

SCOPE OF SERVICES

City of Columbia Carolina Crossroads Utility Relocation Project

The services performed as a part of this Scope of Service include providing design and construction services for the City of Columbia (CITY) water mains, sewer lines, and pump station relocations around a roadway improvement project, including utility coordination, evaluation of alternative alignments, engineering and design, and construction phase services for the project. Scope of this work shall be relocating the CITY's water and sewer utilities as needed to meet the requirements of the documents provided by the SCDOT as part of the SCDOT's Agreement for Carolina Crossroads Phase 2 – US 76 (Broad River Road) at I-20 Interchange Improvement and I-20 Widening Project (Project ID P039719).

This scope is written to develop a set of water and sewer design documents for the project to be bid and constructed. This Scope of Services will be included as in-contract work of SCDOT's Carolina Crossroads Design-Build project as detailed in the SCDOT's Agreement for Carolina Crossroads Phase 2 – US 76 (Broad River Road) at I-20 Interchange Improvement and I-20 Widening Project (Project ID P039719).

The purpose of this scope is to evaluate alternative routes for the relocated lines that conflict with the proposed roadway improvements or other utility facilities, coordinate the design with the SCDOT, confirm capacity needs and issues, and perform engineering and design services for permitting, bidding, and construction services.

In general, (Design-Build Contractor) will provide the following scope of services:

- Utility Coordination
- Evaluation of Relocation Alternatives
- Engineering Design and Permitting
- Relocation Construction Services
- Engineering Services During Construction

TASK 100 – Evaluation and Design Phase Administration

110 General Project Administration

Design-Build Contractor will manage the efforts of its project team members and sub-contractors by assigning manpower, delegate responsibilities, review work progress, monitor budget and schedule, and direct the progress of the work. As part of project administration, Contractor will:

- Participate in design review and construction progress meetings with the CITY as outlined.
- Provide a detailed project schedule for the relocation design and construction, along with on-going updates, on the same frequency as project schedules are required to be provided to SCDOT on the overall project. Schedule updates for relocation work are not need by the CITY more than monthly.
- Plan and perform project quality control and quality assurance.
- Project Administration will terminate at the completion of Task 800.
- Provide monthly progress reports.

120 Coordination Meetings

Throughout design of the project, Contractor will maintain regular contact through the CITY's staff. Progress meetings include:

- Kickoff meeting
- Monthly Progress meetings with CITY's Project Manager for duration of project through construction.
- 50% and 90% replacement alternatives meetings in Task item 270 – Two (2) meetings total (completion of this stage is considered 30% total project design review meeting) and could serve as a monthly review meeting.
- 60% and 100% Draft Final, review of design meetings in Task item 570 – Two (2) meetings total

130 Project Management & Coordination with the CITY

- Contractor will communicate with the CITY through a single point of contact, Consultant's Project Manager.
- Contractor will conduct coordination meetings as outlined in Task 120 of this agreement.

TASK 200 – Preliminary Planning, Investigation, Engineering and Alternative Analysis

210 General Data Collection, Field Recon

- CITY anticipates negotiation and execution of a Memorandum of Agreement (MOA) with the SCDOT on this project. Design-Build Contractor's work shall be consistent with the MOA and other related documents (Supplemental Agreement and Attachments).
- Contractor will obtain county tax map records for identifying property potentially affected by the project.
- Contractor will obtain SCDOT and CITY maps for road and street right-of-way information for areas outside of the roadway plans as needed.

- Contractor will contact other utilities in the areas outside of the roadway plans as needed that can be determined from field observation for mapping and location information that may impact alignment of the proposed water and/or sewer relocations. (For this scope this is assumed to be a minor effort.)
- In addition to the SCDOT roadway construction plans consultant may utilize existing aerial mapping along with utility mapping, county property maps and street right-of-way information to determine possible water and/or sewer line routing alternatives in a table top type route analysis.
- Field Reconnaissance:
 - Based upon the table top analysis, field reconnaissance will be conducted on the identified routing alternatives. Observation during the field reconnaissance will be recorded and used to identify qualifying or disqualifying issues associated with the routing alternatives.
 - Contractor will meet with the CITY to discuss results of the data gathering and field reconnaissance. Upon agreement of the resulting possible alternatives more detailed evaluation of alternatives will be conducted.

