

November 23, 2016

Re: City of Greensboro
Lees Chapel Road Feeder Main
Professional Services Proposal

Mr. Brian Boyd
City of Greensboro
Water Resources Department
2602 South Elm – Eugene Street
Greensboro, NC 27406

Dear Mr. Boyd:

Davis • Martin • Powell & Associates, Inc. (DMP) is pleased to submit this proposal to provide engineering and surveying services for the proposed Lees Chapel Road Feeder Main.

Understanding of the Project

The purpose of the Lees Chapel Feeder Main is to provide redundancy and bolster the capacity of the City's potable water transmission system to convey potable water from the Townsend Water Treatment Plant to the City's water distribution system.

NCDOT Project U-2525C, which is the northern section of the Greensboro Outer Loop between Lawndale Drive and US Highway 29, will include the relocation of an existing 36" water main in Summit Avenue. The Outer Loop will be constructed under Summit Avenue, and a new bridge will be constructed so Summit Avenue can cross over the Outer Loop. Due to this extensive work, the existing 36" water main running parallel to Summit Avenue will have to be relocated as part of the NCDOT project.

The Project Letting (Bid Opening) Date for U-2525C is scheduled for July 17, 2018. Construction will likely begin in September/October 2018. The existing 36" water main running parallel to Summit Avenue cannot be taken out of service without adversely affecting the City's water distribution system. Therefore, the City desires to have the proposed Lees Chapel Feeder Main ready to put in service before the existing 36" water main at Summit Avenue has to be relocated.

The Lees Chapel Feeder Main project will include approximately 14,500 L.F. of 36" ductile iron water main. The 36" water main will be installed along Lees Chapel Road, beginning at the intersection with Brightwood School Road, and extending northeast to Rudd Station Road/Southshore Road. The 36" water main will cross the railroad tracks at Rudd Station Road, then cross Southshore Road, and continue to the northeast along Townsend Road through Bryan Park. The 36" water main will connect to an existing water main at the intersection of Townsend Road and Bryan Park Road.

Stub-outs for future water main extensions will also be designed to branch off the proposed 36" water main where Lees Chapel Road intersects Bush Road, Scott Road, Miltonwood Road, and Hillcroft Road.

Scope of Work

The Scope of Work (SOW) to be performed by DMP will include the following tasks associated with Surveying and Base Mapping, Design, Easement, and Construction Services:

Task A – Surveying and Base Mapping Services

1. DMP will lead and coordinate surveying services for the project. Cartographic Aerial Mapping (CAM), J.C. Waller and Associates (JCW), and Northstate Utility Locating (NUL) will provide support services as sub-consultants to DMP.
2. DMP will perform property research for properties within the project corridor, and send notification letters to potentially affected property owners at least 30 days prior to accessing their property.
3. DMP will 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. DMP will 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. DMP will coordinate with the City's Engineering and Inspections Department staff on the horizontal and vertical control for the project, to facilitate the City's work regarding property acquisition and eventual construction staking.
6. CAM will perform aerial mapping services as a sub-consultant to DMP. CAM is a Minority Business Enterprise (MBE). CAM will obtain digital aerial imagery of the project corridor, and perform digital mapping of existing visible planimetric features and topographic mapping at 1' contours.
7. DMP will perform supplemental ground surveys as necessary for obscure areas identified during photogrammetric mapping. DMP will also perform supplemental ground surveys as necessary to confirm the location of existing objects within the proposed construction corridors. Supplemental survey data collected by DMP will be incorporated into the aerial planimetric and topographic mapping for consistency.
8. DMP will perform limited 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 addresses will be added where applicable.
9. DMP will survey any existing sanitary sewer systems and storm drainage systems/piping within the project corridor, and incorporate these into the overall base mapping for the project.
10. DMP will contact NC 811 to have existing underground utilities marked within the project corridor, such as gas, power, and telecommunication lines.
11. Northstate Utility Locating (NUL) will provide supplemental utility locating/markings as necessary in areas where 811 utility marking may be insufficient.
12. JCW will survey and map the existing underground utility markings, and this information will be incorporated into the survey base map.

