

**AGREEMENT
FOR THE DESIGN & CONSTRUCTION
of**

Bridge Package 32

Bamberg, Calhoun, and Orangeburg Counties, South Carolina

A DESIGN-BUILD PROJECT

**BETWEEN
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
AND
CROWDER CONSTRUCTION COMPANY**

16th day of April, 2025

Contract ID 5772040

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WHEREAS, the South Carolina Department of Transportation, as an agency of the State of South Carolina, wishes to improve the safety and operation of the state highway system Bridge Package 32 in Bamberg, Calhoun, and Orangeburg Counties (hereinafter referred to as “the Project”); and

WHEREAS, the South Carolina Department of Transportation, as a servant of the people of the State of South Carolina, wishes to see this strategic project completed; and

WHEREAS, limitations imposed by traditional methods of designing, and constructing highways would mean that the Project could be completed only after an unacceptable delay; and

WHEREAS, the South Carolina Department of Transportation, working with the Federal Highway Administration (FHWA), has devised an innovative plan to allow the commencement and completion of the Project in a timely and cost-effective manner; and

WHEREAS, pursuant to Section 57-5-1625 SC Code of Law, the South Carolina Department of Transportation desires to award a highway construction contract using a Design / Build procedure; and

WHEREAS, after a competitive process, CONTRACTOR has been selected to participate in this venture by designing and building the Project; and

WHEREAS, the South Carolina Department of Transportation wishes to avail itself of and rely on CONTRACTOR’s expertise and proven track record in designing and constructing such projects, on time and within budget; and

WHEREAS, CONTRACTOR wishes to provide that expertise and to participate in this venture for the good of the people of the State of South Carolina;

NOW THEREFORE, this Agreement is executed and made, effective as of the Effective Date as defined herein, between the SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION (“SCDOT”) and CROWDER CONSTRUCTION COMPANY (“CONTRACTOR”). In consideration of the covenants hereinafter set forth, the parties hereto mutually agree as follows:

I. CONTRACT DOCUMENTS

The Contract shall be composed of this Agreement and all exhibits, SCDOT's Request for Proposals and all attachments, CONTRACTOR's Proposal and all attachments, and CONTRACTOR'S Qualifications and all attachments. In case of conflict, the order of precedence of the "Contract Documents" shall be: (1) this Agreement; (2) Agreement Exhibits; (3) SCDOT Request for Proposals (RFP) document and Attachment B; (4) CONTRACTOR's Proposal and attachments, clarifications, and communications. In the event of a conflict between the Contract Documents and Special Provisions identified in the Agreement Exhibits, the order of precedence shall be (1) the Contract Documents and (2) Special Provisions. The Project Information Package is provided for information only and is not a Contract Document. SCDOT makes no representations or warranties regarding the accuracy of the information contained therein.

II. PROJECT SCOPE

A. Scope of Work

CONTRACTOR shall furnish all services, labor, materials, equipment, supplies, tools, transportation, and coordination required to perform all design, preliminary engineering, surveying, geotechnical services, scheduling, permitting, right of way services, procurement, construction, utility coordination, demolition, material disposal and any other services necessary to perform the Project as defined in the Project Scope of Work made a part hereof as Exhibit 3, Project Design Criteria made a part hereof as Exhibit 4, Exhibits 5 through 7, and Attachment B.

B. Design and Construction Responsibilities

1. CONTRACTOR, consistent with applicable state licensing laws, shall provide, through qualified South Carolina licensed design professionals employed by CONTRACTOR or procured from qualified, independent South Carolina licensed design consultants, the design work and quality control, including, but not limited to, surveys, right of way services, roadway design, maintenance of traffic, geotechnical exploration and design, hydraulic analyses, storm water management, erosion control, superstructure design, and foundation and substructure design including seismic analyses for the preparation of the required drawings, specifications and other design submittals to permit CONTRACTOR to complete the work in accordance with the Contract.
2. CONTRACTOR may rely on geotechnical and survey information provided in Attachment B – Supplemental Design Criteria. The CONTRACTOR shall incorporate the information into the final Project Documents. CONTRACTOR shall supplement the geotechnical and survey information provided as required for its design.
3. CONTRACTOR shall provide through itself or subcontractors the necessary supervision, labor, inspection, testing, material, equipment, machinery, temporary

utilities and other temporary facilities to permit performance of all demolition, earthwork, drainage, foundation work, maintenance of traffic, roadway work, structural work, excavation, erosion and sediment control work, field layout work, construction management, engineering and inspection, utility coordination and relocation, railroad coordination, CONTRACTOR quality control, maintenance, and all other work necessary to complete construction of the Project in accordance with the Contract. CONTRACTOR shall perform all design and construction activities efficiently and with the requisite expertise, skill and competence to satisfy the requirements of the Contract. CONTRACTOR at all times shall exercise control over the means, methods, sequences and techniques of construction. CONTRACTOR's operations and construction methods shall comply with all applicable federal, state and local regulations with regard to worker safety, protection of health and protection of the environment and applicable permit requirements.

4. CONTRACTOR shall design and construct the project in accordance with the approved environmental document. Where new right of way is required to construct the Project, the CONTRACTOR shall design and construct the Project so as to minimize the additional rights of way needed while adhering to the design criteria herein. Right of way services shall be the responsibility of the CONTRACTOR and shall be done in accordance with Article VIII of this Agreement. CONTRACTOR shall furnish the SCDOT a copy of any agreements for the use of additional properties not acquired as right of way that are used in conjunction with the construction of this Project. CONTRACTOR shall abide by the provisions of all applicable environmental permits, any conditions of individual right of way agreements, and all environmental commitments. The CONTRACTOR shall sign the Contractor Certification Form and these terms will be made part of the contract.
5. It shall be the responsibility of CONTRACTOR to comply with all applicable federal, state, and local laws in connection with the services set forth in this Contract. CONTRACTOR shall remain in good standing with the State and promptly notify SCDOT in writing if it is determined to be disqualified, suspended, debarred, or otherwise excluded from bidding, proposing, or contracting with any federal or state department or agency. This obligation shall include, but not be limited to, procurement of all permits and licenses not obtained by SCDOT provided, however, that with respect to any permit or licenses that must be obtained in the name of SCDOT, CONTRACTOR shall perform all functions within its power to obtain the permit, including mitigation, and SCDOT will fully cooperate in this effort and perform any functions that must be performed by SCDOT. CONTRACTOR shall be responsible for payment of all charges, fees, and taxes, and for providing all notices necessary and incident to the performance of the Project as of the Effective Date of this Agreement. The Contract Price shall include all charges, fees and taxes related to the above obligations and if any charges, fees or taxes are waived by the regulatory or governmental entity, then the amount waived shall be deducted from the Contract Price.

6. CONTRACTOR shall remain in good standing with the State and promptly notify SCDOT in writing if it is determined to be disqualified, suspended, debarred, or otherwise excluded from bidding, proposing, or contracting with any federal or state department of agency.

C. Design Criteria

It shall be the responsibility of CONTRACTOR to design all aspects of the Project in accordance with the Contract Documents. For the Project, CONTRACTOR shall provide a completed set of construction plans signed and sealed by a licensed professional engineer in South Carolina. CONTRACTOR shall be fully responsible for the accuracy of the design and compliance with specifications, standards and Project Criteria.

D. Design Review

1. Prior to the Preconstruction Meeting, CONTRACTOR shall provide a Design Review Submittal Schedule to SCDOT. The Design Review Submittal Schedule shall include a Gantt chart of the submittal packages and will serve as the basis for reviewing the design and construction plans. The Design Review Submittal Schedule shall be updated and included with each submittal package. CONTRACTOR, CONTRACTOR's design consultant, subcontractors, suppliers and SCDOT shall discuss the schedule and procedures for submitting design plans at the Preconstruction Meeting. CONTRACTOR, CONTRACTOR's design consultant, subcontractors and suppliers shall not provide any design deliverables until the Design Review Submittal Schedule is approved by SCDOT. The Design Review Submittal Schedule shall be included in Submittal 000.
2. A Design Quality Control (QC) Plan shall be submitted for review and approval prior to any design or plan production. The plan shall clearly detail the processes and steps utilized by the designer and contractor to consistently produce quality designs and plans. The Design QC Plan shall be the first submittal listed in the Design Review Submittal Schedule. CONTRACTOR shall not provide any design deliverables until the Design QC Plan is approved by SCDOT. The Design QC Plan shall be included in Submittal 000.
3. All submittal packages shall be uploaded electronically to ProjectWise and an email shall be sent to SCDOT that verifies the contents of the upload. A complete submittal package shall be limited to one phase (ex. Preliminary/Right Of Way (ROW)/Final/Release For Construction (RFC)) of one roadway segment or structure and include all design deliverables specified in Exhibit 4z. However, submittal packages containing one phase of roadway and bridge for each independent bridge site are permitted and shall include all design deliverables specified in Exhibit 4z. Prior to beginning any construction activities, permanent or temporary, the Traffic Management Plan and Conceptual Work Zone Traffic Control plans for the entire project shall be submitted by the CONTRACTOR and approved by SCDOT.

4. If approved by SCDOT, one Maintenance of Traffic submittal package, including but not limited to, an NPDES permit application and related plans, may be allowed to provide the opportunity to begin construction of non-permanent work items, such as clearing and grubbing, shoulder strengthening, minor demolition not adversely impacting traffic or operations.
5. CONTRACTOR shall provide submittal packages as defined in Exhibit 4z. Prior to commencement of permanent construction activities on any defined segment or structure, SCDOT will have the right, but not the obligation, to review and comment upon all submittal packages pertaining to the said segment or structure. SCDOT reserves the right to provide comments on the design or plans at any time when an issue is identified that is not compliant with the Project Design Criteria, the RFP or is an error or omission.
6. All documents of a submittal package must be uploaded to ProjectWise by 11:59PM for the review period to begin the next business day. No more than one new submittal package shall be uploaded to ProjectWise within a five business day period. SCDOT reserves the right to utilize Bluebeam Studio to facilitate design reviews between SCDOT and the CONTRACTOR. The initial review period for each submittal package shall be 5 business days following the date SCDOT receives an accurate and complete submittal in conformity with the contract. SCDOT review comments will be sent to the CONTRACTOR, who shall respond within five business days and prior to subsequent phase submittals. SCDOT will then status CONTRACTOR'S responses and will provide additional comments, if any, within five business days. If any open comments remain after the initial 5 day review and subsequent five day review and comment periods, there will be no time constraint for the CONTRACTOR to respond. For all subsequent rounds of CONTRACTOR responses, SCDOT will status CONTRACTOR'S responses and will provide additional comments, if any, within five business days. Review comments for Preliminary, ROW, and Final phases of each segment or structure shall be closed before the associated RFC plans are authorized to be submitted and prior to commencement of construction activities.
7. CONTRACTOR shall revise design deliverables and upload to ProjectWise for verification to allow SCDOT to close review comments. Verification design deliverables are required to close SCDOT comments in order to approve ROW and authorize RFC phase submittal packages. CONTRACTOR shall clearly identify and describe any changes made to a verification design deliverable that are unrelated to SCDOT review comments. A complete verification package shall include revised contents for all design deliverables with open review comments and be submitted along with CONTRACTOR responses. After comments are closed and before RFC submittal packages are uploaded to ProjectWise, any changes made to design deliverables may, at the sole discretion of SCDOT, require a new submittal package be provided and require adjustment to the CONTRACTOR's Design Review Submittal Schedule.

8. SCDOT's participation in the review and comment process is fully discretionary to SCDOT; however, no review or comment nor any failure to review or comment by SCDOT shall operate to absolve CONTRACTOR of its responsibility to design and build the Project in accordance with the Contract Documents or to shift responsibility to SCDOT.
9. SCDOT reserves the right to reject any submittal package that is deficient or incomplete. SCDOT will provide a written notice, including cause for rejection, for any submittal package that does not demonstrate the work can be completed in accordance with the Contract. Rejected submittal packages must be revised to comply with the Contract. Revised submittal packages will be considered a new submittal package and reviewed as described above. Rejected submittal packages shall not in any way serve to extend the Construction Time.

E. Maintenance of Traffic

1. The SCDOT work zone mobility requirements found within the documents known as *Rule on Work Zone Safety and Mobility: The Policy for South Carolina Department of Transportation* and *Rule on Work Zone Safety and Mobility: Implementation, Maintenance, and Safety Guidelines* (Policy) shall apply to this Project. These requirements apply to the CONTRACTOR, all subcontractors, and designated representatives acting on behalf of the CONTRACTOR performing duties with responsibilities relative to a work zone, including but not limited to planning, project development, design, construction, and maintenance.
2. The CONTRACTOR shall design, develop, implement and maintain a set of coordinated strategies to manage the work zone impacts of the Project designated as the Transportation Management Plan. These strategies will include a Temporary Traffic Control plan (TMP), a Transportation Operations component, and a Community and Public Relations Plan component. The Policy and the anticipated work zone impacts of the Project shall determine the level of detail, content, and scope of the TMP. The primary component, the Temporary Traffic Control plan shall address traffic control and safety throughout and adjacent to the Project site. A secondary component, the Transportation Operations plan, will address management of traffic operations in the Project site and all adjacent areas impacted by the Project. The final component, the Community and Public Relations Plan, addresses communications with the public and entities impacted by the Project. The CONTRACTOR's Transportation Management Plan and its components shall comply with the requirements of this Agreement and subsequent Exhibits, Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) latest edition, and SCDOT policies, standard specifications and all addendums to the standard specifications, the typical traffic control standard drawings for road construction, and procedures.

F. Ownership of Documents

1. The Project Documents are intended by the parties each to be a “work-made-for-hire” as used in 17 U.S.C. § 101, et seq., and SCDOT shall be the owner of the Project Documents and, except as expressly set forth otherwise in this clause F., all associated Intellectual Property.
2. Upon the Effective Date of this Agreement, CONTRACTOR grants SCDOT an irrevocable, transferable, perpetual, fully paid-up, worldwide, royalty-free, nonexclusive license, with right to grant sublicenses, to reproduce the Proprietary Intellectual Property and Project Documents for the purposes of, but not limited to, promoting, using, maintaining, upgrading, or adding to the Project. The foregoing license includes license to reproduce, modify, adapt, and disclose the Proprietary Intellectual Property in connection with the Project and any interstate or state highway, whether tolled, owned, or operated by SCDOT. The foregoing right to transfer is limited to any governmental entity that succeeds to SCDOT’s ownership of the Project.
3. Upon completion of the Project, SCDOT step-in, or upon early termination of this Agreement, CONTRACTOR shall provide all Project Documents to SCDOT in the format designated by SCDOT.
4. All Proprietary Intellectual Property shall remain exclusively the property of CONTRACTOR (or its subcontractors, suppliers, or vendors).
5. To the extent permitted by applicable law, SCDOT will not disclose any Proprietary Intellectual Property other than to authorized transferees and sublicensees that, to the extent permitted by applicable law, agree to be bound by the foregoing nondisclosure obligation relating thereto. Notwithstanding any provision of this Agreement to the contrary, in no event shall SCDOT or any of its directors, officers, employees, consultants or agents be liable to CONTRACTOR, any of its subcontractors, suppliers, or other vendors, or any affiliate of any of the foregoing, for any losses caused by, arising out of, relating to, or resulting from any breach of the duty of confidentiality set forth in this clause 5 and in clause 2 if such breach is not the result of gross negligence or intentional misconduct, and CONTRACTOR hereby irrevocably waives, and shall cause all such subcontractors, suppliers, and other vendors, to waive, any and all claims against SCDOT or the State of South Carolina to any such losses.
6. With respect to any Proprietary Intellectual Property owned by a person or entity other than CONTRACTOR, CONTRACTOR shall obtain from such owner, concurrently with the execution of any contract with such owner or in connection with the first use or adaptation of the Proprietary Intellectual Property for the Project, both for CONTRACTOR and SCDOT, a license on the same terms as described in clause 2 above. The foregoing requirement shall not apply, however, to mass-marketed software products (sometimes referred to as “shrink wrap software”) owned by such a person or entity, where such a license cannot be extended to SCDOT using commercially reasonable efforts. The limitations

imposed upon SCDOT described in clauses 2 and 5 above shall also apply to SCDOT's licenses in such Proprietary Intellectual Property.

7. Definitions. For purposes of this Article II.F., the following terms have the meanings ascribed:
- a. Intellectual Property means all current and future legal and/or equitable rights and interests in know-how, patents (including applications), copyrights (including moral rights), trademarks (registered and unregistered), service marks, trade names, trade secrets, trade secret rights, designs (registered and unregistered), design rights, utility models, circuit layouts, plant varieties, business and domain names, inventions, solutions embodied in technology, and other intellectual activity, and applications of or for any of the foregoing, subsisting in or relating to the Project, Project design data or Project traffic data. Intellectual Property includes traffic management algorithms, and software used in connection with the Project (including software used for management of traffic on the Project), and associated source code and source code documentation. Intellectual Property is distinguished from physical construction and equipment itself and from other Project Documents (i.e., documents that disclose Intellectual Property).
 - b. Project Documents means any drawings, specifications, test data, inspection reports, QC documents, QA documents, daily diaries, other data, and any other documents (including plans, elevations, sections, details, diagrams, specifications, samples, drawings, sketches, charts, calculations, depictions, specifications, layouts, manuals, files, artwork, correspondence, and other submittals made under this Agreement), including those in electronic form, whether prepared by or on behalf of CONTRACTOR.
 - c. Proprietary Intellectual Property means Intellectual Property created, used, applied or reduced to practice in connection with the Project or with CONTRACTOR's scope of the work that derives commercial value from its protection as a trade secret under applicable law or from its protection under patent law.

G. Construction Criteria

CONTRACTOR shall construct the Project in accordance with all applicable Federal, State, and local statutes and regulations. All construction shall be performed in accordance with the following criteria, which are incorporated herein by reference and made a part hereof. The construction criteria are intended to be complementary and to describe and provide for a complete work. Where the following construction criteria conflict, the order of precedence shall be as listed below:

1. Exhibit 4 – Project Design Criteria
2. Exhibit 5 – Special Provisions

3. Exhibits 6, 7
4. Final Construction Plans provided by SCDOT
5. SCDOT Standard Drawings, effective as of the most recent Standard Highway Letting prior to the release of the Final RFP ([see Design Build Website - https://www.scdot.org/business/design-build.aspx](https://www.scdot.org/business/design-build.aspx))
6. SCDOT Supplemental Specifications and Supplemental Technical Specifications, effective as of the release of the Final RFP ([see Design Build Website - https://www.scdot.org/business/design-build.aspx](https://www.scdot.org/business/design-build.aspx))
7. SCDOT Standard Specifications for Highway Construction, effective as of the release of the Final RFP ([see Design Build Website - https://www.scdot.org/business/design-build.aspx](https://www.scdot.org/business/design-build.aspx))
8. SCDOT Construction Manual, effective as of the release of the Final RFP
9. Qualified Products Policies and Qualified Products List are available on SCDOT internet website.

H. Project Management

1. CONTRACTOR shall be responsible for ensuring that the Project is constructed in conformance with the Contract, all referenced documents and specifications, and applicable laws and regulations.
2. CONTRACTOR shall provide project management services sufficient to supervise the activities of his own personnel and subcontractors. CONTRACTOR shall provide a sufficient number of persons on site, to the satisfaction of SCDOT, to provide for the construction management of the Project.
3. SCDOT will provide representatives assigned to the Project to monitor the construction and provide necessary coordination between SCDOT and CONTRACTOR. All costs for salary and equipment to maintain SCDOT employees will be provided by SCDOT at no expense to CONTRACTOR. SCDOT and FHWA, if applicable, representatives will have unrestricted access to the Project, the work in progress, the "Daily Diaries", and to other technical documents and project records associated with design, construction, demolition, material disposal, materials, quality control, materials installation, and testing. SCDOT will receive reasonable notice of and have the opportunity to participate in any meetings that may be held concerning the Project or the relationship between CONTRACTOR and its consultants and subcontractors when such meetings are associated with technical matters, progress, or quality of the Project. As used in this paragraph, "notice" shall require actual written notice to SCDOT or SCDOT's Agent.

4. CONTRACTOR shall participate in various Project meetings with SCDOT as outlined below.
- a) Project Management Progress Meetings
 - i. CONTRACTOR shall participate in weekly meetings to review and discuss the progress of the design and construction of the Project. During these meetings, the CONTRACTOR will discuss the planned design and construction work for the week, as well as the planned work for the following three weeks. The CONTRACTOR shall ensure that the Project Manager, Lead Design Engineer, Construction Manager, and other appropriate personnel to include active subcontractors are available to participate in the progress meetings.
 - b) Executive Management Meetings
 - i. CONTRACTOR shall participate in monthly executive level management meetings to review and discuss the status of the Project. During the meetings, the parties will address any issues identified and discuss the causes, responsible party, impacts, and potential solutions with the mutual goal of finding the most effective solutions for issue resolution. The CONTRACTOR shall make the Project Executive, Project Manager, and other relevant personnel, including company executives not directly associated with the project, available to participate in these meetings.
5. In the event a dispute arises, the parties shall first attempt to resolve it informally and directly using the Issue Resolution Ladder, recognizing the urgency of resolving disputes promptly and that time is of the essence. The Issue Resolution Ladder is the process for elevating disputes from the field level to higher levels of review, including executive management if necessary, with defined durations for each level of review. The objective of the Issue Resolution Ladder is to resolve disputes as close to the field level as possible while acknowledging the necessity to escalate issues to a higher level before they impact the Project's cost or schedule. Prior to determining a delay has occurred that would involve the submission of a contractor notice of claim, this procedure shall be followed.
- a) The Issue Resolution Ladder shall consist of six levels of review, each with corresponding durations, as outlined below:

Level of Review	Contractor Reviewer	SCDOT Reviewer	Time Limit
6	Executive Officer	Construction Alternative Delivery Engineer	5 Business Days
5	Project Manager	Alternative Delivery Construction Manager	2 Business Days

4	Project Manager	District Construction Engineer	24 hours
3	Project Manager	Resident Construction Engineer (RCE)	24 hours
2	Construction Manager	Assistant RCE/Field Engineer	5 hours
1	Superintendent	Inspector	1 hour

- b) During the Preconstruction / Partnering conference, the project team shall identify the individuals from both SCDOT and CONTRACTOR's organizations who will fill the roles of reviewers in the Issue Resolution Ladder, as well as the required documentation for each level of review in the Issue Resolution Ladder.
- c) If reviewers at any level of the Issue Resolution Ladder are unable resolve a dispute within the specified time limits, they shall elevate the dispute to the next level of review.

I. Control of the Work

- 1. CONTRACTOR shall determine the appropriate means, methods and scheduling necessary to complete the work timely and in accordance with all construction requirements. SCDOT and FHWA, if applicable, will have the right to review and inspect the work at any time.
- 2. If, at any time, SCDOT observes or has actual notice of any fault or defect in CONTRACTOR's performance of this Agreement, SCDOT will comply with the provisions of Article XVII, Default, Suspension and Termination. SCDOT is not required to discover or to accept defective or faulty work. SCDOT's right to have defective or faulty work promptly corrected shall not be waived by any action of SCDOT.
- 3. SCDOT will have the authority to suspend the work, in accordance with Article XVIII of this Agreement.

J. Contract Deliverables

CONTRACTOR shall submit deliverables including, but not limited to, the following as set forth in the CONTRACT. All deliverables shall contain proper references to both the Contract ID number and the appropriate Project ID number for that specific location. Deliverables noted below with an asterisk shall be included in the Design Review Submittal Schedule and follow Design Review procedures as outlined in Article II, Section D of the Agreement.

- 1. Contract Deliverable Matrix

2. All deliverables as specified in Exhibit 4z*
3. CPM Schedule, as specified in Article IV
4. Design Review Submittal Schedule including Gantt Chart of Submittals*
5. Schedule of Values, as specified in Exhibit 2
6. Design QC Plan*
7. Construction QC Plan
8. Clearing and Grubbing Plan
9. SCDES Notice of Intent (NOI) for Stormwater Discharges Covered Under SC NPDES Construction General Permit SCR160000) & Storm Water Pollutant Prevention Plan and signed Contractor Certification Form (SCDHEC 0437)
10. Wetland and Stream Mitigation
11. Crane Operator Documents
12. Community and Public Relations Support Plan, as specified in Article X and Exhibit 5
13. EEO as specified in Article XIX & Exhibit 5
14. DBE Requirements as specified in Article XVIII and SCDOT DBE Supplemental Specification.
15. Right-of-Way documents, as specified in Article VIII
16. Escrow Proposal Documents
17. CONTRACTOR's Materials Certification
18. HAZMAT surveys for structures not already surveyed, SCDHEC Notice of Demolition for RCE Signature
19. Utility Coordination Reports, including Utility Agreements, and Supporting Documentation
20. Right of Way Plats and Monuments (per Preconstruction Advisory Memorandum #8)
21. Shop Plans and Working Drawings
22. As-Built Plans

K. Incorporation of ATCs

1. There are no ATCs for this project.

L. Subcontracts

1. CONTRACTOR shall retain or cause to be retained only subcontractors that are qualified, experienced and capable in the performance of the portion of the work assigned. CONTRACTOR shall assure that each subcontractor has at the time of execution of the corresponding subcontract, supply agreement, or other vendor contract, and maintains at all times during performance of the assigned work, all licenses required by applicable laws. For purposes of this clause, “subcontract, supply agreement, or other vendor contract” shall be referred to as a “Subcontract.”
2. The retention of subcontractors by CONTRACTOR will not relieve CONTRACTOR of its responsibility hereunder or for the quality of the work or materials provided by it. CONTRACTOR shall supervise and be fully responsible to SCDOT for the acts, omissions, negligence, intentional misconduct, or breach of applicable law, contract, governmental approval or permit by any subcontractor, vendor, supplier, or other contractor to CONTRACTOR (a “subcontractor”, or by any member or employee of CONTRACTOR or any such subcontractor, vendor, supplier, or other contractor (each, a “Contractor-Related Entity”), as though CONTRACTOR directly employed all such individuals. No subcontract entered into by CONTRACTOR will impose any obligation or liability upon SCDOT to any such subcontractor or any of its employees. Nothing in this Agreement will create any contractual relationship between SCDOT and any subcontractor.
3. Each Subcontract shall:
 - a. Set forth a standard of professional responsibility or a standard for commercial practice equal to the requirements of this Agreement and prudent industry practices for work of similar scope and scale and shall set forth effective procedures for claims and change orders.
 - b. Require the subcontractor to carry out its scope of work in accordance with this Agreement, all applicable governmental approvals and permits, and applicable law.
 - c. Physically Include Form FHWA-1273.
 - d. Incorporate the general wage decisions applicable to the Project.
 - e. Without cost to CONTRACTOR or SCDOT, expressly permit assignment to SCDOT or its successor, assign or designee of all CONTRACTOR’s rights under the Subcontract, contingent only upon delivery of request from SCDOT following termination of this Agreement, allowing SCDOT or its successor, assign or designee to assume the benefit of CONTRACTOR’s rights with liability only for those remaining obligations of CONTRACTOR accruing after

the date of assumption, such assignment to include the benefit of all subcontractor warranties, indemnities, guarantees and professional responsibility.

- f. Expressly state that any acceptance of assignment of the Subcontract to SCDOT or its successor, assign or designee shall not operate to make the assignee responsible or liable for any breach of the Subcontract by CONTRACTOR or for any amounts due and owing under the Subcontract for work or services rendered prior to assumption (but without restriction on the Subcontractor's rights to suspend work or demobilize due to CONTRACTOR's breach).
- g. Expressly include a covenant to recognize and attorn to SCDOT upon receipt of notice from SCDOT that it has exercised its rights under this Agreement (including specifically step-in rights in the context of Contractor Defaults), without necessity for consent or approval from CONTRACTOR or to determine whether SCDOT validly exercised its rights, and CONTRACTOR's covenant to waive and release any claim or cause of action against the subcontractor arising out of or relating to its recognition and attornment in reliance on any such notice.
- h. Not be assignable by the subcontractor to any person or entity other than SCDOT (or its assignee) without CONTRACTOR's prior consent.
- i. Not be assignable by the CONTRACTOR to any person other than SCDOT (or its assignee) without SCDOT's prior consent.
- j. Expressly include requirements that the Subcontractor will: (i) maintain usual and customary books and records for the type and scope of business operations in which it is engaged (e.g., constructor, equipment supplier, designer, service provider); (ii) permit audit thereof with respect to the Project or work by each of CONTRACTOR, FHWA and SCDOT pursuant to this Agreement, (iii) provide progress reports to CONTRACTOR appropriate for the type of work it is performing sufficient to enable CONTRACTOR to provide the reports it is required to furnish SCDOT under this Agreement.
- k. Include the right of CONTRACTOR to terminate the Subcontract in whole or in part upon any termination by SCDOT of this Agreement for SCDOT's convenience without liability of CONTRACTOR or SCDOT for the subcontractor's lost profits, business opportunity, or any consequential, incidental, indirect, special, or punitive damage.
- l. Expressly require the Subcontractor to participate in meetings between CONTRACTOR and SCDOT, upon SCDOT's request, concerning matters pertaining to such Subcontract or its work.

- m. Include an agreement by the subcontractor to give evidence in any dispute resolution proceeding pursuant to this Agreement, if such participation is requested by either SCDOT or CONTRACTOR.
 - n. Expressly include a provision prohibiting cross-contract offset between the parties thereto, meaning that if a subcontractor is performing work on multiple contracts for the other party to the Subcontract or the other party's affiliates, the other party or its affiliate shall not withhold payment from the subcontractor on its Subcontract because of disputes or claims on another contract.
 - o. Expressly require the subcontractor to make payments to sub-subcontractors, and be liable for interest payments to sub-subcontractors, under applicable law.
 - p. Contain no waiver of the prompt payment protections for the subcontractor provided under applicable law.
 - q. Expressly provide that all claims and charges of the subcontractor and its subcontractors at any time shall not attach to any interest of SCDOT in the Project or the Project ROW.
 - r. Expressly include a covenant, expressly stated to survive termination of the Subcontract, to promptly execute and deliver to SCDOT a new contract between the subcontractor and SCDOT on the same terms and conditions as the Subcontract, in the event: (i) the Subcontract is rejected by CONTRACTOR in bankruptcy or otherwise wrongfully terminated by CONTRACTOR; and (ii) SCDOT delivers request for such new contract following termination or expiration of this Agreement.
 - s. Be consistent in all other respects with the terms and conditions of this Agreement to the extent such terms and conditions are applicable to the scope of work of such subcontractors, and include all provisions required by this Agreement.
 - t. Expressly require the Subcontractor to notify CONTRACTOR and SCDOT, in writing, promptly following any determination by any federal or state department or agency that the subcontractor is disqualified, suspended, debarred, or otherwise excluded from bidding, proposing, or contracting with any such federal or state department or agency.
4. CONTRACTOR shall not amend any Subcontract with respect to any of the foregoing matters without the prior consent of SCDOT.
5. CONTRACTOR shall not enter into any Subcontracts with any person or entity then debarred or suspended from submitting bids by any agency of the State.
6. Additional Requirements Relating to Subcontracts

- a. Prior to any subcontractor performing any work on the Project, CONTRACTOR shall submit the Subcontractor/Hauler Approval Request Form for approval. SCDOT reserves the right to request the subcontract at any time. If requested by SCDOT, then CONTRACTOR shall submit a true and complete copy of the proposed Subcontract to SCDOT for such review and approval. SCDOT may disapprove any proposed Subcontract for reasons to include but not limited to default or delinquency of subcontractor.

7. Subcontracts with Affiliates

- a. For purposes of this clause, "Affiliate" means (i) any equity member of CONTRACTOR, (ii) any person or entity who directly or indirectly, through one or more intermediaries, controls or is controlled by, or is under common control with CONTRACTOR or any such equity member, or (iii) any person or entity for which ten percent or more of the equity interest in such person or entity is held directly or indirectly, beneficially, or of record, by CONTRACTOR, any such equity member, or any affiliate of any person or entity described under clause (ii). "Control" means the possession, directly or indirectly, of the power to cause the direction of the management of an entity, whether through voting rights, securities, by contract, family relationship, or otherwise.
- b. CONTRACTOR shall have the right to have work and services performed by Affiliates only under the following terms and conditions (in addition to all other general requirements for Subcontracts set forth in this Agreement):
 - (i.) CONTRACTOR shall execute a written Subcontract with the Affiliate;
 - (ii.) The Subcontract shall comply with all applicable provisions of this clause, be consistent with prudent industry practices, and be in form and substance substantially similar to Subcontracts then being used by CONTRACTOR or Affiliates for similar work or services with unaffiliated subcontractors;
 - (iii.) The Subcontract shall set forth the scope of work and services and all the pricing, terms and conditions respecting the scope of work and services;
 - (iv.) The pricing, scheduling and other terms and conditions of the Subcontract shall be no less favorable to CONTRACTOR than those that CONTRACTOR could reasonably obtain in an arms' length, competitive transaction with an unaffiliated Subcontractor. CONTRACTOR shall bear the burden of proving that the same are no less favorable to CONTRACTOR; and
 - (v.) No Affiliate shall be engaged to perform any work or services which this Agreement states are to be performed by an independent or unaffiliated party.
 - (vi.) No Affiliate shall be engaged to perform any work or services that would be inconsistent with prudent industry practices.

- c. CONTRACTOR shall make no payments to Affiliates for work or services in advance of provision of such work or services, except for reasonable mobilization payments or other payments consistent with arm's length, competitive transactions of similar scope.

III. CONTRACT PRICE/CONTRACT PAYMENTS

A. Contract Price

The "Contract Price" shall be \$15,233,000.00. In consideration for the Contract Price, CONTRACTOR shall perform all of its responsibilities under the Contract. The Contract Price shall include all work identified in the Agreement and subsequent Exhibits and as identified in the Cost Proposal Bid Form – **EXHIBIT 1**.

B. Contract Price Adjustments

1. Allowable adjustments

When expressly permitted hereunder, only to the extent so permitted, and except as otherwise expressly stated with respect to an aspect of the work (or basis for a change to the Contract Price), the Contract Price may be added to or deducted from as a result of any of the following:

- a. A "Change" or "Force Account Directive".
- b. Differing site condition as set forth in Article XIII.
- c. Suspension for Convenience as set forth in Article XVII.
- d. Intentional or bad faith acts or omissions by SCDOT that unreasonably interfere with CONTRACTOR's performance and cause delay of work on the critical path of the Project.
- e. Changes in legal requirements or regulations that are effective subsequent to the date of submission of CONTRACTOR's response to the RFP.
- f. Discovery of hazardous materials not previously identified in Exhibit 4 Project Design Criteria and Attachment B as set forth in Article XI
- g. Discovery of archeological or paleontological sites not previously identified as set forth in Article X.
- h. Actual Premium Right Of Way Acquisition Costs as set forth in to Article VIII. No additional amount for overhead, profit, bonds and insurance will be considered for this item.
- i. Adverse Utility Adjustments impacts meeting the requirements as set forth in Article VII.

If the critical path is not affected, the Contract Price may be adjusted as follows. The additional 10% adjustment accounts for costs attributable to profit and all overheads.

$$\text{Allowable Contract Price Adjustment} = \text{Direct Costs} + (10\% \times \text{Direct Costs})$$

If the critical path is affected, the Contract Price may be adjusted as follows. The additional 10% adjustment accounts for costs attributable to profit and all overheads (except Extended Job Site).

$$\begin{aligned} \text{Allowable Contract Price Adjustment} \\ &= \text{Direct Costs} + \text{Extended Job Site Overhead} \\ &+ (10\% \times (\text{Direct Costs} + \text{Extended Job Site Overhead})) \end{aligned}$$

Extended Job Site Overhead equals the Rate (D), established in Exhibit 5, times an approved Time Extension.

Other than as provided above, the Contract Price shall not be increased for Contract Time extensions or, except as expressly stated otherwise herein, delay damages. Contract Price adjustments shall be documented by change order through the Contract Change Request process signed by both parties and shall be reflected immediately in a revision to the Schedule of Values. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if notice is not given prior to final payment under this Agreement.

2. Changes

- a. A “Change” shall be any deviation or variation from the Project Scope or the Project Criteria. No Change shall be implemented without the express written approval of SCDOT.
- b. SCDOT or the CONTRACTOR may initiate a “Contract Change Request” in writing via the Contract Requests process in Exhibit 5. If SCDOT approves the change, CONTRACTOR shall perform the services as changed.

3. Force Account Directive

- a. A Force Account Directive is a written order from SCDOT directing a Change prior to agreement with CONTRACTOR on adjustment, if any, to the Contract Price or Contract Time. If a price for the work cannot be agreed upon or a time constraint requires expedited work, CONTRACTOR shall perform the work under Force Account Procedures as outlined in Section 109.5 of SCDOT’s Standard Specifications.

4. Direct Costs

For the purpose of a Contract Price Adjustment, “Direct Costs” shall be defined as:

- a. Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- b. Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- c. Actual costs of machinery and equipment owned by CONTRACTOR or any affiliated or related entity exclusive of hand tools;
- d. Actual costs paid for rental of machinery and equipment exclusive of hand tools;
- e. Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes; and
- f. Costs incurred or fees paid for design work related to the change or event.

C. Contract Payments

1. Schedule of Values

Prior to execution of this Agreement, CONTRACTOR shall provide a Schedule of Values acceptable to SCDOT and work may not start until the Schedule of Values is approved by SCDOT. The Schedule of Values will serve as the basis for cost loading of the CPM Schedule. The CPM schedule shall include sufficient information to provide for monetary and quantitative tracking of the work by SCDOT. Updates to the cost-loaded CPM schedule will serve as the basis for progress payments requested by and made to CONTRACTOR. If the Contract Price is adjusted, CONTRACTOR shall revise its Schedule of Values and the CPM Schedule to reflect the adjustment in the Contract Price. The revised Schedule of Values must be approved by SCDOT prior to the time for the subsequent request for a progress payment otherwise no progress payments will be made. The Schedule of Values shall be incorporated herein as **EXHIBIT 2**. The Schedule of Values should include Lump Sum items that will serve as measurement and payment for any item referred to in this Contract as a "contract unit bid price" item. CONTRACTOR shall submit six separate Schedules of Values; one for all bridges. A list of minimum items to be included in the Schedule of Values is in Attachment B. This minimum items list may be expanded if desired by the CONTRACTOR and approved by SCDOT. A list of all available Schedule of Value items is included in the Project Information Package.

2. Mobilization

Mobilization shall not exceed 5% of the Total Contract Cost as shown in the Schedule of Values. Mobilization will be paid in two equal installments. The first will be paid in the progress payment immediately following Notice to Proceed, and the second will be paid at the start of construction.

3. Periodic Progress Payment Applications

No application for payment of the Contract Price shall be submitted until SCDOT gives a notice to proceed. Applications for payment of the Contract Price may be submitted once a month. Each application for payment of the Contract Price shall set forth, in accordance with the Schedule of Values and the cost-loaded CPM schedule, the percentage of all items comprising the work completed since CONTRACTOR's immediately prior request for payment. The application for payment of the Contract Price may also request payment for equipment and materials not yet incorporated into the Project, provided that (i) SCDOT is satisfied that the equipment and materials are suitably stored at either the Project or another acceptable location, (ii) the equipment and materials are protected by suitable insurance and (iii) upon payment, SCDOT will receive title to the equipment and materials free and clear of all liens and encumbrances.

4. Periodic Progress Payments

SCDOT will review each application for payment and respond within seven calendar days. SCDOT will generate an "Estimate Summary to Contractor" and "Contractor Concurrence Form" for CONTRACTOR review. The "Contractor Concurrence Form", with the attached "Estimate Summary to Contractor", shall be the undisputed application for payment. SCDOT will make each payment within 21 calendar days of the receipt of the corresponding undisputed application for payment. In the event of a dispute over the quality of work or percentage of the Project completed, SCDOT's decision is controlling and final. Payment by SCDOT will not preclude or estop SCDOT from correcting any measurement, estimate, or certificate regarding the percentage completion of the Project, and future payments may be adjusted accordingly.

5. Prompt Payment of Subcontractors

CONTRACTOR shall comply with the requirements of the SCDOT Prompt Payment Clause Supplemental Specification.

6. Withholding of Payment

SCDOT may withhold all or part of any payment under the Contract for any of the reasons listed below. Any funds withheld will be released upon CONTRACTOR fully remedying the defect, fault, or failure and will be included in the next regularly schedule pay estimate. Payment will be subject to retainage if applicable.

- a. Any CONTRACTOR default as set forth in Article XVII;
- b. Reasonable evidence that the Work will not be Substantially Complete within the Construction Time as adjusted and that the unpaid balance of the Contract Price will not be adequate to cover Liquidated Damages for the actual unexcused delay;

- c. Any fines or other charges to SCDOT due to CONTRACTOR's failure to comply with permit requirements or other regulations;
- d. Notice of cancellation of insurance;
- e. Violation of QC plan requirements;

D. Retainage

Provided the Project is proceeding satisfactorily, SCDOT will not withhold retainage. However, if at any time SCDOT determines that CONTRACTOR fails to meet contract terms or the Project is not proceeding satisfactorily, SCDOT may retain up to 10% of the Contract Price as retainage.

IV. CONTRACT TIME

A. Project Schedule

1. Time for Completion of Project: Time is of the essence. The Project shall be Substantially Complete by March 31, 2026. The Notice to Proceed shall be no later than 2 days from the effective date of the Agreement. Final Completion shall be reached as defined in paragraph 5 below.
2. Substantial Completion: When CONTRACTOR believes that it has reached Substantial Completion, it shall notify SCDOT in writing. Substantial Completion is the point in the Project when the work has been constructed to the typical section in the plans over the entire length of the Project, including tie ins to adjacent projects or existing roads, all safety features are installed and are being properly maintained, no lanes will have to be closed to complete any remaining work, and all work is completed except for "Project Close-out Activities". "Project Close-out Activities" are defined as punch list items, site clean-up, demobilization, and final Project documentation, including but not limited to as-built plans.
3. Critical Path Method Schedule: CONTRACTOR shall prepare and maintain a schedule for the Project using the Critical Path Method of scheduling (hereinafter called "CPM Schedule"). Prepare a Level II CPM Schedule in accordance with this agreement and the SCDOT Supplemental Specifications with the following exceptions:
 - a. Submit to the SCDOT the initial baseline CPM schedule within 10 days from the Effective Date of this Agreement. No contract payment will be made to Contractor and no construction work may begin until a CPM baseline schedule is received and accepted by SCDOT. Update the baseline CPM schedule for monetary and quantitative tracking purposes as RFC plans are developed.
 - b. Cost-load the CPM schedule using the expenses identified in the schedule of values. Use the schedule of values to establish Expense Categories and assign to the correct activities.