220 Alternative Analysis and Route Selection

- Upon completion of Task 210, Contractor will determine the extent of the relocations necessary to avoid conflicts with the proposed roadway, drainage, other utilities, and will develop alternatives for relocating the water and sewer infrastructure.
 - Contractor will determine the apparent water and/or sewer infrastructure conflicts with the proposed roadway and drainage system.
- Contractor will proceed with alternative analysis including the following alternatives:
 - Relocating the water and/or sewer within the existing, or new, roadway right-of-way (same general alignment as the existing line(s)).
 - Relocating the new water and/or sewer along a different alignment.
 - Relocating the water and/or sewer adjacent to the existing roadway right-of-way in an easement where it is necessary due to lack of available right-of-way or otherwise advantageous to avoid construction and maintenance conflicts.
 - Various combinations of the above options as needed for the particular project circumstances.
- After an evaluation of the impacts and development of conceptual alternatives, Contractor will present the CITY with options and recommendations for conflict resolution. These will be presented at a meeting with the CITY to review relocation options and select the preferred alternatives before proceeding to preliminary plans. This meeting will identify the relocation corridors for the water and sewer infrastructure.

230 Preliminary Agency Coordination and Meetings

- Upon selection of final route selection, Contractor will contact known regulatory agencies that may have jurisdiction in the project area to coordinate any permitting and notification actions required.

240 Preliminary Utility Coordination and Meetings

- Upon selection of final routes, Contractor will coordinate any conflicts with other utilities, easements, encroachments, and design considerations.
- Contractor will provide relocation sketches for the selected water and sewer relocation routes.

250 Establishing Design Criteria

- It is anticipated that in most cases the relocated water and sewer facilities will predominately be the same size as those being replaced; therefore no sizing or capacity studies are included in this scope. The CITY will provide the hydrant test results for use in by Contractor in performing minimal flow and pressure calculations if required by SCDHEC for a permit to construct.
- In those few cases where multiple existing smaller water mains parallel to one another must be relocated and are approved by the CITY and SCDOT to be consolidated into a single larger main or where the existing pipeline is of a diameter no longer available or is inconsistent with current CITY standards and the next larger diameter pipe must be used, the Design Build Contractor's Engineer-of-record will be responsible for sizing calculations required for submission to SCDHEC and to ensure the consolidated main provides equal or greater capacity. The CITY will provide the hydrant test results needed for performing these calculations.
- Decision factors for the alternative analysis will be developed by the Consultant and reviewed by the CITY. Possible evaluation factors include; cost, constructability, availability of alignments, access for maintenance, public impact, property, permitting, utility and other relevant factors as to provide recommendations for the most reliable solution.
- Contractor will design the new water and/or sewer facilities in accordance with SCDHEC regulations, the CITY standards, permitting requirements, and standard civil engineering practices.
- Contractor will design the water and sewer systems to avoid the roadway infrastructure conflicts as determined.
- Contractor will give consideration in the design to connections to side lines, valve locations, and the ability to serve existing parcels and homes/businesses.
- In addition to conflict resolution, Contractor will design the systems to realign water and sewer lines at the intersections that are proposed to be realigned by the SCDOT.

- Trenchless crossings of roadways or other features shall result in steel-cased crossings meeting the requirements of the Owner's Standard Specifications Section 02590 and other specification sections. The design of the crossing installation is the responsibility of the Design Build Contractor's Engineer-of-record.

270 Preliminary Design Reviews

- Contractor will prepare a report of findings and recommendations for review by the CITY.

TASK 300 – Survey and Utility Mapping

Once the final alignment has been selected by the CITY and approved by the SCDOT, field investigations for that alignment shall be conducted in support of plans preparation and final design. In some cases limited Task 300 services may be needed to complete Task 200.

310 Field Survey

Contractor shall provide all necessary surveys to produce the required design plans and digital files.

- All surveying shall be in accordance with current South Carolina surveying standards and conducted using conventional, GPS, or other accepted methods.
- Horizontal datum shall be: SC State Plane Coordinates NAD83
- Vertical datum shall be: NAVD 88
- The Contractor's surveyor will complete field surveying along a minimum 50-foot wide corridor of the proposed pipeline alignment. Relevant visual or physical features along the route will be surveyed, rock outcroppings, structures, geotechnical bore locations, etc. and will make detailed records for inclusion in field survey files. Contractor's surveyor shall recover existing horizontal control monuments and establish GPS control points along the pipeline alignments. Contractor's surveyor shall traverse along the proposed pipeline route to locate existing sanitary sewer manholes, property boundaries, and other existing utilities and physical features. Contractor's surveyor shall recover existing vertical control points. Contractor's surveyor will also provide top of bank, bottom of bank, and water surface elevations at water crossings along the proposed pipeline alignments. Significant rock outcroppings shall be identified.
- Locate both horizontally and vertically along the routes of each of the proposed water lines, exposed structures, land features, property corners (as required), marked utilities, etc., such as, but not limited to, location of paved roads and driveways (w/type identified); stormwater culverts with inverts and any headwalls or inlet/junction boxes (w/size and invert elevations identified); stormwater ditches (w/top and bottom of banks identified); power poles and

