



Statement of Qualifications

Engineering Services for Various Projects & On Call Services

October 17, 2022

Jake Broom
Chief Operating Officer
Municipal Association of South Carolina
PO Box 12109
Columbia, SC 29211

**Reference: Request for Qualifications - Engineering Services for
Various Projects and On Call Services**

Dear Mr. Broom:

We offer a diverse group of planning, design, and engineering professionals who have years of involvement with utility projects throughout the Carolinas, capable of fulfilling this on-call contract. **STV Incorporated (STV)** has assembled an experienced team of professionals with these specific credentials, who have the ability to draw upon state and regional resources, and are readily available to assist with the water and sewer utility study, design, and construction administration of the projects under this on-call contract. The services STV would like to be considered for are listed below:

- Water Line Extensions
- Water Line Replacement
- Sewer Line Rehabilitation
- Sewer Line Replacement
- Sewer Line Extensions
- Wastewater Force Main Repairs/Replacement/New Facilities
- Other water and sewer system improvements as may be needed by the local government

Water and Wastewater Engineering Expertise

STV shares your high standards for providing engineering services, and we have built a reputation as a leader in utility projects. Our utility group has decades of experience providing utility design, permitting, bidding, and construction phase services in support of small to large infrastructure projects in North Carolina. We have recently completed projects with similar scope, including the Charlotte Water (CLTWater) Little Sugar Creek Sanitary Sewer Improvements, City of Fayetteville North Cool Spring Street Rehabilitation, NCDOT Locomotive and Railcar Maintenance Facility, and utility relocations for the Charlotte Area Transit System (CATS) Blue Line Extension, all of which had significant and challenging water and sewer installations.

The STV Team

Our proposed **Project Manager Andrew Vane, P.E.**, will lead the STV team and is committed to managing all projects under this on-call contract. With 27 years of utility experience, he has provided leadership on numerous projects involving water transmission, water distribution, gravity sewer, and force main. Andrew has thorough knowledge of design procedures, standard specifications, and construction methods and materials for water and wastewater related infrastructure projects and he understands the importance of fostering communication among MASC and other stakeholders as needed. A few of his South Carolina projects include the York County Blankmanship Sewer Sub-Basin Study, Lake Marion Regional Water System Water Mains, Lake Marion Regional



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Water System Harleyville Reach Water Transmission Mains, and the Renewable Water Resources Grove Creek WWTP Effluent Force Main project.

The combined expertise of our team, on-call experience, understanding, and approach provide MASC with the qualified depth of resources needed to deliver high quality on-call engineering services, including multiple simultaneous projects or emergency work. Our team is available immediately, and we look forward to partnering with you for the development and completion of future water and wastewater projects as MASC continues to expand its infrastructure to meet the needs of a growing community.

Please contact me directly at (704) 287-9666 or stuart.matthis@stvinc.com to discuss this proposal in further detail.

Sincerely,
STV Incorporated

A handwritten signature in black ink that reads "G. Stuart Matthis II". The signature is written in a cursive style with a horizontal line at the end.

G. Stuart Matthis II, P.E. | Vice President



1.

Technical Approach/Understanding

1. TECHNICAL APPROACH/ UNDERSTANDING

The American Rescue Plan Act (ARPA) investment in South Carolina’s communities will provide a financial resource for big and small communities to invest in their water and sewer systems. STV has extensive experience working with both larger and smaller communities and appreciates the nuanced differences between municipalities. Many small communities not connected to larger systems have been held back from upgrading their water systems and treatment processes due to the significant capital investment required. The recent product supply crises and increased material and fuel costs have further complicated many utility owner’s ability to upgrade aged and undersized infrastructure. During recent years, the continued housing development growth has not slowed down, putting further strain on the market.

As smaller communities attempt to meet these challenges, a consulting engineering firm with significant infrastructure design, permitting, and construction oversight experience is essential. Getting the most bang for the buck is of primary importance.

Many small communities continue to experience rapid and significant residential and commercial development, both near the town centers and at their outer limits. Existing water and sewer systems are strained by increasing demands and flows, raising the risk of potential capacity issues. Aged gravity sewer infrastructure carries with it a greater threat of infiltration/inflow, resulting in higher pumping costs, higher costs to treatment plants, and lower available capacity to support future growth. Also, heightened water system demands result in lower available pressure for end users, decreased elevated storage tank fire flow capacity, and sometimes, difficulty filling tanks fully during off-peak times at night.

To preempt these challenges, STV dedicates an available team that understands these water and sewer challenges and is equipped to provide assistance with capital improvements planning, system flow and demand projection, development of detailed designs for bidding, acquisition of all necessary permits, and confirmation of proper construction of each project so that it can properly serve municipalities and their residents for years to come.

BENEFITS OF THE STV TEAM

 <p>DEPTH OF RESOURCES FOR MULTIPLE & URGENT TASKS</p>	 <p>COMMITMENT TO QUALITY</p>	 <p>SEAMLESS COORDINATION TO MEET PROJECT GOALS</p>
<p>Our project manager and design team are supported by more than 100 engineering and technical professionals in our Carolina offices. Regardless of the number of tasks issued by the municipalities, the STV team has the diverse resources to help you.</p>	<p>Our project team will follow STV’s robust QA/QC plan which has been proven through various successful projects nationwide. We take quality control very seriously and follow corporate guidelines, which includes internal QC audits.</p>	<p>Having successfully delivered numerous utility projects with similar scopes of work for York County, CLTWater, NCDOT, City of Fayetteville, City of Concord and CATS, we offer a team who understands how to bridge communication among various agencies, leading to successful project delivery.</p>

PROJECT APPROACH

Each project — whether a planning/capacity study or detailed design effort — presents new and unique challenges. As an engineering consultant, it is our responsibility to draw upon all disciplines and expertise to provide an effective and long-lasting end product. Communication is key, and we will freely share all information with the water and sewer utility owner throughout the study and design process. Each assignment will benefit from the methodology outlined below.

GIS Screenings

STV will begin each project by conducting a high-level analysis, collecting valuable information through geographic information systems (GIS) screening. Our planners will access the local, state, and federal databases to provide a snapshot of potential high-risk areas and barriers to a project. Data collected often includes proposed SCDOT projects, State Historical Preservation Office (SHPO) historical structures, floodplains, wetlands, and brownfields, among others. We consolidate databases and develop high-level maps to give all parties a visual representation of conditions. Identifying these risks early can help all stakeholders understand the challenges of a new project and inform our approach to addressing them.

Field Work

Field investigations yield several benefits, the primary one being that they can help to confirm the information acquired by GIS and as-built drawings, which do not always accurately portray what is in the ground. Conducting field surveys for utilities, property lines, existing easements, geotechnical, and property information will enable us to verify that what is being designed is as accurate as possible.

Subsurface Utility Engineering (SUE)

SUE is a critical component of any water or sewer project. STV strives to obtain Level B information for utilities at a minimum, collecting as-built information and GIS data and conducting field connectivity tests of buried utilities and ground penetrating radar (GPR) to locate each. This small investment will help us identify where higher-cost Level A soft digs can be obtained. Our team will identify exact tie-in locations and depths to mitigate the need for additional fittings or realignments during construction. STV first tries to avoid buried and overhead utilities, but if this is not feasible, our dedicated utility coordinators will arrange for dry utilities to be relocated well ahead of construction.

