201.00
RESIDENT I*	82.00
RESIDENT II*	96.00
SENIOR RESIDENT	124.00
DESIGNER*	101.00
SENIOR DESIGNER	124.00
GIS TECHNICIAN	95.00
GIS ANALYST	108.00
SENIOR GIS ANALYST	130.00
ASSISTANT TECHNICIAN*	63.00
TECHNICIAN*	77.00
SENIOR TECHNICIAN*	80.00
ENGINEER TECHNICIAN*	105.00
SENIOR ENGINEERING TECHNICIAN*	108.00

\* Overtime rates are 1.35 times the hourly rate.

The above rates include all employees' wages and payroll burdens, plus company overhead and profit.

**PAYMENT:** Progress invoices will be issued monthly and are to be paid within 30 days of the invoice date unless prior written agreement has been obtained. Subcontractor billings are payable upon presentation.

**SENIOR MANAGEMENT RATES:** Principal and Senior Principal who provide technical review and project guidance will be billed at \$209.00 and \$227.00 per hour.

**SUBCONTRACTS AND SPECIALTY EQUIPMENT:** Subcontractor costs, material costs, and the costs associated with the rental of specialized equipment will be charged at cost plus 15%.

**EQUIPMENT:** Use of equipment and vehicles owned by Chester Engineers will be invoiced at fixed daily or weekly rates. A summary of these rates will be provided upon request.

**LABORATORY ANALYSES:** Analyses performed by outside laboratories will be invoiced as subcontractor costs.

**ADDITIONAL SERVICES:** 1. A surcharge of 50% will be added to published rates for the actual time spent in preparation or attendance at depositions, public testimony, hearings and/or court proceedings. 2. For emergency field services or emergency operations assistance, a surcharge of 50% will be added to these rates for actual time on site.

**COMMUNICATION AND MISCELLANEOUS REPRODUCTION EXPENSES:** In-house costs for postage, photocopying, blueprints and express mail services will be invoiced at company cost.

**DIRECT EXPENSES:** Charges for rental vehicles, meals, travel, and lodging will be billed at actual costs plus 15%. Personal vehicles will be billed at the IRS approved reimbursement rate plus 15%.

**TRAVEL:** Time spent traveling in the interest of the client will be minimized and will be billed at standard hourly rates.

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**SCOPE OF SERVICES**  
**SUPPLEMENTAL AGREEMENT FOR PROFESSIONAL SERVICES**  
**BETWEEN THE CITY OF GREENSBORO AND**  
**CHESTER ENGINEERS (NORTH CAROLINA)**  
**FOR THE MCCLLOUD ROAD BOOSTER STATION PROJECT**

***PROJECT DESCRIPTION***

The City of Greensboro (City) operates and maintains a public water system that provides potable water to area residents and businesses. The water system consists of Mitchell WTP and Townsend WTP, fourteen (14) storage facilities, and twelve (12) booster stations.

The potable water is distributed throughout four pressure zones within the City's service area. These zones are the 920 pressure zone (Low Zone), 1010 pressure zone (Main Zone), 1070 Zone (High Zone), and 1120 pressure zone (West Zone). Both water treatment plants are located in the Main Zone.

The City desires to make improvements to the 1120 pressure zone where the Regional Road Water Booster Station, located near 801 North Regional Road just west of North Regional Road and Caindale Drive, is the lone water booster pump station feeding that zone. These pumps are located under the elevated tank structure. A new water boosting pumping station to be located on McCloud Road is desired for this zone to provide redundancy. Currently both Regional Road Station pumps must operate to meet high demands. This work will improve system reliability and increase system capacity in the 1120 pressure zone. The McCloud Road Booster Station Project consists of the following:

- A building for the new booster pump station with a chlorine room (injection system)
- Roadway for vehicular traffic to and from the booster pump station
- Fencing for the project site
- Two (2) pumps for redundancy
- Piping and Valves (Check valves, pump control valves, isolation valves)
- An electric-motorized actuator for each isolation valve
- An electromagnetic flow meter (mag-meter) installed in a lockable below-grade pre-cast concrete utility vault outside the booster station building
- A surge relief valve installed in the flow meter vault

- An electrical system to operate the pumps, communication and control system, HVAC system, monorail, interior and site lighting, and all other miscellaneous loads. A standby diesel generator connection with manual transfer switch will be provided to allow a portable generator to be connected
- Storm water BMP's for the construction site
- Permitting (ATC, S&EC, Local Permitting, and NCDOT and/or GDOT)

## ***SCOPE OF SERVICES***

The following services will be performed for the McCloud Road Booster Station:

Phase 1: This phase includes (1) Project Management, (2) Design, (3) Permitting, (4) Bid and Award, and

Phase 2: This phase includes (5) Construction Administration

Design services will be supported by a topographical survey and geotechnical (subsurface) investigation both performed by sub-consultants. Other design services include site/civil, process/mechanical, structural, architectural, electrical/instrumentation and controls, and which are all performed by Chester with the exception of process/mechanical.

### ***Project Management***

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Coordinate with the City of Greensboro, sub-consultants, and internal staff for the purposes of executing all aspects of the project. Schedule and attend 3-5 meetings (including conference calls and up to two (2) face to face meetings attended by the design team). Those meetings shall include: (1) The Kick-Off, (2) Design Review at 60%, (3) Design Review at 90%, and two optional meetings to address project issues or concerns. Prepare and provide the following: a project schedule indicating key deliverables and/or milestones, meeting minutes, responses to emails and/or phone calls within two (2) business days, and progress reports (interval specified by the City of Greensboro). Oversee and ensure the quality and timeliness of all deliverables.

### ***Design***

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The design phase will be supported by two preliminary activities and then carried out by five major disciplines. Deliverables will include: 60% Design Documents (includes drawings and specifications) with preliminary opinion of probable construction costs (OPCC); 90% Design Documents with opinion of probable construction costs; and 100% Construction Documents with final OPCC.

***Survey (performed by JC Waller & Associates)***

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A survey of the McCloud Road Booster Station project site and adjacent streets will be performed (See attached scope of services in ATTACHMENT A). The surveyor will also include boring locations as identified by the geotechnical investigation.

***Geotechnical Investigation (performed by S&ME, Inc.)***

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The geotechnical investigation will include two (2) soil test borings to the depths of 25 feet or auger refusal (see attached scope of services in ATTACHMENT B). Exclusions are provided in the scope and below:

- Addenda to the geotechnical report to address changes or additions to the proposed project not known at the time of proposal
- Exploration of site soils using test pits.
- Restoration of grassy or landscaped areas.
- The assessment of site environmental conditions or testing for the presence of contaminants in the soil, rock, surface water or groundwater of the site.
- The monitoring of construction or testing of construction materials.

Prior to field work, two items are requested from the City:

- Access to the site, and
- Any available information regarding the presence and accurate locations of hidden or obscure man-made objects relative to field tests or boring locations.

