

SE-235
PROFESSIONAL INCIDENTAL SERVICES CONTRACT

AGENCY: South Carolina Office of Resilience

PROJECT NAME: Orangeburg County Hydrologic and Hydraulic Study

PROJECT NUMBER: D30-N011-MJ

A/E NAME: Carolina Transportation Engineers & Associates

ADDRESS: 1201 Main Street, Suite 1850

Columbia, SC 29201

In consideration of the mutual covenants and obligations set forth herein, the Agency and A/E (hereinafter jointly referred to as the "parties") agree to the following:

A. CONTRACT DOCUMENTS

1. Documents forming a part of this contract are, in order of precedence:
 - a. This Contract, SE-235.
 - b. A/E Proposal describing services to be provided for this project, the associated hourly billing rates for the A/E and the A/E Consultants, and the projected Reimbursable items.
 - c. Supplemental Conditions, attached if applicable.
 - d. The following other documents:
 - Attachment A - Scope of Work
 - Attachment B - Fees & Schedule
2. The contract is the entire and integrated agreement between the parties and supersedes prior negotiations, representations, or agreements, whether written or oral.

B. REPRESENTATIVES

1. Agency's Representatives

Agency designates the individual listed below as its Representative, which individual shall have the authority to bind the Agency with respect to all matters regarding the Contract and requiring the Agency's approval or authorization:

NAME: Eric Fosmire

TITLE: Chief of Staff & General Counsel

ADDRESS: 632 Rosewood Drive, Columbia, SC

TELEPHONE: 803-822-9580

FAX: 803-771-2887

EMAIL: Eric.Fosmire@scor.sc.gov

The term "Agency" means the Agency or the Agency's Representative.

2. A/E's Representatives

A/E designates the individual listed below as its A/E's Representative, which individual shall have the authority to bind the A/E with respect to all matters regarding the Contract and requiring the A/E's approval or authorization:

NAME: Kevin L. Gantt

TITLE: PE, CPM, Partner

ADDRESS: 1201 Main Street, Suit 1850 Columbia, SC 29201

TELEPHONE: 864-376-6397

FAX: _____

EMAIL: kevin.gantt@carolina-tea.com

The term "A/E" means the A/E or the A/E's Representative.

3. Neither the Agency nor the A/E shall change their representatives without ten days written notice to the other party.

C. A/E RESPONSIBILITIES

1. The A/E shall provide professional services as set forth in this Contract consistent with the professional skill and care ordinarily provided by A/E's practicing in the same or similar locality region under the same or similar circumstances.
2. The A/E represents that its' team is properly licensed in the jurisdiction where the Project is located to provide the services required.
3. The A/E's responsibilities commence with the award of this Contract and terminate with the payment of the final invoice by the Agency.

D. INSURANCE

1. The A/E shall procure and maintain in effect during the term of this Contract the insurance coverages described below, which insurance shall be placed with insurance companies authorized to do business in the State of South Carolina and rated A minus VII or better by the current edition of Best's Key Rating Guide or otherwise approved by Agency.
 - a. Professional Liability Insurance with limits of not less than \$1,000,000 per claim and in the aggregate. A/E shall maintain this coverage in effect during the term of this Contract and for five (5) years after the date of completion of services provided under this Contract. A/E shall give prompt written notice to Agency of all claims made against this policy during the period in which this policy is required to be maintained.
 - b. Worker's Compensation Insurance as required by the State of South Carolina with statutory limits.
 - c. Employers' Liability Insurance with limit of no less than \$1,000,000 per accident.
 - d. Automobile Liability Insurance: Insurance Services Offices (ISO) Form CA 00 01 covering Code 1 (any auto), or if A/E has no owned automobiles, Code 8 (hired) and Code 9 (non-owned), with limits not less than \$1,000,000 per accident for bodily injury and property damage.
 - e. Commercial General Liability Insurance (CGL): ISO Form CG 00 01 12 07 covering CGL on an "occurrence" basis for bodily injury and property damage, including products-completed operations, personal injury, and advertising injury, with limits no less than \$1,000,000 per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to the project or the general aggregate limit shall be twice the required occurrence limit. This Contract shall be considered to be an "insured contract" as defined in the policy.
2. The A/E agrees to require Consultants to comply with the insurance provisions required of A/E pursuant to this Contract unless A/E and Agency mutually agree to modify these requirements for Consultants whose work is of relatively small scope. The A/E agrees that it will contractually obligate its Consultants to advise A/E promptly of any changes or lapses of the requisite insurance coverages and A/E agrees to promptly advise Agency of any such notices A/E receives from its Consultants. The A/E agrees that it will contractually obligate its Consultants to indemnify and hold harmless the Agency to the same extent that the A/E is required to do so as provided in this Contract.
3. The A/E shall provide certificates of insurance to the Agency that evidence compliance with the requirements in this Section.
4. Additional Insured Obligations
 - a. To the fullest extent permitted by law, the A/E shall cause the primary and excess or umbrella policies for Commercial General Liability and Automobile Liability to include the Agency, its officers, officials, employees, and volunteers, as additional insureds for claims caused in whole or in part by the A/E's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Agency's insurance policies and shall apply to both ongoing and completed operations.
 - b. Prior to performing services, and thereafter upon replacement of each required policy of insurance, the A/E shall provide to the Agency a written endorsement to the A/E's General Liability Insurance policy that (i) names the Agency, its officers, officials, employees, and volunteers, as additional insureds, and (ii) states that coverage shall not be cancelled, except with notice to the Agency.
 - c. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the A/E with reasonable promptness.