Environmental Impacts

The wetland and stream crossing permitting process under USACE Section 404 has become more complicated with the changes to the Nationwide Permit numbers. The unplanned financial burdens placed on utility owners due to mitigation costs can be significant if wetlands are not identified, flagged, and avoided if possible early in the design process. STV and its environmental subconsultants have worked directly with the USACE on many similar projects, streamlining the process to minimize schedule impacts.

Conducting threatened and endangered (T&E) species surveys for species such as the Carolina Heelsplitter and Red Cockaded Woodpecker (RCW), and scheduling construction to avoid impacting northern longeared bats, can be essential to maintaining the schedule. In addition to the more visible wetland and T&E species to be considered, concerns can arise when working at sites with former industrial uses. STV encountered one such property for a 24-inch water main project; our subconsultant analyzed the soil for contaminants, STV specified nitrile gaskets plus an allowance for contaminated soils removal in the contract documents. This enabled us to save the client significant potential change order costs.

Real Estate

The region's rapid growth has increased property costs considerably. While many small communities maintain a large portion of their rural areas with lower taxes, housing developments push the land to its limits — often right up against existing gravity sewer easements. Since many utility easements are minimal and allow for maintenance only, this trend has created the need for temporary construction easements whenever a project requires upsizing or replacement.

Built-up development and homeowners' associations (HOAs), in some cases, have forced municipalities to resort to condemnations to obtain easements at significantly higher costs — often, the temporary easements cost nearly as much as permanent easements. The STV team will provide accurate surveys and thorough property research that, together with alignment modification during design, will help to minimize these expenses.

SCDOT Encroachment

As a transportation and infrastructure leader in South Carolina, our roadway design for SCDOT projects has allowed our staff to establish strong relationships with SCDOT at all levels. Our experience with SCDOT roadway improvement projects informs our water and sewer designs. Our staff make every effort to adjust planned pits and excavations beyond the 2:1 slope of the travel lane to avoid costly positive shoring. When necessary, our roadway engineers develop Traffic Maintenance Plans (TMPs) for temporary lane closures to meet SCDOT requirements. We can also provide active shoring plan calculations for contractors, and prepare and submit these to meet all requirements and obtain SCDOT approvals if necessary.

Bid & Construction Phase Services

STV can assist municipalities with bid advertisement, addenda issuance, and bid evaluation. Our field staff make regular site visits to observe construction and make sure that work is done in conformance with the design intent. In addition, our water and sewer project managers speak at public meetings to convey the technical message to residents and stakeholders in a way they can understand.

Project Controls

STV uses BST Enterprise financial management software built specifically for architects, engineers, and environmental consultants. This robust accounting software covers the entire project lifecycle, from estimating work to managing projects and resources, to accounting and billing functions — all in one system. We also implement stringent internal QA/QC processes and regular internal QA/QC audits to maintain a high level of proficiency with every document sent to our clients.



Work Management Plan/ Experience of Proposed Personnel

2. WORK PLAN/EXPERIENCE OF PROPOSED PERSONNEL

WORK PLAN

Project Management

Andrew Vane, P.E. will serve as the project manager and be the sole point of contact for this contract. Andrew is a dedicated project manager familiar with municipal utility projects from both current projects and past projects with his previous firm. As demonstrated by his experience featured in this proposal, Andrew has proven skill coordinating multidisciplinary teams to bring engineering documents from the planning and permitting stages to final design and construction. His overall objective is to continue to build and maintain a positive relationship with clients, and to deliver project assignments on time that meet or exceed standards.

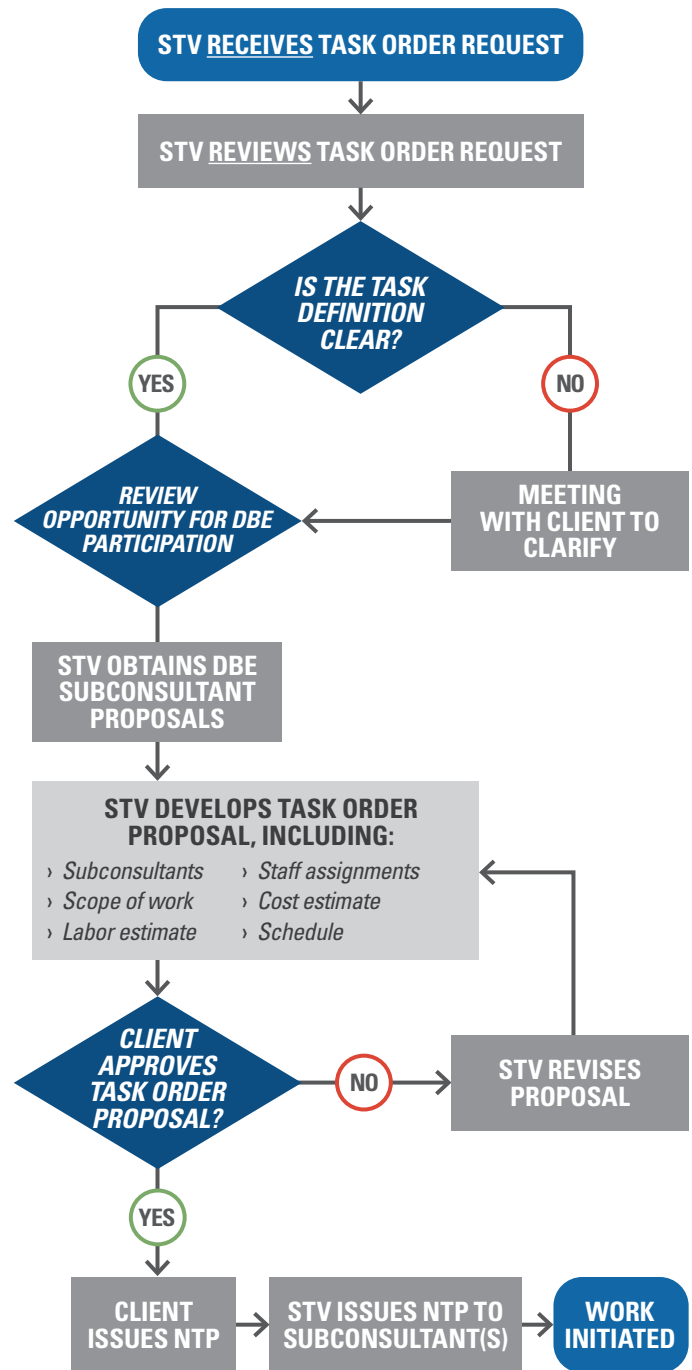
Andrew will manage project initiation, project execution/control and closeout, and will be responsible for project deliverables, schedule, budgets, invoicing, and developing the project specifications. He will schedule and monitor manpower requirements against the project budget/spending performance, including management of activities related to project scope, schedule, cost, cash flow, quality, communications, coordination, manpower, discipline requirements, resources, procurement, and risk elements to optimize quality and fiscal responsibility.

Andrew will keep the team informed of project planning and budget, and will monitor the project from initiation through delivery including development, execution, and updating project manpower. He will submit encroachments and permit applications to federal, state, and local authorities for approval and incorporate any special requirements into the project manual.