- c. Include submittal activities. Allow duration for these activities to include SCDOT review periods.
 - d. Reuse of deleted activity ID's from schedule update to schedule update is not allowed.
 - e. Failure to include any element of work or any activity including but not limited to utility relocation, right of way acquisition, and permitting will not relieve the CONTRACTOR from completing all work by the Substantial Completion dates at no additional time or cost to the SCDOT, notwithstanding the acceptance of the schedule by SCDOT.
 - f. Develop project specific calendars reflecting all seasonal restrictions included in this Agreement and non-work days. Address durations for weather within activity duration, not within the calendar.
 - g. Use only a Work Breakdown Structure (WBS) to organize schedule activities. At a minimum, breakout the design and construction phases. These two breakouts should have the same parent within the structure.
 - h. Submit monthly updates no later than 15 days following the most recent estimate period end date, whether or not an estimate was generated. Set the data date the same as the most recent estimate period end date.
 - i. If SCDOT determines any schedule submission is deficient, it will be returned to the CONTRACTOR. A corrected schedule shall be provided within 7 calendar days from the SCDOT's transmittal date.
 - j. The CONTRACTOR may plan for early completion; however, the schedule shall never reflect a completion date earlier than the original Substantial Completion date. SCDOT will not be liable in any way for CONTRACTOR's failure to complete the Project prior to the original Substantial Completion date. Any additional costs, including extended overhead incurred between CONTRACTOR's scheduled early completion date and the original Substantial Completion date, shall be the responsibility of the CONTRACTOR.
 - k. Include in each narrative a detailed listing of crews utilized on activities and their responsibilities. In lieu of this, the Contractor may request to submit a Resource Loaded CPM schedule.
4. Progress Review Meetings:
- a. Review Meetings shall be held between CONTRACTOR and SCDOT at least every 2 weeks. Periodic construction meetings shall be held by CONTRACTOR with its consultants and subcontractors to coordinate the work, update the schedule, provide information and resolve potential conflicts.

- b. SCDOT and CONTRACTOR will hold a regular CPM Progress Meeting at which all principal parties are expected to attend. These meetings will be held the week before the application for payment is due so that job progress will coincide with the payment application. At this meeting, CONTRACTOR shall provide the most recent schedule with notations showing actual start dates, actual finish dates, and activity progress. If the schedule provided indicates an actual or potential delay to the completion of the Contract, CONTRACTOR shall provide a narrative identifying the problems, causes, the activities affected and describing the means and methods available to complete the Project by the Contract Time.
5. Final Completion: Final Completion shall be achieved within 30 calendar days of Substantial Completion as defined in this Agreement. When CONTRACTOR believes that all elements of its work on the Project, including all of the requirements of the Contract, have been completed, it shall notify SCDOT in writing. Within 15 days thereafter, SCDOT will acknowledge project completion or will advise CONTRACTOR in writing of any aspect of the Contract or the Project Scope that is incomplete or unsatisfactory. CONTRACTOR shall complete all corrective action within fifteen (15) days after written notification of incomplete or unsatisfactory items. CONTRACTOR will notify SCDOT in writing upon completion of necessary corrective action. SCDOT will verify satisfactory completion of the corrective action in writing to CONTRACTOR. Upon verification, the Project shall be deemed to have achieved Final Completion.
6. Inspection/Acceptance; No Waiver: No inspection, acceptance, payment, partial waiver, or any other action on the part of SCDOT will operate as a waiver of any portion of this Agreement or of any power reserved herein or any right to damages or other relief, including any warranty rights, except insofar as expressly waived by SCDOT in writing. SCDOT will not be precluded or estopped by anything contained herein from recovering from CONTRACTOR any overpayment as may be made to CONTRACTOR.

B. Time Extensions

Time may be extended if there is a delay to the critical path of the Project caused by an event listed below. All requests for time extensions shall be made in writing to SCDOT within 20 days of the event causing the delay. All time extensions must be approved in writing by SCDOT. Time extensions for weather shall not be allowed, except as provided under Force Majeure. Time extensions may be allowed for the following events that affect the critical path:

1. Force Majeure as that term is defined in this Agreement in Article XIV;
2. Changes or Force Account Directives;
3. Differing site conditions as defined under Article XIII;

4. Injunctions, lawsuits, or other efforts by individuals or groups that hinder, delay, or halt the progress of the Project, provided that such efforts are not premised on alleged wrongs or violations by CONTRACTOR or its subcontractors;
5. Interference with or delay of work on the critical path of the Project by SCDOT; however, CONTRACTOR shall not be entitled to a time extension if SCDOT's actions are necessitated by CONTRACTOR's actions, omissions, failure to perform quality work, or failure to comply with contract requirements;
6. Changes in the legal requirements or regulations which are effective subsequent to the date of this Agreement;
7. Discovery of hazardous materials not previously identified as set forth in Article XI;
8. Discovery of archeological or paleontological remains not previously identified as set forth in Article X; or
9. Adverse utility relocation impacts meeting the requirements set forth in Article VII.
10. Adverse Railroad coordination impacts as set forth in Article VII.
11. Adverse permit acquisition impacts as set forth in Article IX.

C. Owner's Right to Stop Work

SCDOT will have the authority to suspend the work, wholly or in part, for such periods, as SCDOT may deem necessary, due to CONTRACTOR's failure to meet the requirements of the Contract in the performance of the work. Such suspension of the work shall not constitute grounds for claims for damages, time extensions, or extra compensation.

D. Liquidated Damages

1. CONTRACTOR shall pay liquidated damages to SCDOT in the amount of \$1,500 for each day for which the Project is not substantially complete, as defined in Article IV.
2. CONTRACTOR shall pay liquidated damages to SCDOT in the amount of \$500 for each day that Final Completion, as defined in Article IV, is not achieved.
3. The parties acknowledge, recognize and agree that because of the unique nature of the Project, it is difficult or impossible to determine with precision the amount of damages that would or might be incurred by SCDOT as a result of the CONTRACTOR's failure to complete the Project as specified in the Contract. Therefore, any sums payable under this provision are in the nature of liquidated damages, and not a penalty, and are fair and reasonable and such payment represent a reasonable estimate of fair compensation for the losses that

may reasonably be anticipated from such failure. Liquidated damages are SCDOT's sole remedy for delayed completion; however, liquidated damages do not apply to CONTRACTOR's liability for other contractual breaches, duties, or obligations.

V. CONSTRUCTION QUALITY ASSURANCE PROGRAM

A. CONTRACTOR's Responsibilities

CONTRACTOR shall be responsible for the QUALITY CONTROL Portion of the Program to include the items listed below. Work shall not commence until CONTRACTOR has met these requirements.

1. Quality Control Plan: CONTRACTOR shall submit a Quality Control (QC) Plan that outlines how CONTRACTOR shall assure that the materials and work are in compliance with the contract documents. The initial plan shall be submitted to SCDOT for review and approval at least five business days prior to the beginning of any construction activity. The plan shall be updated as necessary prior to the start of any specific construction operation. The plan shall include a list of SCDOT certified personnel responsible for management and quality control of the Project, and define the authority of each individual. The plan shall also include how CONTRACTOR will monitor quality and deal with failing materials. The QC Plan shall include the QC testing and sampling frequencies and shall indicate the frequency at which the QC Manager will provide QC test results to SCDOT. CONTRACTOR shall include a summary of quantities to SCDOT for the purposes of meeting the minimum acceptance and independent assurance sampling and testing requirements for the Project.
2. Personnel: CONTRACTOR shall provide a sufficient number of SCDOT certified personnel to adequately control the work of the Project. Any personnel required to obtain samples or conduct material testing shall be SCDOT certified. CONTRACTOR shall provide SCDOT with copies of each individual's certifications for review and approval by SCDOT. Approved CONTRACTOR QC personnel shall be on the job at all times that permanent work items and materials are being incorporated into the project. CONTRACTOR's QC personnel shall not have any other project responsibilities.
3. CONTRACTOR Testing: Notwithstanding any required sampling and testing stipulated in Article II.G, the CONTRACTOR should establish additional sampling and testing to ensure that all workmanship and materials are in compliance with the contract requirements. Although not used for acceptance, QC testing and inspection shall ensure that quality has been incorporated into all elements of work prior to requesting acceptance testing and inspection. The QC Program should be sufficient in scope to remedy repeated discoveries of non-compliant work by those performing acceptance inspection and testing. Repeated observations of QC quality shortfalls shall be considered a breakdown of the QC program and shall be cause for investigation and corrective action prior to commencement of work areas

affected. Corrective action may include the addition of new QC procedures, revision to existing QC procedures, re-training of QC personnel, removal and replacement of QC personnel, or other such actions which will restore the effectiveness of the QC program. All QC testing shall be performed in accordance with existing AASHTO, ASTM, or test methods used by SCDOT. The cost of these activities will be borne by CONTRACTOR.

4. Testing Laboratories: Hot Mix Asphalt testing laboratories require SCDOT certification. All other testing laboratories used on the Project must be AASHTO certified and approved by SCDOT 30 days prior to beginning the portion of work for which the laboratory will be performing the testing.
5. Mix Designs: Copies of all initial hot-mix asphalt mix designs and Portland Cement Concrete mix designs, along with supporting data, shall be submitted to SCDOT for review at least five business days prior to use. All hot-mix asphalt mix designs will be prepared by personnel certified in Mix Design Methods. Portland Cement Concrete mix designs will be prepared by a certified concrete technician or a Professional Engineer. The Portland Cement Concrete mix proportions given in the specifications are to be followed. CONTRACTOR shall design the mix to obtain the strength and water/cement ratios given in the specifications, and shall provide workability, air content, gradation and suitable set times as set forth in the Standard Specifications. The SCDOT will be notified of any revisions to CONTRACTOR's mix design. Copies of such revisions will be sent to SCDOT for review at least 10 business days prior to use.
6. Materials Certifications: CONTRACTOR's QC Manager shall submit all material certifications to SCDOT prior to the CONTRACTOR incorporating the material into the project.

B. SCDOT Responsibilities

SCDOT will be responsible for the QUALITY ACCEPTANCE portion of the program to include: conducting inspections, acceptance testing, independent assurance testing and final project material certification.

1. Acceptance Testing: SCDOT personnel assigned to the Project, or qualified personnel retained by SCDOT, will conduct sampling and testing, separate from CONTRACTOR's testing, at the frequencies set forth in SCDOT's Quality Acceptance Sampling and Testing Guide. This testing will be used by SCDOT to determine the acceptability of the materials. All sampling and testing will be in accordance with existing AASHTO, ASTM, or SC test methods used by SCDOT. The cost of these activities will be borne by SCDOT. CONTRACTOR's QC Manager is required to coordinate all activities closely with SCDOT to allow the necessary acceptance testing to be conducted prior to proceeding to the next operation. The disposition of failing materials must be approved by SCDOT.

2. Independent Assurance Testing: SCDOT will be responsible for conducting Independent Assurance Testing. Personnel performing these tests will be SCDOT employees or qualified persons retained by SCDOT. Persons performing these tests will not be involved in Acceptance Testing. This testing will be used to ensure that proper sampling and testing procedures are being followed, and that testing equipment is functioning properly. This testing will consist of observing sampling and testing by both SCDOT personnel performing Acceptance Testing and CONTRACTOR personnel performing Quality Control Testing, as well as taking split samples for the purposes of comparison testing. Independent Assurance Testing will be at an approximate frequency of one-tenth of the Acceptance Testing frequency. Independent Assurance test results will not be used for acceptance. The cost of these activities will be borne by SCDOT.
3. Materials Certification: SCDOT will be responsible for preparing the Materials Certification as required by the FHWA on federally funded projects.

C. CONTRACTOR's Obligation

SCDOT's testing in no way relieves CONTRACTOR of its obligation to comply with the Contract requirements. All materials incorporated into the Project must meet or exceed contract requirements and specifications. Further, any testing by SCDOT will not relieve CONTRACTOR of any of its warranty obligations.

VI. INSURANCE AND BONDING

A. Insurance

1. CONTRACTOR shall purchase and maintain insurance using a company or companies that maintain an A.M. Best rating of not less than A-VII with coverage forms acceptable to SCDOT. The insurance described below shall be maintained uninterrupted for the duration of the Project, including warranty periods, and shall protect CONTRACTOR from claims set forth below which may arise out of or result from CONTRACTOR's operations under the Contract, whether such operations be performed by CONTRACTOR or by any subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable:
 - a. Claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts;
 - b. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;
 - c. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;
 - d. Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly

related to the employment of such person by CONTRACTOR, or (2) by any other person;

- e. Claims for damages, other than to the work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
 - f. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
 - g. Claims involving contractual liability insurance applicable to the Contractor's obligations under the indemnity provisions of this contract.
 - h. Claims involving professional liability.
2. The minimum limits of liability for the following types of insurance are required, except where greater limits are required by statute:

- a. Workers' Compensation, including: Worker's Compensation Insurance/Employer's Liability

State Statutory limits	Employer's Liability
	\$100,000 per accident
	\$500,000 per disease
	\$100,000 each employee

- b. Commercial General Liability
- | |
|------------------------------|
| \$1,000,000 per occurrence |
| \$2,000,000 annual aggregate |

Commercial General Liability insurance shall be written on ISO occurrence form CG 00 01 (or substitute for providing equivalent coverage) and shall cover liability arising from premises, operations, independent contractors, products-completed operations, contractual liability and personal injury and advertising injury. The policy shall contain the per project endorsement.

- c. Business Automobile Liability
- | |
|----------------------------|
| \$1,000,000 per occurrence |
|----------------------------|

This policy shall cover Any Auto, including Owned, Hired and Non-owned Automobiles. Business auto coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 12, CA 00 20, or a substitute form providing equivalent liability coverage.

- d. Umbrella Liability Coverage
- | |
|------------------------------|
| \$5,000,000 per occurrence |
| \$5,000,000 annual aggregate |

The general aggregate limit shall apply separately to the Project.

- e. Professional Liability Coverage:
- | |
|------------------------------|
| \$1,000,000 per claim |
| \$2,000,000 annual aggregate |

- f. This policy shall cover all claims arising from the performance of professional services on the Project (Professional Liability also known as Errors and Omissions Insurance). Evidence of such insurance shall be provided to SCDOT at the time of the execution of the Agreement. This policy is written on a claims-made basis and CONTRACTOR warrants that any retroactive date under the policy shall precede the effective date of this Contract; and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of eight (8) years beginning at the time worked under this Contract is completed. CONTRACTOR shall obtain, or require the Lead Designer to obtain, Professional Liability insurance for this Project.
3. Certificates of Insurance acceptable to SCDOT will be provided to SCDOT prior to execution of this Agreement. These certificates shall name SCDOT as an additional insured under the Commercial General Liability (CGL) arising out of both the on-going operations and completed operations of CONTRACTOR. Such additional insured coverage shall be endorsed to Contractor's CGL policy using ISO Additional Insured Endorsement form CG 2010 (10/01) and CG 2037 (10/01) or a substitute providing equivalent coverage, and included under the commercial umbrella. CONTRACTOR shall maintain continual additional insured status for SCDOT under the products-completed operations coverage for eight years after Substantial Completion. CONTRACTOR shall also name SCDOT as additional insured under Business Automobile and Umbrella policies and reference the Project to which the certificate applies. The policies must contain a provision that coverage afforded will not be canceled until at least 30 days prior written notice has been given to SCDOT and that the policies cannot be cancelled for non-payment of premiums until at least 10 days prior written notice has been provided to SCDOT. Send Notice of Cancellations to Director of Construction Room 330, PO Box 191, Columbia, SC 29202. Make certain that the policies are endorsed to reflect this requirement. Verification of additional insured status shall be furnished to SCDOT by including a copy of the endorsements with the Certificate of Insurance. This insurance, including insurance provided under the commercial umbrella shall apply as primary and noncontributory insurance with respect to any other insurance or self-insurance programs, including any deductibles, afforded to, or maintained by, SCDOT. CONTRACTOR'S deductibles shall not exceed \$250,000 without written consent of the SCDOT and that the certificates show the deductible amounts. CONTRACTOR shall provide a notarized letter from a Certified Public Accountant showing that they have the financial ability to cover the amount of the deductible at the time of the execution of the agreement and for every year thereafter until the insurance obligation ends.
4. Limits shown in this provision are minimum acceptable limits and in no way limit available coverage to the additional insured. CONTRACTOR's CGL and commercial umbrella policies shall contain no provision providing that the limits available to an additional insured are less than the limits available to the CONTRACTOR. SCDOT shall be given all the same rights and insurance coverage as CONTRACTOR.

5. There shall be no endorsements or modifications of the CGL limiting the scope of coverage for liability arising from explosion, collapse, underground property damage or work performed by contractors on behalf of SCDOT.
6. Hazardous Materials: If the CONTRACTOR is required to remove and haul any hazardous waste from the Project, or if the Project involves such similar environmental exposure, pollution liability coverage equivalent to that provided under the ISO Pollution Liability – Broadened Coverage for Covered Autos Endorsement (CA 99 48), shall be provided, and the Motor Carrier Act Endorsement (MCS 90) shall be attached. Limits of pollution liability shall be not less than \$250,000 per occurrence and \$1,000,000 annual aggregate. Coverage shall apply on an “occurrence form” basis, shall cover at a minimum bodily injury, property damage, defense costs and clean-up costs and be extended to include non-owned disposal sites and transportation coverage. This insurance shall remain in effect after acceptance by Owner for the time period required to satisfy the statute of limitations in South Carolina. However, if coverage is written on a “claims made form”, then the Contractor’s Pollution Liability coverage shall include a retroactive date that precedes the commencement of work under this Agreement. Such coverage shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs, including any deductibles, afforded to, or maintained by SCDOT. Pollution Liability policy must include contractual liability coverage.
7. Waiver of Subrogation: CONTRACTOR shall waive its rights against SCDOT, other additional insured parties, and their respective agents, officers, directors and employees for recovery of damages, or any other claims, to the extent these damages are covered by the CGL, business auto, pollution liability, workers compensation and employer’s liability or commercial umbrella maintained pursuant to this section of the Agreement.
8. CONTRACTOR is not required to purchase Builder’s Risk Insurance; however, CONTRACTOR must bear all risk normally covered by Builder’s Risk Insurance. If CONTRACTOR purchases Builder’s Risk Insurance, it shall be at its own cost.
9. After Final Completion of the work, CONTRACTOR shall maintain CGL, professional liability, and commercial umbrella coverage to include liability coverage for damage to insured’s completed work equivalent to that provided under ISO CG 00 01 for eight years after substantial completion.
10. By execution of the contract, the CONTRACTOR accepts the responsibility to provide the liability insurance policies and endorsements as specified herein. Failure of SCDOT to identify a deficiency in the Certificate of Insurance submitted by the CONTRACTOR's insurance agent as evidence of the specified insurance or to request other evidence of full compliance with the liability insurance specified shall not be construed as a waiver of the CONTRACTOR's obligation to provide and maintain the required insurance for the duration of the contract. The CONTRACTOR shall assess its own risks and if it deems appropriate and/or

prudent, maintain higher limits and/or broader coverages. The CONTRACTOR is not relieved of any liability or other obligations assumed or pursuant to the Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.

B. Bonding

1. CONTRACTOR shall at the time of the execution of this Agreement, provide SCDOT the following bonds:
 - a. A Performance and Indemnity Bond from a surety or sureties satisfactory to SCDOT. The amount of bond shall be equal to the Contract Price.
 - b. A Payment Bond from a surety or sureties satisfactory to SCDOT. The amount of bond shall be equal to the Contract Price.
2. These bonds shall be in accordance with the requirements of S.C. Code Ann. §57-5-1660, (1976 as amended) and S.C. Code Ann. §29-6-250 (2000). Bonds shall be issued by a surety company licensed in the State of South Carolina with an “A” minimum rating of performance as stated in the most current publication of “A.M. Best Key Rating Guide, Property Liability” and signed by the surety's agency or attorney-in-fact. Surety must be listed on the current U.S. Department of the Treasury Financial Management Service list of approved bonding companies as approved for an amount equal to or greater than the amount for which it obligates itself in the Bond. If surety qualifies by virtue of its Best's listing, the amount of the Bond may not exceed ten percent of policyholders' surplus as shown in the latest A.M. Best's Key Rating Guide.
3. CONTRACTOR shall also provide a warranty bond, acceptable to SCDOT, in the amount of \$500,000 to cover the warranty obligations of the contract.

VII. UTILITIES AND RAILROAD COORDINATION

A. Utilities

1. The DEPARTMENT has initiated utility coordination. Refer to Exhibit 7 for a list of utility companies/entities that have been identified.
2. CONTRACTOR shall be responsible for clearing and grubbing for the purposes of utility relocation. In the event that CONTRACTOR does not have an approved Notice of Intent (NOI) for land disturbing activity when the CONTRACTOR is prepared to begin said clearing and grubbing, CONTRACTOR will only be responsible for tree cutting in advance of utility relocation. All ground disturbing activities (“grubbing”) will be required to be completed after appropriate NOI approval. The CONTRACTOR shall allow access to the utility companies for the purposes of relocations/de-energizing after clearing and/or grubbing operations are complete.

3. As part of the Project Scope, CONTRACTOR shall have the responsibility of coordinating the Project construction and demolition activities with all utilities that may be affected. CONTRACTOR shall be responsible for the cost of all utility coordination unless defined otherwise herein. If applicable, all temporary relocation costs as well as any other conflict avoidance measures shall be the responsibility of the CONTRACTOR. For those utilities that have prior rights SCDOT will be responsible for permanent relocation costs as defined by the Federal code. For those utilities where the CONTRACTOR determines that the SCDOT has prior rights, CONTRACTOR may exercise these rights and require the utility company to bear the costs of relocation. If there is a dispute over prior rights, SCDOT shall be responsible for resolving the dispute. SCDOT shall have final determination of the utility's prior rights.
4. For those utilities requiring relocation, CONTRACTOR shall conform with SCDOT's "A Policy for Accommodating Utilities on Highway Rights of Way", the applicable State laws, and the Code of Federal Regulations, Title 23, Chapter 1, Subchapter G, part 645, subparts A and B. The CONTRACTOR is responsible for all costs associated with relocating utilities owned by SCDOT.
5. The resolution of any conflicts between utility companies and the construction of the Project shall be the responsibility of the CONTRACTOR. If said utility companies interfere or fail to relocate conflicting utilities in a timely manner, SCDOT may, on an individual basis, consider a time extension for utility company delays when CONTRACTOR can demonstrate that appropriate coordination efforts have been made to expedite the utility relocation, and that the delay has a direct impact on the approved Critical Path. CONTRACTOR shall not be entitled to additional compensation for interference or delays in utility relocations. CONTRACTOR shall meet with the Department's Utilities Office within 30 days of the Notice to Proceed to gain a full understanding of what is required with each utility submittal.
6. CONTRACTOR shall design the Project to avoid conflicts with utilities where possible, and minimize impacts where conflicts cannot be avoided. If there is a dispute between the CONTRACTOR and SCDOT as to whether a utility relocation is required, SCDOT shall have the final determination. Additional utility relocations desired by the CONTRACTOR for but not limited to construction staging, access or convenience, shall be the sole responsibility of CONTRACTOR and all associated costs shall be borne by the CONTRACTOR.
7. CONTRACTOR shall initiate early coordination with all utilities and provide the utility companies with design plans for their use in developing Relocation Sketches as soon as the plans have reached a level of completeness adequate to allow the companies to fully understand the Project impacts. If a party other than the utility company prepares Relocation Sketches, there shall be a concurrence box on the plans where the utility company signs and accepts the Relocation Sketches as shown.

8. CONTRACTOR shall be responsible for collecting and submitting to SCDOT the following from each utility company that is located within the project limits:
 - a. **Relocation Sketches** including letter of “no cost” where the company does not have a prior right;
 - b. **Utility Agreements** including documentation of prior rights, cost estimate and relocation plans where the company has a prior right; and/or
 - c. **Letters of “no conflict”** where the company’s facilities will not be impacted by the Project. Include location sketches on SCDOT plans confirming and certifying that facilities are not in conflict.
 - d. **Encroachment Permits** for all relocations regardless of prior rights.
9. CONTRACTOR shall assemble the information included in the Utility Agreements and Relocation Sketches in a final and complete form and in such a manner that the Department may approve the submittals with minimal review. CONTRACTOR shall ensure that there are no conflicts with the proposed highway improvements, or between each of the utility company’s relocation plans. CONTRACTOR may not authorize the utility companies to begin their relocation work until authorized in writing by SCDOT. Any early authorization by CONTRACTOR shall be at the CONTRACTOR’s risk.
10. At the time that CONTRACTOR notifies SCDOT that CONTRACTOR deems the Project to have reached Final Completion, CONTRACTOR shall certify to SCDOT that all utilities have been identified and that those utilities with prior rights or other claims related to relocation or coordination with the Project have been relocated or their claims otherwise satisfied or will be satisfied by CONTRACTOR.
11. CONTRACTOR shall accurately show the final location of all utilities on the as-built drawings for the Project. SCDOT reserves the right to request CADD files as needed.

B. Railroad

If railroad property is impacted by this project, the following provisions shall apply:

1. Under the direction of and in coordination with SCDOT, the CONTRACTOR shall be responsible for all coordination with the involved Railroad Companies, including but not limited to, sending plans, meetings, correspondence, phone calls, writing/reviewing agreements, and etc. as may be necessary to secure the applicable executed railroad agreements, needed for the construction of the project, between the SCDOT and all involved Railroad Companies. All correspondence related to railroad agreements or conditions shall include the railroad file number and railroad milepost information. The CONTRACTOR shall be responsible for the cost of railroad coordination as defined herein.

2. SCDOT will submit for approval, all required railroad agreements necessary for the Preliminary Engineering and Construction of the project. Upon approval, the SCDOT will submit the agreement to the Railroad Company for execution. If requested, the CONTRACTOR shall be responsible for assisting SCDOT in the development of the railroad agreement by providing requested information.
3. The CONTRACTOR shall be responsible for all costs to the Railroad Company or Companies for services provided by the Railroad or the Railroad's Agent, as detailed in the executed Railroad Agreement between the SCDOT and the Railroad. This includes all expenses such as railroad flagging operations, except as defined above in Section VII.B.1. The CONTRACTOR shall be responsible for all other costs to the Railroad associated with designing and constructing the project as described in the executed Railroad Agreement between the SCDOT and the Railroad Company. The CONTRACTOR shall not include all any costs associated with these requirements in the final bid price. Once a contract is executed, SCDOT shall administer invoicing for costs to the Railroad Company or Companies. Monies will be deducted from the CONTRACTOR's progress payments after payments are made to the Railroad Company.
4. All design and construction activities in, adjacent to, over or under the railroad shall comply with all applicable Federal and State laws and standards, all terms identified in the Special Provisions for Protection of Railway Interests, and all terms of the final agreement executed with the Railroad Company.
5. The CONTRACTOR shall be required to meet the Railroad's Insurance Requirements as specified in the Special Provisions for Protection of Railway Interests.
6. The CONTRACTOR shall attend a mandatory meeting with the SCDOT's Utilities Office and Railroad Projects Office within 10 days after the Notice to Proceed. The CONTRACTOR shall use the SCDOT approved agreement language and procedures, that will be provided in this meeting.
7. CONTRACTOR shall provide project specific information to SCDOT for inclusion into the agreements. The CONTRACTOR shall anticipate and include in the proposed schedule a minimum 14-day approval time-frame for all railroad agreements. If said Railroad Companies interfere or fail to provide information in a timely manner, SCDOT may, on an individual basis, consider a time extension for Railroad Company delays when CONTRACTOR can demonstrate that appropriate coordination efforts have been made to expedite the railroad coordination, and that the delay has a direct impact on the approved Critical Path. CONTRACTOR shall not be entitled to additional compensation for interference or delays related to railroad coordination.
8. CONTRACTOR shall anticipate the need for a separate right-of-entry agreement between the CONTRACTOR and Railroad for surveys, borings, etc. The required PE Agreement, between SCDOT and Railroad, has been executed to allow the

Railroad to review or comment on any design questions or submittals from the CONTRACTOR. The Construction Agreement, between SCDOT and Railroad, will be executed before Notice to Proceed is provided. Refer to Exhibit 8 for additional details.

9. CONTRACTOR is advised that all utility relocations required within railroad right-of-way will require separate agreements between the affected utility company and the Railroad.

VIII. RIGHT OF WAY ACQUISITION

A. General

Upon successful award, SCDOT shall pursue and begin negotiations for rights of entry as needed based on the CONTRACTOR's Technical Proposal. CONTRACTOR shall provide DGN/CAD files utilized to develop Technical Proposal to SCDOT in order to develop rights of entry exhibits. SCDOT will acquire all rights of entry prior to May 15, 2025.

CONTRACTOR is not responsible for acquiring right of way or providing right of way services for rights of entry or proposed acquisitions. Final right of way will be acquired by SCDOT based on the CONTRACTOR's right of way or final design plan submittals. Prior to the CONTRACTOR starting construction activities outside of SCDOT existing right of way, the SCDOT shall prepare and provide the right of way certification(s) to the CONTRACTOR.

SCDOT will provide information used and obtained for right of way acquisition to the CONTRACTOR for incorporation into the final RFC plans. All final right of way shall be incorporated and shown in the RFC plans in accordance with standard SCDOT plan preparation practices.

CONTRACTOR to coordinate with SCDOT for matters related to privately owned irrigation/water line identified at S-38-634. This will be handled as a part of the right of way process.

B. Right of Way Services

SCDOT will provide all services required to obtain right of way.

1. CONTRACTOR shall carry out the responsibilities as follows:
 - a. If after right of entry Certifications have been submitted there remains outstanding remaining tracts that have not been resolved, CONTRACTOR shall exercise care in its operations when working in proximity to adjacent developed properties, properties not yet acquired, and residences or businesses that are to be relocated. CONTRACTOR shall submit a plan to the SCDOT's right of way project manager for approval to:

- (i.) Establish a clear zone adjacent to properties occupied by persons to be displaced in which construction equipment shall not be operated or parked,
- (ii.) Establish a clear zone for construction for properties occupied by persons to be displaced to prevent undue impacts or hardships,
- (iii.) Establish a method of protecting equipment from vandalism or unauthorized use,
- (iv.) Perform all burning in accordance with applicable laws and ordinances, with specific attention to SCDHEC's Bureau of Air Quality Control criteria which require compliance with the South Carolina Air Pollution Control laws, regulations, and standards as they concern the related work included in the Contract.
- (v.) Provide reasonable and safe access to residences or businesses that are to be displaced until such time as the property is vacant, and
- (i.) Observe the property rights of landowners of adjacent and/or yet to be acquired properties.

C. Acquisition of Right-of-Way

SCDOT is responsible for all right of way acquisition.

IX. PERMITS

- A.** The following permits have been determined to apply to all sites. The SCDOT will complete the applicable checklist and applicable information will be provided to the teams when available;

USACE Nationwide 3 Permit (NW3)

Proposers shall develop Technical and Cost Proposals based on the assumption that the NW3 is applicable. Any changes to the permit type required by the CONTRACTOR, will be the responsibility of the CONTRACTOR per Article IX of the agreement. If additional Permit Modifications require further mitigation requirements, these requirements will be the responsibility of the CONTRACTOR.

- B.** All other permits necessary for completion of this project shall be procured by the CONTRACTOR. The CONTRACTOR shall comply with all local, state, and federal permitting requirements. Regarding any permit or license that must be obtained in the name of SCDOT, the CONTRACTOR shall perform all functions within its power to obtain the permit or license, and SCDOT shall fully cooperate in this effort and perform any functions that must be performed by SCDOT. The CONTRACTOR shall submit permit applications to SCDOT. SCDOT will submit the permit application to the appropriate permitting agency indicating that CONTRACTOR is acting as an agent for SCDOT. If said regulatory agencies fail to issue permits in a timely manner, SCDOT may, on an individual basis, consider a time extension for permit approval delays when CONTRACTOR can demonstrate that the application was submitted in a timely manner, all reasonable efforts have been made to expedite the permit approval, and that

the delay has a direct impact on the Critical Path. CONTRACTOR shall not be entitled to additional compensation for delays in permit approval.

- C. Any required Permit Extensions will be the responsibility of the CONTRACTOR. CONTRACTOR shall coordinate with SCDOT Environmental Services Office at least 90 days in advance of the permit expiration date. The CONTRACTOR shall submit Permit Extension requests to SCDOT. SCDOT will submit the Permit Extension request to the appropriate permitting agency indicating that CONTRACTOR is acting as an agent for SCDOT. CONTRACTOR shall be responsible for all associated costs.

X. ENVIRONMENTAL COMPLIANCE

A. Compliance with Environmental Commitments

CONTRACTOR shall comply with all Environmental commitments and requirements including, but not limited to, the following:

1. Compliance with the provisions of all environmental permits applicable to the Project. A copy of the approved NEPA Document and Commitments and Exhibit 6 will be provided prior to the Final RFP date. A copy of the environmental documents will be included in Attachment B and Environmental Commitments will be included in Exhibit 6. If necessary, an updated addenda to the RFP will include finalized documents and exhibit revisions.
2. Compliance with those stipulations and conditions under which SCDOT received approval of the Environmental Document(s) and any modifications resulting from a re-evaluation of the Document(s). If the CONTRACTOR elects to construct the Project in a manner that is not consistent with the assumptions in the SCDOT prepared environmental documents, the CONTRACTOR will be responsible for revising the environmental documents and provide any additional studies that may be required. All revisions will require SCDOT and FHWA, if applicable, approval prior to any right of way acquisition or construction activity;
3. Compliance with applicable laws and regulations relating to potential or actual hazardous materials that may be encountered in the course of carrying out this Agreement;
4. Carrying out all necessary social, economic, and environmental studies required by regulatory authorities in the course of construction;
5. Cost, preparation, revision, acquisition, compliance, and adherence to conditions of any permits required by federal, state, or local laws or regulations; The CONTRACTOR is responsible for any mitigation required by permits. Compensatory mitigation may be available through an approved mitigation bank or Permittee Responsible Mitigation (PRM) as define in EPA's 2008 Mitigation Rule; and

6. The resolution of any deviations from the contract documents, drawings or other information included in the environmental permits that would violate the intent or spirit of the permits. Any proposed changes within the permitted areas would need to be coordinated with SCDOT's Environmental Services Office.

B. Preconstruction / Partnering Conference(s)

CONTRACTOR shall conduct one (or more, if appropriate) pre-construction / partnering conference(s) prior to any construction activity to discuss environmental and permitting issues, which conference shall include all subcontractors, and, to the extent feasible, representatives from the U.S. Army Corps of Engineers, the S.C. Department of Health and Environmental Control Water Quality Division, the FHWA, CONTRACTOR, and SCDOT.

C. Protection of Archeological and Paleontological Remains and Materials

1. When archeological or paleontological remains are uncovered outside of those identified prior to award, CONTRACTOR shall immediately halt operations in the area of the discovery and notify SCDOT.
2. Archeological remains consist of any materials made or altered by man which remains from past historic or prehistoric times (i.e. older than 50 years) Examples include old pottery fragments, metal, wood, arrowheads, stone implements or tools, human burials, historic docks, structures or not recent (i.e. older than 100 years) vessel ruins. Paleontological remains consist of old animal remains, original or fossilized, such as teeth, tusks, bone, or entire skeletons.
3. SCDOT will have the authority to suspend the work for the purpose of preserving, documenting, and recovering the remains and materials of archeological and paleontological importance for the State. CONTRACTOR shall carry out all instructions of SCDOT for the protection of archeological or paleontological remains, including steps to protect the site from vandalism and unauthorized investigations, from accidental damage and from dangers such as heavy rainfall or runoff.
4. CONTRACTOR's Contract Time and or Contract Price shall be adjusted to the extent CONTRACTOR's cost and/or time of performance have been adversely impacted by the presence of archeological or paleontological remains not identified prior to award.

XI. HAZARDOUS MATERIALS

A. Identified Hazardous Materials

1. The CONTRACTOR is referred, in addition to this Article, to Exhibit 6, Project Design Criteria and Attachment B for information and requirements regarding Hazardous Materials inspections and other environmental documentation regarding Hazardous Materials. The CONTRACTOR shall be responsible for handling,

storage, remediation, and disposal of any materials, wastes, substances and chemicals deemed to be a solid waste or hazardous waste under applicable state or federal law, (hereinafter "Hazardous Materials") encountered at the Site which were identified in the Hazardous Materials inspections or other environmental documentation regarding Hazardous Materials provided in Exhibit 6, Project Design Criteria and Attachment B and the cost of these activities shall be included in the Contract Price.

2. If the CONTRACTOR's plan includes demolition, removal, or disposal of existing structures not previously inspected by SCDOT, the Contractor is required to perform lead-based paint and asbestos inspections on the existing structures prior to performing those activities. The cost of the lead-based paint and asbestos inspections shall be included in the Contract Price. Removal of lead-based paint and asbestos and lead-based paint and asbestos containing materials identified by inspections shall be by a qualified independent firm retained by the Department or by negotiating a Contract Change Request with the CONTRACTOR as outlined in the procedures in Article XI.B.
3. If the CONTRACTOR's plan includes demolition, removal, or disposal of existing structures previously surveyed by SCDOT, but the asbestos inspection reports have expired, the CONTRACTOR is required to perform new asbestos inspections on the existing structures prior to performing those activities. The cost of the asbestos inspections shall be included in the Contract Price. The cost of removal, handling, storage, remediation, and disposal of asbestos containing materials identified in the expired inspection reports shall be included in the Contract Price.
4. A copy of the lead-based paint and asbestos inspection reports and the notification of demolition or renovation forms must be submitted to SCDHEC at least ten (10) working days prior to demolition of an existing structure. Prior to submitting the reports and forms to SCDES, the CONTRACTOR shall obtain the RCE's signature. The CONTRACTOR is responsible for obtaining all required permits to proceed with the work.
5. The CONTRACTOR is responsible for all necessary containment, removal, transportation, and disposal of the subsurface and surface Hazardous Materials identified in inspections or other environmental documentation provided in Attachment B in compliance with all applicable Federal (EPA, OSHA & DOT) and State (SCDES & SCDOT) and local (County and Municipality) requirements for Hazardous Materials and worker health and safety. The CONTRACTOR is responsible for obtaining all required permits to proceed with the work.

B. Unexpected Hazardous Materials

Upon encountering any unexpected Hazardous Materials, the CONTRACTOR shall follow the procedures as described below:

1. CONTRACTOR shall stop Work immediately in the affected area and duly notify SCDOT and, if required by state or federal law, all government or quasi-government entities with jurisdiction over the Project or site.
2. Upon receiving notice of the presence of Hazardous Materials, SCDOT will take necessary measures required to verify that the Hazardous Materials are remediated or rendered harmless. Such necessary measures will include SCDOT either (i) retaining qualified independent firm or (ii) negotiating a Contract Change Request with CONTRACTOR.
3. CONTRACTOR shall resume Work at the affected area of the Project only after written notice from SCDOT that the (i) Hazardous Materials have been removed or rendered harmless and (ii) all necessary approvals have been obtained from all government and quasi-government entities having jurisdiction over the Project.
4. CONTRACTOR's Contract Price and/or Contract Time shall be adjusted to the extent CONTRACTOR's cost and/or time of performance has been adversely impacted by the presence of Hazardous Materials.
5. If a Contract Change Request is negotiated, the CONTRACTOR shall comply with Article XI.A.5.

C. General Information

1. For purposes of this Project, the Hazardous Material Generator shall be listed as "SCDOT" of any and all Hazardous Materials and/or hazardous wastes associated with work on the Project, with the exception that CONTRACTOR shall be the generator for all Hazardous Materials it, its consultants, subconsultants, subcontractors or suppliers, brings on to the Project or that is brought to the Project by them and subsequently is caused to be released on the Project by the CONTRACTOR, CONTRACTOR's design consultants, subcontractors and suppliers. The foregoing shall not preclude or limit any rights or remedies that SCDOT may have against third parties and/or prior owners, lessees, licensees and occupants of the Project's right of way.
2. SCDOT is not responsible for Hazardous Materials actually brought to the Project by CONTRACTOR, CONTRACTOR's design consultants, subcontractors and suppliers or anyone for whose acts they may be or are liable. SCDOT is not responsible for negligent or willful acts by CONTRACTOR, CONTRACTOR's design consultants, subcontractors and suppliers or anyone for whose acts they may be or are liable relating to Hazardous Materials found at the site. CONTRACTOR shall indemnify, defend and hold harmless SCDOT and SCDOT's officers, directors, employees and agents from and against all claims, losses, damages, liabilities and expenses, including attorney's fees and expenses arising out of or resulting solely from those Hazardous Materials actually brought to the Project or negligent or willful acts relating to Hazardous Materials, or both by

CONTRACTOR, CONTRACTOR's design consultants, subcontractors and suppliers or anyone for whose acts they may be or are liable.

XII. DEMOLITION, REMOVAL & DISPOSAL OF STRUCTURES

CONTRACTOR shall be responsible for the demolition, removal and disposal of all structures and their appurtenances within SCDOT Right of Way necessary for the completion of the Project, to include those portions which may extend outside the right of way, but were purchased as a part of the acquisition process. Structures shall include the bridges identified in the scope of work and all buildings acquired for the Project. All necessary permitting shall comply with Articles II.B.4 and IX of the Contract. Handling and disposal of Hazardous Materials shall be in accordance with Article XI of the Contract. Before demolition of the structures, the CONTRACTOR shall complete and submit a Notification of Demolition and Renovation form to the South Carolina Department of Health and Environmental Control.

XIII. DIFFERING SITE CONDITIONS

A. Differing Site Conditions, Defined; Burden of Proof

1. "Differing Site Conditions" are concealed or latent physical conditions encountered at the Project site during the term of the Agreement that (i) materially differ from the conditions reasonably assumed to exist at the site (Type 1); or (ii) are of an unusual nature, differing materially from the conditions ordinarily encountered and generally recognized as inherent in the work provided for in the Agreement (Type 2). Type 1 conditions are those geotechnical or geological deviations from what is normally assume to exist based on information provided in the RFP and actual site location. The only Type 2 conditions eligible for relief under this Article XIII are:
 - a. The discovery at the site of any archaeological, paleontological, biological or cultural resource; provided that the existence of such resource was not disclosed in the RFP; and
 - b. The discovery at the site of any species listed as threatened or endangered under the federal or State Endangered Species Act, except for those species disclosed as threatened or endangered in the RFP; and
 - c. The discovery at the site of any manmade object or manmade condition not normally found in subsurface material; and
 - d. The discovery at, near or on the site of any unexpected artesian condition.
2. The definition of Differing Site Condition excludes unanticipated utilities and unexpected Hazardous Waste.
3. CONTRACTOR shall bear the burden of proving that a Differing Site Condition exists and that CONTRACTOR could not have reasonably (i) designed the Project or (ii) worked around the condition, including by resequencing, relocating, or

redeploying its forces to other portions of the Project or other activities unrelated to its work, so as to avoid additional cost. CONTRACTOR shall have no right to claim that any condition constitutes a Differing Site Condition if (A) CONTRACTOR, or any person or entity for which CONTRACTOR is legally responsible, had actual knowledge regarding such conditions prior to submission of the Cost Proposal, or (B) such condition would have become known to CONTRACTOR based upon a Reasonable Investigation prior to the submission of the Cost Proposal, as defined below. Furthermore, CONTRACTOR hereby acknowledges and agrees that, based upon the opportunity to review all available information, seek reasonable additional information, visit the Project site prior to submission of the Cost Proposal, and make any additional subsurface explorations or soil tests that CONTRACTOR determined to have been useful, in each case, prior to the submission of the Cost Proposal, it has assumed all risks with respect to the need to work around locations impacted by Differing Site Conditions.