Task B – Design Services

1. DMP will prepare 30% plans showing preliminary horizontal routes for the proposed water mains, and meet with City staff to review the plans.
2. DMP will prepare 60% plan-profile drawings for the proposed water mains and meet with City staff to review the plans. A preliminary table of contents for specification sections that are anticipated for the project will be provided with the 60% submittal.
3. Following the City's review of the 60% plans, CriTek Engineering Group (CriTek) will prepare the erosion control plan for the project.
4. After preliminary profiles have been prepared, DMP will perform Subsurface Utility Engineering (SUE) Level A soft-dig test holes by vacuum excavation over existing utility lines at critical areas where there could be conflicts between existing utilities and the proposed water mains or encasement pipes. A

total of ten (10) soft-dig test holes to a maximum depth of 10 feet are included in this SOW. We have assumed that up to two (2) days of traffic control will be needed for soft-digs needed within existing roadways. We have also assumed that up to four (4) of the soft-digs will be in existing asphalt roadway, requiring flowable fill backfill and asphalt cut/patch.

5. After preliminary profiles have been prepared, S&ME will perform soil borings and prepare a geotechnical report describing subsurface soil conditions where proposed encasements will be installed under roads and railroad tracks. Soil borings will be performed near the end of each proposed encasement pipe. A total of eighteen (18) soil borings are anticipated.
6. DMP will prepare 90% plan-profile drawings for the proposed water mains, and meet with City staff to review the plans. DMP will prepare the Project Manual, based on the City's Master Specifications, and submit a draft with the 90% submittal.
7. DMP and CriTek will perform QA/QC reviews of the preliminary plans and specifications at the 60% and 90% design stages.
8. DMP will prepare final drawings for the proposed water mains, including the final erosion control plan, and details for associated appurtenances such as air release valves, surge relief valves, blow-offs, etc. Review comments provided by the City during progress submittals will be incorporated into the final drawings and the Project Manual. DMP and CriTek will perform QA/QC reviews of the final plans and the Project Manual.
9. DMP will prepare an itemized Estimate of Probable Construction Cost for the project based on the final drawings and specifications.
10. The City will administer the bid process for the project. DMP representative(s) will attend the Pre-Bid Meeting and the Bid Opening. DMP will also assist City staff with answering questions from prospective bidders during the bid process, and with preparation of any necessary addendums. DMP will also assist with checking references for the low bidder if it is an unfamiliar Contractor.

Task C – Regulatory Permitting Services

1. DMP will 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. NCDEQ - Division of Water Resources and USACE (PCN for 401/404 permit, if required)
 - c. NCDEQ - Division of Environment, Mining and Land Resources (erosion control permit)
 - d. N.C. Department of Transportation (encroachment agreement)
 - e. Norfolk Southern Railway (encroachment agreement)
2. DMP will advise the City of any application fees that the City needs to pay to regulatory agencies.
3. DMP will furnish copies of the drawings and specifications for agency review purposes.
4. DMP will respond to any comments received from review agencies.

Task D – Easement Services

1. Staff with the City's Engineering & Inspections Department has recently expressed a desire to handle easement mapping for water and sewer lines differently from how it has been done in the past. Instead of preparing easement strip maps (G-drawings) and legal descriptions for each easement parcel, Engineering & Inspections Department staff would prefer to have G-drawings along with individual easement map exhibits for each property where easements need to be acquired. Therefore, no legal descriptions will be provided.

The easement map exhibits shall adequately describe the boundaries of any required permanent and temporary easements, with no associated legal descriptions being required. The individual easement

map exhibits shall be prepared on letter or legal size pages whenever possible so they can be recorded with the Deed of Easement documents. We understand that the Engineering & Inspections Department will provide a template for the individual easement map exhibits.

2. DMP will also complete the City's Deed of Easement template for each easement parcel.
3. The SOW includes conversations and meetings with the City and/or property owners throughout the property/easement acquisition phase. Significant adjustments to easement map exhibits resulting from property/easement negotiations with the property owner will be considered additional services and eligible for additional compensation.

Task E – Construction Services

1. After the project is awarded to Contractor, DMP representatives will:
 - a. Attend the Pre-Construction Meeting.
 - b. Review shop drawings and submittals from the Contractor.
 - c. Review and respond to Requests for Information (RFI's) from the Contractor.
 - d. Review change order requests.
 - e. Attend the final field inspection with the Contractor and City staff.
2. Perform periodic site visits during construction, with an anticipated construction contract time of 12 months. (Bi-weekly site visits are anticipated, for a total of 24 site visits).
3. Once construction is completed, DMP will perform as-built surveys to identify locations of valves, hydrants, etc. Record drawings will be prepared from this information, as well as plan mark-ups from 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. Planimetric and topographic mapping produced from aerial photography and supplemented with ground surveys as necessary.
 - c. Mapping of existing property lines and rights-of-way, including property owner information and house/building addresses where applicable.
 - d. Mapping of existing sanitary sewer and storm drainage systems within the project corridor.
 - e. Mapping of existing underground utilities within the project corridor.
2. Test Hole Reports from soft-digs performed on existing utility lines. These reports will include a description of the size, material, and type of each utility line, horizontal coordinates, elevations, and a sketch of the area immediately surrounding each utility. Survey points will be tied to the horizontal/vertical control points established on the project.
3. Geotechnical Report prepared by S&ME.
4. Progress plans for the proposed water lines at 30%, 60%, and 90% design stages.
5. Three (3) sets of final drawings and specifications. 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. Engineer's Estimate of Probable Construction Cost.