Cost Control & Project Tracking

STV's system provides total cost control from inception through completion. Daily cost reporting through our project management dashboard provides detailed analysis and an overall summary of all functional task areas. Cost planning includes a dynamic analysis of the various elements of the task. Considering the budget and historical cost data, cost

TASK ORDER MANAGEMENT



estimates will be established for each functional element of the task for labor, material, travel, and other direct costs. These established estimates will be reappraised and monitored throughout the project to maintain the integrity of the total cost plan. On-demand dashboard reports provide sufficient cost and man-hour data to control the task. Monitoring these reports, along with weekly meetings, will aid in completing projects on schedule and within budget.

Billing

STV uses BST Enterprise financial management software built specifically for architects, engineers, and environmental consultants. The robust accounting software covers the entire project lifecycle, from estimating work to managing projects and resources, to accounting and billing functions — all in one system.

At the start of the project, a formal set-up process will allocate the budget into the appropriate design phases. Invoice reports will be generated from the same software each month and will be sent to the client in their pre-approved format along with supporting documentation as needed. BST will not allow an invoice that exceeds the value remaining in the budget for each project task; therefore, the client cannot be billed in excess of the contract value. Additionally, we maintain a computerized accounting system to identify costs in a format similar to that used by many state auditors.

Schedule & Budget Control

We make sure that when we commit to a schedule, we deliver. Our team's experience with permitting issues, relationships with regulatory agencies and local utility owners, and knowledge of municipalities practices provide a solid platform for timely delivery. Our approach includes best management practices, effective project leadership, and risk mitigation:

- Because coordination and communication among our teaming partners, including the municipalities, is critical to successful project delivery, our tools include a formal project management plan, work breakdown structure, and QC plan.
- Andrew will serve as the single point of contact for this project and will properly and consistently allocate resources so that the schedule meets our commitments.
- We identify potential risks early in the process to meet the established goals in a timely and cost-efficient manner by minimizing or eliminating impacts.

Communication

STV is located in Charlotte and can be available on any project site on short notice. Our Charlotte staff is available and committed to serving clients on these water and sewer projects. Andrew will work directly with municipality staff through each phase and provide regular status updates. He will notify the client immediately regarding any changes or issues to discuss and recommend the best course of action to keep the project on schedule and within budget.

Typical Design Progress Reports

STV routinely assembles a variety of computer-generated progress reports which are submitted to the client either as part of an invoice or as part of regular progress meetings. STV is accustomed to weekly, bi-weekly, or monthly reporting, as the client requires. A typical report contains the following information:

- Major activity from the preceding work period
- Scheduled activity for the upcoming work period
- Upcoming milestones
- Items requiring resolution
- Percentage complete reporting on all tasks, broken down to a level the client desires
- Comparison of percentage complete (work product) versus percentage complete (budget)

Quality Control

QTV's culture of quality requires that every staff member at every level be accountable for his or her work product. Every task. Every time. It is the policy of STV to perform all design and plan production activities in conformance with applicable standards of quality. It is the responsibility of all company personnel to understand and maintain the quality control of their work. Internal quality control for designs is achieved through a rigorous review process that is adhered to on all projects. Audits are performed by corporate quality overseers.

Approach to QA/QC

Following notice to proceed, Andrew will implement a quality control plan (QCP) outlining QA/QC roles, responsibilities and procedures.

What's in a QCP?

Detailed Checking & Technical Review Guidelines

Thorough checking by each engineer and designer of his or her own work is required, as is the use of formal peer checking and QC checklists. Before each milestone submittal, our independent QA/QC Manager, Ron Weathers, P.E., will review plans for constructability and value.

- Checking/red-lining in the typical format of red (error), yellow (correct), blue (revised and backchecked), and green (comment)
- Checker, designer, and backchecker initial and date all plans upon review and revision
- The peer checker is never the same person as the designer
- Corporate quality assurance audits and surveillances are conducted regularly to confirm that QC procedures are followed

Independent Review & Value Engineering Plan

Independent review, evaluation, and analysis by other professionals within STV are conducted regularly. This identifies the frequency and level of detail proposed for the project. Constructability is also reviewed prior to milestone submittals, adding value to the final product, and reducing costly construction change orders.

Project Controls & Document Management

This portion of the QCP identifies specific procedures for controls and document management, including how to name and file documents consistently to proper project chargeability and timesheet keeping. Everything is clarified before projects begin.

Project Approach

STV draws upon experience from similar past projects to incorporate innovative ideas and techniques to reduce costs, minimize impacts, and accelerate project schedules. We know that delivering successful utility design projects depends as much on sound planning, communication, and effective management as it does on skillful engineering. Our team will provide the municipality with a proven approach that will provide both design efficiency and effective delivery.

Communication

The more background/discovered information the engineer and owner share, the easier it will be to identify, evaluate, and address risks. This begins with GIS level screenings and mapping to incorporate property owners, planned developments, cultural/historical locations, environmental ecosystems, and other aspects which might impact a capital improvement program project. Up-front meetings and sharing this documentation allows both the owner and engineer to develop a consensus and approach the project together. Obtaining as-built record drawings provides a starting point for evaluating easements and alignment alternatives.

Another important aspect of communication is coordination with stakeholders. Early meetings with SCDOT and research into SCDOT State Transportation Improvement Plan (STIP) schedules can help identify where SCDOT is planning their next project so that water lines are coordinated in advance.

As a designer of roadway improvement projects for SDOT and other entities, STV has a wealth of background information and the know-how of where to find it within SCDOT. This can prove to be a valuable asset for any project which crosses or follows state highways.

Water & Sewer Projects

As water distribution lines primarily follow roadways, they inherently require close coordination with SCDOT for encroachments, identification of properties with cultural and historical value using preliminary GIS screenings of routes, and trenchless crossings of streams and wetlands to reduce the permitting effort and time required. Evaluation of replacements in place of water lines can reduce impacts if temporary water service is provided to customers. Also, reducing the number of easements can reduce overall costs and impacts to residents.

For sewer line projects, often developers have constructed homes and businesses right up to the edge of existing sewer easements. This makes obtaining temporary easements and access through developed and landscaped properties more challenging. Wetlands and stream impacts are even more likely on sewer projects as they generally follow the drainage basins.

30%, 60%, 90% & Final Design

With all the available information collected and analyzed, STV develops the 30% conceptual design of the new water and sewer facilities. This design will include plan sheets of the water lines and plan/profiles of the lines.

Existing and proposed underground utilities will be shown based on their design level. The 30% documents go through a thorough internal QC review prior to submittal. Following review and approval with the project manager, the 30% design will be used to identify where soft digs are needed to verify conflicts. STV will then advance the design, receiving any additional soft digs or survey information throughout this period and firming up the alignments within the project corridor. When available, a municipality standard details and specifications will be supplemented with any special provisions based on project specific requirements. The 60%, 90%, and final documents each receive in-house QC review prior to submittal.

Environmental Considerations

In addition to the initial desktop screenings, environmental impacts to a project require attention and often mitigation. Most commonly found along road rights-of-way and even open easements are Schweinitz Sunflowers, an endangered species which requires replanting prior to construction within the habitat. STV will work with our in-house environmental personnel to coordinate permitting and relocation if avoidance is impossible. This is just one example of the potential hurdles on a water or sewer project and shows the importance of accurate identification.