***Site/Civil***

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The site/civil design will coordinate with all disciplines. The site/civil design will be responsible for specifying survey requirements and translating that data to produce an overall site plan that is made available to the design group. The overall site plan shall, in general, capture the McCloud Road Booster Station site, adjacent streets, above and below ground utility information, existing structures on the site, etc. The site/civil design will adhere to the preliminary findings (such as zoning and set-back requirements), in the PER prepared by HDR when developing site improvements. The anticipated list of drawings and specifications are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	General	Cover
4	Site/Civil	Standard Civil Details
1	Site/Civil	Erosion Control General Notes, Construction Sequence, etc.
1	Site/Civil	Existing Conditions and Demolition Plan
1	Site/Civil	Site Plan
1	Site/Civil	Site Staking & Utility Plan
1	Site/Civil	Site Grading and Drainage Plan
1	Site/Civil	Erosion Control Plan
1	Site/Civil	Water Line Piping Plan and Profile
1	Site/Civil	Storm Water Piping Plan and Profile
1	Site/Civil	Storm Water Piping Plan Details
14	<b>Total Number of Drawings for Site/Civil</b>	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
02 30 00	Subsurface Investigation
31 11 00	Site Clearing and Grubbing
31 23 13	Subgrade Preparation
31 23 33	Trenching and Backfill
31 25 13	Erosion Controls
31 25 53	Sedimentation Controls
32 15 40	Crushed Stone Surfacing
32 31 00	Fences and Gates
32 92 19	Seeding
33 10 00	Water Utilities
33 30 00	Sanitary Sewerage Utilities
33 40 00	Storm Drainage Utilities
12	<b>Total Number of Specifications for Site/Civil</b>

***Exclusions/Assumptions***

- Relocation of any existing utilities on-site or the overhead power adjacent to the site.
- Assumes gravity storm water discharge for the site

***Process/Mechanical (Performed by CriTek Engineering Group)***

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The process design scope will be performed by CriTek (see scope of services in ATTACHMENT C) and limited to the mechanical/ piping shown in Figure 2-2 from the preliminary engineering report prepared by HDR. The pumps specified and design will follow the pump characteristics recommended in the Analysis of McCloud Pump Station dated July 9, 2013, prepared by Hazen and Sawyer. Underground piping beyond the building will be covered by Site/Civil. The anticipated list of drawings and specifications are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
2	Process/Mechanical	Process Mechanical Drawings
1	P&ID	Process and Instrumentation
3	Total Number of Drawings for Process/Mechanical	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
	<b><i>Equipment Documents</i></b>
TBD	Equipment: Basic Requirements
TBD	Monorails and Hoists
TBD	Pumping Equipment: Basic Requirements
TBD	Chemical Feed: Calcium Hypochlorite Injection System
	<b><i>Mechanical Documents</i></b>
TBD	Pipe and Pipe Fittings
TBD	Pipe: Ductile

<i>Division Number</i>	<i>Description</i>
TBD	Pipe: Plastic
TBD	Valves
TBD	Gate Valves
TBD	Butterfly Valves
TBD	Check Valves
TBD	Miscellaneous Valves
TBD	Plumbing Fixtures and Equipment
TBD	HVAC: Equipment
TBD	HVAC: Ductwork
TBD	Instrumentation and Control For HVAC Systems
TBD	HVAC Systems: Balancing and Testing
17	Total Number of Specifications for Process/Mechanical

### ***Structural***

The structural design will initially provide guidance for the geotechnical investigation. Pending the results of the geotechnical investigation, the structural design will confirm whether the existing soils are suitable for the recommended slab-on-grade foundation (with monolithic turned-down perimeter wall footings) for the building. The design will provide: a foundation design for the booster pump station building and vaults, monorail structural support system, pump foundation, pipe supports and thrust blocks, and vault designs for the flow meter and valves. The anticipated list of drawings, specifications, and exclusions are provided below.

#### ***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Structural	Structural Steel & Concrete Notes
1	Structural	Concrete and Structural Steel Typical Details
1	Structural	Structural Key Plan
2	Structural	Structural Section & Detail Drawings
5	Total Number of Drawings for Structural	

### ***List of Specifications***

<i>Division Number</i>	<i>Description</i>
04 22 00	Concrete Unit Masonry
03 30 00	Cast-In-Place Concrete
03 41 00	Precast Concrete
07 92 00	Joints and Sealants
	Concrete Anchorage
05 12 00	Structural Steel Framing
05 31 00	Steel Decking
05 50 00	Metal Fabrications
7	Total Number of Specifications for Structural

### ***Exclusions***

- Deep foundations are not anticipated. All structures are assumed to be on shallow footing.
- As Built drawings are not included.

### ***Architectural***

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The architectural design will prepare and provide the site/ civil design with preliminary sketches of design for building incorporating relationship to site topography and site access. The architectural design will also:

- Develop building plans, elevations, sections and details incorporating construction dimensions.
- Specify selections for materials, assemblies & finishes incorporating information from existing City of Greensboro documents to the extent feasible.
- Specify equipment selections and provide cut sheets for monorail.
- Develop, design, and specify material selections for building: (1) Plumbing assets (water, gas, sewage, floor drains, trap primers and storm drainage from building roof), and (2) Heating and ventilation systems.
- Perform building code research meeting all requirements for building permit issuance and incorporate findings into design.

The anticipated list of drawings, specifications, and exclusions are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Architectural	Architectural Plans with Plumbing & HVAC
1	Architectural	Architectural Elevations & Wall Sections
1	Architectural	Architectural Details
1	Architectural	Plumbing Details
1	Architectural	Architectural, Plumbing, & HVAC Schedules
1	Architectural	Architectural General Notes and Building Permit Notes
6	Total Number of Drawings for Architectural	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
04 22 00	Concrete Unit Masonry*
05 50 00	Metal Fabrications*
05 51 00	Metal Stairs
05 52 00	Aluminum Handrails and Railings
05 54 00	Cold Formed Metal Framing
05 60 00	Aluminum Hatch
06 61 00	Rough Carpentry
07 10 00	Damp-proofing and Waterproofing
07 41 13	Standing Seam Roof Panels
07 42 13.53	Metal Soffit Panels
07 60 00	Flashing and Sheet Metal
07 71 00	Manufactured Roof Specialties
07 71 60	Crystalline Waterproofing
07 72 00	Roof Accessories
07 82 00	Board Fireproofing
07 92 00	Joints and Sealants*
08 11 13	Hollow Metal Doors and Frames
08 33 23	Overhead Coiling Door

<i>Division Number</i>	<i>Description</i>
08 71 00	Door Hardware
08 80 00	Glazing
09 29 00	Gypsum Board
09 67 23	Fluid Applied Resinous Flooring
09 96 00	Painting (High Performance Coatings)
10 44 16	Fire Extinguishers
14 62 00	Trolley Hoist/ Monorail
22 05 00	Plumbing/ HVAC General Requirements
22 10 00	Plumbing Piping Materials and Methods
22 11 13	Facility Water Distribution Piping
22 13 16	Waste and Vent Systems
22 14 29	Sump Pumps
23 11 20	Natural Gas Systems
23 34 00	Fans
23 55 33	Fuel Fired Unit Heaters
23 82 39.16	Propeller Unity Heaters

**34 Total Number of Specifications for Structural**

*\* Also included in Structural Specifications*

***Exclusions***

- Energy Code “COM-Check” analysis is not included in Building Permit Application Assistance.
- As Built drawings are not included.

***Electrical and I&C***

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The electrical design will encompass the electrical system and associated instrumentation and controls for the McCloud Road Booster Station.

The electrical design will be responsible for sizing the electrical system to operate the pump, HVAC system, monorail, interior and site lighting and all other miscellaneous loads. The electrical design will include a connection with manual transfer switch to allow emergency power from a portable generator when utility power is interrupted. The electrical design will also provide key components to the system as specified in the PER

prepared by HDR. Key components of the 480V/277V electrical system are: main distribution panelboard, manual transfer switch, main breakers for utility and generator supplies, Pump Control Panel, Motor Control Center with pump starters; power monitoring; lighting; and Closed Circuit Television (CCTV).