B. Responsibility

1. Type 1: SCDOT is responsible for only Type 1 Differing Site Conditions that exist throughout a specified area around each SCDOT-provided test hole, as listed in the geotechnical data in Attachment B. For purposes of the Type 1 portion of the definition of Differing Site conditions, “reasonably assumed to exist” means that the geotechnical and geological conditions indicated with respect to each SCDOT test hole exist throughout an area represented by a five- foot radius drawn from the center of the test hole.
2. Type 2: SCDOT is responsible for only Type 2 Differing Site Conditions listed above.
3. CONTRACTOR shall assume responsibility for all other Differing Site Conditions not identified as Type 1 or Type 2.

C. Relief for Certain Differing Site Conditions

1. CONTRACTOR shall submit a Contract Change Request to seek any relief for Differing Site Conditions for which SCDOT has responsibility. So long as CONTRACTOR has met its burden of proof that a condition is a Differing Site Condition for which CONTRACTOR is entitled to certain relief. CONTRACTOR shall be entitled to a change order that provides for:
 - a. additional time, to achieve Substantial Completion for a Differing Site Condition that causes or will result in an identifiable and measurable disruption to the critical path under the then-current CPM Schedule, after consumption of all then-available float; provided, however, that SCDOT may, in its sole discretion, elects to order acceleration, in which case the change order shall not provide for an adjustment to the then-current CPM Schedule as a result of such Differing Site Condition;

- b. actual, direct, and documented costs incurred solely and directly attributable to the Differing Site Condition;
 - c. acceleration costs, only if SCDOT elects to order acceleration.
- 2. CONTRACTOR's entitlement to a change order is subject to the following additional limitations:
 - a. CONTRACTOR shall not be entitled to any disruption damages in connection with any additional costs claimed with respect to any Differing Site Condition;
 - b. CONTRACTOR shall not be entitled to any punitive, indirect, special, incidental, or consequential damages in connection with any additional costs claimed with respect to any Differing Site Condition;
 - c. Costs shall not exceed those allowed in, and calculated pursuant to Section 105.16.5 of the SCDOT Standard Specifications, with the exception of extended job site overhead rates which shall be as set forth in Exhibit 5 of the RFP;
 - d. CONTRACTOR shall not be entitled to an extension of time or additional costs if the delay attributable to the Differing Site Condition is concurrent with any other unrelated delay to an activity on the critical path under the then-current CPM Schedule for which CONTRACTOR is responsible under this Agreement.
 - e. If SCDOT directs acceleration of the Work, the as part of CONTRACTOR's CCR, CONTRACTOR shall show all acceleration costs associated with meeting the original scheduled date for Substantial Completion.

D. Differing Site Condition Procedure

- 1. If CONTRACTOR encounters known or suspected Differing Site Conditions, CONTRACTOR shall promptly notify SCDOT by either submitting a formal notice to SCDOT (for those conditions that CONTRACTOR anticipates are CONTRACTOR's responsibility) or submitting a Contract Change Request before (for those conditions that CONTRACTOR anticipates are SCDOT's responsibility), in either case without substantially disturbing or altering the affected area. If CONTRACTOR is entitled to relief, then CONTRACTOR shall not resume work that affects or reasonably could affect the condition until a Change Order is executed or a Force Account order is issued for the affected work. If CONTRACTOR is not entitled to relief, or if CONTRACTOR elects not to pursue relief to which it may otherwise be entitled, then CONTRACTOR shall not resume work that affects or reasonably could affect the condition until SCDOT consents to work resuming, subject to applicable law and governmental approvals.
- 2. Each Contract Change Request relating to a Differing Site Condition shall be accompanied by:

- a. a statement signed by a qualified professional setting forth (i) all relevant assumptions made by CONTRACTOR with respect to the condition at the relevant portion of the Site, (ii) justifying as reasonable the basis for all such assumptions which includes supporting documentation, (iii) explaining exactly how the condition encountered qualifies as a Differing Site Condition and (iv) listing the specific work-arounds the CONTRACTOR undertook, to mitigate any cost and delay effects of the encounter with the condition, and
 - b. a signed statement certifying that CONTRACTOR, and any person or entity for which CONTRACTOR is legally responsible (i) had no actual knowledge regarding such condition as of the submission of the Cost Proposal and (ii) such condition would not have become known to CONTRACTOR based upon a Reasonable Investigation.
3. If the request is based on Type 1 Differing Site Conditions, the Contract Change Request shall also include detailed information regarding the alleged error in the boring data provided by owner or performed by CONTRACTOR forming the basis for the request, and shall explain how CONTRACTOR's assumptions would have changed had the boring data been accurate.
4. Upon submittal of a Contract Change Request or other notice as set forth above, SCDOT will investigate the conditions within three business days and if it is determined that (1) a Differing Site Condition exists, (2) the condition is SCDOT's responsibility, and (3) the condition causes an increase in the cost or time required for performance of the work, the Contract will be adjusted consistent with the relief provided above.
5. SCDOT shall have the right to require the CONTRACTOR to resume work in the area at any time, even though an investigation may still be ongoing. CONTRACTOR shall promptly resume work in the area upon receipt of notification from SCDOT to do so.

E. Reasonable Investigation

"Reasonable Investigation" means the following activities by appropriate, qualified professionals prior to the submission of the Cost Proposal:

1. Visit and visual, non-intrusive inspection of the site and adjacent locations, except areas to which access rights have not been made available prior to the submission of the Cost Proposal;
2. Review and analysis of all reference documents;
3. Review and analysis of SCDOT-provided governmental approvals or permits, if any, available prior to the submission of the Cost Proposal;

4. Reasonable inquiry with real property, particularly those properties indicating former gas stations/auto garages, and utility owners or occupants, including request for and review of plans provided thereby, if any;
5. Review and analysis of laws, regulations, rules, ordinances, etc. applicable to the Project prior to the submission of the Cost Proposal; and
6. Other activities sufficient to familiarize CONTRACTOR with surface and subsurface conditions, including the presence of utilities, hazardous materials, archeological, paleontological and cultural resources, and threatened or endangered species, affecting the site or surrounding locations.

XIV. FORCE MAJEURE

Delays or failures of performance, in each case, that materially and adversely affect performance of the CONTRACTOR hereunder, shall not constitute breach of the Agreement if and to the extent such delays or failures of performance result in a delay to the critical path identified in the current accepted CPM Schedule that are caused by:

A. Causes

1. acts of God or the public enemy;
2. expropriation or confiscation of facilities;
3. compliance with any order or request of any governmental authority other than SCDOT or a party in privity with it;
4. a change in law after the CONTRACTOR'S submission in response to the RFP that directly and substantially affects performance of the Project;
5. acts of war (including civil and revolutionary); invasion, armed conflict, violent act of foreign enemy, military or armed blockade, military or armed takeover of the Project or the Site;
6. rebellion, terrorism, riot, insurrection, civil commotion or sabotage that causes direct physical damage to, or otherwise directly causes interruption to construction or direct losses during maintenance of the Project;
7. fires, floods, earthquakes, including all foreshocks and aftershocks, where such earthquakes include ground shaking, liquefaction, settlement, or ground movements that directly impact, and cause damage to, temporary or permanent works of the Project; landslides caused by natural events, tornados, hurricanes, tropical storms, sinkholes caused by natural events, in each case directly impacting the physical improvements of the Project or CONTRACTOR'S performance of the scope of the work;

8. explosions, nuclear explosion, including radioactive contamination that triggers CONTRACTOR's obligations pertaining to hazardous materials hereunder and, in each case directly impacting the physical improvements of the Project or performance of the CONTRACTOR's scope of work,
9. national or regional unavailability or shortage of materials as determined by SCDOT after the CONTRACTOR'S submission of the Technical Proposal;
10. embargos directly affecting materials required to perform the CONTRACTOR'S scope of the work;
11. quarantine or suspension by the Governor, President, or other regional authority, or declared epidemic or pandemic, in each case, directly affecting the CONTRACTOR's performance of the scope of the work;
12. declared state of emergency by the Governor, the U.S. President or regional authority having jurisdiction over the Project or the CONTRACTOR'S performance of the scope of the work;
13. strikes (both national or regional strikes) or other concerted acts of workman not arising out of or relating to CONTRACTOR or any person or entity for which CONTRACTOR is responsible;
14. vehicle, as defined by 56-1-10 of South Carolina Code of Laws, collision that occurs prior to Final Completion, the impact of which causes damage to full pavement structure, bridge structure, noise wall, barrier wall/retaining wall or overhead sign structure of the Project;

(each of the foregoing a "Force Majeure Event"), except, in each case, to the extent that any of the foregoing events or consequences of such events (i) arose out of (A) any breach of Contract by CONTRACTOR or any person or entity for whom CONTRACTOR is legally responsible, (B) any act or omission by CONTRACTOR or any such person or entity, (C) any negligence, recklessness, willful misconduct, fraud, or violation of laws by CONTRACTOR or any such person or entity; or (ii) could reasonably have been avoided by CONTRACTOR or any such person or entity (by the exercise of caution, due diligence or reasonable efforts, or otherwise). Any expense attributable to such occurrence of a Force Majeure Event shall not entitle CONTRACTOR to an adjustment in the Contract Price, as it is the Parties' intent that these events will be compensated under the CONTRACTOR's appropriate insurance policy. The duration of delay to the critical path identified in the current accepted CPM Schedule directly caused by a Force Majeure Event shall be added to the Contract Time.

CONTRACTOR shall bear the burden of proving that a Force Majeure Event exists and that CONTRACTOR could not have reasonably worked around the condition, including by resequencing, relocating, or redeploying its forces to other portions of the Project or other activities unrelated to its work, so as to avoid additional delay or cost.

XV. WARRANTY

A. CONTRACTOR Warranties

1. CONTRACTOR warrants that it will perform all services in accordance with the standards of care and diligence normally practiced by recognized engineering and construction firms in performing services and obligations of a similar nature. CONTRACTOR warrants that all materials and equipment furnished shall be of good quality and new unless otherwise authorized by SCDOT and that the construction shall conform to the Contract requirements. CONTRACTOR agrees to promptly correct, at its own expense, defects or deficiencies in materials and workmanship that appear prior to and during a period of three years after Final Completion of the Project. This shall include all plant-produced materials (i.e. asphalt, concrete, etc.). CONTRACTOR shall not be responsible for damages caused by SCDOT's failure to provide timely notification of potentially damaged or defective work of which SCDOT had actual knowledge. CONTRACTOR shall properly perform, at the written request of SCDOT made at any time within the warranty period after Final Completion of the Project as defined in Article IV.A.5, all steps necessary to satisfy the foregoing warranty and correct any element of the Project or the services that is defective or does not reflect such standards of care and diligence. The cost of such corrective services shall be CONTRACTOR's responsibility.
2. CONTRACTOR further warrants the performance of all bridge components on all structures for three years from Final Completion of the Project. If a component fails to perform properly for any reason, including but not limited to normal wear and tear, the CONTRACTOR shall replace the failed component at no cost to SCDOT.
3. The warranty periods begin at Final Completion of the Project. CONTRACTOR shall immediately abate any warranty deficiency that poses an unsafe condition to the public; otherwise deficiencies shall be corrected no later than 30 days from the determination of corrective action. In the event CONTRACTOR, after notice, fails to immediately abate the deficiency or fails to make correction within the prescribed 30 days, SCDOT may have the deficiency corrected. All costs associated with such correction by SCDOT shall be the responsibility of the CONTRACTOR and his Surety. With respect to any component that is repaired or replaced pursuant to this warranty, the warranty period of that component shall be the longer of one year from repair or replacement of the component or the remainder of the original warranty period.
4. CONTRACTOR shall take all steps necessary to transfer to SCDOT any manufacturer's or other third-party's warranties of any materials or other services used in the construction of the Project.
5. These warranties are in addition to all warranties implied by law.

XVI. INDEMNITY

A. Indemnifications by CONTRACTOR

1. Definitions

- a. **Indemnified Parties** means SCDOT, the State of South Carolina, their respective successors, assigns, officeholders, officers, directors, agents, representatives, consultants and employees.
- b. **Loss or Losses** means any loss, damage, injury, liability, obligation, cost, response cost, expense (including attorneys', accountants' and expert witnesses' fees and expenses (including those incurred in connection with the enforcement of any indemnity or other provision of the Agreement)), fee, charge, judgment, penalty, fine or third party claims. Losses include injury to or death of persons, damage or loss of property, and harm or damage to natural resources.
- c. **CONTRACTOR-Related Entity** means:
 - (i.) CONTRACTOR;
 - (i.) CONTRACTOR's shareholders, partners, joint venturers or members;
 - (ii.) Subcontractors and suppliers;
 - (iii.) Any other persons performing any of the work;
 - (iv.) Any other persons for whom CONTRACTOR may be legally or contractually responsible; and
 - (v.) The employees, agents, officers, directors, shareholders, representatives, consultants, successors, assigns and invitees of any of the foregoing.

2. CONTRACTOR shall release, defend, indemnify and hold harmless the Indemnified Parties from and against any and all third-party claims and other Losses (including those incurred in connection with the enforcement of this indemnity) arising out of, relating to or resulting from the following (each an "Indemnified Claim"):

- a. The breach or alleged breach of any of this Contract by CONTRACTOR-Related Entity;
- b. The failure or alleged failure by any CONTRACTOR-Related Entity to comply with any SCDOT approvals, governmental approvals, any applicable environmental laws or other governmental rules (including environmental laws);
- c. Any alleged patent or copyright infringement or other allegedly improper appropriation or use of trade secrets, patents, proprietary information, know-how, copyright rights or inventions in performance of the work, or arising out of any use in connection with the Project of methods, processes, designs,

information, or other items furnished or communicated to SCDOT or another Indemnified Party pursuant to the Contract; provided, that this indemnity shall not apply to any infringement resulting from SCDOT's failure to comply with specific written instructions regarding use provided to SCDOT by CONTRACTOR;

- d. The actual or alleged CONTRACTOR fault in or associated with performance of the work;
- e. Any and all claims by any governmental entity or taxing authority claiming taxes based on gross receipts, purchases or sales, the use of any property or income of any CONTRACTOR-Related Entity or any of their respective agents, officers or employees with respect to any payment for the work made to or earned by any CONTRACTOR-Related Entity;
- f. Any and all stop notices, liens and claims filed in connection with the work, including all expenses and attorneys', accountants' and expert witness fees and costs incurred in discharging any stop notice, lien or claim, and any other liability to subcontractors, laborers and suppliers for failure to pay sums due for their work, services, materials, goods, equipment or supplies, provided that SCDOT is not in default in payments owing (if any) to CONTRACTOR with respect to such work and such SCDOT payment default is the direct reason for the stop notice, lien or claim;
- g. Any release of Hazardous Materials or threatened release of Hazardous Materials
 - (i.) which was brought onto the Project site by any CONTRACTOR-Related Entity, or
 - (ii.) attributable to any CONTRACTOR fault, regardless of the source, origin, or method of deposit of such Hazardous Materials;
- h. To the extent of CONTRACTOR fault, the claim or assertion by any other person (excluding persons in privity of contract with SCDOT) that any CONTRACTOR-Related Entity (i) interfered with or hindered the progress or completion of work being performed by such other contractor, so as to cause inconvenience disruption, delay, or loss, except where the CONTRACTOR-Related Entity was not in any manner engaged in performance of the work, or (ii) failure of any CONTRACTOR-Related Entity to cooperate reasonably with other contractors in accordance therewith;
- i. Any dispute between CONTRACTOR and a Utility Owner, or any CONTRACTOR-Related Entity's performance of, or failure to perform, the obligations with respect to such Utility Owner;

- j. Any dispute between CONTRACTOR and the Railroad, or any CONTRACTOR-Related Entity's performance of, or failure to perform, or obtain approval with respect to the Railroad;
- k. Any CONTRACTOR-Related Entity's breach of or failure to perform an obligation that SCDOT owes to a third person, including governmental entities, railroads, and Utility Owners, under law or under any agreement between SCDOT and a third person, where (i) SCDOT has delegated performance of the obligation to CONTRACTOR under the Contract or (ii) the acts or omissions of any CONTRACTOR-Related Entity which render SCDOT unable to perform or abide by an obligation that SCDOT owes to a third Person, including governmental entities and Utility Owners, under any agreement between SCDOT and a third person, where the agreement was expressly disclosed to CONTRACTOR;
- l. Inverse condemnation, trespass, nuisance or similar taking of or harm to real property by reason of: (i) the failure of any CONTRACTOR-Related Entity to comply with good industry practices, requirements of the Contract or governmental approvals, (ii) any CONTRACTOR default, or (iii) the actual physical entry onto or encroachment upon another's property by any CONTRACTOR-Related Entity;
- m. The failure of CONTRACTOR to fully comply with any insurance requirements described in the Contract;
- n. Any failure to protect and/or maintain valuable papers and records that the Contract require CONTRACTOR to maintain;
- o. Any act, claim or amount arising or recovered under workers' compensations law;
- p. Any errors, inconsistencies or other defects in the design or construction of the Project and/or of Utility Adjustments included in the work;
- q. Any violation of any representation, warranty, or other covenant, obligation or agreement under the Contract or governmental laws and rules to be complied with by CONTRACTOR hereunder or thereunder;
- r. Any failure to pay any liquidated damages under the Contract;
- s. Errors in the design documents provided by CONTRACTOR (including those pertaining to Utility Adjustments), regardless of whether such errors were also included in the RFP, Exhibits and Attachment B. CONTRACTOR agrees that, because the concepts in the RFP, Exhibit and Attachment B are subject to review and modification by CONTRACTOR, it is appropriate for CONTRACTOR to assume liability for errors in the completed Project even though they may be related to errors in the RFP, Exhibits and Attachment B; and/or

- t. any act or omission of any CONTRACTOR-Related Entity or any CONTRACTOR default in any way causing, contributing to, relating to or arising out of (i) any bodily injury (including death) to any person or (ii) any Losses to the tangible property of third parties.
- 3. Subject to the releases and disclaimers herein, CONTRACTOR's indemnity obligation shall not extend to any third-party Losses to the extent directly caused by:
 - a. The gross negligence, recklessness, willful misconduct, bad faith, or fraud of the Indemnified Party;
 - b. SCDOT's breach of any of its material obligations under the Contract;
 - c. An Indemnified Party's violation of any governmental laws, regulations, ordinances, zoning, permits, certifications, or approvals; or
 - d. Any material defect inherent in a prescriptive design, construction, operations or maintenance specification included in the design criteria, exhibits and Attachment B, but only where prior to occurrence of the third-party Losses, CONTRACTOR complied with such specification and did not actually know, or would not reasonably have known, while exercising reasonable diligence, that it was deficient or, if CONTRACTOR actually knew of the deficiency, unsuccessfully sought SCDOT's waiver or approval of a deviation from such specification.
- 4. In claims by an employee of CONTRACTOR, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section A above, shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or a subcontractor under workers' compensation, disability benefit or other employee benefits laws.
- 5. CONTRACTOR is advised that Utility Agreements and the Railroad Agreement may include certain agreements by SCDOT to indemnify, defend, save and hold harmless the Utility Owners and Railroad, respectively, with respect to certain matters. CONTRACTOR's obligations under this Indemnity Article shall automatically apply to require CONTRACTOR, to release, indemnify, defend, save and hold harmless the Utility Owners, Railroad and their employees and agents, in addition to the Indemnified Parties, with respect to all such matters.
- 6. For purposes of this Section I, "third party" means any Person other than an Indemnified Party and CONTRACTOR, except that a "third party" includes any Indemnified Party's employee, agent or contractor who asserts a claim that is (a) against an Indemnified Party, (b) within the scope of the indemnities and (c) not covered by the Indemnified Party's worker's compensation program.

7. SCDOT, and the State shall have no obligation to indemnify, defend and hold harmless CONTRACTOR or any other CONTRACTOR-Related Entity.
8. The requirement to provide an indemnity as specified in this Section I is intended to provide protection to SCDOT with respect to third-party claims associated with the event giving rise to the indemnification obligation, and is not intended to provide SCDOT with an alternative cause of action against CONTRACTOR for Losses incurred directly by SCDOT with respect to the event giving rise to the indemnification obligation.

B. Defense and Indemnification Procedures

1. If SCDOT receives notice of a claim or otherwise has actual knowledge of a claim that it believes is within the scope of the indemnities under Section I, and if SCDOT gives notice thereof, then SCDOT shall have the right to conduct its own defense unless either an insurer accepts defense of the claim within the time required by governmental law and rules or CONTRACTOR accepts the tender of the claim in accordance with Section B.5 below.
2. If the insurer under any applicable insurance policy accepts the tender of defense, SCDOT and CONTRACTOR shall cooperate in the defense as required by the insurance policy and, for purposes of the Contract and proceedings relating to such matter, the applicable Indemnified Party/ies shall be deemed to be (an) insured party/ies. If no insurer under potentially applicable insurance policies provides defense, then Section B.9. below shall apply.
3. If the defense is tendered to CONTRACTOR, then within 30 days after receipt of the tender, CONTRACTOR shall provide to the Indemnified Party written notice whether it has tendered the matter to an insurer, and, if not tendered to an insurer or if the insurer has rejected the tender, shall deliver a written notice stating that CONTRACTOR:
 - a. Accepts the tender of defense and confirms that the claim is subject to full indemnification hereunder without any "reservation of rights" to deny or disclaim full indemnification thereafter;
 - b. Accepts the tender of defense but with a "reservation of rights" in whole or in part; or
 - c. Rejects the tender of defense based on a determination that it is not required to indemnify against the claim under the terms of this Contract.
4. If CONTRACTOR has tendered the matter to an insurer, and the insurer has not rejected the tender, then, for purposes of the Contract and proceedings relating to such matter, the applicable Indemnified Party/ies shall be deemed to be (an) insured party/ies.

5. If CONTRACTOR accepts the tender of defense under Section B.3.a or B.3.b above, CONTRACTOR shall have the right to select legal counsel for the Indemnified Party, subject to reasonable approval by the Indemnified Party, and CONTRACTOR shall otherwise control the defense of such claim, including settlement, and bear the attorneys', consultants' and expert witness fees and costs of defending and settling such claim. During such defense:
 - a. CONTRACTOR shall fully and regularly inform the Indemnified Party of the progress of the defense and of any settlement discussions; and
 - b. The Indemnified Party shall reasonably cooperate in said defense, provide to CONTRACTOR all materials and access to personnel it requests as necessary for defense, preparation and trial and which or who are under the control of or reasonably available to the Indemnified Party, and, subject to governmental laws and rules, maintain the confidentiality of all communications between it and CONTRACTOR concerning such defense.
6. If CONTRACTOR responds to the tender of defense as specified in Section B.3.c, the Indemnified Party shall be entitled to select its own legal counsel and otherwise control the defense of such claim, including settlement.
7. Notwithstanding Sections B.1 and B.2, the Indemnified Party may elect to temporarily assume its own defense at any time by delivering to CONTRACTOR written notice of such election and the reasons therefor, if the Indemnified Party, at the time it gives written notice of the claim or at any time thereafter, reasonably determines that:
 - a. A conflict exists between it and CONTRACTOR which prevents or potentially prevents CONTRACTOR from presenting a full and effective defense;
 - b. CONTRACTOR is otherwise not providing an effective defense in connection with the claim; or
 - c. CONTRACTOR lacks the financial capacity to satisfy potential liability or to provide an effective defense.
8. If the Indemnified Party is entitled and elects to conduct its own defense pursuant hereto of a claim for which it is entitled to indemnification, CONTRACTOR shall reimburse on a current basis all costs and expenses the Indemnified Party incurs in investigating and defending such claim. If the Indemnified Party is entitled to and elects to conduct its own defense, then:
 - a. In the case of a defense that otherwise would be conducted under Section B.3.a the Indemnified Party shall have the right to settle or compromise the claim with CONTRACTOR's relevant insurer(s) prior written consent, which, in each case, shall not be unreasonably withheld or delayed;

- b. In the case of a defense that otherwise would be conducted under Section B.3.b, the Indemnified Party and CONTRACTOR shall consult with each other on a regular basis to determine whether settlement is appropriate and, subject to the rights of any insurer providing coverage for the claim under a policy required under this Contract and the Indemnified Party shall have the right to settle or compromise the claim with CONTRACTOR's prior written consent without prejudice to the Indemnified Party's rights to be indemnified by CONTRACTOR; and
 - c. In the case of a defense conducted under Section B.3.c, the Indemnified Party shall, subject to the rights of any insurer providing coverage for the claim under a policy required under this Contract, have the right to settle or compromise the claim without CONTRACTOR's prior written consent and without prejudice to its rights to be indemnified by CONTRACTOR.
 - d. Where CONTRACTOR has the right under these procedures to settle a claim, in no event shall CONTRACTOR agree to a settlement that will increase the risk, liability or costs of SCDOT or any other Indemnified Party or adversely affect the Project, the work or the completion deadlines without the prior written consent of SCDOT or such Indemnified Party, in its sole discretion.
9. A refusal of, or failure to accept, a tender of defense, as well as any dispute over whether an Indemnified Party which has assumed control of defense is entitled to do so under Section B.8, shall be resolved according to the Claims Procedure. CONTRACTOR shall be entitled to contest an indemnification claim and pursue, through the Claims Procedure, recovery of defense and indemnity payments it has made to or on behalf of the Indemnified Party.

C. No Effect on Other Rights

The foregoing obligations shall not be construed to negate, abridge, or reduce other rights or obligations which would otherwise exist in favor of an Indemnified Party hereunder.

D. CERCLA Agreement

- 1. The indemnities set forth in Section A.7 are intended to operate as agreements pursuant to Section 107(e) of CERCLA to insure, protect, hold harmless and indemnify the Indemnified Parties..

XVII. DEFAULT; SUSPENSION; TERMINATION

A. CONTRACTOR Events of Default (Contractor Default).

- 1. CONTRACTOR shall be in default of this Agreement if:
 - a. CONTRACTOR fails to begin performance of the scope of the work promptly following issuance of the Notice to Proceed;

- b. CONTRACTOR fails to perform the scope of the work in accordance with (i) the documents described in Article I (contract documents), (ii) the final, and as applicable, as-approved deliverables under Article II.J, (iii) applicable standards set forth therein;
- c. CONTRACTOR refuses to remove, replace, and correct rejected materials, or nonconforming or unacceptable work;
- d. CONTRACTOR (i) suspends, ceases, or stops performance of the scope of the work, or (ii) fails to perform the scope of the work continuously and diligently to completion, in either case (A) where CONTRACTOR fails to resume performance or to prosecute the work, as determined in SCDOT's reasonable discretion) as is identified in Preliminary Notice of Delinquency and thereafter in any Notice of Delinquency (as each such term is defined in Section 108 of the Standard Specification), within 15 days after dispatch of such Notice of Delinquency, and (B) excluding work stoppages directed by SCDOT, approved by SCDOT, or for other reasons expressly permitted under this Agreement;
- e. CONTRACTOR abandons all or a material part of the Project, which abandonment is deemed to occur if (i) CONTRACTOR demonstrates through statements, acts, or omissions an intent not to continue, for any reason other than for a reasons expressly permitted under this Agreement, or (ii) no satisfactory progress in the work is performed for a continuous period of more than 15 days unless due to CONTRACTOR's compliance with work stoppages directed by SCDOT or for reasons expressly permitted under this Agreement;
- f. CONTRACTOR fails to resume performance of the scope of the work that has been suspended or stopped within five calendar days after (i) cessation of the event preventing performance (and for which CONTRACTOR is expressly permitted to have suspended or stopped performance under this Agreement) or (ii) receipt of notice from SCDOT to resume performance;
- g. Insolvency, Bankruptcy Events:
 - (i.) CONTRACTOR commences a voluntary case seeking liquidation, reorganization or other relief with respect to CONTRACTOR or CONTRACTOR's debts under any U.S. or foreign bankruptcy, insolvency or other similar law; seeking the appointment of a trustee, receiver, liquidator, custodian or other similar official of its, or any substantial part of its, assets; becomes insolvent, or generally does not pay its debts as they become due; provides notice of its inability to pay its debts; makes an assignment for the benefit of creditors; or takes any action to authorize any of the foregoing;
 - (ii.) An involuntary case is commenced against CONTRACTOR seeking liquidation, reorganization, dissolution, winding up, a composition or arrangement with creditors, a readjustment of debts or other relief with respect to such CONTRACTOR or CONTRACTOR's debts under any

- U.S. or foreign bankruptcy, insolvency or other similar law; seeking the appointment of a trustee, receiver, liquidator, custodian or other similar official of it or any substantial part of its assets; seeking the issuance of a writ of attachment, execution, or similar process; or seeking like relief, and such involuntary case shall not be contested by it in good faith or shall remain undismissed and unstayed for a period of 60 days;
- (iii.) In any voluntary or involuntary case seeking liquidation, reorganization or other relief with respect to CONTRACTOR or its debts under any U.S. or foreign bankruptcy, insolvency or other similar law, this Agreement or any of the other Contract Documents, is rejected, including a rejection under 11 U.S.C. Section 365 or any successor statute; or
 - (iv.) Any voluntary or involuntary case or other act or event described in clause (g)(i) or (g)(ii) shall occur (and in the case of an involuntary case shall not be contested in good faith or shall remain undismissed and unstayed for a period of 60 days) with respect to (i) any equity member, partner or joint venture member of CONTRACTOR, or (ii) any equity member, partner or joint venture member of CONTRACTOR for whom transfer of ownership or management authority would constitute an impermissible assignment hereunder;
- h. Allows any final judgment to remain unsatisfied for a period that, in SCDOT's sole judgment, poses a material adverse effect on CONTRACTOR's ability to perform the scope of the Work and, in particular, to pay for its obligations to SCDOT, subcontractors, and suppliers in connection therewith;
 - i. CONTRACTOR makes, attempts to make, or suffers a voluntary or involuntary assignment or transfer of all or any portion of this Agreement or its interest in the Project;
 - j. CONTRACTOR materially fails to observe or to perform, or to cause to be observed or performed, timely any other material covenant, agreement, obligation, term, or condition required to be observed or performed by CONTRACTOR under the Agreement including but not limited to:
 - (i.) Fails to supply a sufficient number of properly skilled workmen, tools, materials and equipment to assure the prompt completion of the work; or
 - (ii.) Failure to comply with applicable permits, law, or use of the Project violates such permits, law, or this Agreement;
 - k. Any representation or warranty in the Agreement, the SOQs and Proposal (which representations and warranties of CONTRACTOR are incorporated into the Proposal explicitly or by reference), or the Proposal is false in any material respect, materially misleading, or inaccurate in any material respect when made (except as relates to continuing representations and warranties), or omits

material information when made (except as relates to continuing representations and warranties);

- l. Any certificate, schedule, report, instrument, or other document delivered by or on behalf of CONTRACTOR to SCDOT under the Agreement is false or incorrect in any material respect, materially misleading, or inaccurate in any material respect when made (except as relates to continuing representations and warranties in any such certificates, schedules, reports, instruments, or other documents), or omits material information when made (except as relates to such continuing representations and warranties);
 - m. CONTRACTOR (i) fails to make any payment owing to SCDOT under the Agreement in full and when due (including specifically payment of any liquidated or stipulated damages hereunder); or (ii) fails to make, absent a bona fide and valid dispute, payment in full and when due for labor, equipment, or materials in accordance with applicable law and with its agreements with consultants, subcontractors, subconsultants, vendors, or suppliers;
 - n. CONTRACTOR fails (i) to obtain, provide, and maintain any insurance, surety bonds, guarantees, letters of credit, or other payment or performance security as is required under the Agreement for the benefit of the relevant parties, or (ii) to comply with any requirement of the Agreement pertaining to the amount, terms, or coverage of the insurance or security, or (iii) to pay the associated premiums, deductibles, self-insured retentions, co-insurance, or any such other amounts with respect to the insurance or security as and when due;
 - o. Unless continued performance of this Agreement is permitted under the terms of a debarment agreement with the State of South Carolina or otherwise as permitted under clause 2.e. below, and after any rights of appeal have been exhausted, if CONTRACTOR, any equity or joint venture member of CONTRACTOR, any consultant, subcontractor, subconsultant, vendor, or supplier, or any person or entity for which CONTRACTOR is legally responsible (i) is determined to be disqualified, suspended, or debarred, or otherwise is excluded from bidding, proposing, or contracting with a federal or state department or agency, or (ii) has not dismissed any consultant, subcontractor, subconsultant, vendor, or supplier whose work is not substantially complete and who is determined to be disqualified, suspended, debarred, or otherwise excluded from bidding, proposing, or contracting with a federal or state department or agency;
 - p. CONTRACTOR fails to comply with any order by SCDOT issued under, and pursuant to a contractual right in, this Agreement, including specifically orders to suspend CONTRACTOR's performance of the scope of work, in whole or in part, within the time allowed in such order; or
2. Cure Periods. The following list identifies CONTRACTOR's rights to receive notice and opportunity to cure before SCDOT may exercise its remedies under

clause 3 below, and this list also identifies other Contractor Defaults that are not subject to cure:

- a. Except as otherwise specifically set forth in this clause 2, CONTRACTOR and the surety providing the bond(s) pursuant to Article VI.B shall be entitled to 15 days prior written notice and opportunity to cure any Contractor Defaults before SCDOT may exercise any remedies hereunder, including specifically those under clause 3 below.
- b. CONTRACTOR and the surety providing the bond(s) pursuant to Article VI.B shall be entitled to seven days prior written notice and opportunity to cure the Contractor Defaults under clauses XVII.A.1.h., m., and n. before SCDOT may exercise any remedies hereunder, including specifically those under clause 3 below.
- c. Except with respect to those Contractor Defaults listed in clauses d. and e. below, if Contractor Defaults under clauses XVII.A.1.a., f., m., and n. are capable of cure (as determined by SCDOT in its sole discretion) but, by its nature, cannot be cured within such seven or 15 day period, as applicable, (also as determined by SCDOT in its sole discretion), then CONTRACTOR shall commence to cure such Contractor Default within such seven or 15 day period, as applicable, and thereafter diligently prosecute such cure to completion within 60 days or such other later time as determined by SCDOT, in its sole discretion, before SCDOT may exercise any remedies hereunder, including specifically those under clause 3 below.
- d. Except with respect to those Contractor Defaults listed in clause c. above and clause e. below, if a Contractor Default under clause XVII.A.1.e. cannot be cured within 15 days (as determined by SCDOT in its sole discretion), then CONTRACTOR shall commence to cure such Contractor Default within such 15 day period, and thereafter diligently prosecute such cure to completion within 30 days or such other later time as determined by SCDOT, in its sole discretion, before SCDOT may exercise any remedies hereunder, including specifically those under clause 3 below.
- e. CONTRACTOR hereby acknowledges and agrees that no notice and no opportunity to cure is required with respect to the Contractor Defaults under clauses XVII.A.1.g., i., k., l., o.(ii), p. and q., and SCDOT has the right to exercise its remedies hereunder immediately, including specifically those under clause 3 below.
- f. With respect to the Contractor Default under clause XVII.A.1.o., CONTRACTOR shall take appropriate steps to obtain, or to require its equity or joint venture member of CONTRACTOR, any consultant, subcontractor, subconsultant, vendor, or supplier, or any person or entity for which CONTRACTOR is legally responsible to obtain, a debarment agreement with the State of South Carolina in connection with any pending action for

disqualification, suspension or debarment or any pending agreement for voluntary exclusion from bidding, proposing or contracting. If a debarment agreement is obtained that permits continued performance under this Agreement, then the disqualification, suspension, debarment or agreement for exclusion shall not be considered a Contractor Default. If, however, such a debarment agreement is not obtained, the CONTRACTOR shall have the following cure rights:

- (i.) With respect to a Contractor Default under clause XVII.A.1.o(i) involving CONTRACTOR, CONTRACTOR shall have 60 days after the effective date of the disqualification, suspension, debarment or agreement for exclusion to (i) obtain a debarment agreement allowing continued performance or (ii) otherwise cure the Contractor Default;
- (ii.) With respect to a Contractor Default clause XVII.A.1.o(i) involving any equity or joint venture member of CONTRACTOR involving any equity or joint venture member of CONTRACTOR, CONTRACTOR shall have 60 days after the effective date of the disqualification, suspension, debarment or agreement for exclusion (i) to remove the affected equity or joint venture member and obtain SCDOT's approval of the change in the ownership structure of CONTRACTOR, (ii) to obtain a debarment agreement allowing continued performance or (iii) otherwise cure the Contractor Default; and
- (iii.) With respect to a Contractor Default under clause XVII.A.1.o(i) involving a consultant, subcontractor, subconsultant, vendor, or supplier, or any other person or entity for which CONTRACTOR is legally responsible, CONTRACTOR shall have 60 days after the effective date of the disqualification, suspension, debarment or agreement for exclusion to obtain a debarment agreement allowing continued performance or otherwise cure the Contractor Default.

3. Remedies.

a. General Provisions.

- (i.) Failure to provide notice to CONTRACTOR's surety providing the bond(s) pursuant to Article VI.B shall not preclude SCDOT from exercising its remedies under this clause 3.
- (ii.) SCDOT shall also be entitled to exercise any other rights and remedies available under this Agreement, or available at law.
- (iii.) SCDOT's rights under this Agreement shall be cumulative and shall be in addition to every other right provided under this Agreement or at law, and the exercise or beginning of the exercise by SCDOT of any one or more of any of such rights or remedies shall not preclude the simultaneous or later exercise by SCDOT of any or all other such rights or remedies.
- (iv.) Except as expressly stated otherwise in this Agreement, SCDOT's exercise of any right or remedy does not waive or release, nor shall be

deemed to waive or release, CONTRACTOR from any obligations or limiting other remedies that may be available to SCDOT,

b. SCDOT Step-In

- (i.) Subject to any surety rights under surety bond(s) placed for the Project pursuant to Article VI.B., SCDOT shall have the right, but not the obligation, to pay such amounts and or perform such acts as may then be required of CONTRACTOR under the Agreement or contracts with consultants, subcontractors, subconsultants, vendors, or suppliers, whether assigned to SCDOT.
- (ii.) SCDOT may appropriate any or all materials and equipment on the Site as SCDOT determines may be suitable and acceptable and, if and when consistent with the terms of any surety bond(s) placed pursuant to Article VI.B, SCDOT may direct the Surety to complete the Project, may enter into an agreement for the completion of the Project (with the surety or another contractor), or may complete the Project itself. If SCDOT exercises any right to perform any obligations of CONTRACTOR, then SCDOT may, but is not obligated to, among other things: (A) perform or attempt to perform, or cause to be performed, such work; (B) spend such sums as SCDOT deems necessary and reasonable to employ and pay such architects, engineers, consultants, and contractors, and obtain materials and equipment as may be required to complete such work; (C) execute all applications, certificates, and other documents as may be required to complete the Project, including paying such amounts and performing such other acts as may then be required from CONTRACTOR pursuant to its subcontracts with consultants, subcontractors, vendors, and suppliers; (D) modify or terminate any contractual arrangements; (E) take any other actions that SCDOT may, in its sole discretion, consider necessary to complete the Project; and (vi) prosecute and defend any action or proceeding incident to completion of the Project.
- (iii.) SCDOT may deduct from any amounts payable by SCDOT to CONTRACTOR such amounts payable by CONTRACTOR to SCDOT, including those damages listed in clause c. below.

c. Performance Security

- (i.) SCDOT may make demand upon and enforce any surety bond, and make demand upon, draw on and enforce and collect any letter of credit, guaranty or other payment or performance security available to SCDOT under this Agreement, with respect to such Contractor Default in any order.
- (ii.) SCDOT will apply the proceeds of any such action to the satisfaction of CONTRACTOR's obligations under this Agreement, including payment of amounts due to SCDOT.