guy wires (w/connection of overhead power lines to adjacent poles); electric boxes; gas valves and meters; water valves, meters, and fire hydrants; exposed pipes (w/type, diameter, and material identified); cable boxes; telephone pedestals; mailboxes; fences; signage (street name, traffic, etc.); tree and brush lines; trees of sufficient size that require protection according to applicable sections of Richland County's current tree ordinance (with identification of size and type); and any other miscellaneous aboveground structure or feature.

- Contractor shall in areas where utility info is needed obtain underground utilities as identified and marked in the field by the local utility locating service or the Contractor's Subsurface Utility Engineering sub-consultant shall be located by the survey. This shall include, but not be limited to, electric, gas, water, cable, stormwater, fiber optics, and telephone service lines. It will be the responsibility of the Contractor's surveyor to contact the utility locating service in the appropriate amount of time prior to field surveying, such that service lines as identified can be properly located. The Consultant's surveyor will, at a minimum, contact the Palmetto Utility Protection Service (P.U.P.S.) at 1-800-721-7877 and CITY for field locating underground utilities.
- State and County ROWs and any existing obvious and apparent utility easements within the project limits shall be researched through the appropriate entity and identified by the Consultant's surveyor for use during the survey and used for design purposes. This information shall be included in the electronic file and survey drawings.
- Cross Sections along the center of the pipe route shall be taken every 100 feet at a minimum and at locations in between as required to define changes in slope, ditch crossings, etc., as necessary to develop an accurate topography of the survey extents.
- The Contractor shall determine the necessary corridor to be surveyed for this project. At a minimum topographic survey and cross sections will include the area from the edge of pavement to the limits of a temporary construction easement or edge or right-of-way. Where the water and/or sewer is located adjacent to an existing roadway, the opposite side of pavement and driveways will be horizontally located to facilitate developing traffic control plans for the construction phase. Where the water and/or sewer is within the road right of way, the adjacent property owners and their parcel sidelines will not be mapped.

320 Property Research and Easement Exhibits

- Property Research and acquisition responsibilities shall be as described in the SCDOT's Agreement for Carolina Crossroads Phase 2 – US 76 (Broad River Road) at I-20 Interchange Improvement and I-20 Widening Project (Project ID P039719).

- If Easements are utilized, Contractor shall prepare and provide Easement Exhibits as part of this scope. In consultation with CITY, the Consultant's surveyor shall survey, research, plat, and prepare easement descriptions for required permanent easements that will be required to construct the proposed relocations. Exhibits shall be prepared in accordance with the standards of the CITY for recording.

330 Utility Mapping

- The Contractor will utilize Subsurface Utility Engineering (SUE) data provided by the SCDOT. Consultant and Design-Build team shall acquire additional utility location information as needed to plan and perform the relocation work. The Contractor will provide, as needed, additional Level A utility information along the route of the project to determine utility facility elevations where the SCDOT has not collected this information.

TASK 400 – Geotechnical Investigation

410 Field Investigation

- Contractor shall utilize any geotechnical data provided by the SCDOT. Consultant will supplement this data as needed with additional geotechnical investigations as needed for work required to be performed.
- Contractor will provide geotechnical services to identify and characterize subsurface soil conditions along the proposed project routing as needed to design and construct the utility infrastructure. Borings will be performed along the preferred routing to determine general soil conditions. This information will be used to design pipe bedding details, evaluate soils for potential dewatering requirements, the capability of soils to be effectively dewatered, estimate rock excavation, and estimate amounts of additional suitable backfill material needed (if any) for the project. .
- Split-barrel samples will be taken at each boring. Boring will be backfilled at the end of each day and groundwater level will be monitored before backfilling. Borings within the SCDOT right-of-way will be backfilled with grout.
- Contractor will obtain SCDOT and City permits required to conduct investigation on public right-of-way.