E. INDEMNIFICATION

1. Without limitation and notwithstanding any provision in this Contract, the A/E shall indemnify and hold harmless the Indemnitees for and against claims, damages, losses and expenses (including attorneys' fees) asserted by a third party against an indemnitee arising out of or resulting from negligent acts or omissions of the A/E, a consultant, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself). The A/E shall not be required to indemnify an Indemnitee to the extent the Indemnitee's damages result from the Agency's own negligence.

2. Such obligation shall not be construed to negate, abridge, or reduce any other rights, including any other obligations of indemnity, which would otherwise exist as to a party or person described in this Section. As used in this paragraph, "Indemnitees" means the State (including its instrumentalities, agencies, departments, boards, and political subdivisions), the contractor, the subcontractors at all tiers, and the officers, agents and employees of all the forgoing.

F. A/E SERVICES

1. The A/E shall be fully responsible for coordinating all services under this Contract regardless of whether performed by its own employees or by consultants hired by A/E to perform a portion of its' services.
2. The A/E shall be responsible to the Agency for the services furnished to the A/E by any Consultant to the same extent as if the A/E had furnished the service itself. A/E also agrees to coordinate and resolve any inconsistencies in its work and the work of its Consultants. All of A/E's contracts with Consultants shall be in writing, signed by both parties, and shall include the following provision: "The Agency is intended to be a third-party beneficiary of this Contract."
3. The A/E shall prepare and distribute conference memoranda, meeting minutes, summaries of telephone conversations, documentation and reports as required by the Agency to maintain a comprehensive record. The State Project Number and Name as noted above shall be shown on all documents.
4. Any reference in the Contract Documents to the A/E taking action or rendering a decision with a "reasonable time" or "reasonable promptness" is understood to mean no more than ten (10) days, unless otherwise specified in the Contract Documents or otherwise agreed to by the parties.
5. Work Product Documents
 - a. The Work Product to be accomplished and submitted to the Agency shall be as defined in the Contract Documents.
 - b. The A/E shall submit to the Agency, and OSE if required, properly completed documents in the number and form requested for review and approval.
 - c. The Agency and OSE review and approval of all documents or other matters required herein shall not relieve the A/E of his professional duty of care in the preparation of the Work Product for compliance with the requirements of applicable statutes, regulations, codes, or the Manual.
5. Additional Services
 - a. The A/E may provide Additional Services after execution of this Contract without invalidating the Contract. Except for services required due to the fault of the A/E, any Additional Services provided shall entitle the A/E to compensation pursuant to negotiations and an appropriate adjustment in the A/E's schedule.
 - b. The A/E shall not proceed to provide Additional Services until the A/E receives the Agency's written authorization.

G. AGENCY'S RESPONSIBILITIES

1. The Agency shall review the Work Product and shall submit its written approval to the A/E, and OSE, if required.
2. The Agency shall provide prompt written notice to the A/E if the Agency becomes aware of any fault or defect, including errors, omissions or inconsistencies in the A/E's Work Product.
3. The Agency shall include the A/E in all communications that relate to or affect the A/E's services or professional responsibilities. Communications by and with the A/E's consultants shall be through the A/E.

H. CLAIMS AND DISPUTE RESOLUTION

1. All disputes, claims, or controversies relating to the Contract shall be resolved exclusively by the appropriate Chief Procurement Officer in accordance with Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws, or in the absence of jurisdiction, only in the Court of Common Pleas for, or a federal court located in, Richland County, State of South Carolina. A/E agrees that any act by the State regarding the Contract is not a waiver of either the State's sovereign immunity or the State's immunity under the Eleventh Amendment of the United States Constitution. As used herein, the phrase "the State" includes the Agency, any governmental entity transacting business with the A/E pursuant to the Contract, and the State Fiscal Accountability Authority.
2. A/E consents that any papers, notices, or process necessary or proper for the initiation or continuation of any disputes, claims, or controversies relating to the Contract; for any court action in connection therewith; or for the entry of judgment on any award made, may be served on A/E by certified mail (return receipt requested) addressed to A/E at the address provided in the Contract or by personal service or by any other manner that is permitted by law, in or outside South Carolina. Notice by certified mail is deemed duly given upon deposit in the United States mail.
3. The A/E and Agency waive claims against each other for listed damages arising out of or relating to this Contract.
 - a. For the Agency, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) costs suffered by a third party unable to commence work, (vi) attorney's fees, (vii) any interest, except to the extent allowed by Section K.5, (viii) lost revenue and profit lost use of the property, (ix) costs resulting from lost productivity or efficiency.

- b. For the A/E, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) attorney's fees, (vi) any interest, except to the extent allowed by Section K.5, (vii) unamortized equipment costs; and (viii) losses incurred by the A/E's consultants for the types of damages the A/E has waived as against the Agency.
4. Continuation of Work: Pending resolution of a claim or dispute, the A/E shall proceed diligently with the performance of its services under this Contract, and Agency shall continue to make payments in accordance with this Contract for all services rendered by A/E which are not the subject of the claim or dispute.