- (iii.) The provisions of clauses (i) and (ii), shall not apply where access to any such surety bond, letter of credit, guaranty or other payment or performance security is for the purpose of satisfying damages owing to SCDOT, in which case SCDOT shall be entitled to make demand, draw, enforce and collect regardless of whether Contractor Default is subsequently cured.
- (iv.) SCDOT will notify CONTRACTOR at the same time or promptly after it takes any action to make demand upon, draw on, enforce or collect any such surety bond, letter of credit, guaranty or other payment or performance security.

d. Damages

- (i.) Without limiting SCDOT's right to deduct in the event of self-performance under clause 3.b. above, and except as limited by SCDOT's agreement to liquidate certain damages as specified in the Agreement, SCDOT shall be entitled to recover any and all damages available at law on account of the occurrence of a Contractor Default. CONTRACTOR shall owe any such damages that accrue after the occurrence of Contractor Default regardless of when any notice regarding any Contractor Default is given or whether Contractor Default is subsequently cured. Such damages include, but are not limited to:
 - a) the aggregate of reimbursements owing SCDOT;
 - b) any liquidated or stipulated damages accrued;
 - c) 125% of the amounts SCDOT deems advisable to cover any existing or threatened claims of consultants, subcontractors, subconsultants, vendors, suppliers, other laborers, or other persons or entities;
 - d) amounts of any losses incurred or reasonably expected to be incurred by SCDOT in completing the Project;
 - e) the cost to complete or remediate uncompleted or other nonconforming work, plus an administrative charge equal to 10% of such costs;
 - f) throw-away costs for unused portions of the completed portions of the Project
 - g) increased financing costs of SCDOT, if any,
 - h) other damages or amounts that SCDOT has or will be incurred to rectify any breach or failure to perform by CONTRACTOR and/or to bring the condition of the Project to the standard it would have been in if CONTRACTOR had complied with its obligations to

carry out and complete the Work in accordance with the Contract Documents; and

- i) other damages or amounts that SCDOT has determined are or may be payable to SCDOT under this Agreement.
 - (ii.) Where this Agreement is terminated, the damages recoverable by SCDOT shall also include the present value of
 - a) actual and projected costs to SCDOT to terminate, take over the Project, re-procure and replace CONTRACTOR;
 - b) actual and projected delay costs; and
 - c) actual and projected increases in costs to SCDOT to complete the Project.
 - (iii.) Damages owed to SCDOT under this clause c. shall bear interest at the statutory rate of interest under S.C. Code Ann. 34-31-20 from and after the date any amount becomes due to SCDOT until the date paid. The interest rate shall accrue on all amounts SCDOT has had to pay in excess of the remaining balance of the Contract Price from the date of SCDOT's payment.
 - (iv.) Additional Provisions pertaining to costs.
 - a) If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as a termination by SCDOT for its convenience.
 - b) In lieu of the provisions of this Article XVII for terminating this Agreement for cause, SCDOT may pay CONTRACTOR for the work already completed in accordance with the Agreement and may treat the work remaining undone as if they had never been included or contemplated by this Agreement. No claim under this clause (C) will be allowed for prospective profits on, or any other compensation relating to, work remaining and uncompleted by CONTRACTOR.
- e. Termination of the Agreement by SCDOT.
- (i.) CONTRACTOR acknowledges and agrees that any Contractor Default would result in material and substantial harm to SCDOT's rights and interests under this agreement, and therefor justifies termination of this Agreement unless fully and completed cured within the applicable cure period, if any, under clause XVII.A.2.
 - (ii.) Upon expiration of any applicable cure period (if any), and after complying with other obligations of SCDOT, if any, under any surety bonds provided by CONTRACTOR under Article VI.B., if

CONTRACTOR's surety providing such bond(s) refuses to complete the work or fails to take over the work under the terms of the performance bond, then SCDOT may in its sole discretion terminate this Agreement for cause. If SCDOT terminates this Agreement for cause, SCDOT shall deliver a notice to the CONTRACTOR so stating, and termination will be effective three days after dispatch, unless otherwise specified in such notice.

f. Joint and Several Liability of CONTRACTOR and Surety/ies

If a Contractor Default occurs, CONTRACTOR, and any surety providing the bond(s) pursuant to Article VI.B shall be jointly and severally liable to SCDOT for all costs, damages, and expenses of SCDOT listed under clause XVII.A.3.d., including specifically any interest that accrues thereon, whether by virtue of late payment by CONTRACTOR or late payment by surety.

g. Final Release

Except as otherwise expressly provided in this Agreement, if this Agreement is earlier terminated for any reason, then SCDOT's payment to CONTRACTOR of the amounts required under this Agreement (if any) shall constitute full and final satisfaction of, and upon payment SCDOT shall be forever released and discharged from, any and all claims, causes of action, suits, demands and losses, known or unknown, suspected or unsuspected, that CONTRACTOR may have against SCDOT caused by, arising out of, relating to, or resulting from this Agreement or termination thereof, or the Project. Upon such payment, CONTRACTOR shall execute and deliver to SCDOT all such releases and discharges as SCDOT may reasonably require to confirm the foregoing, but no such written release and discharge shall be necessary to give effect to the foregoing satisfaction and release.

A. Suspension of the work for cause

1. Notwithstanding the notice and cure period provisions of this Article XVII, if not substantially cured promptly after SCDOT notifies CONTRACTOR of any of the following, SCDOT has the authority to suspend the Work by written order, wholly or in part, for CONTRACTOR's failure to:
 - a. handle (i) Hazardous Waste, or (ii) any archaeological, paleontological, biological, or cultural resource, in any case, in accordance with prudent industry practices, applicable laws, governmental approvals, or permits; or
 - b. comply with any law, governmental approval or permit.
2. If not substantially cured within three days after SCDOT delivers notice thereof to CONTRACTOR, SCDOT has the authority to suspend the Work by written order, wholly or in part, for CONTRACTOR's failure to:

- a. observe any conditions to commencement of certain portions of the scope of the Work and thereafter commences performance;
 - b. provide proof of required insurance coverage hereunder;
 - c. maintain any surety bond(s) required hereunder;
 - d. correct any nonconforming work; or
 - e. perform the scope of the work in compliance with the Agreement.
3. CONTRACTOR shall promptly comply with any such written suspension order, even if it disputes the grounds for suspension. CONTRACTOR shall promptly recommence performance of the scope of the work upon receipt of written notice from SCDOT directing CONTRACTOR to resume performance. SCDOT will lift the suspension order promptly after CONTRACTOR fully cures and corrects the applicable breach or failure to perform or any other reason for the suspension order ceases to apply.
4. SCDOT shall have no liability to CONTRACTOR in connection with any such suspension, and CONTRACTOR shall have no right to any adjustment in the Contract Price, additional costs, or additional time on the then-current CPM Schedule in connection with any suspension of Work founded on any of the grounds set forth in this clause XVII.B.
5. If SCDOT orders suspension of Work on one of the foregoing grounds but it is finally determined under the Agreement's dispute resolution procedures that such grounds did not exist, it shall be treated as a suspension for SCDOT's convenience under clause XVII.C.

B. Suspensions for Convenience; Suspensions for Safety

1. SCDOT may, at any time and for any reason, by written notice, order CONTRACTOR to suspend all or any part of performance of the scope of the work for the period of time that SCDOT deems appropriate for the convenience of SCDOT. CONTRACTOR shall promptly comply with any such written suspension order. CONTRACTOR shall promptly recommence performance of the scope of the work upon receipt of written notice from SCDOT directing CONTRACTOR to do so.
2. CONTRACTOR shall be entitled for additional time, on a day-by-day basis (or for such additional time, in SCDOT's sole discretion), to achieve Substantial Completion for each day of delay to the CPM Schedule caused by or will result in an identifiable and measurable disruption of an activity on the critical path under the then-current CPM Schedule, after consumption of all then-available float, any such suspensions directed by SCDOT for its convenience; provided, however, that

- a. SCDOT shall have the right to direct suspensions of the work for convenience not exceeding 48 hours each, up to a total of 144 hours during the term before any such CONTRACTOR entitlement to additional time shall accrue;
 - b. SCDOT may nonetheless suspend the work for its convenience for lack of appropriations, in which case, any such suspension shall not serve to diminish SCDOT's balance of 144 hours then-existing, but CONTRACTOR shall be entitled to additional time and costs under this clause C for the duration of any such suspension. Subject to clause c. below, if the duration of suspensions for convenience reaches 270 days continuously, then SCDOT will be deemed to have terminated this Agreement for its convenience;
 - c. SCDOT may suspend the work for its convenience during any period of governmental shutdowns, government-declared restrictions, or other direction of the State or federal executive (including specifically any quarantine or other governmental and non-governmental measures intended to limit the spread of disease), and the duration of any such suspension shall not serve to diminish SCDOT's balance of 144 hours then-existing, nor shall continuation of any such suspension beyond 270 days continuously shall not be deemed to be a termination for SCDOT's convenience;
 - d. SCDOT may suspend the work for its convenience upon discovery of any known or suspected Hazardous Waste or any known or suspected archaeological, paleontological, biological, or cultural resource, and without limiting clause B.1.a above, the duration of any such suspension shall not serve to diminish SCDOT's balance of 144 hours then-existing, nor shall continuation of any such suspension beyond 270 days continuously shall not be deemed to be a termination for SCDOT's convenience.
3. CONTRACTOR shall not be entitled to any additional costs incurred or additional compensation arising out of, relating to, resulting from, or caused by any such suspension directed by SCDOT for its convenience not exceeding 48 hours each, up to a total of 144 hours during the term, but CONTRACTOR shall be entitled to actual, direct, and documented costs incurred resulting from suspensions directed by SCDOT for its convenience beyond any 48 hour period or beyond the aggregate of 144 hours, so long as CONTRACTOR establishes in any CCR that any delay to the CPM Schedule could not have reasonably been mitigated or avoided, and subject to the following further limitations:
 - a. CONTRACTOR shall not be entitled to any disruption damages in connection with any additional costs claimed with respect to any suspension directed by SCDOT for its convenience;
 - b. CONTRACTOR shall not be entitled to any punitive, indirect, special, incidental, or consequential damages in connection with any additional costs claimed pursuant to any suspension directed by SCDOT for its convenience;

- c. Delay and such other actual, direct, and documented additional incremental costs shall not exceed those calculated pursuant to Section 105.16.5 of the SCDOT Standard Specifications, with the exception of extended job site overhead rates which shall be as set forth in Exhibit 5 of the RFP.
4. CONTRACTOR shall not be entitled to an extension of time or additional costs if the delay arising out of, relating to, or resulting from any suspension directed by SCDOT for its convenience is concurrent with any other unrelated delay to an activity on the critical path under the then-current CPM Schedule for which CONTRACTOR is responsible under this Agreement.
5. Notwithstanding anything to the contrary herein, CONTRACTOR acknowledges that among SCDOT's functions and purposes under SC. Code Ann. 57-1-30(B) is to provide safe transportation for the movement of people and goods throughout the state, and accordingly, SCDOT may issue an order suspending work wholly or in part and to take appropriate action when public safety is jeopardized. CONTRACTOR shall promptly comply with any such written suspension order. CONTRACTOR shall promptly recommence performance of the scope of the work upon receipt of notice from SCDOT directing CONTRACTOR to resume performance. Any such suspension shall not be, nor be deemed to be, (a) a suspension directed by SCDOT for its convenience or (b) a suspension for cause under clause XVII.A.3.e, requiring notice and opportunity to cure or otherwise. SCDOT shall have no liability to CONTRACTOR in connection with any such suspension, and CONTRACTOR shall have no basis to submit a CCR or otherwise claim entitlement to additional cost or accommodation of delay.

C. Responsibilities of CONTRACTOR During Suspension Periods

During any suspension periods directed by SCDOT hereunder, CONTRACTOR shall continue to be responsible for the Project and shall prevent damage, loss or injury to the Project. Without limiting the generality of the foregoing, CONTRACTOR shall specifically provide for drainage, protect any known or suspected Hazardous Waste or known or suspected archaeological, paleontological, biological, or cultural resources (including taking affirmative steps to protect the site from vandalism and unauthorized investigations), protect the site from accidental damage, heavy rainfall, runoff, and shall erect necessary temporary structures, signs or other facilities required to maintain the Project. CONTRACTOR shall also maintain all insurance policies and bonds required to be in place under this Agreement, comply with all applicable governmental approvals and other permits. CONTRACTOR shall, unless otherwise directed by SCDOT, continue to be responsible for traffic control, erosion control, and maintenance of the roadway in accordance with this Agreement.

D. Termination for Convenience

1. SCDOT reserves the right to terminate the Agreement at any time, in whole or in part, and upon 30 days written notice to CONTRACTOR, if SCDOT determines it to be in the public interest. Should the Agreement be so terminated by SCDOT for

its convenience, CONTRACTOR shall be paid for the value of the work, based upon the Schedule of Values, performed to the effective date of termination and reasonable demobilization costs, together with any reasonable, pre-agreed cancellation charges by vendors, suppliers, and subcontractors. CONTRACTOR shall also be entitled to the cost of securing that portion of the work as directed by SCDOT, provided such cost is reasonable and is approved by SCDOT. In no event, shall CONTRACTOR recover any amount for work not performed. The total payment to CONTRACTOR pursuant to any termination by SCDOT for its convenience shall not exceed the Contract Price.

2. Termination of all or a portion of this Agreement shall not relieve CONTRACTOR of any responsibility it would otherwise have for the work completed, or for any claims arising from that work.
3. For avoidance of doubt, any termination by SCDOT for lack of appropriations would be a termination for convenience under this clause E.

E. Responsibilities of CONTRACTOR Following Notice of Termination of the Agreement

1. CONTRACTOR shall timely comply with the following provisions independently of, and without regard to, the timing for determining, adjusting, settling, and paying any amounts due CONTRACTOR or SCDOT on account of termination, if any:
 - a. CONTRACTOR shall promptly deliver to SCDOT or its designee possession of all Project Documents, as defined in Article II.F, in CONTRACTOR's possession or control that relates to the Project and that SCDOT deems necessary for completion of the Project;
 - b. CONTRACTOR shall discontinue performance of the scope of the Work, withdraw from the Site, and shall remove materials, equipment, tools, and instruments used by, and any debris or waste materials generated by CONTRACTOR and any subcontractor, vendor, or supplier in the performance of the scope of the Work;
 - c. If and as directed by SCDOT, CONTRACTOR shall confirm the assignment to SCDOT of any contracts with consultants, subcontractors, subconsultants, vendors, or suppliers, and CONTRACTOR shall terminate, at its sole cost, any such contracts not assigned;
 - d. CONTRACTOR shall otherwise promptly and orderly transition the work, demobilize, and transfer management, care, custody, and control of the Project to SCDOT.
2. If SCDOT determines that CONTRACTOR has failed to comply with the foregoing, then upon subsequent notice from SCDOT to CONTRACTOR making reference to this clause, CONTRACTOR acknowledges and agrees that it shall be deemed to have surrendered its access rights to the Site.

3. CONTRACTOR shall, and shall cause its consultants, subcontractors, subconsultants, vendors, and suppliers to, complete all of the foregoing prior to the effective date of the termination of the Agreement as set forth in the notice to CONTRACTOR

XVIII. DISADVANTAGED BUSINESS ENTERPRISES

The DBE goals on P044267 (S-9-22) and P044268 (S-38-39) is 5.0 percent. There are no DBE goals on P044315 (S-5-458), P044269 (S-38-191), P044270 (S-38-634), or P044271 (S-38-1210). Whether or not there is a DBE contract goal on the contract, the Proposer is strongly encouraged to obtain the maximum amount of DBE participation feasible on the contract. SCDOT will have the right to audit all documentation regarding DBE participation in the Project.

XIX. ON-THE-JOB TRAINING REQUIREMENTS

Not required.

XX. RECORD RETENTION

A. Retention Period

1. CONTRACTOR shall maintain the following documents for a period of three years or a period equal to the warranty period, whichever is longer, after Final Completion of the Project:
 - a. All CONTRACTOR samples and test reports;
 - b. Daily Diaries and any other documents required to be retained in accordance with the Quality Control Plan.
 - c. Documents required to be retained under Article VIII.A.17.
 - d. Documents required to be retained under FHWA 1273.
 - e. Documents items listed in Subsection 109.10 and 105.16.9 of the SCDOT Standard Specification.
2. During the retention period, SCDOT will be granted access to those documents upon reasonable notice. At any time during the retention period, SCDOT will have the option of taking custody of the documents. CONTRACTOR shall obtain a written release from SCDOT prior to destroying the records after the retention period.

XXI. AS-BUILTS

A. Documents

1. In addition to those documents set forth elsewhere in this Agreement, CONTRACTOR shall provide to SCDOT prior to Final Completion, complete sets of as-built drawings (See Article XXI.D for details). As-built plans consist of the final version of the design plan CADD drawings that incorporate all changes, including any adjustments, relocations, additions and deletions that occurred during construction. CONTRACTOR shall certify that the as-built plans are a true and correct representation of the work as constructed. If any design changes occur during construction, the plan sheets (or any other “job site record document” with a seal) revised after award of contract shall include a complete accounting and detail of the revisions and design changes. The P.E. responsible for the revisions shall seal each altered plan sheet (or any other “job site record document” with a seal). This documented information is to be part of the As-Built Plan requirements. The CONTRACTOR shall develop as-built plans in accordance with the SCDOT Manual of Instructions for the Preparation of As-Built Plans, edition effective as of the release of the Final RFP.
2. Information regarding major revisions to the plans shall be noted in a revision box on the plans. The information listed in the revision box shall include: the initiator of the revision, a brief explanation of the nature of the revision, and acceptance and approval from CONTRACTOR, along with associated dates.
3. In addition to the revisions that incorporated changes during construction, the as-built plans shall include the following information gathered during construction:
 - a. The location and elevation of foundations remaining below grade.
 - b. The final profile of each bridge constructed. Verification of bridge deck elevations shown in the plans.
 - c. If any structure has pile foundations, information concerning the pile driving operation shall be listed to include pile and driving equipment data, final pile bearing, elevation of pile tip when plan bearing was obtained, final pile tip elevation, penetration into the ground, and PDA or WEAP analysis data. This information shall be entered on each footing or bent sheet, or be included as a new sheet inserted immediately following the pertinent footing or bent sheet.
 - d. If any structure has drilled shaft foundations, information concerning the installation of the shaft shall be listed to include the drilled shaft report. This information shall be entered on each footing or bent sheet, or be included as a new sheet inserted immediately following the pertinent footing or bent sheet.
 - e. The final horizontal location of all existing and relocated utility lines and structures that are within the right-of-way. Include approved Utility Agreements, No Cost/No Conflict Letters, and Encroachment Permits.
 - f. The final location and elevations of all pipes, culverts, and drainage structures.

- g. To include all right-of-way revisions, permissions, and an updated right-of-way data sheet to show the date and manner of acquisition of each tract
4. As-built plans shall be submitted as electronic files (Adobe PDF) as individual sheets sized and properly scaled to 36 inch x 22 inch. Plans shall be submitted via ProjectWise and an email to SCDOT that verifies the contents of the upload. The levels and symbology of the as-built CADD drawings shall conform to SCDOT standard levels and symbology used to develop the design drawings for the Project.

XXII. ESCROW PROPOSAL DOCUMENTS

The Contractor shall submit bid documentation used to prepare the technical and cost proposals for this contract to the Department in accordance with the Supplemental Specification entitled Escrow Bid Documentation dated October 1, 2014.

XXIII. DISPUTE RESOLUTION

A. Parties

1. Each party hereby waives a trial by jury regarding any dispute between them arising out of this Contract and any such trial will be a non-jury trial before the South Carolina Circuit Court in Richland County.
2. In the event of a dispute between the parties, it shall be a condition precedent to litigation that the parties submit the dispute to the Standing Dispute Review Board pursuant to the Claims Procedure set forth in the Project Supplemental Specifications.
3. CONTRACTOR consents that any papers, notices, or process necessary or proper for the initiation or continuation of any disputes, claims, or controversies relating to the Agreement, any court action in connection therewith, or for the entry of judgment on any award made, may be served on CONTRACTOR by certified mail (return receipt requested) addressed to CONTRACTOR at the address provided in Article XXVI. Notice by certified mail is deemed duly given upon deposit in the United States mail.

XXIV. SCDOT'S AGENT

SCDOT will appoint an individual who will be authorized to act on behalf of SCDOT, with whom CONTRACTOR may consult at all reasonable times, and whose instructions and decisions will be binding upon SCDOT as to all matters pertaining to this Agreement and the performance of the parties hereunder.

XXV. ASSIGNABILITY

A. By CONTRACTOR

1. Neither the Agreement nor CONTRACTOR's interest herein, in whole or in part, shall be voluntarily or involuntarily assigned, sold, conveyed, transferred, pledged, mortgaged, or otherwise encumbered (by way of grant of right of entry, grant of special use, management, or control of the Project, or otherwise) by CONTRACTOR without the prior written consent of SCDOT. Notwithstanding the foregoing, CONTRACTOR may assign this Agreement to any entity in which the organizations signing this Agreement for CONTRACTOR, or the shareholder(s), general partner(s) or member(s) that exercise management control over such organizations, hold and exercise effective management control and hold at least 50 percent of the equity interest.
2. Any purported voluntary or involuntary sale, assignment, conveyance, transfer, pledge, mortgage, or encumbrance of this Agreement, in whole or in part, or other grant of right of entry, or grant of other special use, management or control of the Project in violation of this Article shall be null and void ab initio.

B. By SCDOT.

SCDOT may assign the Contract without the consent of CONTRACTOR.

C. Restrictions on Equity Transfers and Changes of Control

1. Except as permitted in this Article, no voluntary or involuntary Change of Control of CONTRACTOR, including any Equity Transfer that would result in a Change of Control of CONTRACTOR, shall be permitted without the prior written consent of SCDOT.
2. Transfers and transactions within any of the exceptions described in clauses (a) through (e) of the definition of Change of Control are allowed at any time without necessity for SCDOT's approval but, in the case of exceptions described in clauses (a) through (c), subject to the condition that CONTRACTOR delivers to SCDOT, no later than ten days prior to the effectiveness of the transfer or transaction, a written notice describing the transfer or transaction and (if applicable) the names of the transferor and transferee, together with documentation demonstrating that the transfer or transaction is within such an exception.
3. Any purported voluntary or involuntary Equity Transfer or Change of Control in violation of this clause C. shall be null and void ab initio.

D. Definitions.

For purposes of this Article, the following terms have the meanings ascribed.

1. Equity Transfer means any sale, assignment, conveyance, transfer, pledge, mortgage, or other encumbrance of any equity interest in CONTRACTOR.
2. Change of Control means any Equity Transfer, transfer of an interest, direct or indirect, in an equity member, or other sale, assignment, conveyance, transfer,

pledge, mortgage, or other encumbrance financing, grant of security interest, hypothecation, transfer of interest or transaction of any type or description, including by or through voting securities, asset transfer, contract, merger, acquisition, succession, dissolution, liquidation, bankruptcy or otherwise, that results, directly or indirectly, in a change in possession of the power to direct or control or cause the direction or control of the management of CONTRACTOR or a material aspect of its business. A change in possession of the power to direct or control or cause the direction or control of the management of an equity member of CONTRACTOR may constitute a Change of Control of CONTRACTOR if such equity member possesses, immediately prior to such Change of Control, the power to direct or control or cause the direction or control of the management of CONTRACTOR. Notwithstanding the foregoing, the following shall not constitute a Change of Control:

- a. A change in possession of the power to direct or control the management of CONTRACTOR Developer or a material aspect of its business due solely to a bona fide transaction involving beneficial interests in the ultimate parent organization of an equity member, (but not if the equity member is the ultimate parent organization), provided, however, that this exception shall not apply if the transferee in such transaction is, at the time of the transaction, suspended or debarred, or subject to a proceeding that may result in being suspended or debarred from bidding, proposing or contracting with any federal or state department or agency;
- b. An upstream reorganization or transfer of direct or indirect interests in CONTRACTOR so long as there occurs no change in the entity with ultimate power to direct or control or cause the direction or control of the management of CONTRACTOR;
- c. An Equity Transfer, where the transferring equity member and the transferee are under the same ultimate parent organization ownership, management and control before and after the transfer;
- d. A change in possession of the power to direct or control the management of CONTRACTOR or a material aspect of its business due solely to bona fide open market transactions in securities effected on a recognized public stock exchange, including such transactions involving an initial public offering; or
- e. The exercise of minority veto or voting rights (whether provided by applicable law, by CONTRACTOR's organizational documents or by related member or shareholder agreements or similar agreements) over major business decisions of CONTRACTOR, provided that if such minority veto or voting rights are provided by shareholder or similar agreements, SCDOT has received copies of such agreements.

XXVI. GENERAL PROVISIONS

1. This Agreement shall be governed by and interpreted in accordance with the substantive laws of the State of South Carolina.
2. Headings and titles of the various parts of this Agreement are for convenience of reference only and shall not be considered in interpreting the text of this Agreement. Modifications or amendments to this Agreement must be in writing and executed by duly authorized representatives of each party.
3. In the event that any portion or all of this Agreement is held to be void or unenforceable, the parties agree to negotiate in good faith to reach an equitable agreement which shall affect the intent of the parties as set forth in this Agreement. For purposes of construction of this Agreement, this Agreement will be considered to have been drafted by both parties and will not be construed against SCDOT because it was drafted by SCDOT.
4. All notices pertaining to this Agreement shall be in writing and, if to SCDOT, will be sufficient when sent registered or certified mail to SCDOT addressed as follows:

Deputy Secretary for Engineering
South Carolina Department of Transportation
Post Office Box 191
Columbia, South Carolina 29202-0191

All notices to CONTRACTOR shall be sufficient when sent registered or certified mail to CONTRACTOR addressed as follows:

6409 Brookshire Blvd.
Charlotte, NC 28216

5. The Contract Documents set forth the full and complete understanding of the parties as of the Effective Date defined herein, and supersedes any and all prior agreements, representations, and understandings of any kind.
6. The parties make no representations, covenants, warranties or guarantees, express or implied, other than those expressly set forth herein. The parties' rights, liabilities, responsibilities and remedies within respect to the work shall be exclusively those expressly set forth in this Agreement.
7. In no event shall any failure by either party hereto to fully enforce any provision to this Agreement be construed as a waiver by such party of its right to subsequently enforce, assert or rely upon such provision.
8. Nothing in this Agreement is intended to create any contract rights for any party other than SCDOT and CONTRACTOR, nor are any third-party beneficiary rights intended to be created hereby.

9. All obligations of SCDOT hereunder are subject to all applicable law and appropriations by the South Carolina General Assembly. The obligation of SCDOT to make any payments under this Agreement does not constitute an indebtedness of the State of South Carolina within the meaning or application of any constitutional provision or limitation and does not constitute a pledge of the faith, credit or taxing power of the State of South Carolina or any political subdivision thereof within the meaning or application of any constitutional provision or limitation.
10. CONTRACTOR is an independent contractor, and nothing contained in this Contract shall be construed as constituting any relationship with SCDOT other than that of independent contractor. In no event shall the relationship between SCDOT and CONTRACTOR be construed as creating any relationship whatsoever between SCDOT and CONTRACTOR's employees, suppliers, or other contractors. Neither CONTRACTOR nor any of the employees, suppliers, or contractors of CONTRACTOR or any of CONTRACTOR's affiliates is or shall be deemed to be an employee of SCDOT. Except as otherwise expressly stated or implied in law or under any governmental approval or permit, CONTRACTOR has sole authority and responsibility to employ, discharge, and otherwise control its employees and has complete and sole responsibility as a principal for its agents, for all suppliers, subcontractors, and for all other persons or entities that CONTRACTOR or any supplier or subcontractor hires to perform or assist in performing the work under this Contract.
11. This Contract shall be binding on and inure to the benefit of SCDOT and CONTRACTOR and each of their successors, permitted assigns, and legal representatives.
12. CONTRACTOR's and SCDOT's representations and warranties, if any, the dispute resolution provisions, the indemnifications, the express obligations of the parties following termination, and all other provisions which by their inherent character should survive expiration or earlier termination of this Contract and/or Final Completion shall survive the expiration or earlier termination of this Contract and/or the Final Completion of the Project.
13. Persons employed by, or contracted to, SCDOT in connection with this Contract are acting solely as agents and representatives of SCDOT when carrying out the provisions of, or exercising the power or authority granted to them under, this Contract. They shall not be liable either personally or as employees of or contractors to SCDOT for actions in their ordinary course of employment or performance of contracted services.
14. It is understood and agreed by the parties hereto that if any part, term, or provision of this Contract is by the courts held to be illegal or in conflict with any law of the State of South Carolina, the validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term, or provisions to be invalid.

Bridge Package 32
Bamberg, Calhoun, and Orangeburg Counties

15. The language in all parts of the Contract shall in all cases be construed simply, as a whole and in accordance with its fair meaning and not strictly for or against any party. In the event of an ambiguity in or dispute regarding the interpretation of the Contract, the Contract shall not be interpreted or construed against the party preparing it, and instead other rules of interpretation and construction shall be utilized.
16. This instrument may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.


IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the Effective Date defined herein. The Effective Date is defined as the date signed by the Director of Construction on behalf of South Carolina Department of Transportation.

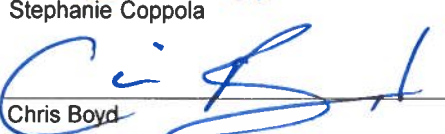
Witnesses:


Stephanie Coppola

Date: 4/16/2025

Witnesses:


Stephanie Coppola


Chris Boyd

SOUTH CAROLINA DEPARTMENT
OF TRANSPORTATION

By: 
Chris J. Gaskins, P.E.,
Director of Alternative Delivery

Recommended:


Travis Driggers
Contract Administrator

CONTRACTOR


George F. Ellis
Crowder Construction Company

By: George F Ellis

Its: Executive Vice President

CERTIFICATION OF CONTRACTOR

I hereby certify that I am the duly authorized representative of CONTRACTOR and that neither I nor the above CONTRACTOR I here represent has:

1. employed or retained for a commission, percentage, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above CONTRACTOR) to solicit or secure this contract;
2. agreed, as an express or implied condition for obtaining this contract, to employ or retain the services of any firm or person in connection with carrying out the contract, or
3. paid, or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above CONTRACTOR) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out the contract except as here expressly stated (if any);
4. either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted proposal.

By execution of this Agreement, CONTRACTOR certifies CONTRACTOR and all CONTRACTOR's consultants, sub-consultants, contractors, employees and agents will comply with South Carolina's Ethics, Government Accountability, and Campaign Reform Act of 1991, as amended. The following statutes require special attention: (a) Offering, giving, soliciting, or receiving anything of value to influence action of public employee - §8-13-790, 8-13-705, 8-13-720; (b) Recovery of kickbacks - §8-13-790, (c) Offering, soliciting or recovering money for advice or assistance of public official - §8-13-720, (d) Use or disclosure of confidential information - §8-13-725, (e) Persons hired to assist in the preparation of specifications or evaluation of bids - §8-13-1150, (f) Solicitation of state employees - §8-13-755, 8-13-760 and §8-13-725, (g) False Claims Act - §16-13-240. The state may rescind any contract and recover all amounts expended as a result of any action taken in violation of this provision.

I acknowledge that this certificate is to be furnished to the Department, the Federal Highway Administration, and the U. S. Department of Transportation, and is subject to applicable State and Federal laws, both criminal and civil.

I acknowledge that giving false, misleading, or incomplete information on this certification may subject me to prosecution under Section 16-9-10 of the South Carolina Code of Laws.

CONTRACTOR


Crowder Construction Company

By: George F Ellis

Date: 4/14/2025

Its: Executive Vice President

CERTIFICATION OF DEPARTMENT

I hereby certify that I am the Director of Alternative Delivery for the South Carolina Department of Transportation (SCDOT) of the State of South Carolina and that the above CONTRACTOR or its representative has not been required, directly or indirectly, as an express or implied condition in connection with obtaining or carrying out this agreement to:

1. employ or retain, or agree to employ or retain, any firm or person, or
2. pay, or agree to pay, to any firm, person, or organization, any fee, contributions, donations, or consideration of any kind, except as here expressly stated (if any).

I acknowledge that this certificate is to be furnished to the Federal Highway Administration, and U. S. Department of Transportation, and is subject to applicable State and Federal laws, both criminal and civil.

SOUTH CAROLINA DEPARTMENT OF
TRANSPORTATION

BY:



TITLE: DIRECTOR OF ALTERNATIVE DELIVERY

Date:

4/16/25

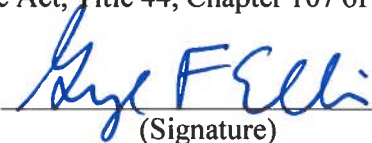
DRUG-FREE WORKPLACE CERTIFICATION

In accordance with Section 44-107-30, South Carolina Code of Laws (1976), as amended, and as a condition precedent to the execution of this agreement, the undersigned, who is an authorized representative of the CONTRACTOR certifies on behalf of the CONTRACTOR that the PROPOSER will provide a drug-free workplace by:

- (1) publishing a statement notifying employees that the unlawful manufacture, distribution, dispensations, possession, or use of a controlled substance is prohibited in the CONTRACTOR's workplace and specifying the actions that will be taken against employees for violations of the prohibition;
- (2) establishing a drug-free awareness program to inform employees about:
 - (a) the dangers of drug abuse in a workplace;
 - (b) the person's policy of maintaining a drug-free workplace;
 - (c) any available drug counseling, rehabilitation, and employee assistance programs; and
 - (d) the penalties that may be imposed upon employees for drug violations;
- (3) making it a requirement that each employee to be engaged in the performance of the agreement be given a copy of the statement required by item (1);
- (4) notifying the employee in the statement required by item (1) that, as a condition of employment of this agreement, the employee will:
 - (a) abide by the terms of the statement; and
 - (b) notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after the conviction;
- (5) notifying the South Carolina Department of Transportation within ten days after receiving notice under item (4)(b) from an employee or otherwise receiving actual notice of the conviction;
- (6) imposing a sanction on, or requiring the satisfactory participation in a drug abuse assistance or rehabilitation program by, any employee convicted as required in Section 44-107-50; and
- (7) making a good faith effort to continue to maintain a drug-free workplace through implementation of items (1), (2), (3), (4), (5), and (6)

By execution of this Agreement CONTRACTOR certifies CONTRACTOR and all CONTRACTOR's consultants, sub-consultants, contractors, employees and agents will comply with all applicable provisions of the Drug-Free Workplace Act, Title 44, Chapter 107 of the South Carolina Code of Laws, as amended.

CONTRACTOR:


(Signature)

COMMISSIONER EMPLOYEE INTEREST CERTIFICATION

As a condition precedent to the execution of this Agreement, the undersigned, who is an authorized representative of the CONTRACTOR/CONSULTANT certifies on behalf of the CONTRACTOR/CONSULTANT, that during the procurement and award of this Agreement, and as an ongoing obligation under this Agreement until the end of the contract period, CONTRACTOR/CONSULTANT represents and agrees to comply with the following provisions:

1. In accordance Section 23 of Act 40 of 2017 (now codified as Section 57-1-350(G) of the Code of Laws of South Carolina 1976, as amended):
 - a) No member of the SCDOT Commission has an interest, direct or indirect, in the proposal or bid submitted to SCDOT for this Project, during the member's term of appointment and for one year after the termination of the appointment.
 - b) No member of the SCDOT Commission will have an interest, direct or indirect, in any contract, franchise, privilege, or other benefit granted or awarded by the Department relating in any way to this Project (through subcontractors, consultants, vendor, or suppliers) during the member's term of appointment and for one year after the termination of the appointment.
2. In accordance with SCDOT Departmental Directive 45(a) regarding Post-employment Restrictions on Qualification-Based Procurements dated August 13, 2015 and amended June 2, 2017:

No current or former employee, who served in a management level position or above, may work on or invoice for services performed on this Project within 365 days after their last day of employment with SCDOT. For the purposes of this bright line rule, "management level position" is defined as any SCDOT Pay Band 7 and above position, which includes, but is not limited to, Directors, Assistant Directors, District Engineering Administrators, District-level Engineers, Program Managers, Assistant Program Managers and Resident-level Engineers.

CONTRACTOR/CONSULTANT hereby certifies that it and all of its consultants, sub-consultants, contractors, vendors, suppliers, employees and agents will comply with the above provisions.

CONTRACTOR/CONSULTANT

By:

(Signature)

Print Name: George F Ellis

Date: 4/14/2025

Its: Executive Vice President

PROJECT INFORMATION PACKAGE ACKNOWLEDGMENT FORM

ACKNOWLEDGMENT

NO RIGHT TO RELY ON PROJECT INFORMATION PACKAGE

The undersigned Proposer hereby agrees that it did not rely on the contents, accuracy, thoroughness, and completeness of the Project Information Package (PIP) as part of its response to the Request for Proposals (RFP) process. The information—defined as broadly as possible—contained within the PIP was provided by or on behalf of SCDOT for informational purposes equally to prospective proposers. The undersigned Proposer acknowledges that the information gathered and provided as the PIP is preliminary only and not intended by SCDOT, its officers, employees, consultants, agents, heirs, and assigns to be comprehensive.

Proposer is hereby informed that SCDOT compiled the information contained within the PIP for the purposes of obtaining all necessary permits, to ascertain feasibility, to estimate project duration and/or cost, and other such determinations as SCDOT deemed necessary in determining whether to pursue this Project. Proposer agrees that SCDOT has specifically disclaimed the accuracy and completeness of the information in the PIP from whatever source it is derived or compiled. SCDOT has made no representations, covenants, warranties or guarantees, either express or implied, regarding the accuracy and completeness of the information contained within the PIP.

Proposer also acknowledges and agrees that the information contained in the PIP is of such a preliminary character that is unreasonable to use for technical, engineering, or scientific decisions relating to, necessary to make, or contained within a proposal including, but not limited to, designs, quantities of materials to be excavated, engineering decisions, material quantities required, etc. Proposer agrees that it is its responsibility to conduct an independent investigation of the facts and circumstances necessary to submit a proposal. Proposer admits that, if it has relied on the information contained within the PIP, it has been specifically advised against doing so and relies upon the PIP at its own risk. The Proposer accepts that there is a substantial possibility that there are potential risks not discovered by the preparers of the PIP. Proposer specifically and intentionally waives reliance upon the thoroughness and comprehensiveness of the PIP, and shall hold harmless SCDOT, its officers, employees, consultants, agents, heirs, and assigns.

Proposer agrees this acknowledgment is an essential and material part of its Proposal and Contract with SCDOT. Proposer has had the advice of learned counsel or the opportunity to consult with said counsel prior to the execution of this acknowledgment.

I acknowledge that giving false, misleading or incomplete information on this certification may subject me to prosecution under the laws of the United States of America and/or the State of South Carolina.

PROPOSER
Name of Proposer: George F Ellis
Authorized Representative George F Ellis
Its: Executive Vice President

SWORN to before me this

14th day of April 2025

(S) [Signature]

Notary Public for the State of North Carolina

My Commission Expires: 4/24/2029



EXHIBIT 1

COST PROPOSAL BID FORM

10. COST PROPOSAL BID FORM

Bridge Package 32
Bamberg, Calhoun, and Orangeburg Counties

CONTRACTOR: Crowder Construction Company

ADDRESS: 6409 Brookshire Blvd. Charlotte, NC 28216

Provide full Project scope as described in Attachment A.

COST TO COMPLETE S-5-458 (A) = \$2,430,000.00

COST TO COMPLETE S-9-22 (B) = \$3,761,000.00

COST TO COMPLETE S-38-39 (C) = \$2,780,000.00

COST TO COMPLETE S-38-191 (D) = \$2,446,000.00

COST TO COMPLETE S-38-634 (E) = \$1,892,000.00

COST TO COMPLETE S-38-1210 (F) = \$1,924,000.00

TOTAL COST TO COMPLETE (A+B+C+D+E+F) = \$15,233,000.00

No conditional Bids will be accepted and will be deemed non-responsive.

George F. Ellis
Signature

March 18, 2025
Date

George F. Ellis - Executive Vice President
Printed Name

EXHIBIT 2

SCHEDULE OF VALUES



Contract Schedule

Contract ID: 5772040

Project(s): P044267, P044268, P044269, P044270, P044271, P044315

Awarded Vendor: 1CR007

CROWDER CONSTRUCTION COMPANY

SECTION 1 5772040 Road \$9,583,000.00
Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0010	9210301 PROJECT MOBILIZATION	761,650.000 DOL	1.00000		761,650.00	
0020	9210303 BONDS / INSURANCE	456,990.000 DOL	1.00000		456,990.00	
0030	9210601 QUALITY CONTROL FOR DESIGN/BUILD PROJECTS	878,000.000 DOL	1.00000		878,000.00	
0040	9211101 DESIGN & ENGINEERING FOR DESIGN/BUILD PROJECT DESIGN & ENGINEERING FOR DESIGN / BUILD	2,950,330.000 DOL	1.00000		2,950,330.00	
0050	9220102 CLEARING AND GRUBBING	1,031,430.000 DOL	1.00000		1,031,430.00	
0060	9220301 GRADING & DRAINAGE	788,000.000 DOL	1.00000		788,000.00	
0070	9220306 EARTHWORK	489,600.000 DOL	1.00000		489,600.00	
0080	9240300 ASPHALT PAVING	1,536,000.000 DOL	1.00000		1,536,000.00	
0090	9262701 PAVEMENT MARK. & DELINEATION	691,000.000 DOL	1.00000		691,000.00	



Contract Schedule

Contract ID: 5772040

Project(s): P044267, P044268, P044269, P044270, P044271,
P044315

Awarded Vendor: 1CR007

CROWDER CONSTRUCTION COMPANY

SECTION 2 5772040 Bridge \$5,650,000.00
Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0100	9251100 BRIDGE FOUNDATIONS	1,437,000.000 DOL	1.00000		1,437,000.00	
0110	9270130 BRIDGE DEMOLITION	801,000.000 DOL	1.00000		801,000.00	
0120	9270201 BRIDGE SUBSTRUCTURE FOR DESIGN BUILD PROJECT 001	961,000.000 DOL	1.00000		961,000.00	
0130	9270251 BRIDGE SUPERSTRUCTURE FOR DESIGN BUILD PROJECT 002	2,451,000.000 DOL	1.00000		2,451,000.00	

Total Bid: \$15,233,000.00

EXHIBIT 3

SCOPE OF WORK

EXHIBIT 3 – SCOPE OF WORK

The project consists of all work necessary to complete the design and construction of replacement of one existing bridge culvert in Calhoun County, two existing bridge culverts and two pipe culverts in Orangeburg County and one existing pipe culvert in Bamberg County with new bridges or culverts. SCDOT requires bridges be constructed for the standard criteria sites but allows for a culvert at the S-1210 site which qualifies for the use of Low Volume Bridge Criteria (LVBC). All other LVBC sites require bridges. SCDOT intends for the routes to remain closed or to be closed and detoured until completion of construction. Refer to the RFP Agreement regarding the Completion dates. Work also includes removal and disposal of the existing culverts, reconstruction of approach roadways and embankments and associated transportation features.

The bridge/culvert replacements and associated roadway tie-ins shall be constructed as close as practical to the existing roadway alignment on the existing centerline. Alignment shifts are acceptable where geometric design improvements are necessary to meet design criteria or to allow for construction by avoiding existing site constraints. The work also includes repairing any deficient roadway embankments within the roadway approach limits of each bridge/culvert.

Number	Route	Crossing	County	Asset Number
1	S-9-22	Caw Caw Creek	Calhoun	670
2	S-38-39	Cooper Swamp	Orangeburg	62
3	S-38-191	Roberts Swamp	Orangeburg	963
4	S-38-634	Cooper Swamp	Orangeburg	N/A
5	S-38-1210	Tampa Creek	Orangeburg	N/A
6	S-5-458	Indian Camp Branch	Bamberg	N/A

SCDOT values:

- Efficient and safe bridge/culvert construction to reopen roadway to traffic
- Reduction of impacts to the traveling public
- Minimization to utility impacts
- Quality plans production and efficient and effective submittal schedules
- Quality construction to produce a durable and easily maintainable facility

The Contractor shall coordinate with all utility companies if their proposed design or construction requires the relocation of utilities either due to a physical conflict with the proposed work or due to crane safety clearances. The contractor shall provide utility coordination in accordance with the requirements of the Agreement for all project locations.

Work also includes debris removal at the sites within the limits of SCDOT right-of-way.

For a full understanding of the project scope and the criteria of the construction items needed for this project, review Exhibit 4, Exhibit 5, Exhibit 6, Exhibit 7, and Attachment B.