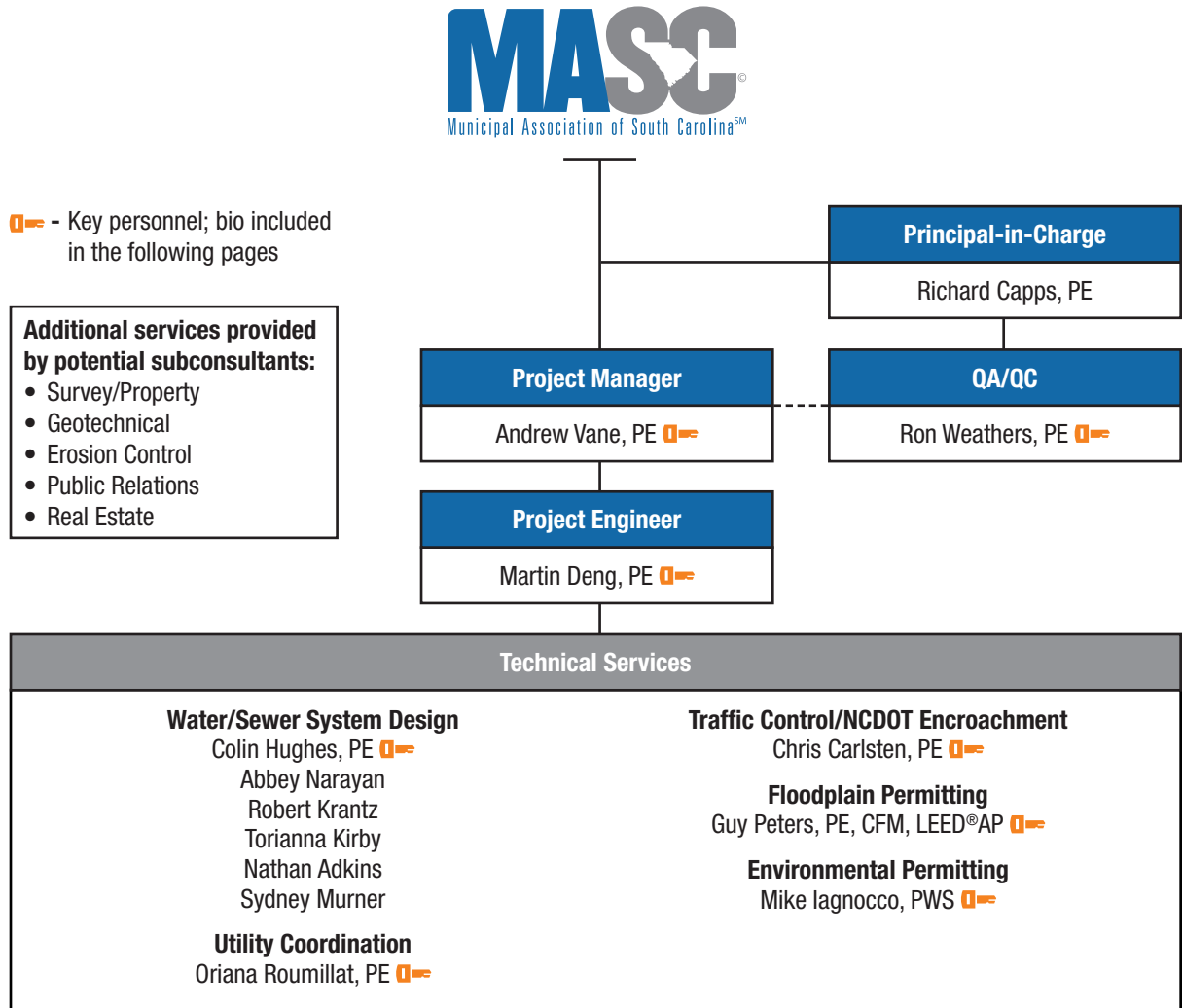
Construction Administration & Observation

Our utility design group often remains active during the construction phase of projects at various levels. This has ranged from an in-office design reference to providing full time resident construction observation and administering the contract on behalf of the owner. We use our designers as eyes in the field, and we prioritize assignments so that the utility designers who worked on the design also serve as field personnel. This brings personnel to the construction site who are familiar with the design and increases their knowledge of practical construction experience, bringing this experience back to the design table.

PROPOSED PERSONNEL

The organizational chart below illustrates the personnel comprising our team and the lines of authority that will govern it, which include clear and direct responsibility to the project manager. This staff is supported by more than 100 engineering and technical professionals. Water and sewer projects often feature multiple major stakeholders and require stringent coordination efforts to meet each stakeholder's needs. This often requires a significant availability of resources to quickly reprioritize projects and aggressively complete designs to meet project milestones. STV has the experienced staff resources available to meet these demands.

STV often uses subconsultants for specialty field services who are well experienced with municipal clients. These subconsultants are often more familiar with a municipality's standards and expectations. STV will engage all municipal clients to make this determination during project scoping and supplement with those whom STV has had successful projects to fill in the gaps.



ANDREW VANE, P.E. *Project Manager*

LOCATION
Charlotte, NC

EDUCATION
Bachelor of Science, Civil Engineering; Clemson University

PROFESSIONAL REGISTRATIONS
Professional Engineer: SC

Andrew is a project manager with nearly 30 years of specialized experience in sewer and water system design. He is familiar with providing hydraulic modeling, pumping and conveyance system design, water system computer modeling, soil erosion and sediment control, and regulatory permitting for projects throughout the region. Andrew is a recognized leader in trenchless design applications, including horizontal directional drill (HDD) and jack and bore/tunnels for pipeline projects that traverse wetlands, buried utilities, railroads, and major roadways. He is experienced with coordinating utility work with regulatory and permitting authorities, including federal agencies.

SIMILAR PROJECT EXPERIENCE

York County Blankmanship Sewer Basin Study | QA/QC Reviewer
City of Concord Poplar Tent Road Water Line Extension | Project Manager
CLT Water Dairy & Derita Sanitary Sewer Improvements PDB | Project Manager
CLT Airport Sanitary Sewer Improvement on Rental Car Road | Project Engineer

MARTIN, DENG, P.E. Project Engineer

LOCATION

Charlotte, NC

EDUCATION

Master of Science, Civil Engineering; Case Western Reserve University

Master of Science, Environmental Engineering; Tongji University, China

PROFESSIONAL REGISTRATIONS

Professional Engineer: NC

CERTIFICATIONS

Pipeline Assessment and Certification Program, National Association of Sewer Service Companies (NASSCO-PACP)

Martin is a civil engineer, and NASSCO-PACP-certified pipeline assessor with more than 20 years of experience in the design and management of water and wastewater projects. He is familiar with all aspects of the project process, including multidisciplinary engineering, multi-agency coordination, and bid document preparation. Martin will draw on expertise in developing water and sewer system plans, performing inspections and rehabilitation, and acquiring associated permits to direct project initiation, execution/control, and closeout. He will be responsible for project deliverables, schedules, budgets, invoicing, and specification development, optimizing project quality with the goal of fiscal stewardship.

SIMILAR PROJECT EXPERIENCE

York County Blankmanship Sewer Basin Study | Project Manager
CLT Airport Sanitary Sewer Improvement on Rental Car Road | Project Manager
CLTWater Dairy & Derita Sanitary Sewer Improvements PDB | QA/QC Reviewer

COLIN HUGHES, P.E. Water/Sewer System Design

LOCATION

Charlotte, NC

EDUCATION

Bachelor of Science, Civil Engineering; North Carolina State University

PROFESSIONAL REGISTRATIONS

Professional Engineer: NC

Colin is a civil engineer specializing in calculations, geometric design, and 3-D modeling for water main, force sewer main, water line relocation, sanitary sewer relocation, and related assignments throughout North Carolina. A capable coordinator, he works with utilities, owner representatives, and design teams to develop and deliver all aspects of infrastructure plans.