The anticipated list of drawings and specifications are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Electrical	One Lines
1	Electrical	Lighting Drawings and Schedules
1	Electrical	MCC/Distribution Panel Schedules
1	Electrical	Site and Power Plans (Including duct banks)
4	Total Number of Drawings for Electrical	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
26 01 20	Operation and Maintenance of Low-Voltage Electrical Distribution
26 01 40	Operation and Maintenance of Electrical Protection Systems
26 01 50	Operation and Maintenance of Lighting
26 05 19	Low-Voltage Electrical Power Conductors and Cables
26 05 26	Grounding and Bonding for Electrical Systems
26 05 29	Hangers and Supports for Electrical Systems
26 05 33	Raceway and Boxes for Electrical Systems
26 05 33.13	Conduit for Electrical Systems
26 05 33.16	Boxes for Electrical Systems
26 05 33.23	Surface raceways for Electrical Systems
26 05 43	Underground Ducts and Raceways for Electrical Systems
26 05 46	Utility Poles for Electrical Systems
26 05 53	Identification for Electrical Systems
26 05 73	Overcurrent Protective Device Coordination Study
26 05 83	Wiring Connections

Scope of Services  
 Supplemental Agreement for Professional Services  
 Between the City of Greensboro and Chester Engineers of North Carolina  
 For The McCloud Road Booster Station  
 Page 11

<i>Division Number</i>	<i>Description</i>
26 06 20	<i>Schedules for Low-Voltage Electrical Distribution</i>
26 06 20.16	<i>Electrical Panelboard Schedule</i>
26 06 20.19	<i>Electrical Motor-Control Center Schedule</i>
26 06 20.23	<i>Electrical Circuit Schedule</i>
26 06 20.26	<i>Wiring Device Schedule</i>
26 06 40	<i>Schedules for Electrical Protection Systems</i>
26 06 50	<i>Schedules for Lighting</i>
26 06 50.1	<i>Lighting Panelboard Schedule</i>
26 09 16	<i>Electrical Controls and Relays</i>
26 09 17	<i>Programmable Controllers</i>
26 21 13	<i>Low-Voltage Overhead Electrical Service Entrance</i>
26 22 13	<i>Low-Voltage Distribution Transformers</i>
26 24 16	<i>Panelboards</i>
26 24 19	<i>Motor Control Centers</i>
26 27 13	<i>Electricity Metering</i>
26 27 16	<i>Electrical Cabinets and Enclosures</i>
26 27 26	<i>Wiring Devices</i>
26 28 13	<i>Fuses</i>
26 28 16	<i>Enclosed Switches and Circuit Breakers</i>
26 28 16.13	<i>Enclosed Circuit Breakers</i>
26 28 16.16	<i>Enclosed Switches</i>
26 29 13.16	<i>Reduced-Voltage Motor Controllers</i>
26 36 13	<i>Manual Transfer Switches</i>
26 41 13.13	<i>Lightning Protection for Buildings</i>
26 41 16	<i>Lightning Prevention and Dissipation</i>
26 41 23	<i>Lightning Protection Surge Arresters and Suppressors</i>
26 51 13	<i>Interior Lighting Fixtures, Lamps, And Ballasts</i>
26 56 13s	<i>Lighting Poles and Standards</i>
26 56 29	<i>Site Lighting</i>
<b>44</b>	<b>Total Number of Specifications for Electrical</b>

The electrical design will also provide instrumentation and controls design drawings, specifications, and OPCC. The instrumentation and control equipment will be provided to control and monitor the operations of the Groometown Road Booster Station. The booster station will be capable of being remotely monitored and controlled from the City’s Supervisory Control and Data Acquisition (SCADA)<sup>1</sup> system. The electrical design will include all of the following according to the PER prepared by HDR and City guidance:

- 4G wireless communications capability (IAW agreed upon telemetry design)<sup>2</sup>,
- A dedicated Pump Station Control Panel (PSCP),
- A programmable logic controller (PLC) and an operator interface Terminal (OIT),
- General instrumentation as listed in Table 2-2 of the PER by HDR,
- Control/ Alarm parameters as listed in Table 2-3,
- Local and remote pump controls,
- PLC based Pump/ Valve Interlock, as well as specified provisions for
- Automatic Operation plus Alarms and Automatic Shutdowns, and
- Infrastructure for security cameras and smoke alarms.

The anticipated list of drawings and specifications are provided below.

***List of Drawings***

<i>No. of Drawings</i>	<i>Type of Drawing</i>	<i>Description</i>
1	Instrumentation and Controls	P&ID’s
1	Total Number of Drawings for Instrumentation and Controls	

***List of Specifications***

<i>Division Number</i>	<i>Description</i>
25 01 10	Operation and Maintenance of Integrated Automation Network Equipment
25 01 20	Operation and Maintenance of Integrated Equipment

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<sup>1</sup> SCADA integration is outside the scope of this proposal and will be performed under separate contract per the City.

<sup>2</sup> Contact Brown & Caldwell for guidance on work performed at New Garden and Battleground Booster Stations.

<i>Division Number</i>	<i>Description</i>
25 01 30	<i>Operation and Maintenance of Integrated Automation Instrumentation and Terminal Devices</i>
25 05 13	<i>Conductors and Cables for Integrated Automation</i>
25 05 26	<i>Grounding and Bonding for Integrated Automation</i>
25 05 53	<i>Identification for Integrated Automation</i>
25 06 11	<i>Schedules for Integrated Automation Network</i>
25 06 30	<i>Schedules for Integrated Automation Instrumentation and Terminal Devices</i>
25 08 00	<i>Commissioning of Integrated Automation</i>
25 11 16	<i>Integrated Automation Network Routers, Bridges, Switches, Hubs, and Modems</i>
25 12 00	<i>Integrated Automation Network Gateways</i>
25 13 13	<i>Integrated Automation Control and Monitoring Network Supervisory Control</i>
25 13 19	<i>Integrated Automation Control and Monitoring Network Interoperability</i>
15 14 16	<i>Integrated Automation Application-Specific Control Panels</i>
25 15 19	<i>Integrated Automation Software for Control and Monitoring Networks</i>
25 35 13	<i>Integrated Automation Actuators and Operators</i>
25 35 16	<i>Integrated Automation Sensors and Transmitters</i>
25 37 00	<i>Integrated Automation Instrumentation and Terminal Devices for Communications Systems</i>
25 51 00	<i>Integrated Automation Control of Facility Equipment</i>
25 91 00	<i>Integration Automation Control Sequences for Facility Equipment</i>
<b>20</b>	<b>Total Number of Specifications for Instrumentation and Controls</b>

**Permitting (Performed by Dewberry)**

The PER developed by HDR provides a preliminary list of permits that are likely required for the McCloud Road Booster Station project. The following permits have been identified from that list:

- NC Division of Land Resources, Land Quality Section Sedimentation and Erosion Control Permit
- City of Greensboro Site Plan Review and Construction Drawing Review.
- Authorization to Construct from the NC Division of Water Resources, Public Water Supply Section for Booster Pump Station and Conveyance Improvements.

See attached scope of services from Dewberry in ATTACHMENT D. Assumptions and exclusions provided in the attachment are applicable to all permits.

### ***Bid and Award***

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Chester will provide the following Bid and Award Phase services:

- Completion of the front end documents to assist the City with the completion of the Project Manual.
- Assist the City with establishing the MWBE goals for the project.
- Attend pre-bid meeting.
- Assist the City with response to questions from bidders.
- Assist the City with any required addenda.
- One field visit by PM.

### ***CONSTRUCTION PHASE ENGINEERING SERVICES***

- Review of all shop drawings
- Assist City with response to RFI's (no more than an average of three (3) per discipline)
- Required Site Inspection by Engineer
- Monthly Progress Meetings and Minutes
- Construction Inspection provided by Delon Hampton on an as-needed basis

### ***DELIVERABLES***

- 60% design documents with OPCC.
- 90% design documents with OPCC.
- 100% Construction Documents with final OPCC
- Project Manual

### ***COMPENSATION***

#### ***Phase 1 Services***

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The lump sum fee to perform Phase 1 services is included in the total amount stipulated in the cover letter submitted with this proposal.

***Phase 2 Services (if authorized)***

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The Chester Team will perform phase 2 services on a cost plus basis. Labor rates for the team are provided in ATTACHMENT E.

***SCHEDULE***

A MS Project schedule will be submitted after a Notice to Proceed is issued. The list below provides the expected durations of the project milestones.