EXHIBIT 4

PROJECT DESIGN CRITERIA

EXHIBIT 4 – PROJECT DESIGN CRITERIA

This exhibit details the criteria by which the project shall be designed and constructed. It is the responsibility of the Engineer to get clarification from the Department if a question arises from the use of the below exhibits. These criteria are divided into subsections as listed below:

Exhibit 4a – Roadway Design Criteria

Exhibit 4b – Structures Design Criteria

Exhibit 4c – Pavement Design Criteria

Exhibit 4d – Traffic Design Criteria

Part 1. Signing and Pavement Marking

Part 2. Work Zone Traffic Control

Exhibit 4e – Hydraulic Design Criteria

Exhibit 4f – Geotechnical Design Criteria

Exhibit 4z – Project Deliverables

DESIGN REFERENCES

This exhibit describes the general design considerations and criteria for the proposed roadway approaches, hydraulics, structures, and surveys.

Design standards shall be in accordance with the following design references as supplemented or amended by Sections 4a, 4b, 4c, 4d, 4e, 4f and 4z of this Exhibit. Any variation in design from the included information shall require written approval from SCDOT.

- AASHTO A Policy on Design Standards Interstate System, 2016
- AASHTO An Informational Guide On Fencing Controlled Access Highways, 1990
- AASHTO Drainage Manual, 2014 first edition
- AASHTO Drainage Manual, Appendix 17A
- AASHTO Guide for the Development of Bicycle Facilities, 2012
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2nd Edition
- AASHTO Highway Drainage Guidelines, 2007
- AASHTO LRFD Bridge Design Specifications, 9th Edition
- AASHTO LRFD Bridge Construction Specifications, 2017, Fourth Edition
- AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2015 Interim
- AASHTO LRFD Bridge Design Guide Specifications for GFRP-Reinforced Concrete, 2018, 2nd Edition
- AASHTO Guide Specifications for Analysis and Identification of Fracture Critical Members and System Redundant Members, 1st Edition with 2022 Interim
- AASHTO Guide Specifications for Bridges Vulnerable to Coastal Storms, 2008 Edition
- AASHTO Guide Specification for Service Life Design of Highway Bridges, 2020, 1st Edition
- AASHTO Manual for Assessing Safety Hardware (MASH)
- AASHTO Manual for Bridge Evaluation, latest edition
- AASHTO Roadside Design Guide, 2011, 4th Edition
- AASHTO Roadway Lighting Design Guide, latest edition
- AASHTO Standard Specifications for Highway Bridges, 17th Edition
- AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, latest edition
- AASHTO Highway Safety Manual
- AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest edition (Only for Standard 35' Luminaire Poles and High Mast Luminaire Poles)
- AASHTO/AWS D1.5/D1.5M: 2020 Bridge Welding Code, 8th Edition
- AASHTO/AWS D1.1/D1.1M: 2020 Structural Welding Code – Steel, 24th Edition
- AASHTO/AWS D1.4/D1.4M: 2018 Structural Welding Code – Reinforcing Steel, 8th Edition
- AASHTO “Standard Specifications for Transportation Materials and Methods of Sampling and Testing” 2013 Thirty-Third Edition
- ACI 318 Building Code and Commentary
- ASCE’s “Minimum Design Loads for Buildings and Other Structures”, latest edition

EXHIBIT 4 – PROJECT DESIGN CRITERIA

- ANSI C2 National Electrical Safety Code, latest edition
- FEMA Regulations, 44CFR Chapter 1
- FHWA Manual on Uniform Traffic Control Devices, Latest edition
- FHWA Report No. FHWA-SA-14-067 Diverging Diamond Interchange Informational Guide
- NCHRP Report 672, Roundabouts: An Informational Guide – Second Edition
- NFAP-70 National Electrical Code, latest edition
- International Building Code, latest edition
- PCI Bridge Design Manual, 4th Edition
- PCI CB-02-16: Recommended Practice for Lateral Stability of Precast, Prestressed Concrete Bridge Girders
- PCI CB-04-20: User Manual for Calculating Lateral Stability of Precast, Prestressed Concrete Bridge Girders
- SCDHEC NPDES Construction Permit # SCR160000
- SCDHEC NPDES MS4 Permit # SCS040001
- SCDOT Access and Roadside Management Standards, August 2008 with updates
- SCDOT Americans with Disabilities Act Transition Plan, December 2014 with updates
- SCDOT Bridge Design Manual, 2006
- SCDOT Bridge Design Memoranda, effective between July 1, 2006 and the Final RFP release date
- SCDOT Bridge Inspection Guidance Document, 2020
- SCDOT Engineering Directives, effective as of the Final RFP release date
- SCDOT Environmental Reference Document, 2008
- SCDOT Geotechnical Design Manual, 2022 Edition
- SCDOT Geotechnical Design Bulletins, effective as of the Final RFP release date
- SCDOT Geotechnical Drawings and Details, effective as of the Final RFP release date
- SCDOT Hydraulic Design Bulletins
- SCDOT Load Rating Guidance Document, 2019, including latest Technical Notes
- SCDOT Pavement Design Guidelines, July 2008 Edition
- SCDOT Preconstruction Advisory Memorandums, effective as of the Final RFP release date
- SCDOT Preconstruction Design Memorandum, effective as of the Final RFP release date
- SCDOT Preconstruction Survey Manual, effective as of the Final RFP release date
- SCDOT Procedures and Guidelines for Work Zone Traffic Control Design, effective as of the Final RFP release date
- SCDOT Qualified Product Lists, effective as of the Final RFP release date
- SCDOT Requirements for Hydraulic Design Studies, May 2009
- SCDOT Road Design Reference Material for Consultant Prepared Plans, June 2010
- SCDOT Roadway Design Manual, 2021, with updates effective as of the Final RFP release date and supplemented with AASHTO A Policy on Geometric Design of Highways and Streets, 2018
- SCDOT Roadside Plants to Avoid/Trees with Limitations on R/W, October 2014
- SCDOT Roadway CADD Manual, effective as of the Final RFP release date
- SCDOT Seismic Design Specifications for Highway Bridges, 2008 (Version 2.0)
- SCDOT Standard Drawings, effective as of the Final RFP release date
- SCDOT Standard Specifications for Highway Construction, 2025

EXHIBIT 4 – PROJECT DESIGN CRITERIA

- SCDOT Stormwater Quality Design Manual, effective as of the Final RFP release date;
- SCDOT Structural Drawings and Details, including Instructional Memoranda, effective as of the Final RFP release date;
- SCDOT Supplement to the MUTCD
- SCDOT Supplemental Specifications (2025), effective as of the Final RFP release date
- SCDOT Supplemental Technical Specifications, effective as of the Final RFP release date
- SCDOT Supplemental Specifications for Roadway Lighting dated December 6, 2018
- SCDOT Traffic Signal Design Guidelines, 2021 Edition
- SCDOT Traffic Signal Material Specifications, effective as of the Final RFP release date
- SCDOT Traffic Signal Supplemental Specifications, effective as of the Final RFP release date
- SCDOT Street Trees and Sidewalk Planting Suggestions, May 2013
- SCDOT Vegetation Management Guidelines, effective as of the Final RFP release date
- South Carolina State Water Law
- The Rule on Work Zone Safety and Mobility, Policy and Guidelines
- The State Stormwater and Sediment and Erosion Control Regulations administered by DHEC, 26 S.C. Code Ann. Regs. 72-405 (Supp. 1995) et seq.
- TRB Highway Capacity Manual, 6th Edition
- TRB Highway Capacity Manual, 2010
- United States Access Board's Revised Draft Guidelines for Accessible Public Rights-of-Way (PROWAG), November 23, 2005

EXHIBIT 4a

ROADWAY DESIGN CRITERIA

1. GENERAL

Prepare the roadway geometric design for the project using the design standards and criteria that are appropriate based on design speed, functional classification, design traffic volumes, right-of-way, and aesthetics. The design elements shall include, but not be limited to, the horizontal and vertical alignments, lane widths, shoulder widths, sight distance, clear zone, cross slopes, and side slopes.

2. CRITERIA

Classify the terrain as rolling on all routes within the scope of work.

2.1 Functional Classification

- | | |
|-----------------------|-------------------------|
| • S-22 (Calhoun) | Rural – Major Collector |
| • S-39 (Orangeburg) | Rural – Major Collector |
| • S-191 (Orangeburg) | Rural Local – Group 4 |
| • S-634 (Orangeburg) | Rural Local – Group 4 |
| • S-1210 (Orangeburg) | Rural Local – Group 4 |
| • S-458 (Bamberg) | Rural Local – Group 4 |

*Bridge sites for S-191, S-634, S-1210, and S-458 meet the criteria for Low Volume Bridge Replacement.

2.2 Design Speed

- | | |
|-----------------------|--------|
| • S-22 (Calhoun) | 50 mph |
| • S-39 (Orangeburg) | 60 mph |
| • S-191 (Orangeburg) | 35 mph |
| • S-634 (Orangeburg) | 35 mph |
| • S-1210 (Orangeburg) | 35 mph |
| • S-458 (Bamberg) | 35 mph |

2.3 Lane Width

- | | |
|--------------------------------------|---------------------|
| • S-22 (Calhoun) & S-39 (Orangeburg) | 11 ft. traveled way |
| • All other sites | 10 ft. traveled way |

2.4 Shoulder Width

- | | |
|---------------------|-----------------------------|
| • S-22 (Calhoun) | 8 feet total (2 feet paved) |
| • S-39 (Orangeburg) | 6 feet total (2 feet paved) |
| • All other sites | 4 feet total (2 feet paved) |

2.5 Horizontal Alignment

Develop horizontal curves in compliance with SCDOT Roadway Design Manual.

Retain existing if horizontal radius is within 15 mph of design speed for low volume bridge replacement sites. Retain existing survey centerline for all bridge sites, if feasible for construction.

2.6 Vertical Alignment

Develop vertical curves, grades, and clearances in compliance with SCDOT Roadway Design Manual and the PCDM-11. For the low volume bridge replacement sites, if the existing K value is within 15 mph of the design speed retain or improve the K value. If the existing K value is not within 15 mph of the design speed, use a K value that is within 15 mph of the design speed. In no case shall a K value be less than the existing, except when the existing K value exceeds the design speed (not the 15 mph allowable range) minimum requirements.

All vertical curves shall meet the minimum length of three times the design speed ($L=3V$).

Maximum Grades – Retain existing or flatter

Minimum Grades – 0.3%

Do not use spline grades.

Grade adjusted K values for downgrades of 3 percent or greater are not required for all of the bridge sites.

2.7 Side Slopes

Develop side slopes in compliance with SCDOT Roadway Design Manual.

2.8 Cross Slopes/Superelevation

Develop cross slopes in compliance with SCDOT Highway Design Manual.

- Shoulder (paved) 4 ft. or less Match travel way pavement slope

For low volume bridge replacement sites, see PCDM-11 for guidance.

2.9 Clear Zones

Use the SCDOT Roadway Design Manual and the AASHTO *Roadside Design Guide*, 2011, 4th Edition. When a range of values is shown, select higher value. SCDOT does not typically use a 3H:1V fill slope. Use 3H:1V fill slopes only where fill heights are required to match existing conditions and clear zone can be obtained within the Project limits. See the AASHTO *Roadside Design Guide*, 2011, 4th Edition for clear zone calculations where a 3H:1V fill slope is used.

Provide MASH compliant guardrail and/or barrier on all approaching quadrants of each bridge. Provide MASH compliant guardrail and/or barrier on all trailing end quadrants of each bridge. Provide MASH compliant leading end treatments (MT2 or MT3) in all

locations where guardrail is terminated. Pre-MASH guardrail will be allowed where deemed necessary for driveway/parcel access, SCDOT approval is required before implementation.

For those areas where no guardrail currently exists, design fill and cut slopes to obtain clear zones and to avoid the need for protection. Where achieving the clear zone requirements results in new right-of-way, wetland impacts, or impacts to immovable obstructions, protect substandard areas contingent upon receiving SCDOT advanced approval.

Where existing fill and cut slopes are presently protected by guardrail and no rigid barrier is proposed, replace damaged and/or substandard guardrail and extend/install new guardrail at locations that do not meet current standard. Also, clear and grind in accordance with SCDOT Engineering Directive (ED) 29.

2.10 Roadside Barriers

Develop roadside barriers in compliance with SCDOT Standard Drawings and the AASHTO Roadside Design Guide, 2011, 4th Edition. Include the following items in the work:

Guardrail: Ensure that all new MASH guardrail and end treatments are listed on the Qualified Products Policies & Listings.

Provide non-mow strip under guardrail in accordance with the guidance found in Attachment B and Exhibit 5, Special Provisions Section 805. Non-mow strips shall be constructed of asphalt.

Use additional length guardrail posts with compressed guardrail shoulder break only where right of way or environmental impacts dictate that standard guardrail shoulder break cannot be built. Slopes shall be designed to meet Exhibit 4f criteria regardless of the standard drawing allowable slopes.

2.11 Right-Of-Way

For bridge sites that currently have a complete 75 feet right-of-way width on each side of the structure and where the length of 75 foot wide right-of-way is at least 45 feet from each end of the proposed bridge, no additional right-of-way is necessary unless the design and construction results in permanent facilities extending outside of the existing right-of-way.

For bridge sites that do not currently have a complete 75 feet right-of-way width on each side of the structure or where the length of 75 foot wide right-of-way is not present at least 45 feet from each end of the proposed bridge, provide a minimum right-of-way width of 75 feet on each side of the structure centerline a minimum of 75 feet from each end of the bridge; refer to SCDOT Roadway Design Manual Chapter 12 Section 12.1.14. Provide right-of-way described within this paragraph regardless of whether the design requires this right-of-way or not.

Provide sufficient right-of-way to cover all permanent facilities. Permanent facilities is defined as area between construction limits left and right.

Clear and grub the entirety of the right-of-way that can be accessed without crossing a wet

stream, creek, or tributary, with the exception of grubbing in wetlands. Contractor shall clear but not grub in the wetlands. Clearing and grubbing is not required for right-of-way that must be accessed by crossing a wet stream, creek, or tributary. When the NPDES line is outside of the construction limits extend grubbing operations within the limits of the BMPs.

2.12 Sight Distance

Develop sight distance in compliance with SCDOT Roadway Design Manual.

Retain existing if value is within 15 mph of design speed for low volume bridge replacement

2.13 Bicycle and Pedestrian

Additional bicycle/pedestrian accommodations are not required as part of this project.

EXHIBIT 4b

STRUCTURES DESIGN CRITERIA

1. GENERAL

Exhibit 4b contains requirements for:

- The replacement of existing bridges as denoted in the Scope of Work

Refer to Attachment B for additional Structures Design Criteria, including box culvert design criteria.

2. CRITERIA

2.1 New Highway Bridges

2.1.1 Bridge Design

Design all new bridges in accordance with the requirements of the AASHTO LRFD Bridge Design Specifications, 9th edition. Use the HL-93 design live loading and all vehicles as required by SCDOT Load Rating Guidance Document (LRGD). See the “Bridge Load Rating” requirements in this exhibit.

2.1.2 Seismic Design and Detailing

For S-22 over Caw Caw Creek and S-39 over Cooper Swamp, the Operational Classification (OC) is “II” in accordance with the SCDOT Seismic Design Specifications (SDS) for Highway Bridges.

For S-22 over Caw Caw Creek, the Seismic Design Category (SDC) is “C” and a detailed seismic analysis is required. Submit seismic design summary reports in accordance with Exhibit 4z submittal requirements.

For S-39 over Cooper Swamp, a detailed seismic analysis and seismic design summary reports are not required. Seismic Design Category “A” is assigned to this site.

For all sites except S-22 over Caw Caw Creek and S-39 over Cooper Swamp, no OC is assigned in accordance with PCDM-11 and a detailed seismic analysis is not required. These bridges shall meet the seismic design and detailing requirements for Seismic Design Category (SDC) “A” defined in the SDS. Use $S_{D1-SEE} = 0.45g$ as the design seismic acceleration coefficient for all bridge sites in accordance with PCDM-11. Seismic design summary reports are not required.

2.1.3 Dimensions

Construct new bridges with roadway widths that are equal to or greater than the approach roadway widths (traveled way plus shoulders) that are specified in Exhibit 4a. For cored slab and box beam structures, use SCDOT Bridge Design Memorandum DM0120 and DM0524 for the minimum number of units in transverse layout and corresponding roadway width on the bridge. For cored slab

and box beam bridges used in conjunction with curving roadway geometry on a portion of the bridge, the bridge width shall be increased to meet minimum shoulder width requirements.

Refer to DM0424 and DM0524 for geometric limitations associated with cored slab and box beam bridges.

2.1.4 Removal and Disposal of Existing Bridges, Box Culverts, and Cross-Line Pipes

Remove and dispose of the existing structures and appurtenances, including non-attached piles and remnants from previous structures, in accordance with the SCDOT Standard Specifications.

2.1.5 Vertical Clearances

Provide vertical clearance in accordance with Exhibit 4e.

2.1.6 Span Arrangement and Skew

Provide a replacement bridge-sized to meet the hydraulic design criteria in Exhibit 4e, with the following exception. For S-1210 over Tampa Creek, a series of pipe culverts or a concrete box culvert is allowed instead of a bridge.

For S-22 over Caw Caw Creek, provide a flat slab bridge sized to meet the hydraulic design criteria in Exhibit 4e, utilizing the standard span lengths and continuous unit configurations available on the SCDOT Structural Drawing and Details website. For S-39 over Cooper Swamp, provide one of the allowable bridge type options listed below in “Superstructures”.

Refer to Attachment B for concrete box culvert design criteria and plan preparation requirements. Attachment B criteria for headwalls, wing walls, aprons, and cut-off walls also applies to pipe culvert(s), if used at S-1210 over Tampa Creek in lieu of a bridge.

Refer to design memo DM0424 and DM0524 for maximum skew angle on cored slab and box beam bridges.

All bents shall be parallel to each other.

2.1.7 Superstructures

For S-22 over Caw Caw Creek, the allowable structure type is flat slab, as outlined in Section 12.3.2.2 of the SCDOT Bridge Design Manual (BDM). Design and load rate flat slab superstructure in accordance with SCDOT Structural Drawings and Details for flat slabs and associated Instructional Memorandum IM702-FS.

For S-39 over Cooper Swamp, allowable structure types are outlined in Sections 12.3.2.1, 12.3.2.2, 12.3.2.3, 12.3.2.4, and 12.2.3.5 of the BDM as well as design memo DM0424 and DM0524. For the flat slab option, utilize the standard span lengths and continuous unit configurations available on the SCDOT Structural Drawings and Details website.

For all other bridges on this project other than S-22 and S-39, the allowable superstructure is adjacent cored slab or box beam spans with asphalt overlay, as outlined in Sections 12.3.2.5 of the BDM as well as design memo DM0424 and DM0524.

SCDOT Structural Drawings and Details for cored slab and box beam bridges are available in standard span lengths in 10-foot increments from 30-feet up to 100-feet. Do not deviate from the standard span lengths provided.

Design and load rate prestressed concrete cored slab and box beam bridges in accordance with the design criteria and assumptions outlined in the applicable SCDOT Structural Drawings and Details Instructional Memorandum (IM704 series).

Provide a smooth float finish to the tops of precast cored slab and box beam units.

Floorless culverts are classified as "Other Structure Types" (Section 12.3.3 of the BDM) and are not permitted for this project.

2.1.8 Concrete Strengths

In prestressed concrete piles and beams, concrete design strengths are not allowed to exceed 8,000 and 10,000 psi maximum, respectively. Utilize Class 4000 concrete in all cast-in-place concrete bridge components, with the following exception. Utilize Class 4000DS concrete in drilled shafts and drilled piles. All precast concrete bridge components shall have a minimum design strength of 5000 psi.

For bridge deck and flat-slab superstructure concrete, design the Class 4000 concrete mix to include between 20-25% Type F fly ash by mass of total cementitious material. High early strength mixes are prohibited. Limit the maximum cement content to 700 pounds per cubic yard.

2.1.9 Final Finish of Exposed Concrete Surfaces and Waterproofing

Final surface finish is not required on this project.

On cored slab and box beam bridges, prior to placement of the asphalt wearing surface, use a bridge deck waterproofing system in accordance with the systems and criteria in Attachment B.

2.1.10 Lightweight Concrete

Lightweight Concrete is not permitted on this project.

2.1.11 Post-Tensioning

Post-tensioning is not permitted for this project.

2.1.12 Bridge Decks

Apply a Grooved Surface Finish to all concrete bridge deck riding surfaces in accordance with SCDOT Standard Specifications.

Asphalt overlays are only permitted on cored slab and box beam spans. At expansion joint locations (bents with at least one bearing located designated as an expansion bearing) for cored slab and box beam bridges, provide the following joint seal in the overlay: Saw-cut the top of finished asphalt surface to dimensions ½" wide by 1½" deep, along the joint centerline for the full width of riding surface between barriers, and fill saw-cut with SCDOT approved cold applied elastic filler in accordance with manufacturer specifications.

2.1.13 Barriers

Provide bridge barrier parapets in accordance with the SCDOT Bridge Design Memo DM0119 and the SCDOT Bridge Drawings and Details for MASH Barrier. Provide two (2) conduits in each barrier as shown in the SCDOT Bridge Drawings and Details.

2.1.14 Bridge Drainage and Low Point

The minimum distance from a bridge end to the roadway profile low point shall be coordinated with concrete flume location shown on guardrail stiffness transition Standard Drawing 805-325-70. When the MTBBC3 (TL3) stiffness transition is used, the low point shall be located minimum of 30 feet beyond where guardrail attaches to rigid barrier. When the MTBBC2 (TL2) stiffness transition is used, the low point shall be located a minimum of 15 feet beyond where guardrail attaches to rigid barrier.

Provide a minimum of one (1) deck drain per span per gutterline, except where the gutterline is on the high side of superelevation. Provide additional drains if necessary to meet the allowable water spread requirements in BDM Figure 18.2-1.

Bridge end drainage shall consist of a single standard concrete flume at each corner receiving deck discharge. Limit flume bypass flow to 0.20 cubic feet per second. Include calculations showing discharge at each bridge inlet, flume, and bypass flow in the Final Hydraulic Report.

At bridge corners with flumes, provide shoulder paving triangles with 4:1 taper as shown on Standard Drawing 805-325-75. At bridge corners without flumes,

provide shoulder paving triangles with 4:1 taper to ensure the entire width of approach slab or end of bridge interfaces with pavement.

2.1.15 Pile Sizes and Types

Minimum pile sizes and acceptable pile types are listed in the following table. No other pile types are permitted.

Where the geotechnical report indicates an aggressive environment in accordance with Geotechnical Design Manual (GDM) Chapter 7, provide a H-pile size at end bents that is one size larger than the design size (i.e. if design calculations are run for HP14x73 piles, detail the plans for a HP14x89 section). Increase pipe pile thickness by 1/8" inch minimum.

PILE TYPE	MINIMUM SIZE
Steel H-Piles*	HP12x53
Steel Pipe Piles*	16" Diam. (min. wall thickness equal to 1/2")
Solid Prestressed Concrete Piles	18" Square
Prestressed Concrete Pile Points	W8x58

*Allowed at End Bents only

If drilled piles are used as the foundation type, see SCDOT Geotechnical Design Manual (GDM) section 16.5. When a steel H-pile is placed in a bored hole and not driven, the structural engineer shall design a load transfer mechanism from the steel section to the concrete encasement.

2.1.16 Steel Pipe Pile Connection Details

The pile connection detail described in Item 2 of Section 19.2.6.3 of the BDM does not apply for this project. Terminate steel pipe piles to provide a 2" minimum gap below the bottom of the bent cap or footing. Connect the piles to the cap and footing using a reinforced concrete infill, with the reinforcing extending into the cap or footing for a minimum anchorage length of 24 times the bar diameter. Extend the reinforced concrete infill inside the pipe pile, as a minimum depth, to the point where the moment demand is less than half of the maximum moment demand. The moment demand used for minimum infill depth must consider the effects of scour (when present). Additionally, extend the reinforced concrete infill below the bottom of liquefiable soil layers into competent soil. The minimum clearance of the reinforcement shall satisfy the requirement of SCDOT Design Memorandum DM0107.

2.1.17 Drilled Shafts

SCDOT Bridge Design Memorandum DM0111 contains a requirement to detail the portion of shaft below the construction casing with a diameter that is six inches smaller than the diameter of the casing. This six-inch reduction

requirement does not apply to this project. For this project, detail the portion of the shaft below the bottom of the construction casing, whether in soil or rock, with a diameter that is at least two inches smaller than the diameter of the casing.

When the design for the upper portion of a drilled shaft requires a column reinforcement cage to be inserted into a larger diameter drilled shaft reinforcement cage, provide a construction joint in the shaft just below the bottom of the column cage. Prior to casting the upper portion of the shaft, remove all drilling fluids and unsound concrete and roughen the surface of the construction joint. Arrange for CSL testing to be performed prior to placement of the column reinforcement cage. Install the column reinforcement cage in the upper portion of the shaft prior to drilled shaft concrete placement in the splice region.

2.1.18 Crosshole Sonic Logging (CSL) Testing

Design and detail all drilled shafts to include CSL access tubes in accordance with the SCDOT Standard Specifications.

2.1.19 Substructures

Design Interior Multi-Column Bents using cast-in-place reinforced concrete bent caps and columns supported on cast-in-place reinforced concrete drilled shafts.

Design Interior Pile Bents using cast-in-place reinforced concrete bent caps and a single row of vertical prestressed concrete piles (with or without prestressed concrete pile points). For corrosion protection of the pile, ensure concrete portions of piles with points extend a minimum of 2 feet below final ground line or predicted scour line, whichever is deeper. Do not use Interior Pile Bents to support an average span length that exceeds 75 feet, considering both adjacent span lengths.

Design end abutments as spill-through abutments with 2:1 slope. In addition to the requirements of Section 20.2.8 of the BDM, set the elevation of the berm so that the top of the berm (embankment fill) is no greater than 5 feet below the superstructure. Limit level-berm-length to 4 feet from the face of bent cap.

For this project where existing culverts are removed, establish new 2:1 abutment slopes such that the toe of slope, including riprap, does not encroach on the existing culvert limits (outside-to-outside).

The following applies to bent cap cantilevers (the distance from centerline of exterior pile to outside end of cap) for Interior Pile Bents and End Bents:

- For a cap supported by prestressed concrete piles, provide a minimum of the equivalent of 2 pile widths of distance from the centerline of the exterior pile to the end of the cap.

- Detail the centerline of exterior pile outside of the centerline of exterior beam/girder/cored slab (i.e. bearing points shall not be located on the bent cap cantilever).
- Provide a distance from the centerline of exterior pile to the edge of a flat slab, cored slab, or box beam superstructure, measured along the bent cap centerline, that is less than or equal to 30 percent of the average pile spacing of the bent.

The following applies to multi-column interior bents:

- The column spacing shall not exceed 30 feet center to center of columns.
- Provide a cantilever distance from the center of exterior column to the end of the bent cap that is less than or equal to 35 percent of the average column spacing of the bent.

2.1.20 Approach Slabs and Wing Walls

Provide approach slabs for all bridges on this project.

Provide parallel wing walls (wing walls that are parallel to the centerline of bridge or edge of approach slab) at all sites. Detail the bottom of the wing wall level and at the same elevation as the bottom of the bent cap. Detail the top inside face of each wing wall to match the elevations and grades along the outside edge of the approach slab.

2.1.21 Slope Protection

Provide rip rap at bridge ends in accordance with Standard Drawing 804-105-00, with the following exceptions.

Place riprap on all new spill-through slopes. Ensure riprap is keyed in 2-foot-minimum depth below toe-of-slope. At locations where the berm elevation is located below the design high water elevation, place riprap on top of the berm.

2.1.22 Bridge Plans

Provide bridge plans that comply with memo DM0724.

As required by the SCDOT Bridge Design Manual, include in the bridge plans Reinforcing Steel Schedules and Quantities Tables for each bridge component (end bents, interior bents, spans, etc.). When these components are required to be constructed in stages, break the Reinforcing Steel Schedules and Quantities Tables down by stage. Immediately following the title sheet, provide a quantities sheet that includes a tabulation of estimated quantities and a summary of estimated quantities.

2.2 Retaining Walls

Retaining Walls are not permitted for this project.

3. BRIDGE LOAD RATING

Perform load capacity ratings in accordance with the SCDOT Load Rating Guidance Document, associated Technical Notes on the SCDOT Bridge Maintenance website, and the Manual for Bridge Evaluation, latest edition.

Request a new bridge Asset ID prior to preliminary plan submittal in order to provide the new Asset ID on the first bridge plan set submitted for QA review.

In the event the load rating indicates the bridge would require load posting (any LRFR rating factors < 1.0), redesign the bridge and update the load until the required capacity is achieved. No new bridge will be accepted by SCDOT which indicates the need for load posting.

Submit Load Rating files for review with the final bridge plan submittal in accordance with Chapter 20 of the LRGD and Technical Note 09. The SCDOT Bridge Maintenance QA review process must be completed prior to releasing the final bridge plans for construction. Following construction, update the load rating and submit final load rating documentation and software files with the as-built plans. All load ratings shall be signed and sealed by a South Carolina registered professional engineer.

EXHIBIT 4c

PAVEMENT DESIGN CRITERIA

EXHIBIT 4c – PAVEMENT DESIGN CRITERIA

1.0 GENERAL

The design for pavement shall conform to the criteria listed in Section 2.0.

2.0 CRITERIA

2.1 Pavement Design

Where new Hot Mix Asphalt (HMA) pavement ties in with existing pavement at the project termini, perform full depth patching as directed by the RCE, variable mill as necessary to provide a smooth transition between existing and new HMA Surface. If profile differential between new and existing does not allow for a butt joint, tie in with HMA Surface over a minimum length of 100 feet or 25 feet per inch of grade differential or whichever is greater.

Tie down driveways with HMA matching mainline type to the back of the Right of Way or as directed by RCE. Tie down intersecting routes with HMA matching mainline type.

Remove or otherwise modify existing pavement in accordance with Section 205.4.5 of the standard specifications prior to placement of new embankment.

Use the following structure for the new construction and existing pavement respectively:

Route	New Construction	Existing Pavement
S-22 Calhoun	175 psy HMA Surface Type C 200 psy HMA Intermediate Type C 850 psy HMA Base Type A or 175 psy HMA Surface Type C 200 psy HMA Intermediate Type C 300 psy HMA Base Type A or Intermediate Type C 10 inches of Graded Aggregate Base	Full Depth Patch as recommended by the RCE Variable mill to tie in Overlay with the following: 175 psy HMA Surface Type C
S-39 Orangeburg	150 psy HMA Surface Type C or D 200 psy HMA Intermediate Type C 450 psy HMA Base Type B or 150 psy HMA Surface Type C or D 200 psy HMA Intermediate Type C 8 inches of Graded Aggregate Base	Full Depth Patch as recommended by the RCE Variable mill to tie in Overlay with the following: 150 psy HMA Surface Type C or D
S-191 Orangeburg	150 psy HMA Surface Type C or D 200 psy HMA Intermediate Type C 300 psy HMA Base Type B or 150 psy HMA Surface Type C or D 10 inches of Graded Aggregate Base	Full Depth Patch as recommended by the RCE Variable mill to tie in Overlay with the following: 150 psy HMA Surface Type C or D
S-458 Bamberg S-634 Orangeburg S-1210 Orangeburg	150 psy HMA Surface Type C or D 350 psy HMA Base Type B or 150 psy HMA Surface Type C or D 8 inches of Graded Aggregate Base	Full Depth Patch as recommended by the RCE Variable mill to tie in Overlay with the following: 150 psy HMA Surface Type C or D

2.2 Additional HMA Paving Notes

In areas where existing pavements are widened outside the travel lanes, use 600 psy of Shoulder Widening material and overlay with the Intermediate and Surface course at the rates specified for that road.

Where leveling, build-up or cross slope correction is required, use HMA Surface Type E for thicknesses 0 to 1.5 inches. Use Intermediate B for any greater thicknesses. Placement and selection of mixes shall be in accordance with Asphalt Mix Design Guidelines found here:

http://www.scdot.org/business/pdf/materials-research/Guidelines_Aspphalt_Mix_Selection.pdf

EXHIBIT 4d

TRAFFIC DESIGN CRITERIA

Part 1 – Signing and Pavement Markings

1. GENERAL PROVISIONS FOR PERMANENT PAVEMENT MARKINGS

Pavement marking work on this project consists of preparing detailed pavement marking plans and providing and applying appropriate markings for the length of the project. All edge lines, lane lines, channelization markings, stop bars and word messages and symbols shall be of the width and patterns detailed in the Standard Drawings. Route lane lines and edge lines shall be 4 inches in width with the exception of 8 inch channelization markings. The white edge lines may be 6 inches in width if sufficient shoulder width is present to allow for bicycle traffic. The final roadway surface material will determine which type of permanent marking material is to be applied. The CONTRACTOR shall use preformed tape (T-1) markings on all concrete bridge deck surfaces. Thermoplastic markings shall be used on all asphalt surfaces.

Permanent Raised Pavement Markers shall be used on this project in accordance with the publications outlined in Exhibit 4.

All work involved in this contract shall be in accordance with the publications outlined in Exhibit 4.

Pavement marking materials used shall meet the following requirements:

Thermoplastic Pavement Markings (Asphalt Surfaces): All thermoplastic markings installed shall meet the requirement of Section 627 of the Standard Specifications.

Preformed Patterned Tape (T-1) Pavement Markings (Concrete Surfaces): The markings applied to the concrete bridge decks on this project shall be pre-formed patterned tape with a raised diamond pattern covered with ceramic elements having a refractive index of 1.9 or greater. These markings shall be installed with a truck mounted application system or other motorized applicator approved by the manufacturer.

The CONTRACTOR shall provide to SCDOT the manufacturer's normal warranty which shall guarantee the tape materials for a period of 72 months from the date of installation from failure to retain the minimum reflectance values provided by the manufacturer and from failure due to loss of material adhesion or complete wear through. If failure occurs, the manufacturer will provide the replacement materials to restore the markings to their original effectiveness.

2. GENERAL PROVISIONS FOR PERMANENT SIGNING

Signing work on this project consists of preparing detailed signing plans; and fabricating, furnishing, and erecting new ground mounted guide, regulatory and warning signs. New signs shall be erected over the entire length of the project, including, at a minimum, stop signs on all intersecting routes. Existing signs, if applicable, shall be maintained during construction.

Development of the signing plans should be coordinated through the District Traffic Engineer. The District Traffic Engineer shall have final approval of all signing plans.

EXHIBIT 4d – TRAFFIC DESIGN CRITERIA – PART 1

The CONTRACTOR will be required to erect bridge vertical clearance and crossing route number flat sheet signs on the new and existing bridges in both directions of travel. The signs shall be fabricated in accordance with the SCDOT sign numbers shown in the table below. The CONTRACTOR shall determine the actual minimum vertical clearance in each direction after bridge construction is complete.

SCDOT Sign Number	Sign Description	Crossing Route Type
W12-2P-78	Vertical Clearance	All
OHB M1-1-48	Crossing Route Information	Interstate – 2 or 3 digit
OHB M1-4-48	Crossing Route Information	US Route – 2 digit
OHB M1-4-60	Crossing Route Information	US Route – 3 digit
OHB M1-5-48	Crossing Route Information	SC Route – 2 digit
OHB M1-5-60	Crossing Route Information	SC Route – 3 digit
OHB M1-6-78	Crossing Route Information	Secondary Route – 2 digit
OHB M1-6-84	Crossing Route Information	Secondary Route – 3 digit

The vertical clearance sign shall be centered over the centerline of the crossing route travel way. The crossing route number sign shall be placed to the left of the vertical clearance sign with a minimum spacing of 8 feet between the right of the route number sign and the left of the clearance sign.

All work involved in this contract shall be in accordance with the publications outlined in Exhibit 4.

EXHIBIT 4d

TRAFFIC DESIGN CRITERIA

Part 2 – Work Zone Traffic Control

1. GENERAL

The CONTRACTOR shall execute the item of Traffic Control as required by the Standard Specifications, the Standard Drawings For Road Construction, the Special Provisions, all Supplemental Specifications, the SCDOT Procedures and Guidelines for Work Zone Traffic Control Design, the MUTCD, the Plans, and the Engineer. This is an amendment to the Standard Specifications to require the following:

2. CRITERIA

2.1 General Regulations

These special provisions shall have priority to the plans and comply with the requirements of the MUTCD and the standard specifications. Revisions to the traffic control plan through modifications of the special provisions and the plans shall require approval by SCDOT. Final acceptance of any revisions to the traffic control plan shall be pending upon review by the member of the Design-Build team representing the Director of Traffic Engineering through the Design-Review Process.

In accordance with the document, *Rule on Work Zone Safety and Mobility: Implementation, Maintenance, and Safety Guidelines*, this project has been classified as “INTERMEDIATE” and all components of the Transportation Management Plan prepared by the CONTRACTOR are required and shall be implemented.

Install and utilize changeable message signs in all lane closures installed on high volume high-speed multilane roadways. Use of changeable message signs in lane closures installed on low volume low speed multilane roadways is optional unless otherwise directed by the plans and the Engineer. Install and use a changeable message sign within a lane closure set-up as directed by the *Standard Drawings For Road Construction*. When a lane closure is not present for any time to exceed 24 hours, remove the changeable message sign from the roadway. Place the sign in a predetermined area on the project site, as approved by the Engineer, where the sign is not visible to passing motorists. Utilize preprogrammed messages in accordance with the *Standard Drawings For Road Construction* when using the changeable message sign as part of the traffic control set-up for lane closures. Only those messages pertinent to the requirements of the traffic control situation and the traffic conditions are permitted for display on a changeable message sign at all times. At no time will the messages displayed on a changeable message sign duplicate the legends on the permanent construction signs.

During operation of changeable message signs, place the changeable message sign on the shoulder of the roadway no closer than 6 feet between the sign and the near edge of the adjacent travel lane. When the sign location is within 30' of the near edge of a travel lane open to traffic, supplement the sign location with no less than 5 portable plastic drums placed between the sign and the adjacent travel lane for delineation of the sign location. Install and maintain the drums no closer than 3 feet from the near edge of the adjacent travel lane. This requirement for delineation of the sign location shall apply during all times the sign location is within 30' of the near edge of a travel lane open to

traffic, including times of operation and non-operation. Oversized cones are prohibited as a substitute for the portable plastic drums during this application.

All signs mounted on portable sign supports shall have a minimum mounting height of 5' from the bottom of the sign to the ground. All signs mounted on ground mounted u-channel posts or square steel tube posts shall have a minimum mounting height of 7' from the bottom of the sign to the grade elevation of the near edge of the adjacent travel lane or sidewalk when a sidewalk is present.

On multilane primary routes, avoid placement of signs on portable signs supports within paved median areas utilized for two-way left turns unless otherwise directed by the RCE.

When mounting signs on ground mounted u-section or square steel tube posts, utilize either a sign support / ground support post combination with an approved breakaway assembly or a single direct driven post for each individual sign support of a sign assembly installation. Do not combine a sign support / ground support post combination and a direct driven post on the same sign assembly installation that contains two or more sign supports. Regarding sign support / ground support post combination installations, ensure that post lengths, stub heights and breakaway assemblies comply with the manufacturer's requirements and specifications. Use approved breakaway assemblies found on the *Approved Products List For Traffic Control Devices in Work Zones*.

When covering signs with opaque materials, SCDOT prohibits attaching a covering material to the face of the sign with tape or a similar product or any method that will leave a residue on the retroreflective sheeting. Residue from tape or similar products, as well as many methods utilized to remove such residue, damages the effective reflectivity of the sign. Therefore, contact of tape or a similar product with the retroreflective sheeting will require replacement of the sign. Cost for replacement of a sign damaged by improper covering methods will be considered incidental to providing and maintaining the sign; no additional payment will be made.

Overlays are prohibited on all rigid construction signs. The legends and borders on all rigid construction signs shall be either reversed screened or direct applied.

Signs not illustrated on the typical traffic control standard drawings designated for permanent construction signs shall be considered temporary and shall be included in the lump sum price bid item for "Traffic Control" unless otherwise specified.

Install "Grooved Pavement" signs (W8-15-48) supplemented with the "Motorcycle" plaque (W8-15P-30) in advance of milled or surface planed pavement surfaces. On primary routes, install these signs no further than 500 feet in advance of the beginning of the pavement condition. On interstate routes, install these signs no less than 500 feet in advance of the beginning of the pavement condition. Install two sign assemblies at each sign location, one on each side of the roadway, on multilane roadways when the pavement condition is present. Install these signs immediately upon creation of this pavement condition and maintain these signs until this pavement condition is eliminated.

Install “Steel Plate Ahead” signs (W8-24-48) in advance of an area of roadway where temporary steel plates are present. Install these signs no further than 300 feet in advance of locations where steel plates are present. On multilane roadways, comply with the same guidelines as applied to all other advance warning signs and install two sign assemblies at each sign location, one on each side of the roadway, when roadway conditions warrant. Install these signs immediately upon installation of a temporary steel plate and maintain the signs until the temporary steel plates are removed. Steel plates are not allowed on interstates without approval from the Resident Construction Engineer.

Install and maintain any necessary detour signing as specified by the typical traffic control standard drawings designated for detour signing, Part VI of the MUTCD, these Special Provisions, and the Engineer.

The CONTRACTOR shall maintain the travel patterns as directed by the traffic control plans and shall execute construction schedules expeditiously. The CONTRACTOR shall provide the Resident Engineer with no less than a two-week prior notification of changes in traffic patterns.

During nighttime flagging operations, flaggers shall wear a safety vest and safety pants that comply with the requirements of ANSI / ISEA 107 standard performance for Class 3 risk exposure, latest revision, and a fluorescent hard hat. The safety vest and the safety pants shall be retroreflectorized and the color of the background material of the safety vest and safety pants shall be fluorescent orange-red or fluorescent yellow-green.

During nighttime flagging operations, the CONTRACTOR shall illuminate each flagger station with any combination of portable lights, standard electric lights, existing street lights, etc., that will provide a minimum illumination level of 108 Lx or 10 fc.

During nighttime flagging operations, supplement the array of advance warning signs with a changeable message sign for each approach. These changeable message signs are not required during daytime flagging operations. Install the changeable message signs 500’ in advance of the advance warning sign arrays. Messages should be “Flagger Ahead” and “Prepare To Stop”.

During surface planing and milling operations, grade elevation differences greater than 1 inch in areas with pavements composed of hot mixed asphalt (HMA) base courses, intermediate courses or surface courses and Portland cement concrete are PROHIBITED unless otherwise directed by SCDOT. However, during surface planing and milling operations for removal of Open-Graded Friction courses ONLY, a grade elevation difference of 1½ inches between adjacent travel lanes opened to traffic may exist unless otherwise directed by SCDOT.

During the paving operations, the length of roadway with an acceptable grade elevation difference less than or equal to 2" shall be restricted to 2 miles.