TASK 500 – Final Design

510 Roadway Coordination (City, Town, County, State, Federal)

- Contractor will contact and meet as necessary with City, County, State and Federal agencies to determine design parameters for construction of the relocated facilities within the roadway rights-of-way.
- Contractor will request drainage system modifications from the SCDOT's designers if appropriate.
- Contractor will coordinate final design with the requirements of roadway encroachment permits.

520 Utility Coordination

- Contractor will contact and coordinate with SCDOT within the construction limits to determine design parameters, right-of-way encroachment requirements and resolve conflict issues.
- Contractor will coordinate final design with the agreed upon requirements of encroachment permits and conflict resolution solutions.

540 Project Plans and Specifications

- Contractor will prepare drawings and specifications depicting the scope, extent, and character of the materials to be provided and the work to be performed by an installation contractor. The Contract Documents shall consist of and include the following:
 - Detailed plan and profile drawings on 24" x 36" plan sheets, 50-scale.
 - It may be necessary to show a different scale that allows for more detail to be shown such that impacts of other utilities and transportation infrastructure can be determined.
 - Plan sheets will utilize the same match lines as shown on the SCDOT plan set. Roadway design stationing will be shown as reference.
 - After completion Contractor will submit GIS information on the pipeline locations along with as-builts in AutoCad and pdf format.
 - Relevant features impacting construction as located by the survey.
 - Design and construction details.
 - Sediment and erosion control details.
 - Relevant environmental features.
 - Traffic control plans.
 - Existing pipe demolition/abandonment as needed
 - By-pass pumping plan as needed
 - Specifications coordinated with the CITY'S standard contract documents.
 - Special conditions related to permit requirements and easement requirements.
 - Material specifications including minimum installation requirements.
- Upon approval of the 100% Draft Final submittal, Contractor will provide 5 full size sets of final plans, one PDF of the signed and sealed drawings and

specifications, and one sided copy of unbound specifications. Should the plans or specifications have revisions resulting from permitting, Contractor shall submit revised plans.

550 Regulatory Agency Coordination

- Contractor will contact and meet as necessary with City, County, State and Federal regulatory agencies to determine design parameters for construction in accordance with regulatory requirements.
- Contractor will coordinate final design to comply with regulatory requirements.
- Potential agencies are:
 - South Carolina Department of Health and Environmental Control
 - City of Columbia – Streets Division
 - City of Columbia - Stormwater
 - South Carolina Department of Transportation
 - Richland County Roads
 - Lexington County Roads

570 Design Reviews

- Contractor will provide the CITY copies of plans and specifications for the Project for review and approval at the thirty (30%) percent, sixty (60%) percent and Draft Final one-hundred (100%) percent completion milestones. Contractor will meet with the CITY during these milestones to discuss the project and obtain input from the CITY. Following the review, Contractor will make revisions as requested by the CITY. Documentation of the completed reviews (and how each comment was addressed) will be provided to the CITY by the Contractor. Following the technical reviews, Consultant will make modifications to the construction documents. The review process will follow the requirements as specified in the SCDOT's Agreement for Carolina Crossroads Phase 2 – US 76 (Broad River Road) at I-20 Interchange Improvement and I-20 Widening Project (Project ID P039719).
- Upon approval by the CITY, plans and specifications and any permits obtained will be submitted to the CITY.

TASK 600 – Permits and Property

610 Property and Right-of-Way Assistance

- Property acquisition of sufficient SCDOT rights-of-way to relocate or retain CITY water/sewer infrastructure in the right-of-way to meet these standards, or the acquisition of easements, shall be the responsibility of either the SCDOT or the Design Build Contractor (responsibility to be as set forth in the SCDOT's Agreement for Carolina Crossroads Phase 2 – US 76 (Broad River Road) at I-20 Interchange Improvement and I-20 Widening Project, Project ID P039719).
- Easements – Refer to task 320 above.

- The Consultant will rely on Richland and Lexington County Tax Map information in identifying property owners and will research Richland and Lexington County records for property plats that have been recorded and filed with the County.
- If easements are being utilized, upon CITY approval of the 60% design plans, Consultant will prepare and submit easement exhibits.