SIMILAR PROJECT EXPERIENCE

CLTWater Dairy & Derita Sanitary Sewer Improvements PDB | Engineer
City of Fayetteville North Cool Springs Road Sewer Repair | Engineering Specialist
CLTWater Irwin Creek Tributary to Remount Road Sewer Improvement | Engineer
CLT Airport NEAT Water/Sewer Relocation | Engineer

RON WEATHERS, P.E. QA/QC

LOCATION

Charlotte, NC

EDUCATION

Bachelor of Science, Civil Engineering; North Carolina State University

PROFESSIONAL REGISTRATIONS

Professional Engineer: NC

Ron is a seasoned civil engineer with more than 40 years of experience overseeing sanitary sewer/water main planning, design, permitting, and construction. His decades-long career managing water and wastewater pipeline and plant rehabilitations with CLTWater gives him insight into project design and implementation from the client's perspective. He will leverage this to conduct quality reviews, making sure that plans are prepared per all applicable codes.

SIMILAR PROJECT EXPERIENCE

NCDOT/CLTWater Locomotive & Railcar Maintenance Facility Water & Sewer Improvement | QA/QC Reviewer
CLT Airport Sanitary Sewer Improvement on Rental Car Road | Construction Engineer
CLTWater Irwin Creek Tributary to Remount Road Sewer Improvement | QA/QC Reviewer
CLTWater 960 Zone North-South Transmission Main & Pressure Zone Boundary Change Design-Build | QA/QC Reviewer

ORIANA ROUMILLAT, P.E. Utility Coordination

LOCATION

North Charleston, SC

EDUCATION

Bachelor of Science, Civil Engineering; The Citadel

PROFESSIONAL REGISTRATIONS

Professional Engineer: SC

Oriana is a civil engineer with more than 20 years of experience on roadway, bridge, and intersection improvement projects, providing utility coordination and design, as well as resident engineering and inspection throughout the state. She is adept at utility coordination and utility design, frequently working with utilities statewide in South Carolina. Oriana's experience and relationships with numerous utility companies enhance her team's ability to provide timely utility coordination potentially saving time and money.

SIMILAR PROJECT EXPERIENCE

*SCDOT Horry County Utility Coordination | Project Manager/Utility Coordinator
Town of Mount Pleasant Coleman Boulevard/Magrath-Darby Intersection Improvements | Utility Coordinator*

York County US 21 North Phase 1 and SC 51 | Utility Coordinator

SCDOT Horry and Georgetown Counties Safety Improvement Projects | Utility Coordinator

York County Pennies for Progress Sales Tax Program Projects | Utility Coordinator

CHRIS CARLSTEN, P.E. Traffic Control/SCDOT Encroachment

LOCATION

North Charleston, SC

EDUCATION

Bachelor of Science, Agricultural /Natural Resources Engineering; Clemson University

PROFESSIONAL REGISTRATIONS

Professional Engineer: SC

Chris is a civil engineer and project manager with more than 25 years of experience in the design and construction of new roadways, roadway improvements and widenings, intersection and interchange modifications, bridge replacements, stormwater systems, and rail projects for SCDOT as well as various counties, municipalities, and other public agencies in South Carolina. He has extensive experience preparing and managing the design plans from initial concept development through production of construction bid documents to include ROW acquisition plans, estimating, environmental permitting, utility coordination, and quality control review.

SIMILAR PROJECT EXPERIENCE

BCDCOG US 52 Corridor Study | Roadway Engineering Lead

York County SC 160 East | Project Manager

SCDOT SC 161 and US 321 Intersection Improvements | Project Manager

York County Mount Gallant Road Widening | Project Manager

GUY PETERS, P.E., CFM, LEED AP Floodplain Permitting

LOCATION

Rock Hill, SC

EDUCATION

Bachelor of Science, Civil Engineering; North Carolina State University

PROFESSIONAL REGISTRATIONS

Professional Engineer: SC

CERTIFICATIONS

Certified Floodplain Manager (CFM); North Carolina

LEED Accredited Professional (AP); U.S. Green Building Council (USGBC)

Guy is a skilled engineer with more than 35 years of stormwater and drainage design experience. He has prepared erosion control and stormwater drainage plans and has conducted hydrology and hydraulics (H&H) modeling for numerous site development and redevelopment projects throughout South Carolina. Guy has guided projects through stringent permitting processes, including Floodland Development Permits, and has prepared and submitted Letters of Map Amendments (LOMCs) and Letters of Map Revision Based on Fill (LOMR-F) applications. His experience also encompasses FEMA Flood Insurance Rate Map (FIRM) recovery projects, including studies conducted after major hurricane events.

SIMILAR PROJECT EXPERIENCE

Town of Mount Pleasant Coleman Boulevard/Magrath-Darby Intersection Improvements | Drainage and Hydraulics Engineer

SCDOT Alligator Road Widening | Stormwater Design Engineer

York County Mount Gallant Road | Drainage and Hydraulics Lead

MIKE IAGNOCCO, PWS *Environmental Permitting*

LOCATION
Charlotte, NC

EDUCATION
Bachelor of Science,
Biological Sciences; State
University of New York at
Oneonta

CERTIFICATIONS
Professional Wetland
Scientist (PWS)

Rosgen Level I - Applied
Fluvial Geomorphology

Rosgen Level II - River
Morphology and Applications

Mike is an environmental scientist with more than 35 years of experience performing and managing environmental studies. He has completed hundreds of wetland projects, including delineations, functional assessments, restoration and enhancement, and Clean Water Act Section 404 permitting through USACE. Mike routinely manages these services for numerous municipalities and various agencies such as SCDOT and the U.S. DoD. He has also prepared environmental documents in compliance with state and federal requirements and authored EAs and EISs prepared in accordance with NEPA and the State Environmental Policy Act (SEPA).

SIMILAR PROJECT EXPERIENCE

CLTWater Little Sugar Creek Sanitary Sewer Improvements | Environmental Task Manager

NCDOT Old Airport Road Widening and Improvements (U-5840) | Environmental Task Manager