- Design Kick-Off Meeting: 10 days from Notice to Proceed
- Submittal of 60% design documents: 60 days from Kick-Off Meeting
- Submittal of 90% design documents: 45 days after 60% review comments
- Submittal of 100% construction documents: 20 days after 90% review comments

**ATTACHMENT A**  
**SCOPE OF SERVICES**  
**JC WALLER & ASSOCIATES**



Site Development - Infrastructure – Planners - Surveyors

*Minority owned Engineering and Survey Firm*

## **BID PROPOSAL**

May 20, 2015

Darnetta D. Craig, PE  
Senior Project Manager  
Chester Engineering  
717 Green Valley Road  
Suite 200  
Greensboro, NC 27408

**RE: City of Greensboro, McCloud Road Booster Station**

Dear Ms. Craig:

We are pleased to submit a Bid Proposal for providing surveying services for City of Greensboro, McCloud Road Booster Station (Parcel #0098316, Approximately 1 acre)

### **SCOPE OF SERVICES**

JC Waller & Associates, PC proposes to provide the following scope of services per your survey requirements set forth below:

#### **I. General**

- A. The survey shall be performed by a surveyor:
  - a) Registered in the state of the site to be surveyed.
  - b) Who shall affix his/her seal, signature, and the date to all drawings and legal descriptions submitted. Submission of electronic data shall be accompanied by a drawing containing this data in electronic image format (i.e. TIFF, PDF, etc.).
  - c) Who shall affix his/her name, address, and phone number to all drawings submitted.
  
- B. Data shall be based upon site observation and record drawings (when available). Record drawings should include, but are not limited to: utility plans, roadway plans, existing surveys, and as-builds. Reference to all applicable record drawings shall be included in the final survey document. Record drawings shall be made available to the Owner's authorized representative upon request. Specific reference to the availability of record drawings should be included on the survey.

**City of Greensboro, McCloud Road Booster Station**

May 20, 2015

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C. It shall be the surveyor's responsibility to research and verify with local authorities and records the accuracy of all boundary information in the preparation of boundary and topographic surveys. Boundary information provided shall not be less than the "Accuracy standards for ALTA/ACSM Land Title Surveys."

D. The survey drawing sheet size shall be 22"x34". Any variation in the size of drawing sheet size must be approved by the Owner's authorized representative. The survey shall be accurately platted to a scale of 1" = 30' or other scale approved by the Owner's authorized representative. The scale selection is to be based on the most effective and comprehensive representation of the required information that can also be contained on one (1) 22x34 drawing sheet. Include north direction and basis of bearing.

E. Provide 6 signed and sealed prints of the final survey. Also provide an electronic copy of the survey via e-mail or compact disc to the Owner's authorized representative. The electronic submission of survey data shall include the digital terrain model DTM of existing topography. Acceptable DTM formats are a separate Land XML file (preferred) or 3-dimensional TIN lines included in the drawing. All point data should also be provided along with a file defining the point descriptions. Point data may also be requested, including a coordinate file in point, northing, easting, z-elevation, description (PNEZD) format.

F. Surveys found to be deficient in any of the requirements set forth in this document will be rejected with comments.

**II. Drawing**

Note: All required plan information shall extend a minimum of fifty feet (50') beyond the subject property lines. Where the subject property lies adjacent to a roadway of width greater than fifty feet (50'), plan information shall include both sides of the adjacent streets.

A. Preferred orientation of plan information is to align true north with plan north.

B. Surveyor's Data

a) Show the name, address, telephone number and signature of the professional land surveyor who performed the survey, his/her official seal, signature, and registration number, the date field information was obtained, the date the completed survey was issued, and the dates of all revisions.

**II. Drawing**

Note: All required plan information shall extend a minimum of fifty feet (50') beyond the subject property lines. Where the subject property lies adjacent to a roadway of width greater than fifty feet (50'), plan information shall include both sides of the adjacent streets.

A. Preferred orientation of plan information is to align true north with plan north.

**City of Greensboro, McCloud Road Booster Station**

May 20, 2015

Page No. 3

**B. Surveyor's Data**

- a) Show the name, address, telephone number and signature of the professional land surveyor who performed the survey, his/her official seal, signature, and registration number, the date field information was obtained, the date the completed survey was issued, and the dates of all revisions.
  - b) Provide a legend for all abbreviations and symbols used on the plat/survey.
  - c) Certify the survey to the Owner.
- C. The title block information shall indicate, as completely as possible:**
- a) City, borough, town or township
  - b) State
  - c) County
  - d) Nearest adjacent street or roadway intersection
  - e) Mailing address, if available
  - f) Date of survey completion
  - g) Scale of drawing

**D. Legal - Items (a) through (f) below shall be organized in a list or table to the side of the plan. All other items may be addressed directly on the plan.**

- a) Note the location of the site benchmark(s) on the survey and include a note as to which vertical datum was referenced (e.g., NAVD 88).
- b) Include a vicinity map indicating the location of the site and its relationship to surrounding streets and highways, particularly those streets or highways along the frontage(s) of the subject property. North orientation of the vicinity map shall always align to plan north, regardless of the orientation of the survey drawing.
- c) Indicate the zoning classification for the subject property.
- d) Show the legal owner's name and address, and tax assessor's or Auditor's parcel number for the subject property.
- e) Show the area of the property in both square feet and acres. When relevant to clarify the portion of the property legitimately available for use, identify area quantities with and without street right of ways.
- f) Show owner's names and addresses, and the existing zoning classification of all adjoining properties.
- g) Show the street address.
- h) Show all monumentation, and indicate whether found or set. Include details pertaining to condition, size, and material of each, per state standards.

**E. Identify streets, roads, highways, adjacent business mall entrances, safety zones, and medians within fifty feet (50') of the subject parcel property lines. Show all of the following for the entire width of the right-of-way:**

- a) Road Name
- b) Route Numbers
- c) Width and type of pavement
- d) Direction of traffic
- e) Medians

## City of Greensboro, McCloud Road Booster Station

May 20, 2015

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- f) Lane restrictions
- g) Curb cut locations (both sides of street)
- h) All striping (including lanes, stop bars, cross walks, etc.)

### F. Dimension the following on the survey:

- a) Edge of roadway pavement or face of curb to the centerline of right of way.
- b) Property boundary, or right of way, to the centerline of right of way.
- c) Show points where limited access begins or ends. If the street, road or highway is going to be altered, show proposed changes, including proposed grades and indicate when such alterations are scheduled to be constructed.

### G. Boundary Information Required

- a) Show any variation between dimensions given in recorded instruments (plats or deeds) and actual measurements, as found, in the field. Label the length and bearings of all property lines and/or lease lines. Where curvature exists, show the radius, arc length, central angle, chord bearing, and chord distance.
- b) The basis of bearings used on the survey shall be noted on the survey (i.e., National Plane Coordinate System, State Plane Coordinate System, Deed Book Reference, etc.).
- c) If the property is made up of two or more parcels.
  - (1) Indicate lot divisions, as well as the entire property boundary outline;
  - (2) Give lot and block numbers;
  - (3) Show all monuments used to determine property lines, including those not within the subject parcel.
  - (4) Set permanent markers at all corners per state and/or local code.
  - (5) Indicate type and location of markers used on drawing.
  - (6) Attach flags to all corner markers, if possible.
  - (7) Where existing monuments do not exist, monument all boundary corners and interior changes in lot line direction or as specified per state boundary requirements. Where it is not possible to set a monument at a corner, a reference monument of the same quality shall be set and noted on the survey.
- d) Show and dimension all possible encroachments and note as such.
- e) Indicate the distance to the nearest intersecting street.
- f) Show and describe all building, parking, and sign setback lines and any other restriction lines, such as easements, buffer yards, etc., both existing and proposed, as established by local authorities. Indicate the width, extent and nature of each.

## III. Topographic Requirements

- A. Show and label any existing features or improvements on subject property and adjacent properties within fifty feet (50') of subject property boundary lines, including, but not limited to:
  - a) Buildings (include finished floor elevation, material, use and height) - include basement grades, notable improvements, such as cisterns, wells, gas taps, utility service lines, walks, drives, fences, etc. Indicate whether slab or basement.