620 Permits

- Construction Permit: Upon CITY approval of the Draft Final one-hundred (100%) percent completion documents, Contractor will submit copies of the project plans and specifications for final review and approval by the South Carolina Department of Health and Environmental Control (SCDHEC); work with SCDHEC and assist the CITY in efforts to obtain the necessary permits and/or approvals; and furnish SCDHEC with the required number of copies of plans and specifications needed for review and approval. The Contractor is responsible for all fees. If a construction permit is not required by SCDHEC, then the Contractor shall submit to get written confirmation from SCDHEC that the utility relocation is considered maintenance and that a permit is not needed.
- Stormwater Permit: The Contractor is responsible for any permitting related to the utility relocation not already covered by the Carolina Crossroads permitting. Fees associated with the permitting shall be the responsibility of the Contractor.
- Wetlands Permit: The Contractor is responsible for any permitting related to the utility relocation not already covered by the Carolina Crossroads permitting. Fees associated with the permitting shall be the responsibility of the Contractor.
- Roadway Encroachment Permits: This scope assumes a City of Columbia and /or a SCDOT Encroachment Permit will be required. Upon approval by the CITY of the Draft Final one-hundred (100%) percent completion documents, Consultant will submit for review and approval for an Encroachment Permit by the City of Columbia, county, and/or the SCDOT
- Railroad Permits: The Contractor is responsible for any permitting related to the utility relocation not already covered by the Carolina Crossroads permitting. Fees associated with the permitting shall be the responsibility of the Contractor.

TASK 700 – Bidding and Award – Not Used

TASK 800 – Engineering Services During Construction

810 General Administration of Construction Contract

- Contractor shall provide engineering review of construction activities sufficient to ensure the project is constructed as designed, and to be able to submit and obtain the permit to operate from SCDHEC.
- Consultant will provide general services during construction as described herein.
- Administration of Construction Contract: As part of general administration of the construction contract, Contractor will consult with CITY. Contractor shall provide contract administration and general services required for the Project, including:
 - a) Attend a pre-construction meeting and monthly progress meetings that will address critical schedule requirements, emergency procedures, schedule updates, coordination issues, change orders, quality assurance testing approvals, and any other issues related to completion of the project. Contractor will submit meeting minutes of these meetings to the CITY.

820 Submittal & Pay Application Review

- Shop Drawing Review: Contractor will submit Shop Drawings and samples for materials used on the project, the results of tests and inspections, and other data that the Contractor is required to submit. Submittals to the CITY should follow the process as described in the SCDOT's Agreement for Carolina Crossroads Phase 2 – US 76 (Broad River Road) at I-20 Interchange Improvement and I-20 Widening Project (Project ID P039719).
- Testing Results: Contractor will perform and review testing results of tests required by contractor for contract compliance and comment on any results that appear to be out of compliance.

840 Completion Monitoring & Documentation

- Quality Testing: Contractor will perform the specified quality testing.
- Final Inspections: Contractor will perform the following:
 - Conduct a walk-through inspection with the CITY to determine if the Project has reached substantial and/or final completion.
 - Prepare a punch list of work items remaining.
 - Conduct one final inspection to determine if the work is acceptable.
 - Stormwater Closeout Inspection & Notice of Termination
 - Closeout of all related permits.

850 Periodic Construction Observation

Construction Observation: Contractor's Project Engineer will visit the site to observe the progress and quality of the executed work of the Contractor and to determine, in general, if such work is proceeding in general accordance with the Contract Documents.

TASK 900 –Not Used

TASK 1000 – Project Closeout

1010 Record Drawings

- Contractor will prepare record drawings in electronic format as approved by the CITY and in accordance with the CITY's record drawing standards. The final record drawings will be delivered in electronic format on a DVD or thumb drive. Drawings shall align the water/sewer utilities with the survey collected of the constructed infrastructure (see design criteria), and shall be provided in AutoCad 2017 or more recent version.

1030 O&M Submittals

- At the conclusion of the project, Contractor will receive, review and transmit to the CITY with written comments guarantees, Bonds, and certificates that are required by the Contract Documents and provided by the Contractor.

1040 Digital Information Submittals

- The final record drawings will be delivered in electronic format on a DVD or thumb drive. Drawings will be provided in a format compatible to the CITY's GIS system (AutoCad 2017 or more recent version).

1050 Final Notice of Acceptability of the Work

- See Task 840 of this agreement.
- Based upon periodic observation, observation during a final walk through of the project site, and construction records the Contractor will provide written notice to the CITY when the Contractor deems the work to be complete and acceptable. The CITY shall respond in writing to detail any outstanding items. Contractor must address all outstanding CITY concerns prior to accepting the Contractor's written notice.

1060 SCDHEC Permits to Operate

- Upon CITY acceptance of the final construction, CITY will provide an Owner's Letter of Acceptance. Contractor will submit all required documents along with an Engineer's Letter of Certification and copies of the record drawings to SCDHEC with a request for Permits to Operate for the water and sewer facilities.