Union County Public Works West Fork Interceptor | Project Manager

ADDITIONAL TEAM MEMBERS

NAME ROLE	EDUCATION	LOCATION	PROJECTS
Richard Capps Jr., P.E. Principal-in-Charge	B.S.: Civil Engineering	North Charleston, SC	<ul style="list-style-type: none"> • SCDOT Leesburg Road Widening Principal-in-Charge • SCDOT US 17 Bypass and SC 707 Interchange Project Manager • Charleston County Folly Road at Camp Road Intersection Principal-in-Charge
Abbey Narayan Water/Sewer System Design	B.S.: Civil Engineering	Charlotte, NC	<ul style="list-style-type: none"> • CLT Airport NEAT Water/Sewer Relocation Utility Engineering Specialist • City of High Point Washington Street Wet Utility Relocation Utility Engineering Specialist • CLTWater Irwin Creek Tributary to Remount Road Sewer Improvement Utility Engineering Specialist
Robert Krantz Water/Sewer System Design	B.S.: Civil Engineering	Charlotte, NC	<ul style="list-style-type: none"> • CLTWater Dairy and Derita Branch Sanitary Sewer Improvements Design-Build Utility Designer • CLTWater 960 Zone North-South Transition Main and Pressure Zone Boundary Change Design-Build Utility Designer • CLTWater Proposed 8" Sanitary Sewer to Serve 3208 Riley Avenue Drafting
Torianna Kirby Water/Sewer System Design	B.S.: Civil Engineering	Morrisville, NC	<ul style="list-style-type: none"> • CLTWater Irwin Creek Tributary to Remount Road Sewer Improvement Utility Designer • CLTWater 960 Zone North-South Transition Main and Pressure Zone Boundary Change Design-Build Utility Designer
Nathan Adkins Water/Sewer System Design	B.S.: Civil Engineering	Charlotte, NC	<ul style="list-style-type: none"> • CLTWater 960 Zone North-South Transition Main and Pressure Zone Boundary Change Design-Build Utility Designer • CLTWater Dairy and Derita Branch Sanitary Sewer Improvements Design-Build Utility Designer • CATS SLP Environmental and Preliminary Design Utility Designer
Sydney Murner Water/Sewer System Design	B.S.: Engineering	Charlotte, NC	<ul style="list-style-type: none"> • CLTWater 960 Zone North-South Transition Main and Pressure Zone Boundary Change Design-Build Utility Designer • CLTWater Irwin Basin Tributary to Remount Road Utility Designer • CLTWater Dairy and Derita Branch Sanitary Sewer Improvements Design-Build Utility Designer



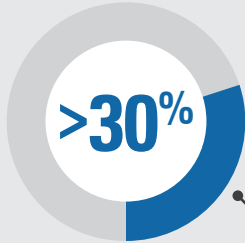
Experience of the Firm

3. EXPERIENCE OF THE FIRM

RELEVANT PROJECT EXPERIENCE

The STV team has extensive experience supporting municipalities on water and sewer projects that are similar in size and scope to those anticipated under this contract. The projects on the following pages demonstrate that STV has the knowledge, skilled personnel, and experience necessary to successfully support this contract.

A KEY BENEFIT OF THE STV TEAM



MORE THAN 30% OF STV'S WORK IS DELIVERED UNDER ON-CALL CONTRACTS.

Our team provides a proven management approach with control mechanisms to deliver projects *on time and on budget*, even working under *aggressive deadlines*.

BLANKMANSHIP SEWER BASIN STUDY

York County, SC

York County monitors water capacity needs on an ongoing basis, making sure of regulatory compliance as its jurisdiction continues to experience population growth and development. In adopting the same process for its sewer system, the county selected STV to assist in the study of the existing capacity and flows and to project future flows, which will help evaluate sewer capacity as each new connection request is received.

STV evaluated the hydraulic performance of the county's Blankmanship sewer sub-basin, a 2,500-acre site located along the Mecklenburg and York county line. The current system is primarily comprised of 8-inch gravity sewer, with some segments of 18-inch and 21-inch PVC pipes that discharge into a 36-inch ductile iron trunk sewer.

The firm developed a dynamic model of the basin, which includes more than 600 gravity sewer manholes and several lift stations with a limited distance of sewer force main, to identify potential capacity deficiencies currently and at build out. Subconsultants provided survey and flow meter



REFERENCE Barry McKinnon, P.E. | (803) 818-5781 | Barry.McKinnon@yorkcountygov.com

COMPLETION DATE 2021

data for select manholes within the basin, which STV used to calibrate the hydraulic model. The firm has also compiled a technical memorandum that summarizes the results and recommends alternatives for build out.

LOCOMOTIVE & RAILCAR MAINTENANCE FACILITY WATER & SEWER IMPROVEMENT

Charlotte, NC

STV designed and oversaw the relocation and replacement of approximately 400 lf of 54-inch prestressed concrete cylinder pipe (PCCP) water main with 54-inch ductile iron pipe (DIP) as part of the construction of the NCDOT locomotive maintenance facility on the NS Piedmont Division main line.

The existing PCCP water main was located under the proposed tracks at the facility. STV performed extensive research to determine the exact depth and slope of the pipe. The firm also coordinated with CLTWater to acquire the needed encroachment permits from NCDOT and NS.

After thorough evaluation of the records and calculations and consultation with CLTWater staff, it was decided that the pipe would be relocated and replaced. The project included the relocation of approximately 1,300 lf of 8-inch and 12-inch DIP sanitary sewer and 1,400 lf of 6-inch DIP water main. STV completed final construction documents and bidding and coordinated the tie-ins with the contractor and CLTWater during construction.



REFERENCE Bill Deal, P.E. | (980) 722-0786 | wdeal@charlottenc.gov

COMPLETION DATE 2019

I-77 AT GILEAD ROAD INTERCHANGE (I-5714/US 21 AND GILEAD ROAD IMPROVEMENTS (U-5114) Huntersville, NC

NCDOT is modifying an existing diamond interchange (I-77 and Gilead Road Exit 23) into a diverging diamond interchange. It also teamed with the Town of Huntersville to improve the intersection of US21 and Gilead Road, which is immediately adjacent to I-77. As part of the NCDOT project coordination, STV was tasked by CLTWater to design both projects. After coordination with CLTWater's planning department, it was decided to up-size the existing 12-inch water line to 16 inches as an opportunity to improve water pressure and flow in the system. The project includes three steel casings, two 36-inch casings under ramps to I-77, and one 400 lf 48-inch encasement under I-77 that will be installed by jack and bore. This project also includes a critical tie-in to the Huntersville Hospital water meter service which cannot be taken down for any length of time. The U-5114 project included more than 2,000 lf of 8-inch gravity sewer and 1,500 lf of up to 24-inch water main relocation design.



REFERENCE Michael Bright, P.E. | (919) 707-6976 | mrbright@dcdot.gov | Bill Deal, P.E. | (980) 722-0786 | bill.deal@charlottenc.gov

COMPLETION DATE Ongoing

MAIN STREET/NC 115 WIDENING AND REALIGNMENT

Charlotte, NC

As part of the NCDOT project coordination, STV was retained by CLTWater to design the water and sewer facilities relocation for this NCDOT widening project. The project is intended to help with the traffic flow along US Highway 115 which travels through the center of the Town of Huntersville. The roadway and drainage portions of this project are being designed by an NCDOT consultant, and STV is serving CLTWater directly as the utility relocation design consultant. STV evaluated the proposed roadway and drainage design and identified potential conflicts. STV then worked with the CLTWater on-call consultants for SUE services to acquire soft digs. After careful evaluation of the conflict area, STV worked with the NCDOT roadway/drainage consultant to modify the roadway and drainage design to minimize water and sewer conflicts.

The project requires the installation of approximately 4,400 lf of 36-inch through 24-inch water transmission mains, 13,500 lf of 12-inch and smaller water distribution mains, 2,000 lf of 8-inch force mains, 500 lf of 8-inch gravity sewers and



REFERENCE Bill Deal, P.E. | (980) 722-0786 | bill.deal@charlottenc.gov

COMPLETION DATE Ongoing

appurtenances, and the removal and re-installation of sewer services and water meters to residential and commercial properties affected by the project. Work also includes two jack and bore trenchless crossings of NS Railroad.