I. TERMINATION OR SUSPENSION

1. Agency Right of Suspension:
 - a. The Agency may, at any time, suspend the Work, in whole or in part, with or without cause for such period of time as determined by the Agency. The A/E shall be compensated for services performed prior to notice of such suspension, except in the event the suspension was due to a default by the A/E.
 - b. When the Work, in whole or in part, is resumed, the remaining amount payable to the A/E may be equitably adjusted to reflect reasonable costs actually incurred by the A/E due to delay or interruption resulting from such suspension.
 - c. If the suspension exceeds ninety (90) consecutive days, the A/E's fees for the remaining services and the time schedules shall be equitably adjusted.
2. Agency Right of Termination:
 - a. Termination for Cause: If the A/E defaults, persistently fails or neglects to perform the services in accordance with the Contract Documents, or fails to perform a provision of the Contract, the Agency shall provide written notice of such default, failure, or neglect to the A/E. If the A/E fails to cure such default, failure, or neglect within ten (10) days from receipt of the Agency's notice, the Agency may, without prejudice to any other right or remedy the Agency may have, terminate the Contract.
 - b. Termination for Convenience: The Agency may, for its convenience, terminate all or any portion of the Work or terminate this Contract by ten (10) days written notice stating the effective date of the termination. Thereafter, the Agency shall pay the A/E for those services actually performed before the date of termination. No payments shall be made for services not actually performed, and no payment shall be made or due for lost profits for portions of the services not actually performed.
3. A/E Right of Termination:
 - a. The A/E may terminate the contract if Work is stopped through no fault of the A/E, or other persons performing work either directly or indirectly for the A/E, for a period of time exceeding sixty (60) consecutive calendar days due to a court order or other public authority having jurisdiction; or a declared National emergency which requires the Work to be stopped.
 - b. Agency Failure to Make Payment: Subject to the Agency's right to withhold payments pursuant to Section K, if the Agency fails to make payments to the A/E as set forth in Section K and any other applicable provisions of the Contract Documents, the A/E may, upon fourteen (14) days prior written notice to the Agency, terminate the Contract and recover from the Agency payment for all services performed, including reasonable overhead, profit and damages applicable to the services performed through the date thereof.
4. In the event of suspension or termination for convenience, upon request of Agency and payment of all fees pursuant to this Section, A/E shall promptly provide Agency with all documents, completed or in progress on the date of termination, in electronic format. The Agency's rights to use the A/E's Work Product in the event of a termination of this Contract are set forth in the Contract.

J. MISCELLANEOUS PROVISIONS

1. Governing Law: The Contract, any dispute, claim, or controversy relating to the Contract, and all the rights and obligations of the parties shall, in all respects, be interpreted, construed, enforced and governed by and under the laws of the State of South Carolina, except its choice of law rules.
2. This Contract is formed pursuant to and governed by the South Carolina Consolidated Procurement Code and is deemed to incorporate all applicable provisions thereof and the ensuing regulations.
3. Severability: If it is determined that any provision of the Contract violates any law, or is otherwise invalid or unenforceable, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provision or parts of the provision of the Contract Documents, which shall remain in full force and effect as if the unenforceable provision or part were deleted. In such case the Contract shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

4. **Economic Conflict of Interest:** The A/E shall not have or exercise any official responsibility regarding a public contract in which the A/E, or a business with which he is associated, has an economic interest. A person working for the A/E shall not have or exercise any official responsibility regarding a public contract in which the person, an individual with whom he is associated, or his family members have an economic interest. If the A/E is asked by any person to violate, or does violate, either of these restrictions, the A/E shall immediately communicate such information to the procurement officer. The state may rescind, and recover any amount expended as a result of, any action taken, or contract entered in violation of this provision. The terms "business with which he is associated," "economic interest," "family member," "immediate family," "individual with whom he is associated," "official responsibility" and "person" have the meanings provided in S.C. Code Ann. § 8-13-100.
5. **Drug-Free Workplace:** The A/E must comply with the Drug-Free Workplace Act, S.C. Code Ann. §§ 44-107-10, et seq. The A/E certifies to the Agency that A/E will provide a Drug-Free Workplace, as defined by S.C. Code Ann. §§ 44-107-20(1).
6. **False Claims:** According to SC Code § 16-13-240, "a person who by false pretense or representation obtains the signature of a person to a written instrument or obtains from another person any chattel, money, valuable security, or other property, real or personal, with intent to cheat and defraud a person of that property is guilty" of a crime.
7. **Non-Indemnification:** It is unlawful for a person charged with disbursements of state funds appropriated by the General Assembly to exceed the amounts and purposes stated in the appropriations per S.C. Code Ann. § 11-9-20. It is unlawful for an authorized public officer to enter into a contract for a purpose in which the sum is in excess of the amount appropriated for that purpose. It is unlawful for an authorized public officer to divert or appropriate the funds arising from any tax levied and collected for any one fiscal year to the payment of an indebtedness contracted or incurred for a previous year per S.C. Code Ann. § 11-1-40.
8. **Assignment:** The Agency and A/E, respectively, bind themselves, their agents, successors, assigns, and legal representatives to this Contract. Neither the Agency nor the A/E shall assign this Contract without the written consent of the other. S.C. Code Ann. Reg. 19-445.20180 provides as follows: "No State contract is transferable, or otherwise assignable, without the written consent of the Chief Procurement Officer, the head of a purchasing agency, or the designee of either; provided, however, that a contractor may assign monies receivable under a contract after due notice from the contractor to the State."
9. **Force Majeure:** In the event A/E is hindered, delayed or prevented from performing its obligations under this Contract as a result of any fire, flood, landslide, tornado or other act of God, malicious mischief, theft, strike, lockout, other labor problems, shortages of material or labor, or any other cause beyond the reasonable control of A/E, the time for completion of A/E's work shall be extended by the period of resulting delay.
10. **Open Trade Representation:** By signing this Contract, A/E represents that A/E is not currently engaged in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code § 11-35-5300. During the contract term, including any renewals or extensions, A/E will not engage in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code § 11-35-5300.