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- b) Sidewalks
- c) Public Transportation Stops
- d) Poles
- e) Signs (identify type, height and approximate dimensions of sign)
- f) Trees
- g) Retaining Walls
- h) Ramps
- i) Curb Cuts
- j) Fences
- k) See Utility Survey Requirements for additional items to be shown on survey.

B. Show any ditches, channels, culverts or headwalls on, or within fifty feet (50') of the site. Show the direction of flow, top of slope and toe of slope. Include a description of the channel lining.

C. Show any existing ponds and/or storm water detention facilities. Include all outlet information (risers, etc.).

D. Locate all shrubs and trees over 3" caliper at waist height and determine species (at a minimum, all trees and shrubs shall be classified as deciduous or evergreen).

E. Show all existing pavement markings and parking spaces on the site and street.

F. Give size and elevation of all basements or pits, if any such structures exist on the subject property.

G. Indicate party walls and their condition. Note any party wall agreement of record.

H. Include a clearly described "benchmark" with elevation accurate to 1/100th of a foot. Establish a minimum of one (1) benchmark tied to an appropriate (USGS/NGS or City/County) vertical datum, on or near the subject property. Every effort should be made to establish a semi-permanent benchmark without setting a spike in a utility pole. Multiple benchmarks may be required. The surveyor shall provide benchmarks in accordance with local AHJ requirements or one (1) benchmark per two (2) acres, whichever is greater. Note the location of the site benchmark on the plan view.

I. Indicate if the property includes any delineated wetlands area and show location, if applicable. Include any setback or buffer information.

J. If a site accepts surface drainage from adjacent properties, specify the tributary area by acreage, and note surface cover, such as asphalt, grass, gravel, etc. All areas that drain onto the site should be surveyed. Contact engineer prior to proceeding if the area to be surveyed is extensive and results in additional fee.

K. Show contour elevation intervals:

## City of Greensboro, McCloud Road Booster Station

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- a) At one-foot (1') elevation increments.
- b) Highlight contours at five-foot (5') elevation intervals with heavier line weight than the one-foot contours.
- c) Error shall not exceed one-half (1/2) the contour interval.

L. Show elevations at all property corners, along all boundary lines at twenty-five foot (25') intervals (minimum), and at least fifty feet (50') into any adjacent property.

- a) Vertical error for spot elevations shall not exceed 0.04 feet (1/2").

M. Show elevations on a maximum grid interval of twenty-five feet (25') for parcels two (2.0) acres and less, fifty feet (50') for parcels larger than two (2.0) acres. If the topography of the land has any significant features or drastic changes of grade, that would not be accurately reflected by the specified grid, show spot elevations at any grade break and/or change in slope:

- a) Along the centerline of roads
- b) Retaining walls (top and both sides)
- c) Along all curbs (top and flowline)
- d) Culverts
- e) Sidewalks
- f) Edge of pavement

### IV. Utility Requirements

A. All utility information listed in this section is required to be shown on the survey. The base price of the survey shall include utility information based on public utility location service field markings, field observation of utility structures and record plans. The surveyor shall include a separate quote for alternate means of locating any utilities in the absence of record plans and field evidence. These alternate means may include the use of surface geophysical methods and/or minimally intrusive excavation.

B. Indicate on the survey or, if location is beyond survey limits, describe the location of the nearest usable:

- a) Domestic and fire protection water service
- b) Natural gas service
- c) Sanitary sewer
- d) Storm sewer
- e) Electric service
- f) Telephone service
- g) Cable TV service (if available)

utilities, that are not available to the subject property should be noted on the survey drawing and the nearest connections, within practical distances up to one thousand feet (1,000'), should be given.

C. Show on the survey all utilities, their approximate location, size and, where possible, any taps or laterals (with their sizes). Show all of the following on the site and within fifty feet (50') of the property line:

**City of Greensboro, McCloud Road Booster Station**

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a) Sewer Structures (storm inlets, storm/sanitary manholes): show top of rim and invert elevations of all structures on or adjacent to subject property, including the nearest upstream and downstream structures, even if located more than fifty feet (50') beyond the subject property. Indicate the material and size of pipe for all connected sewers, and the direction of flow for all pipes.

b) Water and gas curb boxes

c) Utility poles (give pole number and ownership)

d) Street markers

e) Utility lines serving adjacent properties, where such lines encroach upon the required survey area. Indicate whether overhead or underground.

f) Underground Storage Tanks

g) Septic Tanks

h) Wells

i) Drain field locations

D. Electrical, telephone and traffic signal wiring: show utility lines, conduits and boxes.

a) Underground

b) Above ground (indicate height above grade)

E. Gas: indicate mains, pressure, material of piping and meter location.

F. Water: indicate service and fire mains, including nearest fire hydrants up and down street property line. Indicate pressure, material of piping and meter location.

a) Show all water valves on or adjacent to the parcel.

b) Show any existing water wells on subject property or adjacent lots within fifty feet (50') of the property boundary.

G. Miscellaneous: show the following on the survey.

a) Show the location of all traffic signals, control boxes and support poles and/or traffic signs inside the subject property and within fifty feet (50') of the property boundary.

b) Show all existing light poles on the site, in the adjacent public right of way, or within fifty feet (50') of the property boundary. Include the height and type of pole.

c) Show the location of all underground storage tanks including all associated ports, monitoring wells and manways (if applicable).

**City of Greensboro, McCloud Road Booster Station**

May 20, 2015

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**SCHEDULE OF FEES**

JC Waller proposes to provide the services indicated under the **SCOPE OF SERVICES** for Six Thousand-Seven Hundred & 75/100 Dollars (\$6,775.00).

The following is a rate schedule for additional surveying services:

Office computations/drafting.....	\$75.00/per hour
Two man crew.....	\$150.00/per hour
Three man crew.....	\$180.00/per hour
Robotic Station.....	\$180.00/per hour
PLS consultation.....	\$100.00/per hour

**Invoicing and Payment Terms:**

Invoicing will occur on a monthly basis in accordance with the progress of the project. The CLIENT agrees that all invoices submitted by JC Waller & Associates, PC will be paid promptly by the CLIENT or within thirty (30) days of receiving the invoice, whichever occurs first. For projects on which JC Waller & Associates, PC is a sub-consultant, the prime consultant “CLIENT” agrees to pay JC Waller & Associates, PC within 10 days after the prime consultant has received payment.

**SPECIAL CONDITIONS**

The following special conditions shall apply to the technical services to be provided on this project.

1. JC Waller & Associates, PC will remain available to provide additional services not include in the **SCOPE OF SERVICES** at the request of the Client.
2. The location of underground utilities not visible at time of survey will not be surveyed unless specified by the client and are *not included* in the **SCOPE OF SERVICES**.
3. Services, such as materials and travel mileage, *are included* in the **SCOPE OF SERVICES**.
4. We will provide services in a timely and efficient manner and will keep you informed of the job status and any necessary changes. If for any reason a change in this Proposal becomes necessary, you will be notified by a written Scope Change Request from the project manager. After the date of this Proposal Letter, changes in the scope of work caused by governing codes or client revisions may require a schedule and/or fee change. You will be notified of any such changes by a Scope Change Request.
5. The above **SCOPE OF SERVICES** does not include site design services. Should the Client determine that these services are required; JC Waller & Associates, PC will negotiate a fee to provide this service.
6. JC Waller & Associates, PC represents that we are protected by Workers Compensation, General Liability and Professional Liability Insurance Policies which it deems reasonable and adequate. JC Waller & Associates, PC shall furnish certificates of insurance upon request. The

**City of Greensboro, McCloud Road Booster Station**

May 20, 2015

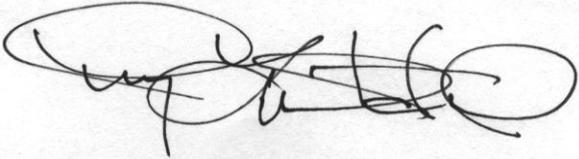
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CLIENT is responsible for requesting specific inclusion or limits of coverage that are not presented in JC Waller & Associates, PC Insurance, the cost of such inclusion or coverage increases, If available, will be at the expense of the CLIENT.