COOL STREET REHABILITATION

Fayetteville, NC

North Cool Spring Street in Fayetteville, NC, was impacted by flooding from Hurricane Matthew, causing extensive erosion to the stream and damaging the roadway embankment, approaches, and an 8-inch diameter aerial sewer crossing. STV provided utility design, permitting, and limited CA services for the replacement of this aerial sewer, which was upsized to 12 inches, on behalf of the Fayetteville Public Works Commission (FPWC). The sewer was rerouted to an area downstream to avoid impacts to a local park and historical markers. Inspection also determined that the existing 16-inch water line hanging beneath the bridge was damaged beyond repair and needed replacement.

STV designed aerial pipe supports for a combined gravity sewer/water line aerial crossing, completing the initial design within 30 days of NTP. The supports for the south side of the aerial crossing were designed as helical piles with a concrete cap to avoid an overhead electric utility.

The firm also designed modifications to accommodate the replacement of additional aged sewer manholes and lines in



REFERENCE Kevin Howell, P.E. | (910) 483-1382 | kevin.howell@faypwc.com

COMPLETION DATE 2019

the vicinity, which during construction were determined to have exceeded their useful lives. The bridge was reopened to traffic less than two years after the catastrophe.

LITTLE SUGAR CREEK TRIBUTARY SANITARY SEWER IMPROVEMENT

Charlotte, NC

STV provided design and construction administration services for approximately 7,300 lf of new trunk sewers in the City of Charlotte's bustling SouthPark neighborhood. The project site includes two large-diameter microtunnel crossings of City-owned roadways through solid rock with hardness exceeding 30,000 psi.

STV's team performed environmental permitting, geotechnical investigation, and easement plat development, as well as study, recommendation, and design of an alignment that would mitigate hardwood tree removal, avoid an earthen dam, and accommodate nearby construction work.

The project replaced the 10-inch and 8-inch diameter tributary sewers with new 30-inch and 24-inch diameter sewers designed to meet Year 2040 projected design flows. It was the recipient of the **American Council of Engineering Companies – North Carolina (ACEC-NC)'s 2021 Honors Award for Engineering Excellence** and **ACEC's 2021 National Recognition Award**.



REFERENCE Chuck Bliss, P.E. | (704) 336-1012 | chuck.bliss@charlottenc.gov

COMPLETION DATE 2019

SANITARY SEWER IMPROVEMENTS ON RENTAL CAR ROAD

Charlotte, NC

STV was chosen to design 2,200 lf of sanitary gravity sewers varying in diameter from 8 to 18 inches to accommodate Charlotte-Douglas International Airport's recent 24-gate expansion. The firm's design included seven trenchless crossings of existing access roadways and parking lots, as well as the new main terminal passenger access deck. One trenchless crossing consisted of 300 lf of bored 48-inch diameter steel casing 38 feet deep to tie into an existing 6-foot diameter interceptor sewer manhole, which was accomplished without affecting the airfield or aircraft ground traffic. In another instance, a bored casing was threaded between piles of the existing retaining wall.

Other services included sewer modeling, design, permitting, and construction administration. Construction was made challenging by the average of 20 to 35 feet of cover with limited workspace; it also required detailed traffic control to maintain access to the main terminal along Rental Car Road. The project received **ACEC-NC's 2022 Grand Award for Engineering Excellence** and **ACEC's 2022 National**



REFERENCE Ashton Watson, P.E. | (980) 722-8136 | ashton.watson@cltairport.com

COMPLETION DATE 2019

Recognition Award.

CEDARS EAST STORM DRAINAGE IMPROVEMENTS

Charlotte, NC

A task under our on-call Storm Water Services contract, the project reduces flooding and address channel erosion problems at the Cedars East Apartment Complex and adjacent neighborhood. Stormwater features include dual 8' x 4' reinforced concrete box culverts (RCBC), a 10' x 7' RCBC, and a 12' x 8' RCBC system more than 1,300 feet in length. Hydrologic and hydraulic modeling included HEC-1 and HEC-RAS balancing techniques. Stream enhancement techniques, such as boulder drop structures, boulder toe, wrapped earth, live staking and biodegradable matting, have been incorporated into stream sections in need of repair. Special drainage structures have been designed to connect box culverts of varying sizes. The box culverts, headwalls, and special drainage structures include detailed design for footings, bases, walls, and top slabs with intricate rebar configurations that tie the structures together. An extensive shoring plan has been developed to secure the proposed culvert trench through limited space constraints.



REFERENCE Matthew Anderson, P.E. | (704) 336-7923 | manderson@ci.charlotte.nc.us

COMPLETION DATE 2022

STV coordinated environmental permitting to deliver the 401/404 permit packages to USACE and North Carolina Department of Environmental Quality (NCDEQ). We acquired an National Pollutant Discharge Elimination System (NPDES) land disturbance permit from NCDEQ by submitting an erosion control plan.

POPLAR TENT ROAD WATERLINE EXTENSION

Concord, NC

To remove a hydraulic bottleneck and provide for the creation of a future higher pressure zone, STV developed preliminary and final designs for a 24-inch diameter water transmission main extension for the City of Concord, NC. The waterline was extended 4,300 lf from east of International Drive to the existing 24-inch waterline at the Eva Drive/Rock Hill Church Road intersection.

The project included construction using ductile iron pipe and required the removal of boulders and solid rock adjacent to high voltage electric transmission towers. STV performed preliminary routing, detailed design, erosion and stormwater permitting, and wetlands delineation, and assisted with bidding. The firm provided coordination and permitting services for the project; its scope of work also included a limited Phase 1 and Phase 2 environmental study because a former gas station along the route was suspected of having petroleum hydrocarbons in the soil.



REFERENCE Jeff Corley, P.E. | (704) 920-5372 | corleyj@concordnc.gov

COMPLETION DATE 2021

R-3300B HAMPSTEAD BYPASS WATER & SEWER FORCE MAIN RELOCATION

Pender County, NC

STV, as a subconsultant, designed and permitted over 24,600 lf of water and sewer lines for this highway widening project in Pender County, NC. This project includes a bypass highway and widening of US 17 from 4-to-10-lanes. Pender County Utilities owns and operates the water transmission and distribution system in the area. Pluris LLC, a private wastewater treatment firm, owns and operates pumping stations, force mains, and WWTP's in the project area. STV designed and permitted all the water and sewer force main relocations as part of this project.

This project required the relocation of approximately 14,800 lf of 6-inch through 18-inch diameter water lines and 9,800 lf of 10-inch through 12-inch force main sewers to accommodate the roadway widening project in this very narrow and busy public ROW. Trenchless design consisted of 630 lf of jack and bored crossings and over 7,000 lf of HDD pipes varying from 12 inches to 18 inches in diameter. Overall, there were nine separate HDD crossings designed, the longest being 1,417 lf of 18-inch diameter pipeline beneath a noise wall, wetlands,



REFERENCE Lonnie Sleeper | (910) 341-2000 | lasleeper@ncdot.gov

COMPLETION DATE 2022

and roadway pavements. The utility relocation portion of this project totaled \$5.6 million.

