CRI TEK
ENGINEERING GROUP

1 Centerview Drive, Suite 307
Greensboro, NC 27407
Telephone: (336) 348-1889
CriTekGroup.com

March 18, 2020

Mr. Brian Boyd
Project Manager
City of Greensboro – Water Resources
2602 S. Elm-Eugene Street
Greensboro, NC 27406

Subject: **Scope of Work for Professional Engineering Services for Hammel Road Waterline Replacement Project**

Dear Mr. Boyd:

CriTek Engineering Group, P.C. (CriTek), is pleased to submit this scope of work for professional engineering services for the Hammel Road Waterline Replacement Project. CriTek has put together a team of professionals, of which have significant experience working on similar projects, to complete the work on the project.

The attachment provides more detail on the engineering scope and schedule for the project. CriTek appreciates the opportunity to work with 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 at 336-348-1889.

Very truly yours,

CriTek Engineering Group

J. Dawayne Crite, PE
President

Attachments
GSO.2020.07

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Understanding of the Project

Based on discussions with the City of Greensboro (City) staff, the project will include replacement of an existing 12-inch with a new 12-inch waterline along Hammel Road in Greensboro, NC. The new Hammel Road waterline will begin at an existing 12-inch isolation valve in Latham Park, near the intersection of W. Northwood Street and Latham Road. The waterline will parallel Hammel Road north, and tie back in to an existing 12 inch water main located at the intersection of Blair Street and Briarcliff Road. The new waterline will be approximately 1,600 linear feet and include service connections for approximately 12 homes along Latham Road, Hammel Road, and Briarcliff road. The purpose of this new water distribution main is to improve redundancy and reliability of the water system. The water main expansion scope consists of:

- New 12-inch ductile iron piping, fittings and valves
- 12 water residential water system reconnections
- Abandonment in place of existing 12-inch waterline
- Four water system tie-in connections

Scope of Work

The Scope of Work (SOW) to be performed by CRITEK ENGINEERING GROUP will include the following tasks associated with the Surveying, Geotechnical Investigation, Design, and Construction Administration Phases:

TASK 1 – PRELIMINARY DESIGN

1. CRITEK ENGINEERING GROUP will request site plans along with existing and proposed design plans of City maintained water lines, sewer, storm drains and other utility infrastructure along the proposed alignments. It is estimated that two (2) CRITEK ENGINEERING GROUP representatives will be required in the field for 0.5 days to conduct onsite investigation of the proposed site to review and inspect existing conditions.
2. Prepare preliminary plans for the proposed water mains, and meet with City staff at 30% design stage to review progress plans.
3. Prepare a preliminary table of contents for specification sections that are anticipated for the project.

Surveying

1. CRITEK ENGINEERING GROUP will subcontract surveying services for the project. DAVIS-MARTIN-POWELL & ASSOCIATES, INC. (DMP) will perform survey services as a sub-consultant to CRITEK ENGINEERING GROUP.
2. Perform property research for properties within the project corridors, and send notification letters to potentially affected property owners at least 30 days prior to accessing their property.
3. Establish and utilize horizontal survey control along the project route to Class AA boundary survey specifications as defined in the Standards of Practice for Land Surveying in North Carolina, NCAC Title 21, Chapter 56.1603 and based on the North American Datum of 1983 (NAD 83).
4. Establish and utilize vertical control along the project route to Class A vertical control survey specifications as defined in the Standards of Practice for Land Surveying in North Carolina, NCAC Title 21, Chapter 56.1605 and based on the National Geodetic Vertical Datum of 1988 (NAVD88).
5. Coordinate with the City's Engineering and Inspections Department staff on the horizontal and

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vertical control for the project, to facilitate the City's work regarding property acquisition and eventual construction staking.

6. DMP will provide a topographic map of the survey area with contours at one (1) foot intervals.
7. Perform boundary surveying and mapping of existing property lines and rights-of-way within the project corridor. Property owner information will be provided and house/building numbers will be added where applicable.
8. Survey any existing sanitary sewer and storm drainage systems that is apparent without using Ground Penetrating Radar (GPR) within the project corridor, and incorporate these systems into the overall base mapping for the project.
9. Contact NC 811 to have existing underground utilities marked within the project corridor, such as water, gas, power, and telecommunication lines. The utility markings will be surveyed, and this information will be incorporated into the overall base mapping for the project.