K. COMPENSATION

1. Basic Services:

The Agency shall compensate the A/E for the services rendered as described in the Contract Documents in Section A in the amount of:

\$ 439,150.00

2. Additional Services:

The Agency shall compensate the A/E for Additional Services rendered as described in the Contract Documents in Section A in the amount of:

\$ TBD

3. Reimbursable Expenses:

For Reimbursable Expenses the compensation shall be the actual costs incurred by the A/E and the A/E's consultants. The A/E and the A/E's consultants shall be allowed a reasonable markup not to exceed 10% for administrative cost related to Reimbursable Expenses.

The Agency shall compensate the A/E for Reimbursable Expenses described in the Contract Documents in Section A as a not-to-exceed amount of:

\$ Included

4. Unless authorized in writing by the Agency prior to incurring the expense, no expense for transportation, travel, or subsistence will be reimbursable to the extent the expense exceeds the amount for which a state employee would be reimbursed under the Travel Regulations. Travel Regulations means the State Fiscal Accountability Authority's Regulations for Reimbursement for Travel and Subsistence Expenses, Disbursement Regulations pdf found at [<https://cg.sc.gov/guidance-and-forms-state-agencies/cgs-accounting-policies-and-procedures>]. There shall be no charge for time spent in travel.
5. Progress Payments: Payments for services shall be made monthly in proportion to services performed. The Agency shall make payments to the A/E of undisputed amounts due for services performed by the A/E within twenty-one (21) days of receipt of the A/E's invoice. The A/E shall make progress payments to the consultants within seven (7) days of the receipt by the A/E of each payment from the Agency. Payments due to the A/E and unpaid under this Contract shall bear interest only if and to the extent allowed by S.C. Code Ann. §§ 29-6-10 through 29-6-60. Amounts due to the A/E shall bear interest at the rate of one percent a month or a pro rata fraction thereof on the unpaid balance as may be due.
6. The Agency shall not withhold amounts from the A/E's compensation to impose a penalty.

AGENCY:

BY:


(Signature of Representative)

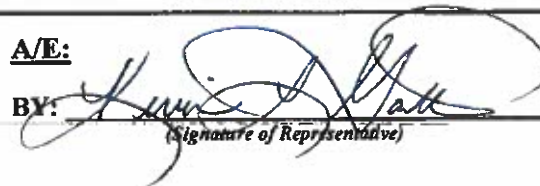
PRINT NAME: Benjamin I. Duncan, II

PRINT TITLE: Chief Resilience Officer

DATE: 6/30/2022

A/E:

BY:


(Signature of Representative)

PRINT NAME: Kevin Gantt

PRINT TITLE: PE, CPM, Partner

DATE: 6/24/2022

ATTACHMENT A

Scope of Work for Orangeburg County Stormwater Hydrologic and Hydraulic Study State Project # D30-N011-MJ

PROJECT UNDERSTANDING

This scope of services is based on the scope of work and deliverables outlined in the Request for Qualifications (RFQ) dated February 1, 2022 and includes modifications discussed during the in person scoping meeting that occurred on April 21, 2022. SCOR wishes to complete a Hydrologic and Hydraulic Study for Orangeburg County, SC within 285 days of receiving notice to proceed. The study is funded by a US Housing and Urban Development (HUD) Community Development Block Grant-Mitigation (CDBG-MIT) grant and is intended to identify flooding issues, conduct an assessment of existing stormwater systems, develop, assess and prioritize projects and solutions, and establish an implementation strategy for the identified projects.

SCOPE OF SERVICES

Carolina Transportation Engineers and Associates, PC (Carolina TEA) will provide the services set forth below.

TASK 1: PROJECT ADMINISTRATION AND MEETINGS

- A. Provide brief weekly email updates and monthly progress reviews to the South Carolina Office of Resilience's Mitigation Department for the duration of the contract.
- B. Conduct a workshop with Orangeburg County municipal officials to identify known areas of flooding or stormwater drainage concerns. The firm will coordinate the workshop with municipal officials and staff. The firm will lead the workshop.
 - a. Workshop: SCOR personnel will attend the workshop. The firm will inform the County of the goals of the planning project and seek information related to known flooding issues. The workshop will last approximately 2 hours, will be located in Orangeburg County, and will be "drop-in" style.
 - i. It is expected that additional areas of focus will be identified throughout this study. All areas must be addressed.
- C. Conduct two (2) public meetings to allow the County's citizens to identify areas with flooding or stormwater drainage concerns. This information will be used to complete mapping of the areas of flooding throughout the County. The firm will coordinate the workshop with municipal officials and staff. The firm will lead the public meetings. SCOR personnel will attend the public meetings.
 - a. Public Meetings (2): The goal of the public meetings is to provide the County's citizens with information related to the project, seek input from them, and to provide information related to general stormwater issues. The firm will prepare hard copy maps and digital input methods so that the County citizens can fill out questionnaires and report flooding issues. The meeting will last up to 4 hours.
 - b. Project Mailer: The mailer will be produced to introduce the project to the public and advertise the public meeting. The firm is responsible for mailing the mailer.
 - c. Questionnaires: A questionnaire will be developed to seek input from the County's citizens regarding their experiences with flooding within the County and to document the location of the flooding, how often it occurs, and the extent to which it may occur.
 - d. Project Webpage: A project webpage will be developed and hosted by the firm. The webpage will be used to post project updates, milestones, schedules, meeting information, and provide a forum for submitting questionnaires digitally. The webpage is assumed to be hosted for the life of the project, approximately 285 days

TASK 2: DATA GATHERING, FIELD SURVEY, ANALYSIS, AND EXISTING CONDITIONS REPORT

This task includes the following:

- A. Conduct data gathering and analysis to include extensive research of all reports, studies, plans, land use, parcels, work orders, FEMA claims, topography, soils, GIS data, previously completed models, reported flooding, and other resources necessary to understand the existing conditions and contributing factors in the

designated area. Additionally, gather information related to the South Carolina Department of Transportation (SCDOT) for the current and planned transportation improvement projects, existing hydraulics unit data within the vicinity of Orangeburg County, as well as all other potential sources of data located within the County offices, to include, but not limited to water facilities, public works departments, and river gauges. Provide a report and formal briefing of all stormwater drainage issues and historical flood related data gathered to the South Carolina Office of Resilience's Mitigation Department. This requirement must be completed within 60 days of contract award. Only after this action is accepted can the firm submit an invoice for the first 20% of the overall contract. Should the firm fail to provide the quality or quantity of research and analysis required, or fail to execute within the established time standards, the firm will make acceptable revisions and then will be issued a letter of concern. Any subsequent failures to meet time or quality standards will result in the termination of the contract.

B. Conduct a field inventory of the County that will include surveying and documenting size, materials, conditions, and locations of existing drainage systems throughout the entire project area.

a. Data collection will be to survey grade accuracy and includes:

- i. Elevations will meet the posted standards of the SC VRS network**
- ii. All survey work shall be "Class A" surveying standard and performed in compliance with the Standards of Practice for Land Surveying in South Carolina as defined for GIS surveys**
- iii. The horizontal datum is NAD 83/2011 iv) The coordinate system is State Plane South Carolina 3200**
- iv. The vertical datum is NAVD 88**
- v. The unit of measurement is the US International Feet**

C. Analysis

a. Develop hydrologic and hydraulic models which account for:

- i. Future land cover**
- ii. Future hydraulic setting**
- iii. Changes in rainfall patterns**
- iv. Problem area identification**
- v. Development of design criteria targets**
- vi. Prepare hydrologic and hydraulic models to determine discharge values and to model the 2-, 10-, 25-, 50-, and 100-year 24-hour storm. The hydrologic models shall include existing and future conditions, and anticipated changes in rainfall intensities. HEC-HMS, rational method, TR55, or USGS National Stream Flow Statistics will be used to model hydrology. The hydraulic modeling will utilize HEC-RAS 6.0 for riverine systems and culvert crossings that are in series. Individual culvert locations may be modeled using HY-8. Open channels may be modeled using Manning's equation or FlowMaster. Inlets, closed systems, and overland flow may be modeled using StormCAD, EPA SWMM, or similar program. Attenuation may be considered in areas where significant storage behind a large culvert embankment is assumed. The existing conditions model (existing land uses, existing collection system, and existing outfalls) will be executed and verified based on previous studies, available data, reported flooding, and other data as appropriate.**
- vii. Provide a report and formal briefing to the South Carolina Office of Resilience's Mitigation Department. This requirement must be completed within 120 days of contract award. Only after this action is accepted can the firm invoice for the second 20% of the overall contract for a running total of 40%.**

D. Standard Operation Procedure (SOP) and Database: Carolina TEA will prepare a SOP for collecting and storing information in a GIS database. Using the agreed upon SOP, Carolina TEA will create a GIS database that will include the information gathered in Task 1 and the feedback obtained in Task 2 above. The database will be updated with survey information and the observed field inventory of the County's stormwater infrastructure that is anticipated to include size, material, location, elevation, and a visual assessment of condition. A photograph of each inventoried item will be collected and included in the GIS database. An initial visual reconnaissance of existing stormwater infrastructure will be performed by Carolina TEA to identify existing stormwater infrastructure that was not known or included in the available data obtained in Task 1. The reconnaissance will occur on publicly owned property or on private property with prior approval from the landowner.

Subconsultants for this project are RK&K and Stantec. RK&K will lead the stormwater drainage study and the Benefit Cost Analysis development while Stantec will lead grant management and public involvement activities. It is anticipated that the survey will focus on the areas of known or reported flooding as a priority.

Stormwater Utility System Mapping

- A. If, during stormwater data collection, the A/E's field crews observe odors, sheens, or potential illicit discharges, the A/E will notify the SCOR within the same business day, if possible, but no later than 24 hours from the time of observation. Additionally, if the A/E's field crews observe dry weather flows, the Consultant will record the location of the dry weather flow and report it to SCOR. SCOR will notify the appropriate entity within 24 business hours.
- B. Open Channel Cross Sections (Major Systems)
 - a. The A/E will utilize FEMA cross section data, if appropriate and relatively recent, for hydraulic modeling purposes. Where FEMA cross section data does not exist or requires augmentation, the A/E will obtain field survey data consisting of 6-point cross sections (left overbank, left top of bank, left bottom of bank, right bottom of bank, right top of bank, right overbank). Cross sectional information outside the limits of the 6-point sections will be based on the best available information (GIS topography, DEMs, etc.). Channel lining and bed type will also be collected. For areas with no FEMA cross-sectional data, the A/E will collect cross-sections approximately every 200-300 feet (average) and upstream/downstream of stream all crossings.
- C. Bridges
 - a. Bridges requiring survey for modeling purposes will include dimensional and elevation data as necessary for accurately modeling backwater effects on the hydraulic model. Bridge data will include shots parallel to the road representing the road overtopping elevation, bridge deck thickness, location and height of railing, pier location and dimensions, and underlying channel and abutment dimensions and elevations.
- D. Culverts
 - a. Culverts at stream crossings will be characterized by two pipe ends with properties to be collected. Sufficient dimensional and elevation data will be collected to accurately model backwater effects of culverts within the *Primary System*. Pipe ends will be connected with a Civil 3D pipe object or linework representing the culvert footprint if Civil 3D cannot accommodate the specific configuration. Multi-barrel culverts shall include two pipe ends for each barrel. Additionally, culverts will include 5 ground shots representing the overtopping profile of the above road/train embankment as follows: one directly above the culvert, 25 and 50 feet up-station of the original shot, and 25 and 50 feet down-station of the original shot.
- E. Dams and Impoundments
 - a. None included in this project at this time.
- F. Open Channel Cross Sections (Ditches)
 - a. A typical single channel measurement (top width, bottom width, depth, and liner type) will be measured. The channel length and horizontal location will be digitized from best available data (aerial photography, GIS topography, etc.) and the channel measurement will be inferred onto the digitized line as representation of the entire channel length. Channel longitudinal slope will be estimated based on best available information (preferably by using elevational data from upstream/downstream bounding structures).
- G. Closed System Structures
 - a. Closed systems will consist of a variety of types of structures and will be collected. Structure types include catch basins, drop inlets, junction boxes, pipe ends, slab top inlets, underground pipe junctions, and yard inlets. Properties to be collected include structure type; structure dimensions; unique structure ID number; x and y coordinates; structure elevation; depth of structure; pipe in/out sizes, materials, and invert elevations; and obstruction assessment. In the case of pipe ends, information regarding the end treatment will also be collected (headwall, mitered, flared end section, stub, etc.).
- H. Closed System Pipes
 - a. Pipes which connect closed system structures will be located and included in field survey data. Pipe