IRWIN CREEK TRIBUTARY TO REMOUNT ROAD SEWER IMPROVEMENT PDB

Charlotte, NC

CLTWater contracted with STV to improve the Irwin Creek Remount sewer basin, located in close proximity to LYNX Blue Line LRT infrastructure, to accommodate explosive Transit-Oriented Development (TOD) growth. The project team performed a study to upsize the inadequate trunk sewer system, conducting additional flow monitoring, condition assessment, and alternative alignment analysis to update the preliminary engineering report (PER). The firm's design combines dig and replace with bypassing, upsizing, and paralleling the existing sewer. Approximately 2,000 lf of 30-inch, 1,200 lf of 24-inch, 4,400 lf of 18-inch, and 6,000 lf of 12-inch sewer pipe will be installed, varying from PVC to ductile iron pipe (DIP) and fiberglass-reinforced plastic (FRP). Incorporation of a 3-pipe inverted siphon eliminated an aerial sewer crossing at Irwin Creek and minimized permitting requirements. The firm also designed 720-lf, 60-inch hand-mined tunnel under I-77; a 435-lf, 48-inch microtunnel boring machine (MTBM)-mined tunnel through the contaminated site of a former incinerator landfill; and various 36 to 48-inch jack and bore steel casings.



REFERENCE Mac McClanahan | (704) 995-7489 | mac.mcclanahan@charlottenc.gov

COMPLETION DATE Ongoing

DAIRY-BRANCH SEWER IMPROVEMENT PROGRESSIVE DESIGN BUILD

Charlotte, NC

As part of a progressive design-build (PDB) team, STV led the design of improvements to CLTWater's Dairy tributary sewer branch, enabling continued rapid development in close proximity to expanded CATS LYNX Blue Line light rail transit (LRT) service. STV performed a SSES for the Dairy branch trunk in the city's South Boulevard area, designing 8,700 lf of 18- to 36-inch diameter gravity sewer to replace approximately 8,500 lf of existing 10- to 18-inch diameter gravity sewer. Given the dense commercial and residential developments around the tributary sewer, this project required the use of Microtunnel Boring Machine (MTBM) tunnels, each measuring over 400 lf beneath roadways, creeks, and parking lots to minimize disruption to residents, customers, and building foundations.

This project also included phasing the project so that construction to be completed in Freedom Park ahead of a yearly festival. STV provided construction and technical support throughout and will be involved through completion of construction. These designs eliminated multiple aerial



REFERENCE Mac McClanahan | (704) 995-7489 |
mac.mcclanahan@charlottenc.gov

COMPLETION DATE Ongoing

creek crossings, work on public school sites and across two city parks.

NORTH END-AROUND TAXIWAY (NEAT) WEST OLD DOWD ROAD RELOCATION UTIL- ITY RELOCATION

Charlotte, NC

As part of the North End-Around Taxiway (NEAT) project adding a fourth runway at the Charlotte Douglas International Airport (CLT), STV is providing planning and preliminary design for the relocation of West Old Dowd Road and Airport Overlook Drive. CLTWater's 24-inch diameter water transmission main had to be rerouted and a gap in the distribution system completed so water could be supplied to the River District area. These two phases consisted of the design and permitting of 850-lf of 12-inch, 6,180-lf of 24-inch, and 5,940-lf of 36-inch water transmission mains.

STV coordinated the location of the water transmission main with two separate design-build contractors for the Barry Drive tie-in and for the Paw Creek force main to facilitate a common utility easement for CLTWater. This required six trenchless installations, the longest being a 473-lf, 48-inch diameter cased crossing of both Norfolk Southern and Duke Energy Transmission. The gap water line project made use of an existing 54-inch diameter casing beneath I-485. Although the casing was misaligned and required a rail system to



REFERENCE Chuck Bliss, P.E. | (704) 336-1012 |
chuck.bliss@charlottenc.gov

COMPLETION DATE Ongoing

install the 24-inch diameter water line, the forethought of CLTWater to have the casing open-cut during the I-485 construction saved a significant amount of money. The Old Dowd Road water main relocation will be constructed simultaneously with a new roadway and bridge by a local heavy civil contractor.

960 ZONE NORTH-SOUTH TRANSMISSION MAIN

Charlotte, NC

Charlotte's CATS Blue Line Extension Light Rail Corridor has necessitated resilience improvements to CLTWater's 960 Pressure Zone. The 960 Zone North-South Water Transmission Main improvement project will address these needs, adding approximately 30,300 lf of a 36-inch water line from Idlewild Road to the Hickory Grove Elevated Water Tank in eastern Mecklenburg County. As a subconsultant, STV is providing design and construction oversight services.

These improvements aim to curtail any adverse communal effects in case of an emergency outage at the Plaza Road or Sardis Road booster pump stations. Additionally, the majority of the 36-inch transmission main will be located within the road's ROW on city- and county-owned property, which will minimize impacts to vehicular traffic and private parcels. Our trenchless installation techniques will minimize conflicts with neighboring wetlands, existing utilities, and other nearby infrastructure. New fire hydrants installed along the route will enhance fire protection and promote fire safety in nearby neighborhoods.



REFERENCE Amy Vershel, P.E. | (704)-336-1077 | amy.vershel@charlottenc.gov

COMPLETION DATE Anticipated Late 2023



4.

Familiarity with Federal Funding Requirements

4. FAMILIARITY WITH FEDERAL FUNDING REQUIREMENTS

STV has a extensive experience with not only projects that receive federal funding, but with helping clients receive more federal funds through grant writing, and planning. We have a proven track record of developing competitive grant applications for clients across the United States and a nuanced understanding of grant research and application processes. The firm understands that maximizing and diversifying potential revenue streams for municipalities is critical to long-term financial sustainability. Grants from traditional and non-traditional sources are an important part of any financial model. We understand that the highly variable nature of discretionary grants makes including them in your improvement plans difficult—some years you are successful, others not.

A sample of STV water and sewer projects that used federal funding:

- NCDOT/CLT Water Locomotive & Railcar Maintenance Facility Water & Sewer Improvement | TIGER Grant
- CLT Airport NEAT West Old Dowd Road Relocation Utility Relocation | FAA
- CATS Blue Line Extension | FTA

STV's approach is to collaborate with clients and technical experts to develop a complete, well-documented, compliant, and competitive grant application package. STV brings a unique perspective to the use of grants in project finance and our team has experience working on a variety of different FTA grant applications. Our highly integrated grant writing team brings experience in transportation planning, economics, and finance to a range of modes and grant opportunities.

We help clients determine their most competitive projects and then write grant applications and gather supporting documentation. Recent examples of our work include assistance to Fairfax County, VA, with grant applications for the Richmond Highway bus rapid transit project. For the DC Circulator in Washington, DC, STV supported two grant applications — one for FTA's Low/No Emissions grant program and another for the FTA's Bus and Bus Facilities grant program. Both grant applications were successful; DOT received \$5.2 million. STV has also helped agencies secure security and resilience funding.

The firm also has experience with grant writing for large resiliency grants for example the New York City Transit (NYCT) was awarded \$1.5B for Superstorm Sandy recovery/resiliency after STV staff worked onsite with NYCT staff to prepare 13 grant applications in a short timeframe — 11 of the 13 applications were funded.

STV'S STELLAR GRANT TRACK RECORD

\$100 MILLION Identification of funding strategies for the \$100 million **Assembly Street Railroad Corridor Separation and Consolidation project in Columbia, SC**

Numerous grant applications for the \$700 million **Route 1 (Richmond Highway) BRT project in Fairfax, VA**

\$700 MILLION

\$2.6 MILLION Two successful \$2.6 million grant applications for **FTA's Low/No Emissions grant and Bus and Bus Facilities grant programs for the DC Circulator bus system in Washington, D.C. and Rosslyn, VA**

Obtained \$16.9 million in **FTA New Starts/ Small Starts funding for the Jacksonville Transportation Authority (JTA) East Corridor BRT in Jacksonville, FL**

\$16.9 MILLION