7. For all contracts \$10,000.00 or more, JC Waller & Associates, PC total liability to the CLIENT for any and all claims whatsoever for professional acts, errors, or omissions and for any and all causes including negligence, strict liability, breach of contract, or breach of warranty, injuries, damages, claims, losses, expenses, or claim expenses (including reasonable attorney's fees), shall be limited to available insurance proceeds. For contracts with a contract sum of less than \$10,000.00, JC Waller & Associates, PC total liability to the CLIENT for any and all claims whatsoever for professional acts, errors, or omissions and for any and all causes including negligence, strict liability, breach of contract, or breach of warranty, injuries, damages, claims, losses, expenses, or claim expenses ( including reasonable attorney's fees), shall be limited to the amount of fees paid by the CLIENT to JC Waller & Associates, PC for services performed under the contract. It is specifically understood and agreed that in no case shall JC Waller & Associates, PC be required to pay an amount in Damages disproportional to JC Waller & Associate, PC's culpability, or any share of any amount levied to recognize more than the actual economic damages, subject to any limitations of liability and indemnification provisions contained in this PROPOSAL.
8. We have provided two (2) originals of this Proposal for your review and approval. Please sign both original of the Proposal as your acknowledgement and acceptance of the above-mentioned terms and conditions. Please return an original to our office and retain an original for your records.

I look forward to working with you on this project and others in the future.

Sincerely,



Terry L. Westendorf, PLS

*Acknowledgement & Acceptance:*

\_\_\_\_\_  
*SIGNATURE*

\_\_\_\_\_  
*DATE*

\_\_\_\_\_  
*PRINT NAME & TITLE*

**ATTACHMENT B**  
**SCOPE OF SERVICES**  
**S&ME, INC.**



June 4, 2015

Chester Engineers  
717 Green Valley Road, Suite 200  
Greensboro, North Carolina 27408

Attention: Ms. Darnetta Craig, P.E.  
Senior Project Manager

**Reference:** **Proposal for Subsurface Exploration**  
Proposed McCloud Road Booster Station  
7754 McCloud Road  
Greensboro, North Carolina  
S&ME Proposal No. 13-1500279

Dear Ms. Craig:

We are pleased to present this proposal to perform geotechnical services for the proposed McCloud Road Booster Station in Greensboro, North Carolina. This proposal describes our understanding of the project, discusses the intended scope of services, outlines the project schedule, and presents the associated compensation for our services. Our Agreement for Services (AS-071) is attached and incorporated as part of this proposal.

### **PROJECT INFORMATION**

Project information has been obtained from the following sources:

- An e-mail from Darnetta Craig, P.E. with Chester Engineers to Finley Lloyd, P.E. with S&ME on May 19, 2015 which included an electronic pdf copy of the *Preliminary Engineering Report*, dated May 2014, prepared by HDR Engineering, Inc.
- A visit to the site.

Planning is in progress for the construction of the McCloud Road Booster Station at 7754 McCloud Road in the northeast corner of the intersection of McCloud Road and Thatcher Road in Greensboro, North Carolina. The *Preliminary Engineering Report* indicates the booster station will be a one-room, single-story structure supported on a slab-on-grade foundation with monolithic turned-down perimeter wall footings with approximate plan dimensions of 34 feet by 28 feet. The structure is planned to consist of load bearing masonry walls and a standing seam metal roof. The building will house two floor-mounted electric pumps, 8 inch piping, and associated equipment. An overhead monorail will be located above the pumps. Relatively light equipment loads are anticipated.

Structural loads were not available, however based on the proposed construction, we anticipate wall loads of 5 kips per foot or less. Based on the *Analysis of McCloud Pump Station* document included in the *Preliminary Engineering Report*, dated July 9, 2015, prepared by Hazen and Sawyer, the proposed station finished floor elevation is 906 feet. Contour elevations were not legible on the topographic drawing included in the report,

but it appears that fill heights on the order of 10 feet may be required to establish the proposed finished floor elevation. An underground water metering vault is planned in the southwest corner of the site. The depth and elevation of this vault are not known at this time. The bottom of the vault is anticipated to be less than 8 feet below the existing ground surface.

Underground 8-inch diameter water lines tying the booster station to the existing water system are planned to enter the building from the south. Pipe depths are not known at this time. We anticipate excavations for the new underground water lines will be less than 8 feet below existing grade. A stormwater best management practice (BMP) device will be required for the site. BMP details have not been determined at this time.

The planned station site is located in the northeast corner of the intersection of McCloud Road and Thatcher Road. The site is currently covered with mature trees. The existing ground surface is a moderately sloping surface drainage feature. Steeper topography was encountered sporadically, suggesting surface erosion and previous fill placement (possibly associated with roadway construction). A dozer or similar tracked equipment will be required to clear a pathway through the trees and for limited grading to allow drill rig access to boring locations. Based on the water distribution schematic shown on the *Preliminary Engineering Report*, existing buried water lines are not anticipated in the vicinity of the proposed booster station footprint.

A proposal to perform a subsurface exploration has been requested for use in the planning, design, and construction of the proposed booster station.

## **DISCUSSION**

The purpose of our work is to explore subsurface conditions within the planned booster station footprint and develop geotechnical recommendations for use in the planning, design, and construction of the proposed development. Based on our experience, we anticipate site subsurface conditions will consist predominately of residual soils derived from weathering of underlying bedrock with occasional near-surface fill and alluvial soils.

S&ME plans to perform 2 Standard Penetration Test borings within the booster station footprint to depths of 25 feet or auger refusal. Borings that encounter auger refusal at depths less than 10 feet (or in existing fill) will be offset once to determine the extent and competency of refusal materials. S&ME will measure ground water depths encountered in the borings at termination of drilling.

S&ME will notify North Carolina's 811 service to have member underground utilities field marked across the site prior to performance of our field work. S&ME will also review utility drawings made available to us by others to confirm that proposed boring locations are offset from existing utilities shown.

## **SCOPE OF SERVICES**

S&ME proposes to offer the following Basic Services as part of this proposal:

- Contact NC 811 to field mark member underground utilities in the vicinity of the planned soil test boring(s).
- Field layout of boring(s) by measuring distances and approximating right angles from existing site features or using GPS equipment.
- Mobilization of a dozer to the site.
- Perform limited clearing of existing trees and vegetation and limited grading to allow drill rig access.
- Mobilization of a truck or ATV-mounted drill rig to the site.
- Performance of two (2) soil test borings to depths of 25 feet or auger refusal (50 linear feet budgeted).
- Perform one offset boring for each boring that encounters refusal within 10 feet of the ground surface, or in existing fill.
- Measure groundwater levels within each boring at completion of drilling (if any).
- Backfill boreholes and install a hole closure device near the ground surface.
- Stratification of the boring soil samples by a geotechnical professional.
- Limited laboratory testing including natural moisture contents, Atterberg limits, and grain size distribution.
- Evaluation of the subsurface conditions encountered in light of the proposed development.
- Preparation of an engineering report summarizing our understanding of the proposed construction, exploration, regional geology, subsurface conditions, and recommendations. Recommendations will address:
  - Shallow foundation recommendations.
  - Total and differential settlements.
  - Difficult to excavate materials and groundwater (if encountered).
  - Suitability of site soils for use as structural fill.
  - Lateral earth pressure parameters for design of below-grade structures.
  - Site grading recommendations.
  - Floor slab support.
  - Seismic Site Class.

NOTE: This proposal is solely intended for the basic services as described above in the scope of services. The scope of services may not be modified or amended, unless the changes are first agreed to in writing by the client and S&ME. Use of this proposal and corresponding report is limited to the above-referenced project and client. No other use is authorized by S&ME.

## **CLIENT RESPONSIBILITIES**

The scope of services, fee, and project schedule are contingent upon the following responsibilities being fulfilled:

- Issuing authorization to proceed.
- Providing access to the site.
- Providing information about the presence and accurate locations of hidden or obscure man-made objects relative to field tests or boring locations if available. We request that this information be provided to us prior to the proposed field work.