properties include upstream structure, downstream structure and pipe shape, size, invert elevations, slopes, and material.

I. Difficult Access (DA) Structures

- a. There will be some structures which cannot be accessed in the field for various reasons. Access limitations could include sedimentation, debris, structure being covered or paved over, access problems, fences/security, etc. A reasonable attempt to access or locate the structure must be made. The A/E will devote approximately 5 minutes attempting to locate system structures. If accessing or locating is not possible, then an approximate location will be stored for the structure and a report provided to the County for resolution by designated County staff. The County will resolve DA Structure issues. Once the structure is made accessible, the Consultant will re-visit the structure and collect the missing data.

Carolina TEA will develop design criteria targets to determine level of service performance by each of the analyzed systems. The level of service will be defined by local design standards (if any), SCDOT design criteria, SCOR or County input, and/or other published engineering guidelines/standards. Carolina TEA will prepare hydrologic and hydraulic models to determine discharge values and to model the 2-, 10-, 25-, 50-, and 100-year 24-hour storm using a combination of models depending on the system that is analyzed. The hydrologic models shall include existing and future conditions, and anticipated changes in rainfall intensities. HEC-HMS, rational method, TR55, or USGS National Stream Flow Statistics will be used to model hydrology. The hydraulic modeling will utilize HEC-RAS 6.0 for riverine systems and culvert crossings that are in series. Individual culvert locations may be modeled using HY-8. Open channels may be modeled using Manning's equation or FlowMaster. Inlets, closed systems, and overland flow may be modeled using StormCAD, EPA SWMM, or similar program. Attenuation may be considered in areas where significant storage behind a large culvert embankment is assumed.

Carolina TEA will prepare a report to document the data gathered in Task 2 and to summarize the modeling and level of service performance of the existing stormwater infrastructure. Carolina TEA will present the findings of this task in a formal briefing to SCOR staff.

TASK 3: ALTERNATIVES ANALYSIS

- A. Create an alternative analysis to remedy the problem areas and improve the level of service to those systems.
 - a. Alternatives will include:
 - i. Alternative outfalls, capacity improvements, basin diversions, stormwater detention, etc. In addition, other best management practices may be considered for implementation including green infrastructure projects in appropriate areas. The firm will screen the alternative projects in cooperation with the County and SCOR to arrive at a set of projects and programs that will address the goals of the County.
 - ii. An assessment of a design that fully meets the defined design standards.
 - iii. An assessment of a design that meets some but may not meet all the current design standards, but will improve the level of service of the infrastructure to address the reported or identified flooding issue.
 - iv. More alternatives may include an option to improve conditions but may not meet some or all of the design standards, including a potential buyout scenario where the flooded infrastructure is removed from the problem area.
 - v. Low-impact development retrofit projects may also be identified as part of the alternative analyses. These projects are anticipated to include cistern, storage and potential reuse, structure control measures within existing impervious areas, and/or pervious pavers as options to reduce and/or treat stormwater runoff from individual sites.
 - vi. Stream and/or wetland restoration potential will also be evaluated as part of the alternatives analysis which may include properties outside of Orangeburg County limits.
 - b. Create Summary Report of findings, including but not limited to:
 - i. GIS Mapping.
 - ii. Summary of the existing drainage system.
 - iii. List of priority projects
 - iv. Documentation of methods; and
 - v. Technical data, related information, and the results of the alternatives analysis.
 - c. Develop a Sensitivity Analysis to study the impact of higher flood frequency events.

- d. Provide a preliminary report and formal briefing to the South Carolina Office of Resilience's Mitigation Department. This requirement must be completed within 180 days of project award. Only after this action is accepted can the firm submit an invoice for an additional 10% of the overall contract for a running total of 50%.