Geotechnical Investigation

1. CRITEK ENGINEERING GROUP will subcontract geotechnical services for the project. Summit Design and Engineering Services, PLLC. will perform subsurface investigation services as a sub-consultant to CRITEK ENGINEERING GROUP.
2. Send notification letters to potentially affected property owners at least 30 days prior to accessing their property
3. Perform a total of four (4) borings along the water main alignments. The borings are adjacent to the existing road and will require traffic control. The borings will advance 10 feet below grade or auger refusal.
4. Standard Penetration Tests (SPT) will be performed in the borings at 2.5-foot intervals in the top 10 feet, in general accordance with ASTM D 1586.
5. Water level measurements will be performed at the termination of borings.
6. Following completion, borings will be backfilled with cuttings and a commercial hole closure device installed near the ground surface.
7. Perform limited laboratory testing including natural moisture contents (1 tests), Atterberg limits test (1 test), and grain size analysis (1 tests) on selected soil samples.
8. Preparation of an engineering report summarizing understanding of the proposed construction, exploration, regional geology, subsurface conditions, and recommendations.

TASK 2 –FINAL DESIGN

1. Prepare final drawings for the proposed water lines. The following list of drawings is expected for the project:
    a. Cover Sheet (1 sheet)
    b. General Notes, Sheet Index, Site Plan (1 sheet)
    c. Water Main Plan and Profile Drawings at 1" = 40' scale (8 sheets) in City mylar format
    d. Standard Details (3 sheet)
    e. Misc. Permit Required Details (4 sheets)
        i. Erosion Control

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ii. Traffic Control

2. Prepare final specifications based on the City of Greensboro Master Specifications.
3. Prepare an itemized opinion of probable construction cost for the proposed water lines based on the final drawings and specifications.
4. Develop a traffic control plan for Hammel Road and review with City staff.
5. Provide three (3) sets of final drawings and specifications. Plans and specifications will also be available in electronic format (PDF, DWG, etc.) as required by the City.

TASK 3 – REGULATORY PERMITTING

1. Prepare applications, technical criteria and design data for use in obtaining regulatory agency approvals. Submittals will be required for:
    a. City of Greensboro Water System Extension Permit
    b. City of Greensboro Constructability Permit
    c. City of Greensboro Department of Transportation (encroachment agreement)
    d. NCDEQ - Division of Environment, Mining and Land Resources (erosion control permit)
2. CRITEK will subcontract NCDEQ erosion control services to KENNERLY ENGINEERING AND DESIGN, INC. (KENNERLY). KENNERLY will be responsible for preparing all erosion control drawings and specifications for the project.
3. Coordinate the payment of application fees to regulatory agencies by the City.
4. Furnish copies of the drawings and specifications for agency review purposes.
5. Respond to any comments received from review agencies.

TASK 5 - BIDDING SERVICES

1. Attend the Pre-Bid Meeting and the Bid Opening. CRITEK ENGINEERING GROUP will also assist City staff with answering questions from prospective bidders during the bid process, and with preparation of any necessary addendums.

TASK 6 – CONSTRUCTION ADMINISTRATION

1. After the project is awarded to Contractor, CRITEK ENGINEERING GROUP representatives will:
    - Conduct the Pre-Construction Meeting and prepare meeting minutes.
    - Review shop drawings and submittals from the contractor.
    - Review and respond to Requests for Information (RFI's) from the contractor.
    - Review change order requests.
    - Review and make recommendations of the contractor's monthly requests for payment and final pay request.
    - Perform periodic site visits during construction (up to ten 2-hour site visits included).
    - Attend the final field inspection with the contractor and City staff.
    - Perform final walk through with the contractor and City staff to verify punch list items are complete.

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- CRITEK ENGINEERING GROUP will prepare record drawings identify locations of valves, hydrants, etc. Record drawings will be prepared from information by the contractor and City inspector.

Summary of Deliverables

The following deliverables will be provided:

1. Complete survey base mapping for the project corridor, including:
    a. Horizontal/vertical control file(s) which can be shared with the City's Engineering & Inspections Department for their use in staking easements and construction staking.
    b. Topographic mapping produced from ground survey.
    c. Mapping of existing property lines and rights-of-way, including property owner information and house/building numbers where applicable.
    d. Mapping of existing sanitary sewer and storm drainage systems within the project corridor.
    e. Mapping of identified existing underground utilities within the project corridor.
2. One (1) full-size set of progress plans for the proposed water lines at 30%, 60%, and 90% design stages.
3. Prepare a preliminary table of contents for specification section at the 30% design stage.
4. Engineer's Estimate of Probable Construction Cost at the 90% design stage.
5. Final Sealed Construction Plans and Specifications in PDF format. We understand that the City will distribute bid documents to prospective bidders through Duncan-Parnell.
6. One (1) set of mylar record drawings will be provided to the City. Record drawings can also be provided in digital format, including scanned images (PDF/TIF), GIS, or DWG files upon request.
7. Prepare MWBE Goal Setting Sheets & documentation.