7. Easement strip maps (G-Drawings) and individual easement map exhibits for each easement parcel. Preparation of G-Drawings and up to forty (40) easement map exhibits are included in the SOW.
8. 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.

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 DMP to provide the scope of services described herein.
2. Provide copies of any hydraulic modeling reports related to the project.
3. Provide record drawings and utility mapping in either AutoCAD (.dwg), GIS (shapefile), or TIFF/PDF format for existing water and sewer lines within the project corridor.
4. Advise DMP of project issues as they arise, such as changes in scope or schedule.

Compensation

DMP proposes to perform engineering and surveying services, based on the Scope of Work described herein, for the maximum estimated fee of **Five Hundred Ten Thousand Dollars (\$ 510,000.00)**, as shown below.

Basis of Compensation			
Task	Description	Compensation	
		Lump Sum	Time & Materials, Not-to-Exceed
A	Surveying & Base Mapping Services		
A: 1 – 10	Surveying and Base Mapping	\$ 155,000	
A: 11 – 12	Supplemental Utility Locating & Marking		\$ 40,100
	Sub-Total, Surveying & Base Mapping Services	\$ 155,000	\$ 40,100
B & C	Design Services		
B: 1 - 3, 6 - 10, and C	Preliminary & Final Design, Permitting, and Bidding	\$ 125,000	
B: 4	SUE Level A Soft-Digs		\$ 24,000
B: 5	Geotechnical Investigation & Report		\$ 40,000
	Sub-Total, Design Services	\$ 125,000	\$ 64,000
D	Easement Services		
D: 1 - 2	Prepare Easement Maps & Deed of Easement Forms		\$ 40,000
D: 3	Meetings with City R/W Agent & Property Owners		\$ 5,000
	Sub-Total, Easement Services	\$ 0	\$ 45,000
E	Construction Services		
E: 1	Construction Administration		\$ 50,000
E: 2	Construction Field Services		\$ 23,000
E: 3	As-Built Survey and Record Drawings		\$ 7,900
	Sub-Total, Construction Services	\$ 0	\$ 80,900
	Total, All Services	\$ 280,000	\$ 230,000
	Maximum Total Fee	\$ 510,000	

The attached Standard Rate Schedule, approved under DMP's current "Agreement for Professional Services" with the City of Greensboro Water Resources Department, shall apply to this project. The maximum contract fee will not be exceeded without prior authorization by the City.

Reimbursable expenses are described as follows:

1. Mileage and associated travel costs for employees working on the project.
2. Postage and shipping charges associated with the project.
3. Sub-consultant expenses at a multiplier of 1.0.

Schedule

As mentioned previously, the Bid Opening for NCDOT Project U-2525C is scheduled for July 17, 2018, and construction will likely begin in September/October 2018.

The anticipated duration of the construction contract for the Lees Chapel Feeder Main project is 12 months. The target date for completing the Lees Chapel Feeder Main should be the end of August 2018. The Notice-to-Proceed Date should be the beginning of September 2017. Allowing three (3) months from Bid Opening to the Notice-to-Proceed Date, the recommended Bid Opening date for the Lees Chapel Feeder Main should be the beginning of June 2017. DMP will formulate our design schedule with the goal of being ready to advertise the project for bids in early May 2017.

Additional Services

DMP 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

DMP appreciates the opportunity to submit this professional services proposal for the Lees Chapel Feeder Main. 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,

DAVIS • MARTIN • POWELL & ASSOCIATES, INC.