TASK 4: PROJECT RECOMMENDATIONS

- A. Project Recommendations: Develop and assess new projects that have not been previously identified or proposed. These requirements must be completed within 210 days of contract award. Only after this action is accepted can the firm submit an invoice for an additional 20% of the overall contract for a running total of 70%.
 - a. Create a ranking system to prioritize projects. The ranking system will include:
 - i. A Benefit-Cost Analysis on each of the prioritized projects. The firm will provide that dataset to the South Carolina Office of Resilience's Mitigation Department. The Benefit-Cost Ratio of recommended projects should be 1.0 or greater.
 - ii. A comprehensive assessment of the impact of the determined projects on the Low-to-Moderate Income community. Provide a report and a formal briefing to SCOR.
 - iii. Projects that may be eligible for other sources of funding for project implementation will be noted.
 - iv. A recommended phasing plan will be developed to provide the priority of project (s) and/or programs
 - b. Prepare an opinion of probable cost (OPCs) for each proposed priority project. The OPC will include:
 - i. An estimate of real estate costs for easements, if easements are required, based on parcel tax value, if available, or as directed by SCOR
 - ii. An estimate of design, permitting, and constructions costs
 - iii. The firm will prepare up to five detailed concept plans at approximately 10% level to inform the OCP
 1. Survey of the identified project areas may be performed and may include 1' topographic data, property corners, deed research, right-of-way, utility easements, public utilities (no sue is assumed), existing structures and their finished floor elevations, trees greater than 12" dbh, and other structures within the project area. The concept plans will include a proposed plan view and an estimate of work area including an assessment of construction access. A preliminary profile will be designed to estimate grading and the limits of disturbance for the proposed project.
 - c. Develop "What If" scenarios
 - i. Develop a detailed scope of services, to include only preliminary design, and implementation schedule for the first phase of the project.
 - ii. It is anticipated that up to five projects developed during the study will be selected for initial implementation
 - d. Attendance at meetings if needed, to explain concepts and proposals. The firm must be available for call meetings and in-person meetings within 24-48 hours.

Carolina TEA will prepare a report to document the project ranking matrix, the results of the BCA, and LMI community assessment. Carolina TEA will provide a formal briefing to SCOR staff.

TASK 5: FINAL REPORT

Conduct the final deliverable and all-encompassing brief within 285 days of the contract award. Only after this action is accepted can the firm submit an invoice for the remainder of the contract. The final report will include the following:

- A. A review and summary of the historical problems associated with systematic flooding associated disasters throughout Orangeburg County to include the impact of sustained rainfall draining through surrounding water basins
- B. A review of the planning parameters associated with this specific assessment and its direct tie to CDBG-MIT funding for mitigation
- C. Project goals and objectives
- D. Design criteria

- E.** Level of service definitions
- F.** A thorough literature study of previously published infrastructure and drainage management problems in the affected areas throughout Orangeburg County to include all previous studies which directly impact the problem at hand
- G.** Coordination with all applicable agencies and organizations who are stakeholders in the study area. As a minimum, this will include the US Army Corps of Engineers, any and all watershed management agencies or civilian equivalent, the State Department of Transportation, Department of Natural Resources, Department of Health and Environmental Control, Department of Parks Recreation and Tourism, South Carolina Department of Agriculture, the US Department of Agriculture, and county and local jurisdictions affected
- H.** Alternative selection criteria
- I.** Project prioritization matrix, including scoring
- J.** A comprehensive listing of all projects considered within the parameters of the strategy as well as a thorough review and definition of each screening criteria used to arrive at the recommended projects
- K.** A prioritized list of recommended construction projects resulting from the analysis, each in terms of the highest probability of success against future disasters and their specified budget estimations. Include level of service improvements
- L.** A Benefit-Cost Analysis of each project which reflects the benefit achieved by conducting the project and its direct impact upon Low- to-Moderate Income communities. The BCA assessment will occur once.
- M.** A review and assessment of the environmental concerns associated with each project and an estimated timeline for the associated environmental clearance
- N.** Based upon the final prioritized list of projects, a list of homes, including addresses, inside the study area that would be impacted by any recommended infrastructure construction projects and if they are recommended for potential buyout
- O.** A qualitative and quantitative impact statement upon Low-to-Moderate Income populations that each construction project will resolve concerning future disasters
- P.** An analysis of each prioritized project and the benefit it provides for Low-to-Moderate Income citizens throughout Orangeburg County concerning future flood events
- Q.** A holistic risk assessment of each distinct proposed construction project
- R.** Estimate the project delivery cost including all aspects of federal, state, and local permitting as well as all environmental considerations and concerns for each prioritized project
- S.** Anticipated permitting requirements for each project
- T.** Detailed concept plans (approximately 10%)
- U.** A general topographic schematic of the proposed projects
- V.** A general exhibit of the proposed projects
- W.** Geopolitical issues associated with the projects
- X.** A digital deliverable of the GIS database to SCOR



HENRY D. MCMASTER, Governor
BENJAMIN I. DUNCAN II, Chief Resilience Officer

ATTACHMENT B

Fees & Schedule

for

Orangeburg County Hydrologic and Hydraulic Study

State Project # D30-N011-MJ

ADDITIONAL SERVICES

Any services not specifically provided for in the above scope will be billed as additional services and performed at our then current hourly rates. Additional services we can provide include, but are not limited to, the following:

- Grant applications
- FEMA map updates or permitting
- Water quality modeling
- NPDES Phase II permitting assistance
- Additional concept design beyond identified in this scope
- Final design
- Utility locations and/or Subsurface Utility Exploration

SCHEDULE

We will provide our services as expeditiously as practicable with the goal of meeting the following schedule:

- Task 1 Project Administration and Meetings
- Task 2 Existing Conditions Report – 135 days from NTP
- Task 3 Alternatives Analysis Report – 180 days from NTP
- Task 4 Project Recommendations & LMI Assessment – 240 days from NTP
- Task 5 Final Report – 285 days from NTP

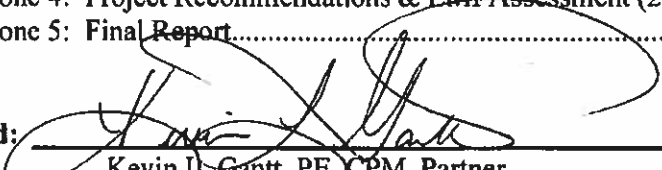
FEES AND PAYMENT

Carolina Transportation Engineers and Associates, PC will perform the services in Tasks 1-5 for the total lump sum labor fee of \$439,150.00.