## **EXCLUDED SERVICES**

Without attempting to be a complete list or description of services excluded from this proposal and not performed by S&ME, the following services are specifically excluded:

- Addenda to the geotechnical report to address changes or additions to the proposed project not known to us at the time of this proposal.
- Exploration of site soils using test pits.
- Environmental site assessment. The assessment of site environmental conditions or testing for the presence of contaminants in the soil, rock, surface water or groundwater of the site is beyond the proposed scope of geotechnical services.
- Construction phase services. The monitoring of construction or testing of construction materials is beyond the proposed scope of geotechnical services.

If any of the above excluded services are required, please contact us so that we can modify this proposal or prepare a proposal for additional services.

## **COMPENSATION**

We will perform the Scope of Services described in this proposal for a lump sum fee of \$4,300. If we conclude that additional services are necessary based on the subsurface conditions encountered, we will confer with you. We will not proceed with additional services that incur additional costs without your permission.

## **SCHEDULE**

We will proceed with the project upon authorization and receipt of signed authorization. S&ME will complete the field exploration services, finalize our recommendations, and issue the report within 3 to 4 weeks following authorization. Verbal updates and preliminary recommendations can be provided during the course of the work.

## **AUTHORIZATION**

An Agreement for Services (Form Number AS-071) is attached and is incorporated by reference as a part of this proposal. Please indicate your acceptance of our Agreement for Services by signing the form and returning to our office. Upon receipt of the signed Agreement, we will execute, return to you, and proceed with the performance of our services.

If you elect to accept our proposal by issuing a purchase order, then please specifically reference this proposal number and date. Your purchase order will be an acceptance of our Agreement for Services and an authorization to proceed with the performance of our services. The terms and conditions included in any purchase order shall not apply, as our agreement is for services that are not compatible with purchase order agreements.

**If this proposal is transmitted to you via e-mail, and if you choose to accept this proposal by e-mail, your reply e-mail acceptance will serve as your representation to S&ME that you have reviewed the proposal and the associated Agreement for Services (AS-071) and hereby accept both as written.**

## **CLOSING**

S&ME appreciates the opportunity to be of service to you. If you have questions regarding this proposal, or if we may be of further assistance, please contact us.

Sincerely,

**S&ME, Inc.**



Finley Lloyd, P.E.  
Project Manager



Matt Moler, P.E.  
Senior Engineer

Attachment: Agreement for Services (AS-071)

**ATTACHMENT C**  
**SCOPE OF SERVICES**  
**CRITEK ENGINEERING GROUP.**

September 9, 2015

Ms. Darnetta Craig, PE  
Chester Engineers  
717 Green Valley Road, Suite 200  
Greensboro, NC 27408

**Subject: Proposal for Engineering Services for  
Kirkman Street Water Line, Sandy Ridge Road Water Line and McCloud Booster Pump Station  
Improvement Projects**

**CriTek # GSO.2015.05, -.06, -.07**

Dear Ms. Craig:

CriTek Engineering Group, P.C. (CriTek), at your request, is pleased to submit proposals for engineering services associated with the following projects:

- Kirkman Street 12-inch Water Line Improvement Project
- Sandy Ridge Road 12-inch Water Line Improvement Project
- McCloud Road Booster Pump Station Improvements Project

Attached please find a scope of work and budgetary spreadsheet for each project to provide more detail on the engineering scope, and the fees proposed. CriTek appreciates the opportunity to work with Chester Engineers and the City of Greensboro towards the successful completion of this project. If you have any questions, or need additional assistance, please do not hesitate to call.

Very truly yours,

**CriTek Engineering Group**



J. Dawayne Crite, PE  
President

Attachments  
File: GSO.2015.05, -. 06, -.07

**EXHIBIT A**  
**SCOPE OF WORK****PROJECT DESCRIPTION**

Based on initial discussions with Chester Engineers, Incorporated (Chester) and the City of Greensboro the McCloud Road Booster Pump Station Improvements project is to include improvements to the City of Greensboro's 1120 pressure zone. A new water boosting pumping station is to be located on McCloud Road to improve system reliability and increase system capacity in the 1120 pressure zone. The detailed scope of services for the basic services follows:

**Task 1: Final Design and Contract Documents**

CriTek shall prepare process mechanical construction documents for the above listed scope suitable for receipt of bids for construction of the project. This scope assumes that the complete project will be included in one set of contract documents assembled by others. Throughout final design, CriTek will maintain regular contact with the City of Greensboro and Chester's staff to review the progress of design. Formal design review meetings with the City of Greensboro will be conducted at the 60 – and 90-percent design completion stage(s). At the conclusion of final design, drawings and specifications will be submitted to Chester and, subsequently, the City of Greensboro for final review and approval. Any revisions stemming from these reviews will be resubmitted to responsible agencies to be included in the approved set of construction documents. Final design services to be provided by CriTek are described as follows:

**Task 1.1: Prepare Construction Contract Drawings** – Construction contract drawings will be prepared showing the scope, extent, and character of the work to be performed by the contractor. Drawings shall include mechanical process drawings. The following list of drawings is expected for this project:

- Process Mechanical Drawings (2 sheets)
- Process and Instrumentation Drawing (1 sheet)

The following design assumptions were made during development of this Scope of Work:

- The pump station design will follow the recommendations in the Preliminary Engineering Report dated May 2014, prepared by HDR Engineering, Inc.
- The pumps specified and design will follow the pump characteristics recommended in the Analysis of McCloud Pump Station dated July 9, 2013, prepared by Hazen and Sawyer.
- All necessary survey and geotechnical information will be made available to CriTek.
- Plat development, subconsultant management (including geotechnical investigations, field survey, utility locations, stream/wetland delineations, property search, right-of-way mapping, etc.) shall be performed and managed by others.
- Others will be responsible for making copies of final construction contract documents, receiving and processing deposits for the documents, and distribution the documents as part of Bidding Services.
- CriTek shall prepare construction cost estimates for process mechanical equipment and piping.
- Permitting services will be prepared by others.

**Task 1.2: Final Review** – CriTek will conduct a final review of the construction documents prior to bidding.

**Deliverable(s):** CriTek will prepare and submit design documents as described above and listed below:

- One (1) electronic (PDF) set of process mechanical contract drawings at the 60-percent design stage.
- One (1) electronic (PDF) set of process mechanical contract specifications at the 60-percent design stage.
- One (1) electronic (PDF) set of process mechanical contract drawings at the 90-percent design stage.
- Construction cost estimate for process mechanical equipment and piping.
- One (1) electronic (PDF) set of process mechanical contract specifications at the 90-percent design stage.
- One (1) 22" x 34" hard copy set of process mechanical drawings with engineers stamp and signature.

## **Task 2 – Bidding Services**

CriTek shall provide services during the Bidding Phase of the project. It is assumed that the duration of the Bidding Phase will be up to 6 weeks. This scope budgets for one bidding of a single contract. This scope allows for Prequalification of Contractors prior to bidding, if desired by the City of Greensboro. Bidding services to be provided by CriTek are outlined below:

**Task 2.1: Bid Advertisement and Addenda**– Assist Chester in advertising for and obtaining bids for construction. Maintain a record of prospective bidders to whom bidding documents have been issued. Respond to bidder questions as appropriate to clarify, correct, or change the bidding documents.

## **Task 3 – Engineering Services During Construction**

CriTek shall provide the following limited engineering services during construction phase:

- Shop drawing, request for information (RFI), and other submittal review.
- Engineering support (input from design engineer on contractor questions, problem resolution, etc.).

## **Unspecified Additional Services**

This Scope of Work can be amended so that CriTek can perform out-of-scope services as requested by Chester. These types of services that are not included in this Scope of Work, but may be performed, at Chester's request, include the following:

- Full time construction observation
- Record drawings

## **SCHEDULE**

The tasks outlined above will be initiated within one week of a Notice to Proceed from Chester Engineers. This scope assumes up to 36 weeks for design and bidding. A detailed project schedule will be developed and agreed between CriTek and Chester prior to initiating design.