During the milling and surface planing operations, the length of roadway with an acceptable grade elevation difference less than or equal to 1" shall be restricted to 2 miles.

Supplement and delineate the shoulder edges of travel lanes through work zones with traffic control devices to provide motorists with a clear and positive travel path. Utilize portable plastic drums unless otherwise directed by SCDOT. Vertical panels may be used where specified by the plans and directed by the RCE. The installation of traffic control devices are required in all areas where those areas immediately adjacent to a travel lane open to traffic have been altered in any manner by work activities, including but not limited to activities such as grading, milling, etc. Install the traffic control devices immediately upon initiating any alterations to the areas immediately adjacent to or within 15 feet of the near edge line of the adjacent travel lane. When sufficient space is available, place the traffic control devices no closer than 3 feet from the near edge of the traffic control device to the near edge line on the adjacent travel lane. When sufficient space is unavailable, place the traffic control device at the maximum distance from the near edge of the adjacent travel lane available.

2.2 Lane Closure Restrictions

The lane closure restrictions stated below are project specific, for all other restrictions, see supplemental specification, “Lane Closure Restriction”, dated July 1, 2019.

The CONTRACTOR shall install all lane closures as directed by the Standard Specifications For Highway Construction (latest edition), the Standard Drawings For Road Construction, these special provisions, the MUTCD, and the Engineer. The CONTRACTOR shall close the travel lanes of interstate routes as directed by the typical traffic control standard drawings designated for lane closures on interstate routes and primary and secondary routes as directed by the typical traffic control drawings designated for primary and secondary routes.

2.2.1 Primary and Secondary Routes –

On primary and secondary routes, SCDOT prohibits lane closures during any time of the day that traffic volumes exceed 800 vehicles per hour per direction. SCDOT reserves the right to suspend a lane closure if any resulting traffic backups are deemed excessive by the Engineer. Maintain all lane closure restrictions as directed by the plans, these special provisions, and the Engineer.

All other routes with lane closure prohibitions for this project are listed on the SCDOT website under Doing Business with SCDOT in the Publications and Manuals section for Traffic Engineering.

These restrictions also apply to all road closures and pacing operations. SCDOT reserves the right to suspend a lane closure if any resulting traffic backups are deemed excessive by the Engineer. Maintain all lane closure restrictions as directed by the plans, these special provisions, and the Engineer.

Installation and maintenance of a lane closure is PROHIBITED when the CONTRACTOR is not actively engaged in work activities specific to the location of the lane closure unless otherwise specified and approved by the Engineer. The length of the lane closure shall not exceed the length of roadway anticipated to be subjected to the

proposed work activities within the work shift time frame or the maximum lane closure length specified unless otherwise approved by the Engineer. Also, the maximum lane closure length specified does not warrant installation of the specified lane closure length when the length of the lane closure necessary for conducting the work activity is less. The length and duration of each lane closure, within the specified parameters, shall require approval by the Engineer prior to installation. The length and duration of each lane closure may be reduced by the Engineer if the work zone impacts generated by a lane closure are deemed excessive or unnecessary.

The presence of temporary signs, portable sign supports, traffic control devices, trailer mounted equipment, truck mounted equipment, vehicles and vehicles with trailers relative to the installation or removal of a closure and personnel are prohibited within the 15 to 30 foot clear zone based upon the roadway speed limit during the prohibitive hours for lane closures specified by these special provisions.

On multilane primary and secondary routes, a reduced regulatory speed limit of 35 MPH shall be in effect during lane closures. Erect temporary regulatory “Speed Limit” signs (R2-1-48-35) and “Speed Reduction 35 MPH” signs (W3-5-48-35) on temporary supports according to the typical traffic control standard drawings. Cover the existing regulatory speed limit signs when reduced speed limits are in place. Immediately remove or cover the “Speed Limit” signs (R2-1-48-35) and the “Speed Reduction 35 MPH” signs (W3-5-48-35) upon the removal of the lane closures.

The CONTRACTOR shall discontinue and remove a lane closure when the work activities requiring the presence of the lane closure are completed or are discontinued or disrupted for any period of time to exceed 60 minutes unless the presence of unacceptable grade elevation differences greater than 1” in milled areas or greater than 2” in all other areas are present unless otherwise directed by the Engineer.

2.3 Shoulder Closure Restrictions

2.3.1 Primary and Secondary Routes –

On primary and secondary routes, SCDOT prohibits the CONTRACTOR from conducting work within 15’ of the near edge of the adjacent travel lane on an outside shoulder or a median area under a shoulder closure during any time of the day that traffic volumes exceed 800 vehicles per hour per direction. The routes and times are listed above in Section 2.2. The hourly restrictions for lane closures shall also apply to work activities conducted under a shoulder closure within 15’ of the near edge of an adjacent travel lane or a median area. SCDOT reserves the right to suspend work conducted under a shoulder closure if any traffic backups develop and are deemed excessive by the Engineer. Maintain all shoulder closure restrictions as directed by the plans, these special provisions, and the Engineer.

On primary and secondary roadways, SCDOT prohibits the CONTRACTOR from conducting work within 1’ or less of the near edge of an adjacent travel lane under a shoulder closure. All work that may require the presence of personnel,

tools, equipment, materials, vehicles, etc., within 1' of the near edge of an adjacent travel lane shall be conducted under a lane closure.

2.4 Detour Requirements

For S-9-22 and S-38-39, the CONTRACTOR shall utilize the detour route provided in Attachment B and provide a detour plan based on this route for approval by SCDOT. The CONTRACTOR shall begin installing and maintaining road closure signs and or barricades per standard drawing 610-505-00 within 30 calendar days of Notice to Proceed. Detour signing shall be installed and maintained within 30 calendar days once the detour plan is approved by SCDOT. If existing SCDOT detour signs, road closure signs, or barricades are present, the Contractor shall replace the signs in accordance with the approved plans or standard drawings and return the existing signs to SCDOT. SCDOT Weekly Work Zone and Traffic Control (WZTC) inspections and reporting will begin upon installation of these signs and barricades and will continue until work is complete and signs are removed at each bridge location.

Detour Plans must be submitted and approved for all project sites. Maintain the detour in accordance with the Specifications, the *SCDOT Standard Drawings*, the *MUTCD*, the Special Provision, the Plans and the RCE.

Maintain all detour signing. Monitor the detour during the operation to identify any areas of concern that may arise due to the additional detoured traffic. In the event areas of concern are identified, implement corrective actions within SCDOT guidelines and approved by the RCE to minimize or eliminate the identified areas of concern.

SCDOT will consider failure to maintain the detour within all requirements as set forth by the Specifications, the SCDOT Standard Drawings, the MUTCD, the Plans, the special provisions and the RCE as failure to provide the traffic control as required and shall result in immediate suspension of all work activities requiring the detour until the condition is corrected.

The CONTRACTOR is responsible for all of the following items related to providing and installing the detour(s) as specified or directed in the detour plan and standard drawings including maintaining and removing the detour as necessary. This includes providing signs erected on portable or ground embedded sign supports, traffic control devices and properly trained personnel to install, maintain, and remove the detour. For all detours, the CONTRACTOR shall provide all materials, labor, hardware, equipment, tools, supplies, transportation, incidentals; miscellaneous items and traffic control necessary for installation and maintenance of the detour until completion of the work in accordance with the Plans, the Specifications and other terms of the Contract.

Geometric improvements and signal maintenance/improvements on detour routes will not be the responsibility of the CONTRACTOR. See Section 401 of Exhibit 5 for full depth patching requirements for the detour route.

2.5 Mobile Operations

A mobile operation moves continuously at all times at speeds of 3 mph or greater without any stops. The minimal traffic flow impacts generated by these operations involve brief traffic flow speed reductions and travel path diversions. Conduct work operations that cannot be performed at speeds of 3 mph or greater under standard stationary lane closures.

SCDOT prohibits the CONTRACTOR from conducting mobile operations during the hours when lane closures are prohibited. The hourly restrictions for lane closures shall also apply to work activities conducted under mobile operations. SCDOT reserves the right to suspend work conducted under mobile operations if any traffic backups develop and are deemed excessive by the Engineer. Maintain all mobile operation restrictions as directed by the plans, these special provisions, and the Engineer.

The distance intervals between the vehicles, as indicated in the *Standard Drawings For Road Construction*, may require adjustments to compensate for sight distance obstructions created by hills and curves and any other conditions that may obstruct the sight distance between the vehicles. However, adjustments to the distance intervals between the vehicles should be maintained within the range of variable distance intervals indicated in the standard drawings unless otherwise directed by the Engineer.

Maintain two-way radio communication between all vehicles in the vehicle train operating in a mobile operation.

Supplement the work vehicles and the shadow vehicles with amber colored flashing dome lights. The vehicles may also be supplemented with advance warning arrow panels and truck mounted attenuators as directed in the *Standard Drawings For Road Construction* and the Standard Specifications.

The CONTRACTOR shall install, operate and maintain all advance warning arrow panels, truck mounted attenuators and truck mounted changeable message signs as required by these special provisions, the manufacturer's specifications, the *Standard Drawings For Road Construction*, the Standard Specifications, the plans and the Engineer.

2.6 Typical Traffic Control Standard Drawings

The typical traffic control standard drawings of the "Standard Drawings For Road Construction", although compliant with the MUTCD, shall take precedence over the MUTCD. The typical traffic control standard drawings of the "Standard Drawings For Road Construction" shall apply to all projects let to contract.

Install the permanent construction signs as shown on the typical traffic control standard drawings designated for permanent construction signing.

2.7 Staging

Traffic Control Restrictions (Project Specific General)

All routes other than the approved detour shall remain open to traffic including no restriction/reduction in movements. No closure or restriction in movement or detour is allowed unless otherwise approved by SCDOT.

EXHIBIT 4e

HYDRAULIC DESIGN CRITERIA

1.0 GENERAL

Designs, as a minimum, to address:

- Ditch Capacity and Stability
- Storm Sewer Systems and Deck Drainage
- Cross-line Pipes
- Bridge Hydraulics and Scour
- Sediment and Erosion Control
- Best Management Practices
- Stormwater Quality Design

2.0 CRITERIA

2.1 Roadway Drainage

- 2.1.1 Perform all aspects of roadway drainage design for each site, to include approach runoff, cross-line pipes, storm sewer systems, sideline and outfall ditches.
- 2.1.2 Replace 15-inch pipe with minimum 18-inch pipe at all locations where design warrants retaining pipes except for driveways and yard drain connections that meet design standards.
- 2.1.3 At locations where fill height is greater than or equal to ten feet, provide a minimum five foot buffer between the toe of fill and the nearest top of bank of any proposed sideline ditch or swale. A detail is included in Attachment B/Hydrology.
- 2.1.4 Culverts used at permissible project sites shall meet all RHDS 2009 culvert criteria.
- 2.1.5 RCP is required for potential pipe alternatives.
- 2.1.6 Bridges are required at all sites except S-1210. Any pipe culverts for S-1210 shall be designed for the 4% AEP (25-year) design event. If the combined culvert opening (measured along centerline of roadway) is less than 20 feet then roadway drainage criteria shall be met except as otherwise stated in RFP. If the culvert opening is more than 20 feet, then low volume bridge criteria shall be met except as otherwise stated in the RFP.
- 2.1.7 If pipes culverts are used at S-1210 the number of pipes (barrels) is limited to three.
- 2.1.8 The roadway embankment may be overtopped at S-1210. This is only

EXHIBIT 4e – HYDRAULIC DESIGN CRITERIA
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allowed at crossings that currently have embankment overtopping for the design event. To prevent erosion brought on by shear stresses, the segment of the embankment affected by overtopping must be stable or protected with riprap for the design and 100-year (1% AEP) events. Headwalls, wing walls, cut-off walls and aprons are required at S-1210 and shall be constructed in accordance with Attachment B structure design criteria for box culverts. For pipe culverts in series, design one headwall common to all pipes at both the inlet and outlet end, with 2-feet minimum clearance between pipe openings. In addition to the embankment riprap requirement above, provide a riprap pad full-width of apron and 10-feet minimum in length away from the apron at the inlet and outlet ends.

2.1.9 Pipe culvert design at S-1210 shall have no negative impact on existing hydraulic condition. Proposed WSE's shall not increase for any design event up to and including the 1% AEP (100-year) design event.

2.1.10 Bridge Package 32 requires steady state analyses for all bridges.

2.2 Bridge Hydraulic Design and Scour

2.2.1 Perform hydrologic and hydraulic designs for the referenced bridges in accordance with the "SCDOT's Requirements for Hydraulic Design Studies" (May 2009), PCDM-11, SCDOT's Hydraulic Design Bulletins, and apply the noted amendments:

2.2.1.1 Qualitative Site Assessment

- A Level 1 qualitative assessment shall be used to evaluate basin and site conditions that may adversely impact the bridge of interest. This assessment includes a review of the flood history, scour history, and comparative bridge data. When site conditions dictate the need for a higher design standard, the designer shall follow the guidance of the latest RHDS.
- Not all bridges in exhibit package 32 qualify for "Supplemental Design Criteria for Low Volume Bridge Replacement Projects" in accordance with Preconstruction Design Memorandum PCDM 11. Only the following sites qualify for Low Volume Criteria if replaced with a bridge structure. S-1210 over Tampa Creek, S-191 over Roberts Swamp, S-634 over Cooper Swamp, and S-458 over Indian Camp Branch are qualifying sites.
- S-22 over Caw Caw Creek and S-39 over Cooper Swamp shall meet full criteria and not qualify for low volume criteria.

2.2.1.2 Design Frequency

EXHIBIT 4e – HYDRAULIC DESIGN CRITERIA

- 4% AEP (25 Year) event
- Follow HDB 2019-4 and PCDM-11 for all other design frequency criteria

2.2.1.3 Freeboard

- Freeboard shall meet HDB 2019-4 criteria for S-22 and S-39. The qualifying low volume sites freeboard shall be at least 1 foot for the design event. Additionally, free surface flow shall be maintained through the bridge for the 100-year (1% AEP) event.

2.2.1.4 Backwater

- Backwater shall meet HDB 2019-4 criteria for S-22. The qualifying low volume sites shall meet the backwater criteria of PCDM-11 for the pre-washout condition.
- Backwater will be allowed up to of 1.5 feet for the S-39 project site over the natural or unrestricted condition when improving existing backwater conditions. The EOR will also certify that there will be no impacts on upstream properties.

2.2.1.5 Low Chord

- The design high-water elevation for evaluating freeboard and determining the minimum low chord elevation as well as other calculations requiring design water surface elevation shall represent the highest water-surface upstream of the bridge before it begins to drawdown through the bridge.
- The qualifying low volume sites shall meet the low chord requirements of PCDM-11.
- Existing bridge low chords for S-22 and S-39 will not be considered for design of new structures since the existing structures were not bridges.

2.2.1.6 Bridge Ends

- Bridge ends shall not be inside the limits of the existing bridge ends (as defined along the centerline of roadway) for S-22 and S-39 project sites.
- Bridge ends for qualifying low volume sites shall meet PCDM -11 criteria.

EXHIBIT 4e – HYDRAULIC DESIGN CRITERIA
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2.2.1.7 Bridge Span Configuration

- Limited conceptual work has been performed for each site. Teams shall propose bridge span configurations in accordance with all RFP criteria. Channels shall be spanned where possible.

2.2.1.8 Abutments/Bents

- Construct in accordance with Exhibit 4b.
- Abutment setbacks are not required as stated in HDB 2019-4 or PCDM-11 when there are no clearly defined channels at the crossing.

2.2.1.9 Scour

- Design scour shall follow HDB-2019-3 for S-22 and S-39. Qualifying low volume sites shall meet the criteria in PCDM -11 for scour design.
- Plot the scour profiles with the design and check flood events label and the triple profile on the bridge plan and profile sheet. The right and left profile for the triple profile will occur at a location outside of the roadway fill.

2.2.2 Hydro Model

- Model natural, existing, and proposed conditions for each bridge. Create new hydraulic models using new geometry files and project runs for proposed designs (including any changes to natural or existing (pre-washout) runs). Use the USGS Regression equations to generate discharges for the SCDOT runs. Include backwater effects from downstream controls. Refer to the HEC-RAS Reference Manual v4.1 or latest edition for guidance on setting up cross sections and other inputs within the model. In addition to the four cross sections described within the Manual, add additional cross sections as necessary to achieve a downstream limit where a change in starting elevation will not affect the computed high-water depth at the bridge and the upstream limit extends to the limit of backwater from the bridge.

2.2.3 The models shall include sensitivity analyses. Summarize the inputs and outputs, to include backwater and freeboard.

2.3 **Sediment and Erosion Control, Water Quality, and NPDES**

2.3.1 Develop a plan that meets the requirements of SCDOT's Construction

EXHIBIT 4e – HYDRAULIC DESIGN CRITERIA
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Permit SCR160000 for erosion and sedimentation control during construction at each site. Summarize the plan on the ECDS that is included within the construction plans.

- 2.3.2 Determine if there are downstream impairments at each site's receiving waters. When impairments exist downstream, ensure discharges do not contribute to the noted impairments.
- 2.3.3 Include treatment at outfalls through vegetative practices where possible and utilize structural controls when vegetative practices are not applicable. Evaluate outfalls for post-construction treatment on a case specific basis against the Maximum Extent Practicable standard.
- 2.3.4 Prepare the NPDES permit package(s), to include the plan review checklist under Attachment B, and perform all coordination to obtain the permits. The SCDOT reviews, signs and submits the package to SCDHEC.

EXHIBIT 4f

GEOTECHNICAL DESIGN CRITERIA

1.0 GENERAL

All subsurface exploration, geotechnical design, and construction for the Project shall be carried out in accordance with the SCDOT Geotechnical Design Manual (GDM), Geotechnical Design Bulletins, the Special Provisions listed in Exhibit 5, and the design criteria herein.

2.0 CRITERIA

The Geotechnical Subsurface Data Report (GSDR) and subsurface investigation field testing data files have been provided in Attachment B.

Geotechnical information provided in Attachment B as part of this RFP may be used in the design of the Project at the CONTRACTOR's discretion. If the CONTRACTOR elects to use the geotechnical information in Attachment B, the CONTRACTOR shall verify that the information provided is applicable to the CONTRACTOR's specific design.

All temporary and permanent shoring submittals shall be reviewed and approved by the Lead Design Engineer and Geotechnical Engineer of Record (GEOR) for the Project prior to submitting to SCDOT's Resident Construction Engineer (RCE).

2.1 Bridge

The CONTRACTOR shall be responsible for the load testing of all foundations used on this project if required by design. All testing reports for driven piles shall bear the legible seal, signature, and date of the testing firm's engineer registered as a Professional Engineer in the State of South Carolina. The CONTRACTOR's EOR and GEOR shall review and approve, in writing, all load test reports prior to submitting the reports to SCDOT's RCE or Construction Engineering and Inspection (CE&I) team as designated for review and acceptance or comment. Comments made by SCDOT shall be reviewed and rectified by the Contractor's EOR and GEOR prior to the results of the load testing being used in design.

2.1.1 Driven Piles

The CONTRACTOR shall provide a Pile Installation Plan (PIP) that shall include the pile index testing program, if index piles are utilized, in addition to the requirements of the Standard Specifications. The pile index testing program shall at a minimum include the Bent and Pile number of each pile to be tested as well as the number of index piles to be tested. The number of index piles shall conform to the SCDOT GDM. The GEOR and EOR shall provide a QC review of the CONTRACTOR's PIP prior to submitting to SCDOT's RCE or CE&I team as designated for QA review. After performing QA review, SCDOT's RCE will submit the PIP to the SCDOT Bridge Construction Engineer (BCE) for final acceptance.

Drilled piles designed as driven piles per Section 16.5 of the GDM shall be driven sufficiently to fully embed the pile tip in the bearing layer.

If Pile Driving Analyzer (PDA) testing is required for driven piles by the GEOR's design, the CONTRACTOR's PDA testing shall be performed by a PDA certified operator with a Certificate of Proficiency from Pile Dynamics, Inc. of Advanced or higher. The PDA certification shall have been renewed within 4 years of the date of pile installation. In addition to the PDA testing, CAPWAP (Case Pile Wave Analysis Program) analysis shall also be performed.

The GEOR shall review the PDA testing data and reports and develop driving criteria for the production piles. Following installation of the production piles, the GEOR shall perform a QC review of all production pile driving logs, PDA testing reports, and RFC plans to verify that all criteria have been met. If all criteria have not been met, the Design-Build Team shall perform additional work as necessary to ensure all criteria have been met. The EOR shall submit an As-Installed Driven Pile Foundation Package for each structural element supported on driven pile foundations that includes all PDA testing reports and production pile driving logs with a certification statement that all criteria have been met.

The As-Installed Driven Pile Foundation Package shall be submitted to SCDOT's RCE or CE&I team as designated for QA review. After performing QA review, SCDOT's RCE will submit the As-Installed Driven Pile Foundation Package to the SCDOT BCE for final acceptance. As-Installed Driven Pile Foundation Packages submitted with any deficiencies in criteria that have not been specifically addressed will be rejected. This process shall also be followed when PDA testing is not required by the GEOR's design.

2.1.2 Drilled Shafts

The CONTRACTOR shall provide a Drilled Foundation Installation Plan (DFIP) in accordance with the requirements of the Standard Specifications. The GEOR and EOR shall provide a QC review of the CONTRACTOR's DFIP prior to submitting to SCDOT's RCE or CE&I team as designated for QA review. After performing QA review, SCDOT's RCE will submit the DFIP to the SCDOT Bridge Construction Engineer (BCE) for final acceptance.

Following installation of the drilled shafts, the GEOR shall perform a QC review of all production drilled shaft logs, CSL and TIP test reports, and RFC plans to verify that all criteria have been met. If all criteria have not been met, the Design-Build Team shall perform additional work as necessary to ensure all criteria have been met. The EOR shall submit an As-Installed Drilled Shaft Foundation Package for each structural element supported on drilled shaft foundations that includes all testing reports and

production drilled shaft logs with a certification statement that all criteria have been met.

The As-Installed Drilled Shaft Foundation Package shall be submitted to SCDOT's RCE or CE&I team as designated for QA review. After performing QA review, SCDOT's RCE will submit the As-Installed Drilled Shaft Foundation Package to the SCDOT BCE for final acceptance. As-Installed Drilled Shaft Foundation Packages submitted with any deficiencies in criteria that have not been specifically addressed will be rejected.

2.2 Roadway

Fill slopes or ditch slopes steeper than 2H:1V are not allowed.

Miscellaneous overhead structure foundations such as lighting and signage shall be designed in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, effective as of the Final RFP release date.

2.3 Seismic

Seismic design of the bridge structures, roadway structures, and bridge embankments shall be required in accordance with the SCDOT Geotechnical Design Manual and SCDOT Seismic Design Specifications for Highway Bridges.

The Simplified Newmark method described in Section 13.15.2 and Equation 13-72 of the GDM shall be used to analyze seismic ground displacements along a shear plane.

Use of discrete elements or rigid inclusions for soil shear strength loss (SSL) mitigation using area replacement ratio, shear modulus ratio, and shear stress reduction methodology are not permitted. Additionally, methods proposed to mitigate soil SSL that do not include densification or excess pore pressure reduction are not permitted. When allowing soil SSL to occur, other ground improvement or ground modification methods may be used to mitigate the effects of soil SSL occurring.

Three-Point Acceleration Design Response Spectrum (ADRS) curves have been generated for the Project and are provided below.

S-9-22 over Caw Caw Swamp

Design EQ	PGA	S _{DS}	S _{D1}
FEE	0.24	0.50	0.17
SEE	0.40	0.97	0.50

S-38-39 over Cooper Swamp

Design EQ	PGA	S _{DS}	S _{D1}
FEE	0.25	0.51	0.16
SEE	0.46	1.15	0.49

The range of natural period of the soil column on the project has been calculated for the project site and is provided in the ADRS curve. The Structural Engineer of Record (SEOR) shall calculate the fundamental period range of interest of each seismically designed structure and compare the earthquake period, soil column period, and structure period. If these three fundamental periods coincide, the SEOR shall demonstrate that structural design has accounted for this greatest potential of damage as referenced in LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations, FHWA-NHI-11-032, GEC No. 3.

EXHIBIT 4f – GEOTECHNICAL DESIGN CRITERIA

3-Point Acceleration Design Response Spectrum

SCDOT v3.2 - 06/01/2023

Project ID:	P044267	Latitude:	33.6229
Route:	S-22	County:	09 - Calhoun
Project:	S-22 over Caw Caw Creek		
	Longitude: 80.8891		

Designer:	D. Sapkota - Support
Date:	1/21/2025

Design EQ	PGA	S _{DS}	S _{D1}	M _W	R	PGV	D ₅₋₉₅	T' _o
	g	g	g	-	km	inches/sec	sec	sec
FEE	0.24	0.50	0.17	7.30	90.63	6.31	33.03	0.17
SEE	0.40	0.97	0.50	7.30	89.70	18.96	32.89	0.17

Fundamental Period of Structure, T_0^*	Range of Interest		$V_{s,H}^*$	H	T_{NH}	
	sec				sec	
	sec	0.5^*T_0			2.0^*T_0	$\frac{(4^*H)}{V_{s,H}^*}$
0.00	0.00	0.00	1373.06	292.50	0.31	1.28
0.00	0.00	0.00	H = B-C Boundary			

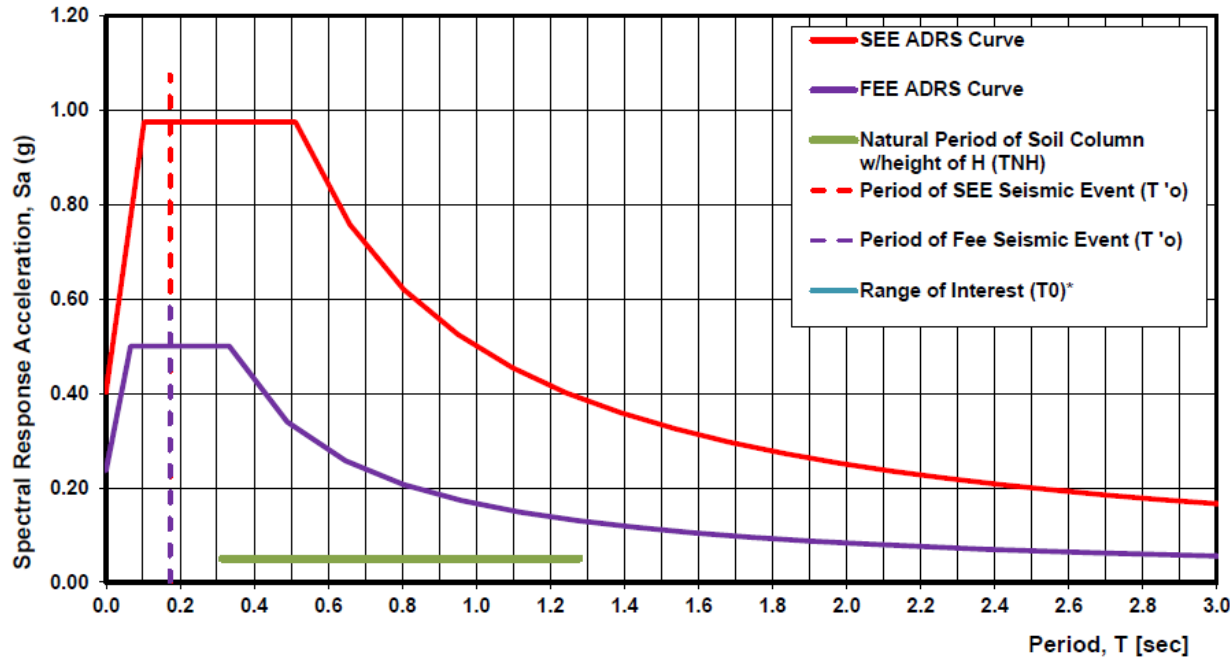
H = B-C Boundary

Damping:	5%	Geologic Condition:	Geologically Realistic (Q = 100)*
		ADRS Location within Soil Column:	SCP
			At Ground Surface

South Carolina Piedmont

*Same Geologic Condition as used in SCENARIO_PC (2006)

SC Seismic ADRS Curve



FEE Data		SEE Data	
T	S _a	T	S _a
0.00	0.237	0.00	0.403
0.01	0.281	0.02	0.498
0.02	0.324	0.03	0.594
0.03	0.368	0.05	0.689
0.04	0.412	0.07	0.784
0.06	0.456	0.09	0.880
0.07	0.500	0.10	0.975
0.09	0.500	0.14	0.975
0.11	0.500	0.17	0.975
0.13	0.500	0.20	0.975
0.16	0.500	0.24	0.975
0.18	0.500	0.27	0.975
0.20	0.500	0.31	0.975
0.22	0.500	0.34	0.975
0.24	0.500	0.38	0.975
0.27	0.500	0.41	0.975
0.29	0.500	0.44	0.975
0.31	0.500	0.48	0.975
0.33	0.500	0.51	0.975
0.49	0.340	0.66	0.758
0.65	0.257	0.80	0.620
0.80	0.207	0.95	0.525
0.96	0.173	1.10	0.455
1.12	0.149	1.24	0.401
1.27	0.130	1.39	0.359
1.43	0.116	1.54	0.325
1.59	0.105	1.68	0.297
1.74	0.095	1.83	0.273
1.90	0.087	1.98	0.253
2.06	0.081	2.12	0.235
2.22	0.075	2.27	0.220
2.37	0.070	2.41	0.207
2.53	0.066	2.56	0.195
2.69	0.062	2.71	0.184
2.84	0.058	2.85	0.175
3.00	0.055	3.00	0.166

EXHIBIT 4f – GEOTECHNICAL DESIGN CRITERIA

3-Point Acceleration Design Response Spectrum

SCDOT v3.2 - 06/01/2023

Project ID: P044268	Latitude: 33.3489	
Route: S-39	County: 38 - Orangeburg	Longitude: 80.9122
Project: S-38-39- Over Cooper Swamp		

Designer: D. Sapkota - Support
Date: 1/21/2025

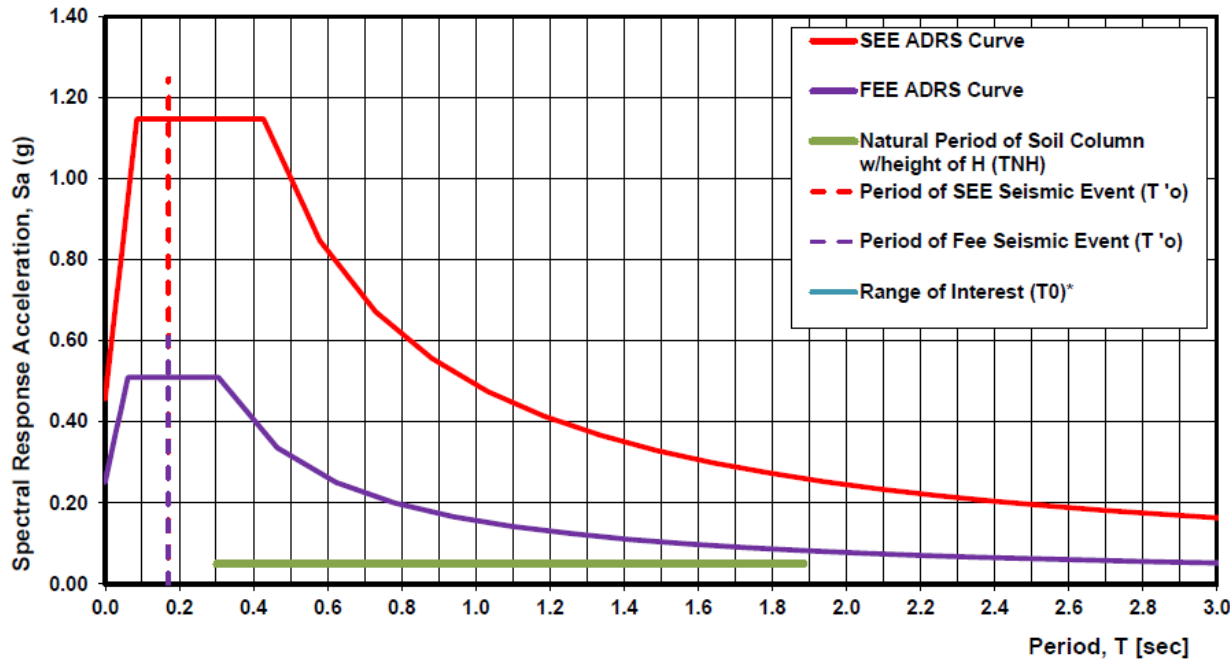
Design EQ	PGA	S _{DS}	S _{D1}	M _W	R	PGV	D ₅₋₉₅	T' _o
	g	g	g	-	km	inches/sec	sec	sec
FEE	0.25	0.51	0.16	7.30	84.70	5.93	31.75	0.17
SEE	0.46	1.15	0.49	7.30	84.00	18.64	31.64	0.17

Fundamental Period of Structure, T_0^*	Range of Interest		$V_{s,H}^*$	H	T_{NH}	
	sec				sec	
	sec	0.5^*T_0			2.0^*T_0	ft/sec
0.00	0.00	0.00	1634.80	513.60	0.30	1.89
0.00	0.00	0.00	H = B-C Boundary			

Damping: 5%	Geologically Realistic (Q = 100) [*]
Geologic Condition: SCP	
ADRS Location within Soil Column: At Ground Surface	

South Carolina Piedmont
^{*}Same Geologic Condition as used in SCENARIO_PC (2006)

SC Seismic ADRS Curve



FEE Data		SEE Data	
T	S _a	T	S _a
0.00	0.252	0.00	0.459
0.01	0.295	0.01	0.574
0.02	0.338	0.03	0.688
0.03	0.381	0.04	0.803
0.04	0.424	0.06	0.918
0.05	0.467	0.07	1.033
0.06	0.510	0.09	1.148
0.08	0.510	0.11	1.148
0.10	0.510	0.14	1.148
0.12	0.510	0.17	1.148
0.14	0.510	0.20	1.148
0.16	0.510	0.23	1.148
0.18	0.510	0.26	1.148
0.20	0.510	0.28	1.148
0.22	0.510	0.31	1.148
0.24	0.510	0.34	1.148
0.27	0.510	0.37	1.148
0.29	0.510	0.40	1.148
0.31	0.510	0.43	1.148
0.46	0.336	0.58	0.848
0.62	0.250	0.73	0.672
0.78	0.200	0.88	0.556
0.94	0.166	1.03	0.475
1.10	0.142	1.18	0.414
1.26	0.124	1.34	0.367
1.42	0.110	1.49	0.330
1.57	0.099	1.64	0.299
1.73	0.090	1.79	0.274
1.89	0.083	1.94	0.253
2.05	0.076	2.09	0.234
2.21	0.071	2.24	0.219
2.37	0.066	2.39	0.205
2.52	0.062	2.55	0.193
2.68	0.058	2.70	0.182
2.84	0.055	2.85	0.172
3.00	0.052	3.00	0.163

EXHIBIT 4z

PROJECT DESIGN DELIVERABLES

1.0 GENERAL

This exhibit describes the makeup of submittal packages used for Design Review and permanent record retention by SCDOT. All submittals shall be in accordance with Departmental guides, including but not limited to, the Road Design Reference Material for Consultant Prepared Plans, as amended herein, and shall include all checklists, indexes and electronic files in the specified format and folder structure.

1.1 Document Naming Conventions

Documents submitted on SCDOT Design-Build projects shall follow the Design-Build file naming conventions that can be found under Design-Build Resources at the following link: <https://www.scdot.org/business/pdf/design-build/Design-Build-File-Naming-Conventions.pdf>

1.2 Submittal Exceptions

At their own risk, Teams may utilize Conceptual Plans submitted with their Technical Proposals as Preliminary Plans for the purpose of early Utility Coordination and Permitting. SCDOT will provide comments, if any, on Conceptual Plans to the successful proposer.

Teams may elect to eliminate Preliminary and Right-of-way Roadway and Bridge plan package submittals, at their own risk. If teams elect to begin submittals with Right-of-way submittal packages, include any appropriate information shown under Preliminary Submittal Packages with the Right-of-way Submittal Packages. If teams elect to proceed directly to Final Submittal Package, include any appropriate information shown under Preliminary Submittal Package and Right-of-way Submittal Packages with the Final Submittal Package.

Teams may elect to proceed from Conceptual Plans submitted with their Technical Proposals to Final Bridge Plans at their own risk for all sites.

2.0 SUBMITTAL PACKAGES

SUBMITTAL PACKAGE CONTENTS****
Preliminary Submittal Packages
Preliminary Road Submittal Packages shall include:
<ul style="list-style-type: none"> • Preliminary Road Plans
<ul style="list-style-type: none"> • Preliminary Road Calculation Package

EXHIBIT 4z – PROJECT DESIGN DELIVERABLES
--

<ul style="list-style-type: none"> • Survey Control Data Sheet
<ul style="list-style-type: none"> • Conceptual Work Zone Traffic Control Plans*
<ul style="list-style-type: none"> • Conceptual ITS Design Plans*
<ul style="list-style-type: none"> • Preliminary Roadway Drainage Design Report
<ul style="list-style-type: none"> • Preliminary Road Geotechnical Report
Preliminary Bridge Submittal Packages shall include:
<ul style="list-style-type: none"> • Preliminary Bridge Plans
<ul style="list-style-type: none"> • Preliminary Bridge Hydraulic Design Report
<ul style="list-style-type: none"> • Preliminary Bridge Geotechnical Report
<ul style="list-style-type: none"> • Preliminary Seismic Design Summary Report
Right-of-Way Submittal Packages
Right of Way Submittal Packages shall include:
<ul style="list-style-type: none"> • Right-of-Way Plans
<ul style="list-style-type: none"> • Survey Control Data Sheet
<ul style="list-style-type: none"> • Conceptual Work Zone Traffic Control Plans*
<ul style="list-style-type: none"> • Conceptual ITS Design Plans*
<ul style="list-style-type: none"> • Right-of-Way Hydraulic Reports
Final Submittal Packages
Final Road Submittal Packages shall include:
<ul style="list-style-type: none"> • Final Roadway Plans
<ul style="list-style-type: none"> • Survey Control Data Sheet
<ul style="list-style-type: none"> • Work Zone Traffic Control Plans
<ul style="list-style-type: none"> • Final ITS Design Plans
<ul style="list-style-type: none"> • Final Roadway Drainage Design Report

EXHIBIT 4z – PROJECT DESIGN DELIVERABLES
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<ul style="list-style-type: none"> • Final Road Geotechnical Reports
<ul style="list-style-type: none"> • Final Road Calculation Package
Final Bridge Submittal Packages shall include:
<ul style="list-style-type: none"> • Final Bridge Plans
<ul style="list-style-type: none"> • Final Bridge Hydraulic Design Report
<ul style="list-style-type: none"> • Final Bridge Geotechnical Report
<ul style="list-style-type: none"> • Final Seismic Design Summary Report
<ul style="list-style-type: none"> • Bridge Load Rating Documentation
RFC Submittal Packages
RFC Road Submittal Packages shall include:
<ul style="list-style-type: none"> • RFC Roadway Plans
<ul style="list-style-type: none"> • Survey Control Data Sheet***
<ul style="list-style-type: none"> • RFC Work Zone Traffic Control Plans
<ul style="list-style-type: none"> • RFC ITS Design Plans
<ul style="list-style-type: none"> • RFC Road Geotechnical Reports
<ul style="list-style-type: none"> • RFC Road Design Calculations
RFC Bridge Submittal Packages shall include:
<ul style="list-style-type: none"> • RFC Bridge Plans
<ul style="list-style-type: none"> • RFC Bridge Hydraulic Design Report
<ul style="list-style-type: none"> • RFC Bridge Geotechnical Report
<ul style="list-style-type: none"> • RFC Seismic Design Summary Report
<ul style="list-style-type: none"> • RFC Bridge Design Calculations
<ul style="list-style-type: none"> • Bridge Load Rating Documentation

Construction Submittals (including, but not limited to)**
• Traffic Management Plan
• Paving Plan
• Foundation Installation Plan Submittals
• Foundation Testing Submittals
• Hazardous Materials Testing Submittals
• Shop Plans
• Working Drawings
• NPDES Submittals
• Revised Permit Drawings
• As-Built Plans
• As-Built ITS Design Plans

* If ROW plans are not anticipated, these plans shall be included with the preliminary road plans.

** Reviews for these submittals are not held to the standard periods as outlined in Article II, Section D of the Agreement.

*** CONTRACTOR may rely on survey information provided in Attachment B – Supplemental Design Criteria. CONTRACTOR shall incorporate the information into the final project documents. CONTRACTOR shall be responsible for supplementing the survey information provided as required for their specific design.

**** CONTRACTOR shall supply hard copies if requested by SCDOT.

3.0 SUBMITTAL PACKAGE CONTENTS

3.1 All Submittals Packages

- Partial submittal of the required contents of the preliminary, right of way, or final submittal packages will not be allowed.
- Perform a thorough QC review of the submittal packages prior to submitting them to SCDOT.
- Digital signatures are required for RFC documents. Inked signatures are not allowed
- Submittal package pdf files shall be flattened before being uploaded to ProjectWise with the exception of RFC individual digitally signed sheets.

- Plans shall be submitted electronically as a landscape 22"x36" pdf file for roadway plans and a landscape 22"x34" pdf file for bridge plans.
- Reports shall be submitted electronically as a portrait 8.5"x11" pdf file. Larger sheets may be included for charts, diagrams, etc.
- At the request of SCDOT or its representative, Contractor shall submit calculations and/or design files, including computer aided drafting files for review with a submittal package, or at any point prior when requested by SCDOT.

3.2 Preliminary Submittal Packages

3.2.1 Preliminary Road Plans

- The plans shall include, but not be limited to, the following:
 - title sheet
 - roadway typical section
 - survey control data
 - strip map, including property closures
 - roadway plan and profile
 - cross sections
 - clearing limits on plan view and cross sections
 - drainage features
 - existing right-of-way
 - proposed right-of-way
 - roadway structure layout limits
 - noise barrier wall alignments

3.2.2 Preliminary Road Calculation Package

- The calculations package shall include, but not be limited to, the following for each roadway within the project limits: plans shall include, but not be limited to, the following:
 - superelevation calculations & application
 - guardrail length of need exhibits
 - intersection sight distance exhibits (plan & profile view)
 - turning templates
 - non-ninety-degree intersections documentation
 - summary of compressed shoulder guardrail

3.2.3 Conceptual Work Zone Traffic Control Plans

- The plans shall include, but not be limited to, the following:
 - Staging Narrative
 - Concept Staging Plans
 - Widening/Rehabilitation Typical Sections for each Stage of Construction and any critical points

- Where additional Right-of-Way is warranted for the purposes of Staging
- Separation of Adjacent Travel Lanes / Traffic Splits as described in the SCDOT Procedures and Guidelines for Work Zone Traffic Control Design
- Where the travel lane leaves the existing roadway bed or direction on new alignment (transition area) and returns (termination area)

3.2.4 Conceptual ITS Design Plans

- The Contractor shall develop and furnish conceptual design plans as indicated in Exhibit 5*

3.2.5 Preliminary Bridge Plans

- The plans shall include, but not be limited to, all items described in Chapter 3 of the SCDOT Bridge Design Manual and applicable items listed on the Structural QC Checklist for Preliminary Plans.