Lump sum fees will be invoiced based on milestone delivery. Payment will be due within 25 days of your receipt of the invoice and should include the invoice number and Wood project number.

Milestone 1: Project Administration, Meetings, Data Gathering (20%).....	\$109,787.50	(25% of total)
Milestone 2: Field Survey & Existing Conditions Report (20%).....	\$87,830	(20% of total)
Milestone 3: Alternatives Analysis Report (10%)	\$43,915	(10% of total)
Milestone 4: Project Recommendations & LMI Assessment (20%)	\$87,830	(20% of total)
Milestone 5: Final Report.....	\$109,787.50	(25% of total)

Signed: _____



Kevin D. Gantt, PE, CPM, Partner
Carolina Transportation Engineers and Associates, PC

Date: _____

6/24/2022

Orangeburg County Drainage Study		Carolina TIA/HK&K Cost Estimate					(Expanded 2 Public Meetings/ & 7 Sites)		5/31/2022
Project Items	Est. Total Hours	Total Price	Hourly Rate (HR)	HR w/est 3 Multiplier	# People	Hrs/Site	Description		
Phase 1 Data Gathering									
Background Data	96	\$18,720	195	65	2	6	6 days		
Workshop to Identify Known SW Concerns	18	\$4,800	300	100	2	8	2 hr meeting; 2 hr travel; 2 hr prep; 2 hr post		
Public Meeting	64	\$19,200	300	100	4	16	(2 meetings) 4 hr meetings; 2 hr travel; 2 hr prep (added 1 person for the 5 assistants needed)		
Public Meeting Materials	8	\$2,400	300	100	1	8	4 hrs per area, (maps, interviews with media, hand outs and social media outreach)		
***Printing of Maps and handouts		\$400					3 rollout plots, 12 small maps, handouts and questionnaires for all 3 meetings		
***Initial Assessment	48	\$14,400	300	100	2	24	3 days to perform initial assessment of locations received at public meetings		
Field Inventory	294	\$57,330	195	65	2	147	3 days per site; 7 sites		
	526	\$117,250					27%	27% Hrs	
Phase 2 Analysis									
Current Conditions Models - Overland & Pipe Networks	266	\$39,900	150	50	1	266	38 hrs/site; 7 sites		
Future Conditions Models	56	\$8,400	150	50	1	56	8 hrs/site; 7 sites		
Preliminary Report	112	\$33,600	300	100	2	56	8 hrs/site; 7 sites		
Formal Briefing and Next Phase Brief Up (Virtual)	16	\$4,800	300	100	2	2	2 hr meeting; 3 hr prep/post		
	450	\$66,700					70%	23% Hrs	
Phase 3 Alternative Analysis and Findings									
Problem Area Alternative Analyses	224	\$33,600	150	50	1	224	32 hrs/site; 7 sites		
Sensitivity Analysis for Higher Frequency Events (Max. 7)	56	\$8,400	150	50	1	56	8 hrs/site; 7 sites		
Preliminary Report	56	\$16,800	300	100	1	56	8 hrs/site; 7 sites		
Formal Briefing and Next Phase Brief Up (Virtual)	16	\$4,800	300	100	2	2	2 hr meeting; 3 hr prep/post		
	352	\$63,600					14%	18% Hrs	
Phase 4 Project Recommendations									
Project Cost Estimates	56	\$8,400	150	50	1	56	8 hrs/site; 7 sites		
Benefit Cost Analysis	98	\$29,400	300	100	2	49	7 hrs/site; 7 sites (used senior members of team for accuracy)		
Ranking System	56	\$16,800	300	100	2	28	4 hrs/site; 7 sites		
What If? Scenarios (up to 5 scenarios)	42	\$6,300	150	50	1	42	6 hrs/site; 7 sites		
Formal Briefing and Next Phase Brief Up (Virtual)	16	\$4,800	300	100	2	2	1 hr meeting; 3 hr prep/post		
LMI Assessment	28	\$8,400	300	100	1	28	4 hrs/site; 7 sites		
	296	\$74,100					17%	15% Hrs	
Phase 5 Final Report and Briefing									
Draft Final Report	112	\$33,600	300	100	2	56	8 hrs/site; 7 sites		
Final Report (1 round of comments with revision)	42	\$12,600	300	100	2	21	3 hrs/site; 7 sites		
Final Briefing	30	\$9,000	300	100	3	10	2 hr meeting; 6 hr prep/post		
	184	\$55,200					13%	9% Hrs	
Phase 6 Project Management									
Weekly Email Updates	6	\$1,800	300	100	1	6			
Project Administration	135	\$40,500	300	100	1	135	9 mos 15 hrs/mo (less than 4 hrs per month)		
	141	\$42,300					10%	7% Hrs	
TOTAL	1949	\$439,150							
Billing Cycle	20%	20%	10%	20%	30%				
	\$87,830.00	\$87,830.00	\$43,915.00	\$87,830.00	\$131,745.00	\$439,150.00			
	\$117,750	\$86,700	\$82,600	\$76,100	\$97,500	\$439,150			

FINAL



Orangeburg County
Hydrologic and Hydraulic Study



Project Schedule