### **STAFFING AND COORDINATION**

CriTek will perform work as a sub-consultant under the guidance of Chester Engineers. CriTek will work directly with Chester and their representatives to perform the scope of work. During preliminary and final design CriTek will be provided with geotechnical, survey, property owner and existing utility information within the proposed limits of disturbance necessary to complete the work.

### **PAYMENT OF SERVICES**

This amount includes a lump sum fee of \$20,034.00 for all Basic Services described in Exhibit A (Tasks 1 - 2, inclusive) and \$150.00 per hour for Task 3 services. Partial payments shall be made by the Chester on a monthly basis in proportion to the percentage of work completed and the balance of payment made when the work is completed. Total cumulative payments made to CriTek by the completion of the following project phases shall be as presented in Exhibit B.



**ATTACHMENT D**  
**SCOPE OF SERVICES**  
**DEWBERRY ENGINEERS INC.**

June 1, 2015

Ms. Darnetta D. Craig, PE  
Senior Project Manager  
Chester Engineers (North Carolina) Inc.  
717 Green Valley Road, Suite 232  
Greensboro, NC 27408

**RE: Proposal for Professional Services  
McCloud Road Booster Pump Station Permitting  
7915 Triad Center Drive, Greensboro, NC**

Dear Ms. Craig.

Dewberry Engineers Inc. (Dewberry) submits our proposal to assist with permitting the City of Greensboro (City) McCloud Road Booster Pump Station project to improve system reliability and increase system capacity in the 1120 pressure zone.

### **Understanding of Project**

Dewberry's understanding of the project as outlined below:

- A Preliminary Engineering Report (HDR, May 2014) has been completed that developed a proposed booster station layout, preliminary alignments for the new suction and discharge lines, documented the flow and head conditions provided by the City, and developed a preliminary cost estimate with schedule for design, permitting, and construction.
- A new booster pump station (approximately 750 gpm @ 110 ft TDH) is proposed for the site at 7915 Triad Center Drive.
- The new piping is proposed as 8-inch. The suction and discharge line will connect to the existing 12-inch water main on Thatcher Road.
- The design will include one booster station building and one meter vault.
- The Design will be completed by Chester Engineers (North Carolina) Inc.
- Preliminary layout indicates over one-acre of land disturbance, outside of stream buffer zones, outside wetland boundaries and outside of floodplain boundary.

### **Understanding of Scope**

Dewberry proposes to assist with the permitting of the McCloud booster station project as outlined below. Tasks associated with this scope include the following:

- Dewberry will attend all project meetings to facilitate proper communication between our companies.

- Dewberry will prepare a permits memo and Draft permit applications and descriptions of fees to be delivered with the 60% design package for review.
- Dewberry will attend all review meetings.
- Dewberry will prepare 90% permit application package with request for permit application fees and applicant signature. Permit application package to be delivered with 90% design package.
- Dewberry will revise/modify permits as applicable following 90% review, however if no revisions are necessary then final permits will be submitted to the applicable agency following completion of 100% design submittal.
- Permits anticipated based upon preliminary design memo (HDR, May 2014) are:
  - City of Greensboro Site Plan Review and Construction Drawing Review.
  - Authorization to Construct from the NC Division of Water Resources, Public Water Supply Section for Booster Pump Station and Conveyance Improvements
  - NC Division of Land Resources, Land Quality Section Sedimentation and Erosion Control Permit
- Dewberry will prepare all the maps, tables and notification (if any) to adjoining landowners.
- Permit fees will be requested from the City for the associated fee at 90% design level.

### **Budget**

The lump sum budget to permit the design of the booster station is \$6,900.

Application fees will be requested from City of Greensboro, Water Resources Department prior to submittal and are not included in the Dewberry budget.

### **Additional Services**

Any item not contained in the scope of services or outlined as Exclusions will be deemed as Additional Services. Additional Services will be provided if requested by Chester Engineers (North Carolina) Inc. at the Standard Hourly Billing Rates (Attachment A).

### **Exclusions**

Based upon our knowledge of the current plant operations, Dewberry does not propose the following within this proposal:

- NCDOT encroachment agreement.
- Environmental assessments
- Permit application fees
- Stormwater Pollution and Prevention Plan (SWPPP)
- Stormwater Management Plan



**ATTACHMENT E**  
**LABOR RATES**

## CHESTER ENGINEERS 2015 CHARGES FOR PROFESSIONAL CONSULTING SERVICES (C5)

The charges for any services provided by Chester Engineers consist of: (1) an hourly billing rate for any professional staff member actively working on a project; (2) reimbursement of direct expenses; (3) reimbursement of subcontractor's and other special costs; (4) use and rental charges for equipment; and (5) laboratory analyses. Invoices covering these charges and expenses will be submitted for payment on a monthly basis (except for subcontractor invoices which will be billed as received); unless some other arrangement has been agreed upon.

Hourly billing rates for various classifications of Chester Engineers personnel are indicated below and are subject to annual revision:

<u>STAFF CLASSIFICATIONS</u>	<u>HOURLY RATES</u>
STAFF ENGINEER/SCIENTIST	\$107.00
ENGINEER/SCIENTIST I	116.00
ENGINEER/SCIENTIST II	122.00
SENIOR ENGINEER/SCIENTIST	129.00
PROJECT ENGINEERS/SCIENTIST	148.00
SENIOR PROJECT ENGINEERS/SCIENTIST	170.00
PROJECT/TECHNICAL MANAGER	191.00
SENIOR PROJECT/TECHNICAL MANAGER	201.00
RESIDENT I*	82.00
RESIDENT II*	96.00
SENIOR RESIDENT	124.00
DESIGNER*	101.00
SENIOR DESIGNER	124.00
GIS TECHNICIAN	95.00
GIS ANALYST	108.00
SENIOR GIS ANALYST	130.00
ASSISTANT TECHNICIAN*	63.00
TECHNICIAN*	77.00
SENIOR TECHNICIAN*	80.00
ENGINEER TECHNICIAN*	105.00
SENIOR ENGINEERING TECHNICIAN*	108.00

\* Overtime rates are 1.35 times the hourly rate.

The above rates include all employees' wages and payroll burdens, plus company overhead and profit.

**PAYMENT:** Progress invoices will be issued monthly and are to be paid within 30 days of the invoice date unless prior written agreement has been obtained. Subcontractor billings are payable upon presentation.

**SENIOR MANAGEMENT RATES:** Principal and Senior Principal who provide technical review and project guidance will be billed at \$209.00 and \$227.00 per hour.

**SUBCONTRACTS AND SPECIALTY EQUIPMENT:** Subcontractor costs, material costs, and the costs associated with the rental of specialized equipment will be charged at cost plus 15%.

**EQUIPMENT:** Use of equipment and vehicles owned by Chester Engineers will be invoiced at fixed daily or weekly rates. A summary of these rates will be provided upon request.

**LABORATORY ANALYSES:** Analyses performed by outside laboratories will be invoiced as subcontractor costs.

**ADDITIONAL SERVICES:** 1. A surcharge of 50% will be added to published rates for the actual time spent in preparation or attendance at depositions, public testimony, hearings and/or court proceedings. 2. For emergency field services or emergency operations assistance, a surcharge of 50% will be added to these rates for actual time on site.

**COMMUNICATION AND MISCELLANEOUS REPRODUCTION EXPENSES:** In-house costs for postage, photocopying, blueprints and express mail services will be invoiced at company cost.

**DIRECT EXPENSES:** Charges for rental vehicles, meals, travel, and lodging will be billed at actual costs plus 15%. Personal vehicles will be billed at the IRS approved reimbursement rate plus 15%.

**TRAVEL:** Time spent traveling in the interest of the client will be minimized and will be billed at standard hourly rates.