Andrew P. Larrick, PE

Enclosures:

Attachment A1 – SUE Terms & Conditions

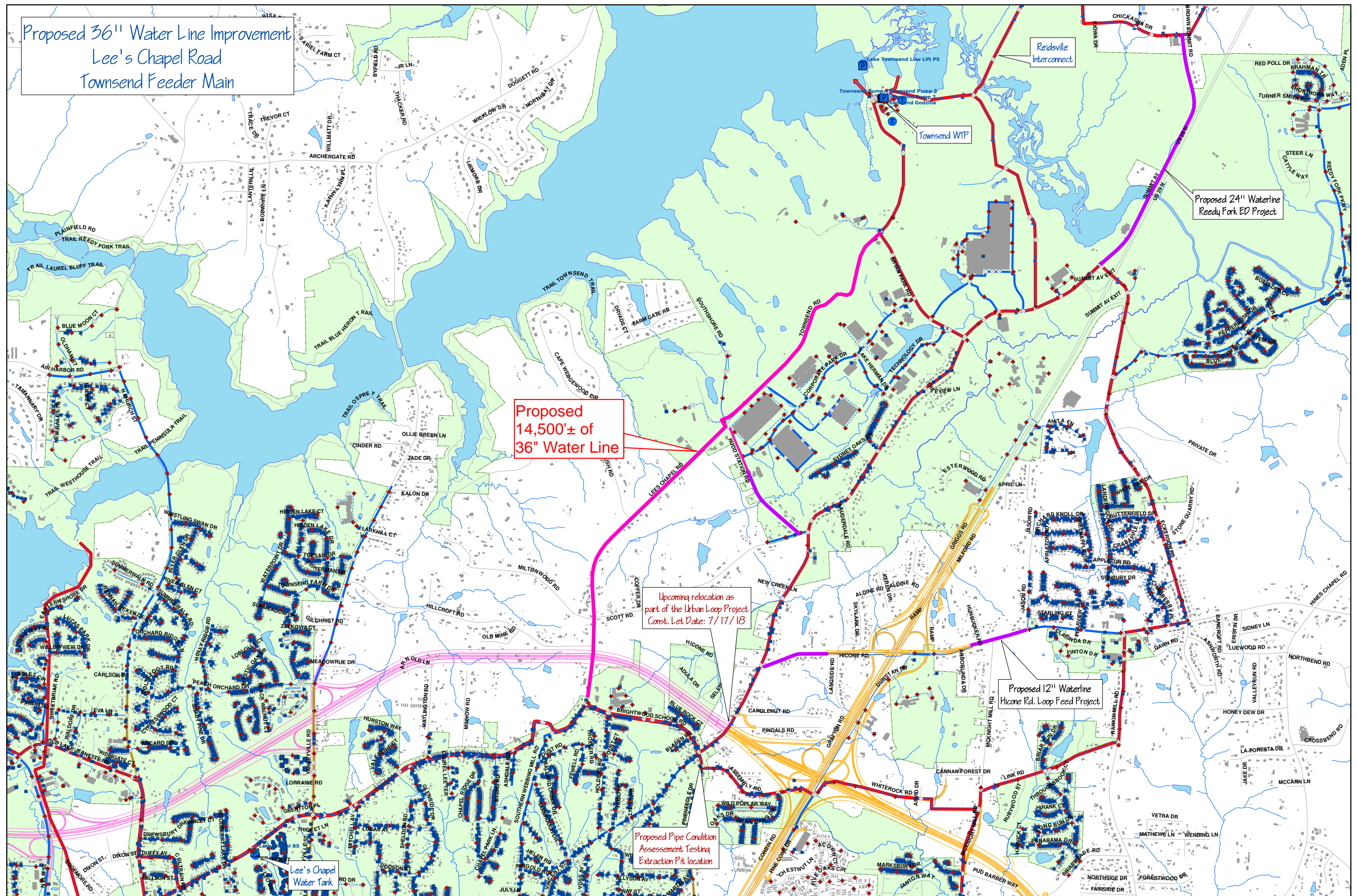
Attachment B - Standard Rate Schedule

Project Exhibit Map (by COG Water Resources Dept.)

C: File (enc)

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Proposed 36" Water Line Improvement
Lee's Chapel Road
Townsend Feeder Main



Proposed
14,500'± of
36" Water Line

Upcoming relocation as
part of the Urban Loop Project
Const. Let Date: 7/17/18

Proposed Pipe Condition
Assessment Testing
Extraction Pit location

Proposed 12" Waterline
Hicone Rd. Loop Feed Project

Proposed 24" Waterline
Reedy Fork ED Project

Reidsville
Interconnect

Townsend WTP

Lee's Chapel
Water Tank