3.2.6 Preliminary Hydraulic Reports

- Preliminary Roadway Drainage Design Reports shall include, but not be limited to, the following:
 - Pre/post outfall summaries
 - HW/D summaries for crosslines
 - Open channel designs
 - Address permitting requirements
 - Field Investigation and Pipe Inspection Report
- Preliminary Bridge Hydraulic Design Reports shall include, but not be limited to, the following:
 - Preliminary Hydraulic Model Design and Supporting Documentation including Hydrology Data Sheets, the Hydraulic Design and Risk Assessment Form, and the NEPA Bridge Replacement Scoping Trip Risk Assessment Forms (for each applicable location)
 - Modeling files
 - Address permitting requirements (for each applicable location)
- NPDES permitting-if permitting is going to be phased, address how submittals will be phased and anticipated submission schedules.

3.2.7 Preliminary Road & Bridge Geotechnical Reports

- Submit Geotechnical Reports based on applicable design criteria (Low Volume Bridge Criteria or Standard SCDOT Design Criteria)

- The geotechnical reports shall include, but not be limited to, the following:
 - all items described in Preconstruction Design Memorandum (PDM) 2017-11, all items described in Chapter 21 of the SCDOT Geotechnical Design Manual and the latest design memorandums

3.2.8 Preliminary Seismic Design Summary Report

- Provide the information outlined in SCDOT Bridge Design Memorandum DM0122.

3.3 Right-of-Way Submittal Packages

3.3.1 Right-of-Way Plans

- The plans shall include, but not be limited to, the following:
 - title sheet
 - roadway typical section
 - survey control data
 - strip map, including property closures
 - right-of-way data sheet
 - roadway plan and profile
 - cross sections (include sediments basins, dams and crosslines)
 - clearing limits on plan view and cross sections
 - drainage features
 - existing right-of-way
 - proposed right-of-way
 - roadway structure layout limits
 - noise barrier wall alignments

3.3.2 Conceptual Work Zone Traffic Control Plans

- The plans shall include, but not be limited to, the following:
 - Staging Narrative
 - Concept Staging Plans
 - Widening/Rehabilitation Typical Sections for each Stage of Construction and any critical points
 - Where additional Right-of-Way is warranted for the purposes of Staging
 - Separation of Adjacent Travel Lanes / Traffic Splits as described in the SCDOT Procedures and Guidelines for Work Zone Traffic Control Design
 - Where the travel lane leaves the existing roadway bed or direction on new alignment (transition area) and returns (termination area)

3.3.3 Conceptual ITS Design Plans

- The Contractor shall develop and furnish conceptual design plans as indicated in Exhibit 5*

3.3.4 Right-of-Way Hydraulic Reports

- Roadway Drainage Design Reports shall include, but not be limited to, the following:
 - Updates to the preliminary roadway drainage designs
 - Inlet spacing calculations and bridge deck drainage calculations
 - Geopak drainage summaries
 - Storm sewer system profiles for the design storm and the 50-yr event at sag locations
 - Sediment and erosion control designs
 - Water quality and post construction designs
 - Detention designs and supporting documentation
- NPDES package shall be provided for review in preparation for submittal to SCDHEC/OCRM.

3.4 Final Submittal Packages

3.4.1 Final Road Plans

- The plans shall include, but not be limited to, the following:
 - title sheet
 - roadway typical section
 - survey control data
 - strip map, including property closures
 - right-of-way data sheet
 - roadway plan and profile
 - cross sections
 - clearing limits on plan view and cross sections
 - drainage design (include drainage tables per Plan Preparation Guide behind each drainage sheet)
 - existing right-of-way
 - proposed right-of-way
 - summary of estimated quantities
 - strip map including property closures
 - sediment and erosion control design
 - proposed barrier locations
 - permanent signing plans
 - permanent pavement markings plans
 - traffic signal plans
 - roadway structure plans

3.4.2 Final Road Calculation Package

- The finalized calculations package shall include copies of all hand written or electronic calculations or notes (non-CADD) that will facilitate verification and review of the plans.
 - All calculations submitted in the Preliminary Road Calculation Package shall be updated as necessary for the final design.

3.4.3 Final Bridge Plans

- The plans shall include, but not be limited to all items described in Chapters 3 and 6 of the SCDOT Bridge Design Manual and applicable items listed on the Structural QC and QA Checklist for 95% Plans.
- Additional electronic files:
 - Copies of all hand written or electronic calculations or notes (non-CADD) that will facilitate verification and review of the plans.
 - Electronic files for specifications and special provisions in Adobe PDF or Microsoft Word format

3.4.4 Work Zone Traffic Control Plans

- The plans shall be in accordance with the SCDOT Procedures and Guidelines for Work Zone Traffic Control Design and all other applicable design references listed in Exhibit 4

3.4.5 Final ITS Design Plans

- The Contractor shall develop and furnish ITS design plans as indicated in Exhibit 5*

3.4.6 Final Hydraulic Report

- Final Roadway Drainage Design Reports shall include, but not be limited to, the following:
 - Updates to the Right-of-Way hydraulic drainage designs
- Final Bridge Hydraulic Design Reports shall include, but not be limited to, the following:
 - Final Hydraulic Model Design and Supporting Documentation including all updated forms
 - Final Modeling files
 - Scour Study- additionally plot the 100- and 500-year lines on the bridge triple profile sheet (for each applicable location)
 - Address CLOMR and/or “No Impact” Certifications (for each applicable location)
 - Include the hydrology data for bridges, culverts and pipes greater than 48 inches on the bridge triple profile sheets

- Complete NPDES package

3.4.7 Final Road & Bridge Geotechnical Reports

- Submit Geotechnical Reports based on applicable design criteria (Low Volume Bridge Criteria or Standard SCDOT Design Criteria)
- The geotechnical reports shall include, but not be limited to, the following:
 - all items described in Preconstruction Design Memorandum (PDM) 2017-11, all items described in Chapter 21 of the SCDOT Geotechnical Design Manual and the latest design memorandums
 - all items described in Section 6.4 of the SCDOT Geotechnical Design Manual and the latest design memorandums.
 - design details and plan notes along with data that are consistent with that shown in the final bridge and road plans
 - Contractor's designer shall prepare the required geotechnical bridge and roadway plan sheets that clearly detail any geotechnical requirements outlined in the reports

3.4.8 Final Seismic Design Summary Report

- Provide the information outlined in SCDOT Bridge Design Memorandum DM0122.

3.4.9 Bridge Load Rating Documentation

- See Requirements for Bridge Load Rating in Exhibit 4b, Section 3.

3.5 RFC Submittal Packages

- RFC submittal packages shall be submitted once all comments have been closed on all submittals for each phase (ex. Preliminary/ROW/Final/RFC) of a segment or structure and a request for RFC plans has been issued by the Construction Office.
- After all comments are closed, no changes shall be made to the design deliverables before providing a RFC submittal package.
- Insert RFC Plans into plan folders as detailed in the SCDOT Plan Preparation Guide and the SCDOT Bridge Design Manual if not submitted with digital signatures.
- The Engineer of Record, a licensed and registered Professional Engineer in the State of South Carolina, shall sign and seal all RFC plans and reports. RFC documents shall be original documents if not submitted with digital signatures.
- RFC documents submitted with digital signatures shall comply with the SCDOT Digital Signatures Manual.

- A complete set of Road and Bridge design calculations shall be included with the respective RFC submittal package and at any point prior when requested by SCDOT. Organize each calculation package in a neat and logical format, including a table of contents and page numbering.
- Roadway Plan electronic files submittals: Information herein is an abbreviated list of electronic deliverables taken from the Road Design Reference Material for Consultant Prepared Plans. Submit Checklists, Indexes and files in accordance with the format and attachments specified in the document.
 - CADD electronic files index with the detailed descriptions of the contents of each file must be provided in a “readme” file. The index should also include detailed descriptions and names of horizontal and vertical alignments and profiles utilized by the GEOPAK software on the project. A copy of the file folder structure is shown in Road Design Reference Material for Consultant Prepared Plans.
 - All surveyed mapping, control points, benchmarks, GPS setup, 2D or 3D contours, spot points, survey notes, DTM, breaklines, TIN files, aerial photos and all other CADD files and data used in developing surveys for the project. Also, the survey points should be provided in ASCII file format (Point number, N, E, Z, and Descriptions). Contact information for the survey company should be provided. All electronic survey files are to be placed in a separate folder.
 - All MicroStation files including all files that would supplement the ability to view files correctly such as reference files and cell libraries.
 - All .gpk files and any other Geopak files, such as input and criteria files that are needed to facilitate the review of plans should be submitted.
 - If other Civil Engineering software packages were utilized for project development then all binary or ASCII files that are software dependent for that package shall be submitted
 - All electronic files that pertain to the construction stake out. Files will be in LandXML or csv format and will include all horizontal controls, vertical controls and templates. LandXML or csv data will be provided in a separate folder.
 - On each printed sheet in the plans, the electronic folder name, filename, and date must be shown.
 - Provide plot setting to include levels used, symbology, line weights and pen tables in order to reproduce all plans sheets
 - All roadway structures’ design criteria with calculations will be provided in a separate folder.

- Pavement Design will be provided in a separate folder with soil support data, traffic volumes, and ESAL's
- Electronic files for specifications and special provisions in Adobe PDF or Microsoft Word format
- Approved Design Exceptions to AASHTO and/or SCDOT design standards developed during design

3.6 Revisions to RFC Plans and Reports

- After providing a RFC submittal package, any subsequent changes to the RFC plans and reports will be considered revisions. Revisions shall be denoted as detailed in the design manuals or as directed by the Department.

3.7 Traffic Management Plan

- The Contractor shall submit a Traffic Management Plan in accordance with the document, Rule on Work Zone Safety and Mobility: Implementation, Maintenance, and Safety Guidelines.
- All components of the Transportation Management Plan shall be submitted for review by SCDOT and must be approved before any construction activities can begin.

3.8 Foundation Installation Plan Submittals

- Prepare Drilled Foundation Installation Plans (DFIP) and/or Pile Installation Plans (PIP) in accordance with the SCDOT Standard Specifications for Highway Construction. Submit all foundation installation plan submittals electronically. The Contractor's Engineer of Record shall review and approve all DFIP and PIP (including pile driving criteria) prior to submitting the foundation installation plans to SCDOT for review and acceptance. SCDOT will review the foundation installation plans and provide either acceptance or comments. The Contractor's Engineer of Record shall resolve all comments prior to re-submittal to SCDOT. SCDOT will review the DFIP and/or the PIP only to verify that the specifications have been addressed. The Contractor shall provide a supplement to the report containing the actual field conditions encountered and as-built foundation data and information after construction of the foundations is complete.

3.9 Foundation Testing Submittals

- Submit to SCDOT an electronic copy of all applicable foundation testing reports for all bridge and roadway structures to include but not limited to Shaft Load Test and Pile Driving Analyzer test reports.

3.10 Hazardous Materials Testing Submittals

- The Contractor shall submit to SCDOT:
 - Results of any hazardous materials analytical testing of sampled or excavated subsurface materials as outlined in the Agreement.
 - Manifests of all hazardous materials requiring disposal.

3.11 Shop Plans

- Submit shop plans, as defined by and in accordance with the SCDOT Standard Specifications, to the Contractor's Engineer of Record for review and approval. Route all approved shop plans to SCDOT for review and distribution. After reviewing the plans, SCDOT will either distribute the plans or provide comments. If comments are provided, the Contractor's Engineer of Record shall review the comments prior to resubmitting to the SCDOT for further review. The Contractor's Engineer of Record shall stamp the shop plans "approved" prior to submittal to SCDOT. SCDOT will stamp and distribute the plans. Do not commence fabrication and construction/erection until after SCDOT distributes the plans.

3.12 Working Drawings

- Submit working drawings and design calculations, as defined by and in accordance with the SCDOT Standard Specifications, to the Contractor's Engineer of Record for review and approval. Route all approved working drawings and design calculations to the SCDOT for review and distribution. SCDOT will review the drawings and calculations and either provide acceptance of the drawings as prepared or provide comments. If comments are provided, the Contractor's Engineer of Record shall review the comments prior to resubmittal to SCDOT for further review. The Contractor's Engineer of Record shall stamp the working drawings and design calculations "approved" prior to submittal to SCDOT. SCDOT will stamp and distribute the drawings and calculations. Do not commence construction/erection until after SCDOT distributes the drawings and calculations. The responsible engineer, registered as a Professional Engineer in the State of South Carolina, shall seal, sign, and date all design calculations and working drawings. SCDOT will review the working drawings and design calculations only to verify that the specifications have been addressed.

3.13 NPDES Submittals

- The appropriate level of design and review shall be completed prior to any NPDES package submittal.

3.14 Revised Permit Drawings

- Contractor shall provide to SCDOT revised permit drawings that show ROW limits that differ from those in the approved USACE Permit.

3.15 As-Built Plans

- Provide a copy of the as-built plans in accordance with the Manual of Instruction for the Preparation of As-built Plans.
- Provide a final copy of all electronic data as noted in section 3.4.1 and 3.4.2 which captures all changes to electronic data since the final plans submittal.
- A complete as-built set of signing plans, including SignCAD copies of all layouts, shall be submitted to the SCDOT as directed by the Director of Traffic Engineering at the conclusion of the project.
- The CONTRACTOR shall provide as-built plans to include: directional bore logs, conduit offsets every 500', GPS data of device locations, all service and pull boxes, power metering points, mid span and reel end splices (three complete sets). An electronic copy of all GPS data will be turned in at the same time as the as-built plans. Allocation drawing and Fiber Trak data entry will be furnished by the Department as part of the integration.
- Provide As-Built "red-lined" signal plans to the District Signal Shop after the signal work is completed.
- Provide as-built load rating(s), updated as needed, with as-built plans if there have been any changes to the bridge(s) that affect the load rating. If no changes are made that affect the load rating(s), provide a certification signed by the engineer of record stating the original load rating(s) remain accurate for the bridge(s).

EXHIBIT 5

SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

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SPECIAL PROVISIONS**(1) DIVISION 100: STANDARD DRAWINGS:**

The Bidders are hereby advised that this project shall be constructed using the Current Standard Drawings with all updates effective at the time of the letting. The Standard Drawings are available for download at <https://www.scdot.org/business/standard-drawings.aspx>. All drawings that are updated are labeled with their effective letting date in red.

All references in the plans, standard specifications, supplemental specifications, supplemental technical specifications or special provisions to drawings under the previous numbering system (prior to 2007) are hereby updated to the new drawing numbers. Refer to sheets 000-205-01 through 000-205-07 to find new drawing numbers when looking for references to older drawing numbers. "Old sheet numbers" are also visible on the website when using the full set of drawings "current" search and are sortable by clicking the header "Old Sheet #" on the results page. Be aware that some older drawings now span over multiple pages due to detailing changes.

(2) DIVISION 100: MOST RECENT EFFECTIVE UPDATES:

The following drawings were removed, updated, or added effective with the January 2019 letting. See section 103 for imminent drawings on future lettings.

403-205-01	721-1	BRIDGE END FLUME MOVED TO 805-325-75 AND 719-920-00	REPLACED JAN 2019 BY 805-325-75, 805-325-76 AND 719-920-00
403-205-02	S 805-9B	BRIDGE END FLUME MOVED TO 805-325-75 AND 719-920-00	REPLACED JAN 2019 BY 805-325-75, 805-325-76 AND 719-920-00
403-210-00	721-1A	BRIDGE END FLUME MOVED TO 805-325-75 AND 719-920-00	REPLACED JAN 2019 BY 805-325-75, 805-325-76 AND 719-920-00
605-010-01	605-3(1)	CONSTRUCTION SIGNING - PERMANENT WORK ZONE SPEEDING - \$200 FINE PRIMARY ROUTES	JANUARY 2019 UPDATE
605-015-00	605-4	CONSTRUCTION SIGNING - PERMANENT WORK ZONE SPEEDING - \$200 FINE INTERSTATE ROUTE	JANUARY 2019 UPDATE
605-025-03	605-5(1)	CONSTRUCTION SIGNING - SPECIAL SIGNS \$5000 FINE FOR VIOLATIONS	JANUARY 2019 UPDATE

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610-005-00	610-1	FLAGGING OPERATION TWO-LANE TWO-WAY PRIMARY & SECONDARY ROUTES	JANUARY 2019 UPDATE
610-005-20	2019U PDATE	FLAGGING OPERATION WORK ZONE THRU STOP STOP SIGN CONTROLLED SIDE ROADS	JANUARY 2019 UPDATE
610-005-30	2019U PDATE	FLAGGING OPERATION WORK ZONE CONTINUE THRU STOP CONTROL INTERSECT ALL APPROACH	JANUARY 2019 UPDATE
610-005-40	2019U PDATE	FLAGGING OPERATION WORK ZONE THRU TRAF SIGNAL W/LAW ENFORCEMENT OFFICERS	JANUARY 2019 UPDATE
610-005-50	2019U PDATE	FLAGGING OPERATION WORK ZONE CONTINUE THRU TRAF CONTROL INTERSECT W/FLAGGER	JANUARY 2019 UPDATE
610-005-60	2019U PDATE	FLAGGING OPERATION WORK ZONE TERMINATE @ INTERSECT W/2-LANE 2-WAY ROAD DEPARTURE	JANUARY 2019 UPDATE
610-005-70	2019U PDATE	FLAGGING OPERATION INTERSECTIONS W/TWO-LANE TWO-WAY ROADWAYS APPROACH LANE	JANUARY 2019 UPDATE
610-005-80	2019U PDATE	FLAGGING OPERATION STOP SIGN CONTROL INTERSECTION W/LOW SPEED \leq 35 MPH	JANUARY 2019 UPDATE
610-005-90	2019U PDATE	FLAGGING OPERATIONS STOP SIGN CONTROL INTERSECTION 40MPH-60MPH MULTILANE ROAD	JANUARY 2019 UPDATE
610-515-00	610-28	EXTENDED ROAD CLOSURE OF NEW ROADWAY ALIGNMENT	JANUARY 2019 UPDATE
719-115-00	REPLA CED	INSTRUCTIONS FOR DROP INLET TYPE 115 DI115 (PHASED OUT 1/2019)	USE DI125 OR 24X36 DI, DI115 PHASED OUT 1/2019

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

719-920-00	NEW 2019	4' SLOPE FLUME (CURB STYLE WITH CUTOFF WALLS)	NEW DELINEATOR AT LEADING END TREATMENTS OR AS SPECIFIED
805-001-01	NEW2 018	PERMANENT BARRIER GENERAL NOTES - GUARDRAIL, RIGID BARRIER, FLEXIBLE BARRIER	REVISED NOTE 10.11
805-001-02	NEW2 016	PERMANENT BARRIER GENERAL NOTES - GUARDRAIL, RIGID BARRIER, FLEXIBLE BARRIER	REVISED NOTES 50.01 & 50.02
805-090-00	NEW 2019	GUARDRAIL FABRICATION DETAILS NOTICE	NOTICE THAT FABRICATION DETAILS ARE COVERED IN STATUS FABRICATION
805-115-10	NEW 2018	SITE GRADING FOR LEADING END TREATMENT MT3 (TL3)	CORRECT SHOULDER GRADING REMOVE "24:1 LABEL", FONT
805-115-50	NEW 2018	SITE GRADING FOR LEADING END TREATMENT MT2 (TL2)	CORRECT SHOULDER GRADING REMOVE "24:1 LABEL", FONT
805-210-05	MASH UPDAT E	MGS3 GUARDRAIL WITH 1 OMITTED POST (12' CLEAR SPAN)	NEW DELINEATOR AT LEADING END TREATMENTS OR AS SPECIFIED
805-325-30	805- 325-00	MTBBC3 APPROACH STIFFNESS TRANSITION TL3	CORRECTS PAY ITEMS
805-325-50	805- 325-00	MTBBC2 APPROACH STIFFNESS TRANSITION TL2	CORRECTS PAY ITEMS
805-325-70	805- 325-00	APPROACH STIFFNESS TRANSITION CURB TO FLUME FOR CB	CORRECTS FLUME LOCATION AND CURB LENGTH
805-325-75	NEW 2019	FLUME INLET AT GUARDRAIL (HANDWORK)	WORKS WITH STANDARD FLUME 719-920-00
805-325-76	NEW 2019	FLUME INLET AT GUARDRAIL (HANDWORK)	WORKS WITH STANDARD FLUME 719-920-00

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

805-520-00	NEW 2011	GUARDRAIL POST INSTALLATION IN PARTIALLY WEATHERED ROCK (PWR)	MASH DETAIL, USES FULL LENGTH POST
805-545-00	MASH UPDATE	GUARDRAIL RELATED MULTIPLE OFFSET BLOCKS FOR MGS AND MTBBC SERIES DEVICES	NEW DELINEATOR AT LEADING END TREATMENTS OR AS SPECIFIED
805-600-00 to 705-779-99	PRE MASH	DRAWING NUMBERS RESERVED FOR PREMASH GUARDRAIL DETAILS. UPDATED DRAWINGS PENDING.	ATTACH TO EXISTING RAIL OR WHERE MASH DEVICE DOES NOT FIT
805-785-00	NEW2 017	NARROW & WIDE CRASH CUSHIONS	MASH UPDATE TO CRASH CUSHIONS
805-825-00	MASH UPDATE	SHAPE TRANSITION THRIE-BEAM TO SINGLE SLOPE	REVISED END BEVELS AND MASH GUARDRAIL GEOMETRY

(3) DIVISION 100: IMMINENT STANDARD DRAWINGS:

On the Standard Drawings search page, enter status of Imminent with other fields blank to see a list of upcoming Standard Drawings and their corresponding effective let date. Imminent drawings may be used at any time they are available if approved by the Resident. Follow procedure shown in imminent drawings when noted in this section.

Imminent Drawings will be made available as soon as they are signed.

(4) DIVISION 100: STANDARD DRAWING ERRATA:

The Bidders are hereby advised that the following note changes apply to the published Standard Drawings.

On sheet **000-205-05**, add the following information under the columns below:

OLD DRAWING NAME

NEW DRAWING NAME

720-905-01 to 720-905-05

720-901-01 to 720-993-32

On sheet **605-005-05 (ver 1-1-2013)**, replace entire text of General Note #4 with the following text:

4. The square footage of sign panels attached to 2½" x 2½" 12 gauge sign support secured to a 3" x 3" 7 gauge breakaway anchor shall not exceed 20 square feet.

On sheet **610-005-00 (ver 5-1-18)** added the following definiton to Note 1 of Flagging Operations section:

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

SIDE ROAD FLAGGER – This flagger is stationed on an intersecting side road and controls the side road traffic entering into the roadway where the work activity area is located.

On sheet **610-005-20 (ver 5-1-18)** added Note 5 :

5. When the work proceeds through a “STOP sign controlled” “SIDE ROAD” intersection continue the work operations through the intersection to a specific location point within the “DEPARTURE LANE” no less than 300 FT to 500 FT beyond the limits of the intersection to allow the work train and all portions of the lane closure to clear the intersection.

On sheet **610-005-20 (ver 5-1-18)**

Added dimension “300’-500” for the work activity area after the intersection.

On sheet **610-005-30 (ver 5-1-18)** added Note 5 :

5. When the work proceeds through a “STOP SIGN CONTROLLED” intersection continue the work operations through the intersection to a specific location point within the “DEPARTURE LANE” no less than 300 FT to 500 FT beyond the limits of the intersection to allow the work train and all portions of the lane closure to clear the intersection.

On sheet **610-005-40 (ver 5-1-18)** added Note 5 :

5. When the work proceeds through a “TRAFFIC SIGNAL CONTROLLED” intersection continue the work operations through the intersection to a specific location point within the “DEPARTURE LANE” no less than 300 FT to 500 FT beyond the limits of the intersection to allow the work train and all portions of the lane closure to clear the intersection.

On sheet **610-005-50 (ver 5-1-18)** added Note 5 :

5. When the work proceeds through a “TRAFFIC SIGNAL CONTROLLED” intersection continue the work operations through the intersection to a specific location point within the “DEPARTURE LANE” no less than 300 FT to 500 FT beyond the limits of the intersection to allow the work train and all portions of the lane closure to clear the intersection.

On sheet **610-005-60 (ver 5-1-18)** Title block changed :

Title block now reads “Flagging Operations – Work Zones Beginning @ Intersections with Two-Lane Two-Way Roadways – Departure Lane.”

On sheet **610-005-70 (ver 5-1-18)** Title block changed :

Title block now reads “Flagging Operations – Work Zones Terminating @ Intersections with Two-Lane Two-Way Roadways – Approach Lane.”

On sheet **610-005-80 (ver 5-1-18)** Note 6 revised:

6. Dependent upon the location of the work zone in the “Departure Lane” or the “Approach Lane” of the two-lane two-way road, when the work zone progresses to a location that requires conversion from this flagging operation traffic control setup to a standard flagging operation traffic control setup or vice versa, comply with the requirements of Standard Drawing No. 610-005-60 or Standard Drawing No. 610-005-70 as necessary regarding these conversions.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS
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On sheet **610-005-90 (ver 5-1-18)** Note 6 revised:

6. Dependent upon the location of the work zone in the “Departure Lane” or the “Approach Lane” of the two-lane two-way road, when the work zone progresses to a location that requires conversion from this flagging operation traffic control setup to a standard flagging operation traffic control setup or vice versa, comply with the requirements of Standard Drawing No. 610-005-60 or Standard Drawing No. 610-005-70 as necessary regarding these conversions.

In **Section 714-000 – Pipe Culverts (Permanent) (ver January 2011)**

Delete and replace all references to P1 Biaxial Geogrid with B4 Geogrid on all Drawings within this Section of the Standard Drawings.

On sheet **720-305-00 (ver May 2008)**, delete the entire note directly above main detail:

On sheet **720-405-00 (ver May 2009)** Detail 2 replace dimension 2'-6" maximum with:

2'-6" minimum

On sheet **720-901-01 (ver Feb 2015)** replace note 5.04 with:

5.04 When a mid-block crossing is required, consider mid-block staggered crossing (720-955-41) to encourage eye contact between the pedestrian and the oncoming traffic. Always angle the stagger so that the pedestrian travels through the refuge facing the oncoming traffic.

On sheet **722-305-00 (ver May 2010)** Detail 4 replace note “French Drain see note 21” with:

French Drain see note 4.5.

On sheet **722-305-00 (ver May 2010)** table 722-305A, 4th column, change the following:

Delete (SF)

Replace text “up to 36” with “up to 3’X3’ “

Replace text “larger than 36” with “larger than 3’X3’ ”

On sheet **722-305-00 (ver May 2010)** change general note 3.3 2nd sentence & Detail 4:

Place Class 2 Type C Geotextile for Erosion Control under riprap as specified in SCDOT Standard Specification.

On sheet **804-105-00 (ver May 2008)** Title Block replace text “Rirap (Bridge End)” with:

Riprap (Bridge End)

On sheet **804-105-00 (ver May 2008)** Change Note 2: Geotextile Pay Item to:

8048210 Geotextile for Erosion Control under riprap (Class 2) Type C.... SY

On sheet **804-205-00 (ver May 2009)** Change Note 2: Geotextile Pay Item to:

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS
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8048210 Geotextile for Erosion Control under riprap (Class 2) Type C.... SY

On sheet **804-305-01 (ver Jul 2017)** Change Note 4: Geotextile Pay Item to:

8048210 Geotextile for Erosion Control under riprap (Class 2) Type C.... SY

On sheet **804-305-02 (ver Jul 2017)** Change Section A: Geotextile Note to:

Geotextile for Erosion Control under riprap (Class 2) Type C

On sheet **804-310-00 (ver Jul 2017)** Change Note 3: Geotextile Pay Item to:

8048210 Geotextile for Erosion Control under riprap (Class 2) Type C.... SY

On sheet **805-001-01** Jan 2019 version, replace note 25.06 with:

25.06 FOR PROJECTS THAT SPECIFY PREMASH DEVICES (W-BEAM, TYPE T, TBBC, TYPE B, ETC.) INSTALL W-BEAM RAIL HEIGHT AT 29" +/- 1" (PREVIOUSLY NOTED AS 27.75" +3"/- 0".

On sheet **805-220-00** (ver Jul 2018) replace note 5:

FOR SITES WITH BRIDGES, BOLT GUARDRAIL TO BRIDGE PARAPET AS REQUIRED IN STIFFNESS TRANSITION, AND HOLD FACE OF GUARDRAIL POSITION (TYPICALLY 5'-3" FROM FACE OF CURB) THROUGH STIFFNESS TRANSITION. Make any necessary adjustments to face of guardrail within the LONGITUDINAL BARRIER. INSTALL END TREATMENT so that impact head is beyond the back of sidewalk.

On website, drawings between 805-500-00 and 805-779-99 are reserved as PREMASH standards. Do not value engineer or otherwise substitute PREMASH devices in any location where it has been determined that MASH devices fit and are specified. If MASH devices do not fit site condition, install PREMASH only upon approval by the Resident Engineer. Note that during MASH implementation, some PREMASH details may be published with old drawing numbering and a cover sheet that addresses drawing and pay item changes.

On sheets **805-860-xx (05, 10, 15, 20, 24, 30)** (ver Jan 2016):

All references to toe drain details are revised to refer to drawing 805-875-10 (correct all notes pointing to drawings 805-895-00 or other incorrect drawing numbers.)

(5) DIVISION 100: CONSTRUCTION MANAGEMENT SYSTEM:

All references to SiteManager are hereby revised to SCDOT's Construction Management System.

(6) SECTION 102: UNIQUE ENTITY ID (SAM) REQUIREMENT FOR ALL PROJECTS

The Bidders are advised that the Prime Contractor must register and maintain a current registration in the System for Award Management (<http://sam.gov>) at all times during this project. Upon registration, the Contractor will be assigned a SAM Unique Entity ID.

The Bidders are also advised that prior to the award of this contract, they MUST be registered, active, and have no active exclusions in the System for Award Management.

(7) SECTION 103: MOBILIZATION – SUBCONTRACTOR:

Mobilization – Subcontractor consists of the preparatory operations for subcontractors including: moving personnel and equipment to the project site; paying bond and insurance premiums; establishing offices, buildings, and other facilities necessary for work on the project; and all other preparatory work or costs incurred before beginning work on the project.

Mobilization - Subcontractor is paid at the lump sum price bid, which price and payment is full compensation for organizing and moving all subcontractor forces, supplies, equipment and incidentals to the project site, regardless of the number of times such moves are made. The price and payment also includes costs for demobilization.

When the item Mobilization – Subcontractor is included in the bid items, payment will be made on the first four estimates once construction begins. Each payment is for 25% of the lump sum price for Mobilization - Subcontractor, subject to the maximum total limit of 5.0% of the total contract amount.

If there is a remaining amount of the lump sum price for Mobilization after payments are made according to the limit above, then the remaining amount is paid after all work on the project has been completed and accepted.

Partial payment for this item in no way acts to preclude or limit any of the provisions of partial payments otherwise provided for by the Contract or these specifications.

Payment for this item includes all direct and indirect costs and expenses required to complete the work.

Pay items under this section include the following:

Item No.	Pay Item	Unit
9210305	MOBILIZATION – SUBCONTRACTOR	DOL

(8) SECTION 104: CONTRACT CHANGES:**A. PURPOSE**

The purpose of this document is to establish the responsibilities and procedures for processing Requests for Information (RFI), Design Change Notifications (DCN), Field Change Notifications (FCN), and Contract Change Requests (CCR) after the execution of the contract for SCDOT design-build projects. These actions require review and either acceptance or approval prior to implementation. The timely review and response to Contractor/SCDOT submittals by the appropriate project officials is imperative to maximize the benefits of design-build contracting and reduce project delays.

B. DEFINITIONS

The following are the four different types of Contract Requests (CR).

Request for Information (RFI): A written request, typically by the Contractor to SCDOT, requesting clarifications or interpretations of the contract, plans, and specifications, including input required to resolve discrepancies. An RFI can also be used to obtain concurrence for construction means and methods that differ from traditional practice. In addition, SCDOT may initiate an RFI to the Contractor requesting clarification of means and methods.

Design Change Notification (DCN): A written notification by the Contractor that states changes within the contract requirements are needed to the design after the plans have been released for

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construction. These changes to the design will be subject to the same level of quality assurance and quality control reviews as the original design, including SCDOT and Contractor review, respectively.

Field Change Notification (FCN): A written notification by the Contractor to SCDOT to construct the project differently than shown in the Released for Construction (RFC) plans, but still within the contract requirements and SCDOT accepted practices. FCNs typically capture minor changes that do not require review and approval from the Engineer of Record (EOR), but will be noted on the as-built plans.

Contract Change Request (CCR): A written request to change contract requirements or deviate from SCDOT accepted practices. CCRs shall document all changes to contract time and price. CCRs, if approved, will be processed individually or in groups via a Change Order in SCDOT's Construction Management System.

C. PROCEDURES

1. General

- a. Utilize SCDOT CR Form for all RFIs, DCNs, FCNs, and CCRs.
- b. Contractor will submit a form to the SCDOT RCE via ProjectWise, or vice versa, for all RFIs, DCNs, FCNs, and CCRs. FHWA shall be copied on Projects of Division Interest (PoDI).
- c. A sequential project-specific numbering system should be used for each CR submittal (e.g. CR-001).
- d. The RCE shall track the review progress for all documents in real time in a single spreadsheet in ProjectWise. This spreadsheet shall include:
 - 1) The CR number
 - 2) The duration agreed to for review completion
 - 3) The status of each submittal in each update
 - 4) The party that is currently responsible for reviewing and responding
- e. Initial review times for each of these documents will be 10 business days, unless otherwise agreed upon by the RCE and the Contractor. Review times may be extended if SCDOT's initial comments are not addressed. The Contractor and RCE are responsible for ensuring all parties fully understand the magnitude of potential schedule impacts of each submittal.
- f. If an approved CCR impacts contract time or price, it should be documented expeditiously as a Change Order in SiteManager.
- g. If a CR requires revision, it shall supersede all previous submittals and therefore must include all necessary attachments. A new CR form shall be submitted with the original identification number and applicable revision number (e.g. CR-001-R1).

2. Requests for Information

An RFI may be initiated by the Contractor or SCDOT. RFIs that are internal to the Design-Build Team, i.e. Contractor, should not be tracked by SCDOT.

a. RFIs submitted by the Contractor to SCDOT:

- 1) All RFIs are to be submitted by the Contractor's Project Manager to the RCE using the CR Form. The form and supporting documentation shall be placed in a designated ProjectWise folder that the Contractor, RCE, DOC's Office, and Preconstruction may

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access. A Bluebeam session may be initiated by SCDOT if multiple reviewers are involved.

- 2) Upon receipt, discipline experts for the Contractor, EOR, or SCDOT may discuss details independently, but any conclusions and supporting information must be documented in a formal response by the RCE utilizing the original CR Form.

b. RFIs sent by SCDOT to the Contractor:

- 1) The RCE will develop the RFI in coordination with SCDOT staff as needed using Form XXX. The RCE will provide all RFIs via a designated ProjectWise folder that the Contractor, RCE, DOC's office, and Preconstruction may access.
- 2) The Contractor will submit the response and supporting information to the RCE in this same ProjectWise folder.
- 3) The RCE will review the Contractor's response and determine whether a separate notification or request is needed.

3. Design Change Notification

- a. The Contractor shall notify the RCE of any design changes being considered on any documents or plans that have been released for construction by utilizing CR Form. Supporting the form should be all revised documents that clearly identify all proposed changes. The form and supporting documentation shall be placed in a designated ProjectWise folder that the Contractor, RCE, DOC's Office, and Preconstruction may access. A Bluebeam session may be initiated by SCDOT if multiple reviewers are involved.
- b. Once the DCN is reviewed and if all comments are resolved, the RCE will accept the DCN using CR Form and submit to the Contractor along with all necessary attachments. If any SCDOT comments cannot be resolved in accordance with the contract requirements, the DCN will be rejected, and SCDOT will provide an explanation for the rejection and comment on the favorability as a CCR.
- c. Digital and hard copies of revised plans that will become revised RFC plans shall be submitted by the Contractor following the procedures outlined in the contract and as agreed to for the original RFC plans. The Contractor shall provide revised Released for Construction (RFC) plans after SCDOT accepts the DCN.
- d. The Contractor is to ensure that all parties affected by any design changes and/or plan revisions receive revised RFC plans, i.e. utility companies, subcontractors, sub-consultants, railroad company representatives, etc.

4. Field Change Notification

- a. The Contractor shall notify the RCE of any FCN under consideration utilizing CR Form.
- b. The Contractor shall clearly identify all proposed changes on CR Form and attach all supporting documents and details needed for SCDOT to fully understand the proposed changes. A Bluebeam session may be initiated by SCDOT if multiple reviewers are involved.
- c. If the FCN does not require any design changes to the RFC plans, does not violate the contract requirements, and in the opinion of the RCE, complies with SCDOT accepted practices, the RCE will accept the FCN.
- d. If the FCN requires design changes to the RFC plans, the FCN will be rejected and SCDOT will provide an explanation for the rejection and the need to resubmit as a DCN.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

- e. If the FCN violates the contract requirements, the FCN will be rejected and SCDOT will provide an explanation for the rejection and comment on the favorability as a CCR.
 - f. If the FCN does not comply with SCDOT accepted practices, the FCN may be accepted or rejected. If rejected, SCDOT will provide an explanation for the rejection and comment on the favorability as a CCR.
 - g. The Contractor shall document all SCDOT accepted FCNs as redlines in the as-built plans.
5. Contract Change Request
- a. CCRs sent by Contractor to the SCDOT:
 - 1) The Contractor shall submit a CCR to the RCE using Form XXX with sufficient description, information, calculations, justification, and any impacts to cost and time for SCDOT to make an informed decision. The Contractor shall provide the RCE with additional supporting documents or justification upon request.
 - 2) The RCE is to review the submittal and seek input from SCDOT discipline experts as needed. A Bluebeam session may be initiated by SCDOT if multiple reviewers are involved.
 - 3) Upon concurrence with SCDOT and FHWA staff, the RCE will approve or reject any CCR using CR Form.
 - 4) If the CCR is approved, including any changes to cost and time, a SiteManager Change Order will be issued to the Contractor for review and concurrence.
 - 5) If the CCR is determined to be necessary to the project but cost and time cannot be agreed upon, SCDOT reserves the right to direct the Contractor to perform the work under Force Account Procedures in lieu of rejection. Upon completion of the changed work, a SiteManager Change Order will follow for contractor review and concurrence.
 - b. CCRs sent by SCDOT to the Contractor:
 - 1) The RCE shall submit a CCR to the Contractor using Form XXX with sufficient description and information for the Contractor to respond.
 - 2) The Contractor must respond with sufficient information, calculations, and justification for all cost and time changes.
 - 3) The RCE is to review the response and seek input from SCDOT discipline experts as needed. A Bluebeam session may be initiated by SCDOT if multiple reviewers are involved.
 - 4) Upon concurrence with SCDOT and FHWA staff, the RCE will approve or reject any cost or time changes associated with the CCR using CR Form.
 - 5) If the CCR is approved, including any changes to cost and time, a SiteManager Change Order will be issued to the Contractor for review and concurrence.
 - 6) If the CCR is determined to be necessary to the project but cost and time cannot be agreed upon, SCDOT reserves the right to direct the Contractor to perform the work under Force Account Procedures in lieu of rejection. Upon completion of the changed work, a SiteManager Change Order will follow for contractor review and concurrence.

(9) SECTION 104: DETOUR ROUTES:

When the contract documents allow/specify detours, SCDOT will maintain detour routes with the exception to detour signage and full-depth patching as required by the Resident Construction Engineer specified in Section 401.

(10) SECTION 105: SCDOT COMPUTER USAGE POLICY:

The **CONTRACTOR** and its designated employees, as well as any subcontractors and subcontractors of any tier, having access to SCDOT electronic data, is required to follow **SCDOT's** Acceptable Computer Usage Policy (http://iwww.dot.state.sc.us/pdf/departamental_directives/updated/DD37.pdf) which establishes guidelines for acceptable use and confidentiality of **SCDOT's** information technology for data entry into **SCDOT'S** computer system; provided that the section of the Policy pertaining to SCDOT's right to inspect any users email at any time is qualified to reserves unto SCDOT the right to inspect contractor or subcontractor emails that are SCDOT business related, including emails that are related to the services with which contractor is under contract.

The **CONTRACTOR** and its designated employees, as well as any subcontractors and subcontractors of any tier, having access to SCDOT electronic data, is required to also follow **SCDOT's** IT Security Policy (http://iwww.dot.state.sc.us/pdf/IT_Security_Policies_09042012.pdf), which sets forth **SCDOT** IT Security Policy including Network Security Policy, Network Access and Authentication Policy, Physical Security Policy, Backup Policy, Incident Response Policy, Corporate Security Policies, VPN Site-to-Site Policy, Wireless Access Policy, Remote Access Policy, Confidential Data Policy, Guest Access Policy, Third Party Connection Policy, Outsourcing Policy, and Mobile Device Policy; the South Carolina Act 190 of 2008; the Financial and Identity Theft Protection Act; and the Personal Financial Security Act. Prior to access to the **SCDOT** network, each person designated by the **CONTRACTOR** is required to sign an acknowledgment of the DD37 policy requirements.

The **CONTRACTOR's** obligations with respect to the provisions of computer use and data confidentiality shall survive termination or expiration of the contract. Without limiting any rights **SCDOT** may have, and notwithstanding any other term of this contract, the **CONTRACTOR** agrees that **SCDOT** may have no adequate remedy at law for a breach of the **CONTRACTOR's** obligations under this clause and therefore **SCDOT** shall be entitled to pursue equitable remedies in the event of a breach.

The **CONTRACTOR** is responsible for ensuring that it, as well as any subcontractors and subcontractors of any tier, having access to SCDOT electronic data, is required to manage and reduce risk by employing and using good cyber threat preventative measures. **CONTRACTOR, subcontractors and subcontractors** shall use the National Institute of Standards and Technology's Risk Management Framework (NIST RMF) as its cybersecurity framework or use other comparable frameworks and standards for cyber security protection. **CONTRACTOR** shall insert a NIST RMF or equivalent framework requirement provision in all subcontract for this Project which require or allow a subcontractor or subcontractor to have access to SCDOT data. **CONTRACTOR** shall provide SCDOT, upon request, third party certifications to verify implementation of an industry recognized cyber security framework during the Project. Other comparable cyber security frameworks include: NIST RMF; NIST CSF; ISO IES 27001/ISO 27002; SOC 2; IASME Governance; CIS Controls version 7; COBIT 5; FedRAMP; HIPAA; GDPR; FISMA; NERC CIP; HITRUST CSF.