Responsibilities of the City

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

1. Furnish available information pertinent to the project to allow CRITEK ENGINEERING GROUP to provide the scope of services described herein.
2. Provide record drawings and utility mapping in either AutoCAD (.dwg), GIS (shapefile), or TIFF/PDF format for existing water, sewer, storm drain and other City maintained lines within the project corridor.
3. Advise CRITEK ENGINEERING GROUP of project issues as they arise, such as changes in scope or schedule.
4. The City will distribute bid documents to prospective bidders.

Assumptions Developed Within the Scope

CRITEK ENGINEERING GROUP has made the following assumptions while developing the scope and fee:

1. The diameter of the proposed water mains have been established by others and does not need

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to be evaluated by CRITEK ENGINEERING GROUP.

2. The proposed water mains will be a pressure main of ductile iron material.
3. The proposed water mains will be installed using open-cut construction methods.
4. Sections of exposed waterline adjacent to the creek will be removed and the waterline capped with flowable fill.
5. The total length of the survey will not exceed 8.8 acres based on the GIS map and boundaries provided by the City.
6. Hammel Road is a City of Greensboro maintained road and does not require an NCDOT encroachment permit.
7. Only those permits specifically mentioned in this Scope of Work are anticipated and included in the scope of services.
8. The City will pay all permit application fees.
9. Following the initial permit application, CRITEK ENGINEERING GROUP will address and resubmit permits as necessary for approval.
10. Existing 12-inch water line on Hammel Road will be abandoned in place with flowable fill.
11. All existing water services on the existing 12-inch line on Hammel Road will be transferred to the new 12-inch water line.
12. The Hammel Road waterline will be designed and constructed within the existing City of Greensboro road right-of-way and will not require easement acquisition.
13. Pavement impacts due to waterline installation will be patched. Roadway mill and/or full width overlay is not required.
14. Neighborhood outreach attendance or material preparation is not included in this scope.
15. Permits from the Parks and Recreation Department are not required or included in this scope.

Project Schedule

This scope of work assumes up to 11 months for design, permitting and bidding services. A detailed project schedule will be developed and agreed to between the City and CRITEK ENGINEERING GROUP prior to initiating design. The proposed time periods for the performance of CRITEK ENGINEERING GROUP'S services are as follows:

Notice to Proceed issued to CRITEK ENGINEERING GROUP by May 1, 2020

30% Design submitted to the City within 5 months from Notice to Proceed

60% Design submitted to the City within 6 months from Notice to Proceed

90% Design submitted to the City within 7 months from Notice to Proceed

100% Design submitted to the City within 8 months from Notice to Proceed

Notice to Proceed issued to Contractor within 10 months from Notice to Proceed

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Compensation

CRITEK ENGINEERING GROUP proposes to perform engineering and surveying services, based on the Scope of Work described herein, on a Lump Sum basis, for fee of **One Hundred Fifty-Seven Thousand Five Hundred Thirty Dollars and Zero Cents – 157,530.00**. A schedule of values for major tasks are listed below.

- Surveying Services: $41,768.00
- Geotechnical Services: $4,995.00
- Preliminary Design: $12,592.00
- Final Design: $61,514.00
- Permitting: $15,379.00
- Bidding Services: $3,367.00
- Construction Administration: $17,914.00

Fees for this scope of work are summarized by the following utilization of prime and subconsultants:

- Summit Design and Engineering – $ 4,204.00
- Davis-Martin-Powell & Associates - $37,150.00
- Kennerly Engineering and Design (WBE) - $8,000.00
- CriTek Engineering Group (MBE) - $108,176.00

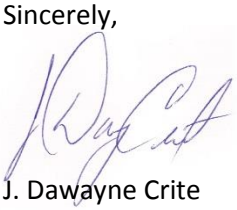
Additional Services

CRITEK ENGINEERING GROUP is available to provide additional services in conjunction with this project, which are unforeseen at this time. Any additional services would be performed in accordance with our standard rates, and costs would not be incurred without prior authorization.

Closing

CRITEK ENGINEERING GROUP appreciates the opportunity to submit this proposal for engineering surveying and geotechnical services. If acceptable, please forward the appropriate contract documents to our office for execution. If you have any questions or if you would like to discuss this proposal in more detail, please let me know.

Sincerely,



J. Dawayne Crite
President
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