(11) SECTION 106: SOURCE OF TELECOMMUNICATION AND VIDEO SURVEILLANCE EQUIPMENT

In accordance with 2 CFR 200.216, Contractors, in the performance of this Contract, are prohibited from procuring or obtaining telecommunication or video surveillance equipment, services, or systems produced by:

- Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(12) SECTION 106: SOURCE OF SUPPLY AND QUALITY OF MATERIALS:

Add Paragraph 3 to Subsection 106.1 of the Standard Specifications with the following:

“When materials, components, or elements that are not specifically covered in the Standard Specifications, Supplemental Specifications, Supplemental Technical Specifications, or Project Special Provisions are proposed to be incorporated into the work, submit to the RCE a specification covering the proposed material, component, or element for review and acceptance prior to incorporating it into the work. Ensure that such materials, components, or elements meet the requirements of the AASHTO specifications that were effective as of the date of the Final RFP. If the materials, components, or elements are not covered in the AASHTO specifications, ensure that they meet the requirements of the ASTM specifications that were effective as of the date of the Final RFP. Submission of a specification for a material, component, or element not covered in the Standard Specifications, Supplemental Specifications, Supplemental Technical Specifications, or Project Special Provisions does not guarantee approval for use on the Project.”

(13) SECTION 107: PROJECT BULLETIN BOARDS:

In accordance with the Required Contract Provisions Federal-Aid Construction Contracts Section II, Item 3, Part d, add the following:

Single Location Projects – On projects in which work is performed at a single location (such as bridge replacement projects, two-lane to five-lane widening projects, etc.), mount the project bulletin board in a permanent location within the project limits so that it is visible and accessible at all times.

Multiple Location Projects – On projects in which work is being performed or has the capability of being performed at multiple locations (such as resurfacing projects, pavement marking projects, etc.), display a portable bulletin board with at least one of the prime contractor’s work crews. If the prime contractor is not performing work, display the portable bulletin board with at least one of the subcontractor’s work crews. Display the portable bulletin board in a location and a manner that is acceptable to the RCE. Notify the RCE and all subcontractors as to the location of the portable bulletin board. On resurfacing projects, mount an additional project bulletin board in a permanent location at the asphalt plant supplying asphalt mix to the project so that it is visible and accessible at all times.

(14) SECTION 107: FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED:

Attention is directed to this Federal Legislation, which has been enacted into law. The contractor will be responsible for carrying out all of the provisions of this legislation, which may affect this contract.

(15) SECTION 107: CARGO PREFERENCE ACT REQUIREMENTS:

A. Use of United States-flag vessels – General Provisions:

"(1) Pursuant to Pub. L. 664 (43 U.S.C. 1241(b)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.

"(2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (A)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590."

B. Use of United States-flag vessels - The contractor agrees:

"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

"(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (B)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

"(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

(16) SECTION 107: CONTRACT PROVISION TO REQUIRE CERTIFICATION AND COMPLIANCE CONCERNING ILLEGAL ALIENS:

By submission of this bid, the bidder as the prime contractor does hereby agree:

- A. to certify its compliance with the requirements of Chapter 14 of Title 8 of the S.C. Code of Laws regarding Unauthorized Aliens and Public Employment;
- B. to provide SCDOT with any documents required to establish such compliance upon request; and
- C. to register and participate and require agreement from subcontractors and sub-subcontractors to register and participate in the federal work authorization program to verify the employment authorization of all new employees, or to employ only workers who supply the documents required pursuant to S.C. Code 8-14-20(B)(2).

(17) SECTION 107: IRAN DIVESTMENT ACT:

By submission of this bid/proposal, the bidder/proposer as the prime contractor/consultant/vendor does hereby certify his compliance to the following:

- A. CERTIFICATION: (a) The Iran Divestment Act List is a list published pursuant to Section 11-57-310 that identifies persons engaged in investment activities in Iran. Section 11-57-310 requires

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

the government to provide a person ninety days (90) written notice before he is included on the list. The following representation, which is required by Section 11-57-330(A), is a material inducement for the SCDOT to award a contract to you. (b) By signing your Offer, you certify that, as of the date you sign, you are not on the then-current version of the Iran Divestment Act List. (c) You must notify the SCDOT immediately if, at any time before posting of a final statement of award. You are added to the Iran Divestment Act List.

- B. ONGOING OBLIGATIONS: (a) You must notify SCDOT immediately if, at any time during the contract term, you are added to the Iran Divestment Act List. (b) Consistent with Section 11-57-330(B), you shall not contract with any person to perform a part of the Work, if, at the time you enter into the subcontract, that person is on the then-current version of the Iran Divestment Act List.
- C. OPTION TO RENEW RESTRICTION: Contractor acknowledges that, unless excused by Section 11-57-320, if the contractor is on the then-current Iran Divestment Act List as of the date of any contract renewal, the renewal will be void ab initio.

(18) SECTION 107: REQUIREMENTS FOR FEDERAL AID CONTRACTS WHICH AFFECT SUBCONTRACTORS, DBE HAULERS, MATERIAL SUPPLIERS AND VENDORS:

March 1, 2010

- A. The contractor's attention is directed to the requirements of Section I.2 in Form FHWA 1273 that is included in your contract documents as the Supplemental Specification "Required Contract Provisions Federal-Aid Construction Contracts". Section I.2 requires that "the contractor shall insert in each subcontract all of the stipulations contained in the Required Contract Provisions". This requirement also applies to lower tier subcontractors or purchase orders. These provisions must be physically included in your subcontracts. A reference to the applicable specification will not suffice.
- B. The contractor's attention is directed to the requirements of the Supplemental Specification "Standard Federal Equal Employment Opportunity Construction Contract Specifications". Section 2 requires that the provisions of this specification must be physically included in each subcontract with a value of \$10,000 or greater.
- C. The contractor's attention is directed to the requirements of the Equal Employment Opportunity Performance certifications in the Proposal Form Certifications and Signatures section of the contract. Section 1 concerning Equal Employment Opportunity must be physically included in each subcontract.
- D. Prior to the approval of the subcontractor request, all DBE subcontracts must include a signed copy of the subcontract agreement between the Prime Contractor and the DBE Subcontractor.
- E. Prior to the issuance of formal approval, of any DBE haulers, the contractor must submit a signed copy of the hauling agreement.
- F. The contractor's attention is further directed that sections 1, 2, 3, 8, 9, and 11 of Form FHWA 1273, or Sections 1, 3, 8 and 10 of Form 1316 (for Appalachian contracts only) must be physically included in each purchase agreement with a value of \$10,000 or greater with a vendor or supplier, and in open-end contracts where individual purchases are less than \$10,000 but where the total purchases accumulate to \$100,000 or more per year.

(19) SECTION 107: LATE DISCOVERY OF ARCHAEOLOGICAL/HISTORICAL REMAINS ON FEDERAL AID PROJECTS AND APPROVAL OF DESIGNATED BORROW PITS:

August 7, 1991

A. LATE DISCOVERY OF ARCHAEOLOGICAL/HISTORICAL REMAINS ON FEDERAL AID PROJECTS

- 1. Responsibilities:

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

The Contractor and subcontractors must notify their workers to watch for the presence of any prehistoric or historic remains, including but not limited to arrowheads, pottery, ceramics, flakes, bones, graves, gravestones, or brick concentrations. If any such cultural remains are encountered, the Resident Construction Engineer shall be immediately notified and all work in the vicinity of the discovered materials or site shall cease until the Department's Staff Archaeologist or the State Highway Engineer directs otherwise.

2. Applicability:

This provision covers all areas of ground disturbance resulting from this federal - aid contract, including but not limited to road construction, Department designated borrow pits, Contractor furnished borrow pits, and/or staging areas.

3. Cost Reimbursement and Time Delays:

Any extra work required by A(1) above within the project right of way or on Department designated borrow pits (see below) will be paid for in accordance with Subsection 104.05 of the Standard Specifications. Extra contract time may be provided under Subsection 108.06 of the Standard Specifications for archaeological work within the project right of way or on designated borrow pits.

NOTE: On Contractor furnished borrow pits the contractor is not entitled to any additional time or money for delay on impact resulting from A(1) above or for extra work required by A(1) above. Therefore, contractors may wish to retain professional archaeological services to better ensure that borrow pit areas are cleared of archaeological/historical remains prior to use on Federal aid projects.

B. APPROVAL OF DESIGNATED BORROW PITS ON FEDERAL AID PROJECTS (PLANT SITES WHICH QUALIFY AS COMMERCIAL ARE NOT INCLUDED)

In instances where the Department specifically designates the location of borrow pits on project plans or in contract specifications for use on a Federal aid project, an archaeological survey will be performed by Department archaeologists prior to award of contract.

This provision also applies to designated disposal sites, staging areas, haul roads, and job site field offices.

(20) SECTION 107: SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES TRAINING SPECIAL PROVISIONS:

THE NUMBER OF TRAINEES INCLUDED IN THIS PROJECT WILL BE:

Road: 0

Bridge: 0

The Supplemental Specification states "...the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program." The Contractor is advised that the Department will not accept bids with any unit price other than \$0.80/Hr for the item: ON-THE JOB TRAINEE. Bids that are submitted with any other unit price will be corrected by the Department to \$0.80/Hr, and the Grand Total bid amount adjusted accordingly.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

Contractor must also comply with the On-the-Job Training Manual located at <https://www.scdot.org/business/pdf/businessDevelop/OJT-Manual.pdf>.

(21) SECTION 107: MONITORING OF CONSTR.-RELATED EARTHBORNE VIBRATIONS:

July 8, 2015

A. DESCRIPTION

The project construction will generate vibrations that will travel through the earth, which will subsequently be received or “sensed” by nearby structures and inhabitants. Specific procedures that will generate earthborne vibrations during bridge and roadway construction include (but are not limited to) the installation of piles, earthquake drains, shoring walls, general foundation construction, and vibratory compaction of unclassified or borrow excavation. To mitigate the risk of vibration-related damage to nearby structures, this specification outlines the Contractor's responsibility for performing a program of pre-construction condition assessment and vibration monitoring during construction.

This specification is based, in part, on AASHTO R 8-96 (2004) *Standard Recommended Practice for Evaluation of Transportation-Related Earthborne Vibrations*. As discussed in AASHTO R 8-96 (2004), humans respond to a much broader range of vibration frequencies and intensities than structures. Intrusive vibration levels can annoy humans at much lower intensities than levels considered critical for structures. Thus, occupants of adjacent properties may perceive that the construction-induced vibrations may present risk to their structures. The recommended safe vibration limits are intended to mitigate the risk of structure damage, and more specifically, reduce the development of “threshold cracks” or cosmetic cracking. Such cracks may appear at lower vibration levels than the level at which architectural or minor structural damage would be expected to occur.

B. PRE-CONSTRUCTION CONDITION ASSESSMENT

The Contractor shall retain a geotechnical engineering firm to perform a pre-construction condition assessment to document the conditions of nearby buildings and other sensitive nearby structures prior to the beginning of construction. The assessment shall be performed on all properties adjacent to the project site and any other properties as directed by the Engineer. The assessment shall include any structures within 300 feet of any vibration inducing construction activity. The assessment should include video and photographic documentation of all exteriors and interiors, and installation of crack monitors on cracks that might propagate due to construction vibrations. All documentation of existing building conditions and information concerning the type and location of crack monitors shall be presented to the Engineer in a report prior to construction.

C. CRACK MONITORING DURING CONSTRUCTION

During all construction, the Contractor shall perform periodic readings of the crack monitors that were installed during the pre-construction condition assessment. All readings shall be provided to the Engineer within 48 hours of taking the reading. Provided that the crack readings confirm that vibrations are not contributing to increasing the crack width, the crack monitors may be read once per week. More frequent readings may be directed by the Engineer during activities that are expected to have greater earthborne vibrations (e.g., pile driving). If the crack readings suggest that vibrations from the project site are contributing to crack width, then the Contractor shall immediately notify the Engineer and review those activities that are generating the earthborne vibrations. The Contractor and his or her geotechnical firm shall then submit a detailed plan for repair, perform the repair at no cost to the Department and develop and submit for review a revised construction plan to address the vibration problems and minimize further damage and complaints.

D. VIBRATION MONITORING DURING CONSTRUCTION

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

1. Procedure - The Contractor shall monitor vibrations at no less than four locations at each specific site of construction activity along the perimeter of the project during all foundation and embankment construction activities. The locations shall be selected by the Contractor based on the location of the construction activities and their relative position to nearby offsite structures. Prior to construction, a plan of the monitoring locations shall be submitted to the Engineer for acceptance. The locations of the vibration monitors shall be adjusted during construction with acceptance by the Engineer. The vibration monitors shall be established at the site so that background vibrations may be determined prior to beginning foundation or embankment construction. The sensitivity range of the seismograph shall be selected so that the recording is initiated below the maximum allowable particle velocity shown in Figure 1 and extends above the highest expected intensity. Specific activities of the vibration source shall be indexed in time to allow correlation with the arrivals on the vibration
2. Project Vibration Criteria - The maximum allowable particle velocity is shown in Figure 1. If the data from the monitors indicate that vibrations are exceeding the established criteria, then the Contractor shall immediately notify the Engineer and suspend those activities which are generating the earthborne vibrations, until the Contractor and his or her geotechnical firm have developed a revised construction plan to resolve the problem. The problem shall be resolved at no additional cost to the Department.
3. Instrumentation – The vibration monitors shall consist of digital seismographs that display the particle velocities and associated frequencies plotted against the criteria for this project (i.e., Figure 1). Each seismograph shall contain geophones with response capability in three mutually perpendicular axes or components: one vertical and two horizontal (radial and transverse). The frequency response of the geophones shall be linear from at least 4 Hz to more than 200 Hz. The sensitivity shall range from less than 0.02 in/sec to more than 5.0 in/sec. The BlastMate III by Instante! is one type of seismograph that is suitable for this project.
4. Calibration and Instrument Use - The Contractor shall field calibrate the vibration monitors before the start of each recording period. The transducer shall be positioned with the longitudinal axis toward the vibration source. Transducers must be adequately coupled with the ground. Operation of all vibration monitors shall be in accordance with the instrument manufacturer's instructions and recommendations. Vibration records shall be collected in waveform plot or strip chart plot. The peak vector sum of the particle velocity in longitudinal, transverse, and vertical planes shall be shown along with the respective dominant or principle frequencies. The highest recorded particle velocity (i.e., the vector sum of the three orthogonal directions), when indexed to a particle vibration event, shall be reported as the peak particle velocity. The recorded peak particle velocity shall be compared to criteria appropriate for the subject of concern.
5. Complaints - In the event of a complaint, the Contractor shall immediately contact the Engineer and review those construction activities that are inducing vibrations into the earth. The Contractor shall prepare a report documenting all relevant data such as the time and date presented in the complaint, a description of the construction activities during the subject time/date, data from the monitoring instruments for the subject time/date, complaint information and a description (including photographs, if possible) of the alleged damage. The Contractor and his or her geotechnical firm shall then submit a detailed plan for repair, perform the repair at no cost to the Department and develop and submit for review a revised construction plan to address the vibration problems and minimize further damage and complaints.

E. METHOD OF MEASUREMENT

In addition to the pre-construction condition assessment report, the Contractor shall also provide monthly reports containing the results of the crack monitors and vibration monitors during those activities that generate earthborne vibrations, including (but not limited to) ground improvement

and foundation construction. The reports shall document that the Contractor is providing the work described by this specification.

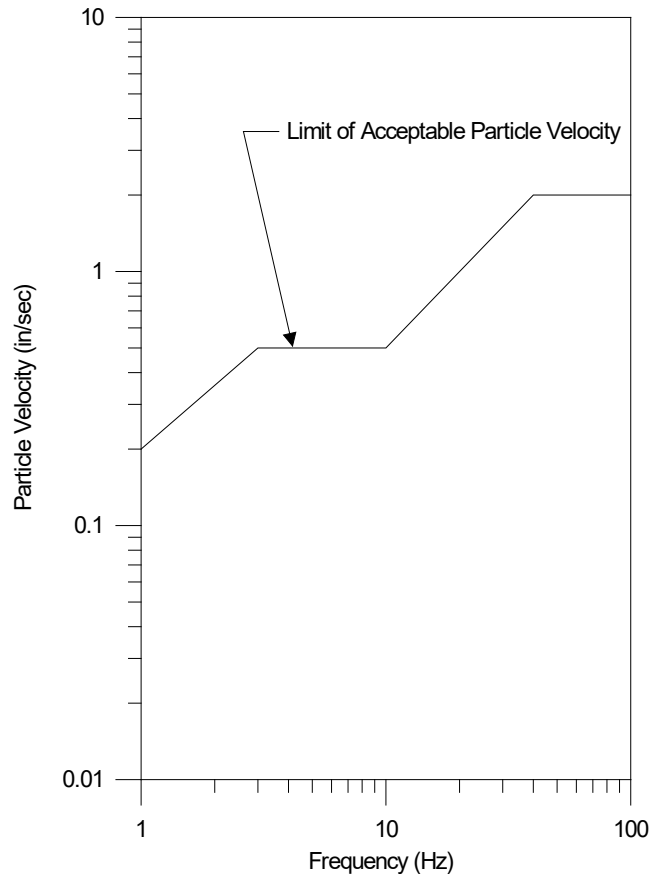


Figure 1 - Vibration Criteria (adapted from AASHTO R8-96)

(22) SECTION 107: COMMUNITY AND PUBLIC RELATIONS PLAN:

SCDOT will take the lead role on this project and be responsible for a portion of the public information efforts. Unless noted otherwise elsewhere in this RFP, the SCDOT responsibilities include:

- A. Developing and maintaining the project website
- B. Soliciting and administering advertisements and media announcements, as deemed necessary

The Contractor shall coordinate with the Department to promote public awareness for this project. The amount of public involvement required for this project is directly based on the Contractor's Transportation Management Plan and construction details. The Design- Build Team's responsibilities shall include:

- A. Providing details surrounding the impacts to the public
- B. Providing advance notice to the Department of upcoming project impacts
- C. Attending and/or speaking at public meetings If necessary
- D. Hand delivery of time sensitive informational materials

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

The Contractor shall hold an initial project coordination meeting with SCDOT at least one month prior to start of construction to discuss project impacts to the public. This information will be used by the Contractor to create a Public Information Plan.

The Contractor shall inform the Department at least twenty-one (21) calendar days in advance of any construction activity that will have significant impact on the public, including, but not limited to, the start of construction, major traffic shifts, road closures, ramp closures, detours, night work and project completion.

The Contractor will develop, with the assistance of SCDOT, the specific list of target audiences for this project. The following groups are identified as typical target audiences to receive informational materials:

- A. State Senator(s) and Representative(s)
- B. Chairman of the County Council
- C. County Administrator/Manager
- D. County Planner
- E. City Mayor (as appropriate)
- F. City Manager (as appropriate)
- G. Transportation services
- H. Emergency services
- I. Neighborhood groups and private homes
- J. Industry and businesses
- K. Chamber(s) of Commerce
- L. Individual schools effected by the project
- M. Public School District(s) and Transportation Office(s)
- N. Post Office
- O. Any other organization as deemed necessary by the Department

The minimum public information requirements solely associated with the Transportation Management Plans shall include, but not be limited to the following:

Public Meetings - If Beginning of Construction meeting for area businesses and residents is held, Contractor shall attend and be prepared to speak at this event.

Distribution of Informational Materials - For beginning of construction and for all road closures with detour routes, the Contractor shall be responsible for delivering time sensitive informational material provided by the SCDOT directly to portions of the target audience. If the Contractor informs the Department of the aforementioned activities less than twenty-one (21) calendar days in advance, the Contractor shall hand deliver the informational materials to the impacted target audiences.

The Department will be responsible for establishing, creating, maintaining and updating the project website for this project. However, throughout the project duration, the Contractor shall coordinate with the RCE to ensure the accuracy of the aforementioned project website. At a minimum, the Contractor shall designate a contact for public information inquiries and coordination. Throughout construction, at a minimum, this contact shall provide bi-weekly updates to the RCE, including, but not limited to, traffic control phasing, graphic illustrations, project pictures, etc.

The Contractor shall include in their Total Cost to Complete, all costs associated with their involvement in the Community and Public Relations Plan.

(23) SECTION 107: COORDINATION OF USGS EQUIPMENT RELOCATION WITHIN HIGHWAY CONSTRUCTION:

For projects requiring United States Geological Survey (USGS) equipment to be installed, removed, or relocated, coordination between the CONTRACTOR, the Department, and the USGS will be required.

Coordinate the schedule for installation, removal, or relocation of any USGS equipment. Notify the RCE within 48 hours prior to the beginning of work by the USGS. Provide traffic control for all USGS operations.

All work and equipment related to the removal, installation, or relocation of USGS equipment will be performed and provided by the USGS and will follow their standard practices and guidance from the SCDOT Bridge Maintenance Office and Hydraulic Design Support Office.

No direct payment will be made for coordination or work required for the relocation of USGS equipment. Include all associated cost in the unit price for Traffic Control.

(24) SECTION 108: PARTNERING:

A. COVENANT OF GOOD FAITH AND FAIR DEALING

This Contract imposes an obligation of good faith and fair dealing in its performance and enforcement.

The CONTRACTOR and Department, with a positive commitment to honesty and integrity, agree to the following mutual duties:

1. Each will function within the laws and statutes applicable to their duties and responsibilities.
2. Each will avoid hindering the other's performance.
3. Each will proceed to fulfill its obligations diligently.
4. Each will cooperate in the common endeavor of the Contract.

B. PARTNERING

The Department encourages the foundation of cohesive partnering with the CONTRACTOR and its principle subcontractors and suppliers. This partnering is not a legal partnership as defined by South Carolina law. Partnering will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance and completion within budget, on schedule, and in accordance with the Contract.

The establishment of a partnering charter will not change the legal relationship of the parties to the contract nor relieve either party from any of the terms of the Contract. Any cost associated with effectuating partnering will be agreed to by the Department and the CONTRACTOR and will be shared equally between them.

(25) SECTION 108: EVALUATION OF DELAYS

The Contractor shall evaluate delays and calculate the appropriate time extension due based on the following:

1. The Contractor shall base all evaluations of delay and all calculations of the appropriate time extensions due on the schedules submitted to and accepted by the Department. The Contractor shall not use schedules that did not exist on the project or create schedules after the delay has occurred to demonstrate entitlement to a time extension.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

1. The Contractor shall base evaluations and calculations related to the determination of extensions of time on the Critical Path as established by the schedules submitted to and accepted by the Department. The Contractor is not entitled to a time extension for delays that do not delay the Critical Path. The Critical Path is defined as the longest path through a project schedule.
2. The evaluations and calculations required to establish entitlement to a time extension will vary depending on the nature and timing of the delay and whether the Contract Time is measured in working days, calendar days, or based on a fixed completion date.
3. The schedules relevant to the evaluation and calculation of time extensions are the most current schedules submitted to and accepted by the Department. For example, if the Department determines that Extra Work is required and the Supplemental Agreement adding this work will be dated June 2, then the determination of the time extension due the Contractor will be based on the last schedule submitted and accepted by the Department prior to June 2 of the same year.
4. The Contractor's evaluations and calculations to document an appropriate time extension shall be performed as follows:
5. The Contractor shall use the method known in the construction industry as the Time Impact Analysis (TIA) to identify and measure critical delays that have not yet occurred (prospective). The Contractor shall not use this method to evaluate delays that have already occurred (retrospective). In general terms, the Contractor shall perform a TIA as follows:
 - a. Develop a "mini" schedule depicting the changed work (hereby referred to as a fragnet).
 - b. Identify the current Progress Schedule as described in paragraph (4), above. Record the scheduled completion date in this schedule.
 - c. Insert the fragnet into the current Progress Schedule by properly linking the fragnet with the existing activities in the current Progress Schedule.
 - d. Recalculate the current Progress Schedule with the fragnet inserted and record its scheduled completion date.
 - e. The difference in the scheduled completion dates (or other Milestone dates) between the current Progress Schedule and the Progress Schedule calculated with a properly inserted and properly composed fragnet is the delay attributable to the changed work. The time extension due, if any, will be based on this delay.
6. The Contractor shall use a Contemporaneous Analysis when evaluating delays that have already occurred. In general terms, the Contractor shall perform a Contemporaneous Analysis as follows:
 - a. Identify the accepted Progress Schedule that is immediately before the start of the delay being evaluated.
 - b. Identify each Progress Schedule in effect during the delay and the Progress Schedule with a data date immediately following the conclusion of the delay.
 - c. Identify the critical path each day from immediately before the start of the delay to the Accepted Progress Schedule immediately following the delay.
 - d. Determine whether the delay falls on the critical path.
 - e. If the delay does not fall on the critical path, then no project delay occurred, and no time extension is due.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

- f. If the delay falls on the critical path, then determine the number of days the critical path is delayed. The time extension due, if any, will be based on this delay to the scheduled completion date

Concurrent Delays are two separate and independent delays that both delay the critical path at the same time. Concurrent Delays can occur when a CONTRACTOR caused delay is concurrent with an SCDOT-caused delay, when a delay that is the responsibility of neither the CONTRACTOR nor SCDOT is concurrent with an SCDOT-caused delay, or when a CONTRACTOR caused delay is concurrent with a delay that is the responsibility of neither the CONTRACTOR nor SCDOT. In each of these scenarios, the Contractor is entitled to an extension of Contract Time but is not entitled to recover additional time-related costs for the period of concurrency.

(26) SECTION 109: FUEL ADJUSTMENT INDEXES:

No fuel adjustment will be made on this Project.

(27) SECTION 109: REFERENCES TO UNIT PRICING:

Except listed below, any references in the contract documents to unit price, measurement, and payment, are typical references for design-bid-build contracts and are not applicable to the extent they effect payment on Design-Build contracts. The Design-Build contractor's schedule of values shall provide sufficient detail to compare work progress to the contractor's schedule and determine appropriate periodic payments.

The following Special Provisions contain unit rate and payment information specifically applicable to this Design-Build contract:

SECTION 401: HOT MIX ASPHALT (HMA) QUALITY ASSURANCE

SECTION 401: HOT-MIX ASPHALT RIDEABILITY

SECTION 401: FULL DEPTH ASPHALT PAVEMENT PATCHING

SECTION 701: NON-CONFORMING CONCRETE

(28) SECTION 202: REMOVAL OF EXISTING GUARDRAIL:

Section 202.3.4.2 applies on this project.

(29) SECTION 203: BORROW EXCAVATION:

Delete paragraph 1 of Subsection 203.2.1.8 of the Standard Specifications and replace it with the following:

1. Borrow consists of material required for the construction of embankments or for other portions of the work where the elevation of the existing subgrade is less than the subgrade elevation required on the Plans or directed by the RCE. When sufficient material is available entirely within the right-of-way, the work is covered by the item Unclassified Excavation and the material shall meet the material requirements of Borrow Excavation in this subsection. When it is necessary to bring material from outside of the right-of-way, the work is covered by the item Borrow Excavation, and the material shall also meet the requirements for Borrow Excavation in this subsection. The material requirements of this subsection apply to all material used in the work regardless of its origin. The requirements of this subsection are not applicable to in situ subgrade material.

(30) SECTION 203: BORROW EXCAVATION (FOR SHOULDERS):

This work shall consist of satisfactory placement of all materials necessary to bring the shoulder grade to within 2 inches of the final pavement edge grade. The Contractor shall furnish all earth material necessary to eliminate any edge of final pavement to shoulder gradient differential that exceeds 2 inches. The quantities shown on the plans are the Engineering estimate of the number of units that will be necessary for this project, actual field measurements may cause these quantities to vary.

Selected materials shall be used for this operation. The selected material shall consist of a friable material such as topsoil, etc., containing grass roots and having the properties of being comparatively porous, capable of growing grass and of a stable nature in that when compacted it will resist erosion and be capable of supporting vehicles when relatively wet. When the area where material is to be placed, is greater than 4 feet in width, it shall be scarified and/or disked to a minimum depth of 3 inches prior to placing any material. Scarifying or diskings is not required for areas less than 4 feet in width. Borrow shall be mixed with the existing scarified and/or disked shoulder material in such a manner as to provide a seed bed in accord with Section 810.15 of the Standard Specifications. The Contractor has the option of placing the borrow material (a) Prior to placing final surface course or (b) Following the placing of the finished surface course.

(31) SECTION 203: BORROW PITS:

A. PERMITTING OF BORROW PITS

Prior to using borrow material from commercial or other borrow pits located wholly or in part in wetland areas, the contractor shall submit written evidence that operations to obtain fill material from the borrow pit(s) have received all appropriate and necessary authorizations from federal, state, and/or local authorities.

Permitted Borrow Pits

If the appropriate federal, state, and local authorities have issued permits, the contractor shall provide to SCDOT copies of all permits issued for such borrow pit sites.

B. BORROW PITS WITHOUT SECTION 404 PERMIT

For borrow pit sites for which a Section 404 permit under the Clean Water Act has not been issued, the contractor shall provide SCDOT with copies of documentation provided by the contractor or its subcontractor(s) to the U.S. Army Corps of Engineers, which shall, at a minimum, clearly define the location of the borrow pits and any wetlands on the borrow pit site; describe the proposed activities and processes that will be used to prepare the site, obtain fill material from the site, and store material at the site; and request the U.S. Army Corps of Engineers to confirm in writing that no Section 404 permit is required for those operations. No operations shall take place at the borrow sites for at least thirty days from the date of the submission of confirmation request to the U.S. Army Corps of Engineers. After thirty-one days the contractor may begin work. The contractor shall also provide copies to SCDOT of any response(s) provided by the U.S. Army Corps of Engineers to its documentation.

C. RESPONSIBILITY

SCDOT has no obligation or duty to review, assess, evaluate, or act upon such documentation and maintains no authority or responsibility to alter, amend, reject, accept, or otherwise exercise any control over the contractor or subcontractor regarding compliance with Clean Water Act Section 404 and the implementing regulations for Section 404. Documentation submitted to SCDOT is for public information and coordination purposes only. The contractor is responsible for all costs related to the selection, operation, and/or activities at any borrow pit site in wetlands including fines, additional mitigation, and impact delays related to failure to obtain any and all

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necessary federal, state, and local permits and approvals for borrow pits and operations. Nothing herein shall affect in any way SCDOT's right to accept or reject any fill material not meeting the required technical specifications.

(32) SECTION 205: HIGH-STRENGTH GEOTEXTILE FOR EMBANKMENT REINFORCEMENT:

April 21, 2015

A. DESCRIPTION

This work shall consist of furnishing and installing construction geotextiles in accordance with the details shown in the plans, specifications, or as directed by the RCE.

B. MATERIALS

A geotextile is defined as any permeable polymeric textile used with foundation, soil, rock, earth, or any other geotechnical engineering related material, as an integral part of a civil engineering project, structure, or system. Use geotextiles and thread used in joining geotextiles manufactured from fibers consisting of long-chain polymers, composed of at least 95 percent by weight of polyolefins or polyesters. Use geotextiles with fibers formed into a stable network such that the fibers or yarns retain their dimensional stability relative to each other, including selvages (edges) during shipping, handling, placement, and in service. Use geotextile free from defects or tears.

1. **Minimum Average Roll Values:** All property values, with the exception of Apparent Opening Size (AOS), represent Minimum Average Roll Values (MARV) in the weakest principal direction. Provide geotextiles whose average test results from any roll sampled in a lot for conformance or quality assurance testing meets or exceeds minimum values provided in this Section.
2. **Apparent Opening Size:** Values for Apparent Opening Size (AOS) represent maximum average roll values. Acceptance will be based on ASTM D 4759.
3. **Reinforcement Geotextile:** Use reinforcement geotextile within existing and/or proposed fills for slope reinforcement.

Furnish geotextiles meeting the property requirements outlined in Table 1.

Table 1: High Strength Geotextile Properties (Design Requirements)^{1,2}

Property	Test Method	Geotextile Property Requirements
Long-Term Design Strength, T_{al} , MD		22,800 lb/ft
Long-Term Design Strength, T_{al} , XD		2,280 lb/ft
Sewn Seam Breaking Strength ³	ASTM D4884	900 lbs/ft
AOS	ASTM D4751	$\leq (1.0 \text{ to } 2.0) D_{85(\text{soil})}$
Permeability	ASTM D4491	$\geq 10k_{\text{soil}}$
Default Pullout Friction Factor, F^*	ASTM D6706	$0.6 \tan \phi$
Default Alpha, α	ASTM D6706	0.6
Ultraviolet Stability	ASTM D4355	$\geq 50\%$ after 500 hrs of exposure

- Notes:
1. The test procedures shall conform to the most recently approved ASTM geotextile test procedures.
 2. All numeric values represent Minimum Average Roll Value (MARV).
 3. Applies to factory or field sewn seams.

4. Source Approval and Certification

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Prior to construction, the Contractor shall submit to the Resident Construction Engineer (RCE) a Certification Package prepared by the geotextile reinforcement manufacturer. The Contractor shall allow 21 calendar days from the day the submittals are received by the RCE for review and acceptance. Submit the following information regarding each geotextile proposed for use:

- a. Manufacturer's name and current address;
- b. Full product name/number, including roll number;
- c. Geosynthetic material (i.e. polymer type) and structure (including fiber/yarn type);
- d. Proposed geotextile use(s); and
- e. Certified test results for the properties outlined in Table 1 and below in Section 4.

The Certification shall state that the furnished geotextile soil reinforcement is in full compliance with the design requirements as stated in this specification and the design drawings and is fit for use in long-term critical soil reinforcement applications. In addition to the minimum required properties in Table 1, the submittal shall also certify the following values for each geotextile soil reinforcement used on the project:

- a. The ultimate tensile strength, T_{ULT} , (MARV) for geogrid soil reinforcements, MD/XD
- b. The tensile strength at 5% strain, MD
- c. The creep reduced tensile strength, MD
- d. The geotextile's pullout coefficients (F^* , α)

The Contractor's submittal package shall include, but not be limited to, actual test results for tension, creep, durability, construction damage, joint/seam strength, pullout and quality control. A person having the legal authority to bond the manufacturer shall attest to the certificate. Any tests required shall be performed at no additional cost to the Department. If in the opinion of the RCE, the required documentation is not provided for individual reduction factors (RF) or pullout coefficients (F^* , α), default values for these design parameters shall be used in accordance with this specification.

a. Ultimate Tensile Strength (T_{ult}):

The ultimate tensile strength, T_{ult} , shall be determined from wide width tensile tests (ASTM D 4595). Geotextile samples tested in accordance with ASTM D 4595 shall be with an 8-inch width specimen, or a 4-inch specimen width with correlation to an 8-inch width. Correlation methodology shall be submitted to, and is subject to acceptance by the RCE. All geotextile strength tests (ASTM D 4595 and ASTM D 6637) shall be conducted at a strain rate of 10% per minute based on actual gage length necessary to meet the testing sample dimension requirements. Laboratory test results documenting the ultimate tensile strength, T_{ult} , in the reinforcement direction shall be based on the minimum average roll values (MARV) for the product.

b. Long-Term (Allowable) Design Tensile Strength (T_{al}):

The allowable tensile load per unit width of geotextile soil reinforcement, T_{al} , in accordance to the backfill type used shall be computed as follows:

$$T_{al} = \frac{T_{ult}}{RF}$$

c. Reduction Factor (RF):

The total reduction factor, RF, is the combined reduction factor for long-term degradation due to installation damage, creep, and durability. The total reduction factor, RF, shall be defined as follows:

$$RF = RF_{ID} \times RF_{CR} \times RF_D \geq 3.0$$

The individual reduction factors shall be documented in accordance with the site conditions, design calculations, and specifications. When sufficient documentation is not provided for individual reduction factors, RF_{ID} , RF_{CR} , and RF_D , a reduction factor RF of 7.0 shall be used. The reinforcement manufacturer shall certify and document the individual reduction factors as follows:

d. Installation Damage Reduction Factor (RF_{ID}):

The reduction factor for installation damage, RF_{ID} , shall be documented by field and laboratory test results and literature review, as described in ASTM D 5818 for the reinforced backfill specified or for more severe soils. Samples subjected to installation damage shall be tested for tensile strength and deformation characteristics in accordance with ASTM D 4595. Recommended values for reduction factors for installation damage (RF_{ID}) for various soils shall also be documented. The minimum installation damage reduction factor, RF_{ID} , shall be 1.1, regardless of product specific test results.

e. Creep Reduction Factor (RF_{CR}):

Laboratory test results documenting creep performance over a range of load levels, for a minimum duration of 10,000 hours based on tension creep test (ASTM D 5262) shall be required. Creep test samples shall be of sufficient width to be representative of overall product creep response (fiber creep testing will not be accepted).

The creep-limiting strength, T_i , shall be based on extrapolating the 10,000 hours (or longer duration) tension creep tests to a 75-year design life, unless a 100-year design life is specified in the plans. The creep extrapolation method shall be based on methods described in FHWA NHI-10-025, *"Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes"* - Appendix "D". Laboratory test results and extrapolation methodology shall be documented.

The reduction factor for creep, RF_{CR} , is defined as the ratio of the average lot specific ultimate tensile strength, T_{ULTLOT} , to the creep-limiting strength, T_i . The average lot specific ultimate tensile strength, T_{ULTLOT} , for the lot of material used for creep testing, T_{ULTLOT} , shall be determined from wide width tensile test, ASTM D 4595.

f. Durability Reduction Factor (RF_D):

The total reduction factor for durability, RF_D , shall be defined as the combined effects of chemical and biological degradation. Laboratory test results, extrapolation techniques, and a comprehensive literature review shall document the reduction factor for durability for all material components in accordance with FHWA NHI-09-087, *"Corrosion / Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes"*. The minimum durability reduction factor, RF_D , shall be 1.1, regardless of product specific test results.

g. Soil Reinforcement Pullout Coefficients (F^* , α):

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The Certification Package shall document the pullout coefficients (F^* , α) meet or exceed the required coefficients necessary to obtain the T_{al} provided above where,

F^* = Minimum pullout friction factor = $C_i \tan \Phi$,
 C_i = Soil interaction coefficient ≥ 0.6
 Φ = Soil Angle of Internal Friction

The pullout friction factor, F^* , and the scale effect correction factor, α , shall be documented by laboratory testing from pullout tests. Pullout testing shall be conducted for site-specific materials or for materials representative of the reinforced backfill at confining pressures specified by the Engineer. When laboratory tests are used from representative soils, the representative soils shall be documented by providing the soil's angle of internal friction, gradation, and coefficient of uniformity ($C_u = D_{60}/D_{10}$). Recommended pullout coefficients for various soil types shall also be documented. The pullout coefficients shall be determined by using the quick effective stress pullout tests ("Measuring Geosynthetic Pullout Resistance in Soil" per ASTM D 6706). The soil interaction coefficient, C_i , shall be documented when computing the pullout friction factor, F^* . When sufficient documentation is not provided for pullout coefficients, F^* and α , and the coefficient of uniformity, C_u , is greater or equal to 4, the default values indicated in this specification can be used. If the coefficient of uniformity of the reinforced backfill is less than 4, laboratory pullout test shall be required to determine pullout friction factor, F^* , and the default scale effect factor, α .

5. Sample Approval.

To confirm that the on-site geotextile meets the property values specified, random samples shall be submitted to the RCE for evaluation. The machine direction shall be marked clearly on each sample submitted for evaluation. The machine direction is defined as the direction perpendicular to the axis of the roll.

Cut a sample from the geotextile roll with the minimum dimensions of 4 feet by the full width of the roll beyond the first wrap. The geotextile samples shall be cut from the roll with scissors, sharp knife, or other suitable method that produces a smooth edge and does not cause geotextile ripping or tearing. Submit a manufacturer's certificate of compliance signed by an authorized manufacturer's official. The certificate must attest that the geotextile meets all the Minimum Average Roll Value (MARV) requirements specified in Table 1 as evaluated under the manufacturer's quality control program. Geotextiles supplied for construction of the project shall be certified in accordance with the following criteria. The tests described in the specification shall be conducted by the manufacturer or by an approved independent testing laboratory on samples taken from the same lot number as the material actually shipped to the project and at the specified frequency. The manufacturer or independent testing laboratory shall maintain the appropriate accreditations and must be preapproved by the Department. All rolls shall be marked with individual and distinct roll numbers. All roll numbers shall have traceable certified mill test reports from the given lot that they were manufactured. These test reports must be supplied to the Department prior to installation of any geotextile materials. After the sample and the required information have been submitted to the RCE, allow 30 calendar days for evaluation.

Product acceptance is determined by comparing the average test results of all specimens within a given sample to the Minimum Average Roll Values (MARV) listed in Table 1. Install geotextiles only after the material has been tested and/or evaluated and accepted. Replace all geotextiles installed prior to acceptance that do not meet specifications at Contractor's expense.

a. Sewn Seam Approval

If the geotextile seams are to be sewn in the field, the Contractor shall provide a section of sewn seam that can be sampled by the RCE before the geotextile is installed. The sewn seam shall be in accordance with ASTM 6193.

The seam sewn for sampling shall be sewn using the same equipment and procedures as will be used to sew the production seams. The seam sewn for sampling must be at least 6 feet in length. If the seams are sewn in the factory, the Contractor shall provide samples of the factory seam at random from any of the rolls to be used. Regardless of whether the seam is to be sewn in the factory or the field, the manufacturer and/or Contractor shall certify that the strength meets the requirement set forth in Table 1. If seams are to be sewn in both the machine and cross-machine direction, provide samples of seams from both directions. The seam assembly description shall be submitted by the Contractor to the Engineer and will be included with the seam sample obtained for testing. This description shall include the seam type, stitch type, sewing thread type(s), and stitch density.

If sewn seams are used for seaming the geotextile, use thread that consists of high strength polypropylene or polyester. Do not use nylon thread. Use thread that is of contrasting color to that of the geotextile itself.

If the manufacturer can provide a T_{al} MD that is greater than the sum of the required T_{al} MD and sewn seam breaking strength (for each specified in the project plans), the sewn seams may be eliminated and a minimum overlap of 1 foot may be used.

6. Identification, Shipment and Storage

Conform to ASTM D 4873, *Standard Guide for Identification, Storage, and Handling of Geotextiles*. Clearly label each roll of geotextile shipped to the project with the name and address of the manufacturer, full product name/number, quantity, and roll number.

The RCE will reject materials that are mislabeled or misrepresented. Wrap each roll with a material that protects the geotextile, including ends of the roll, from damage due to shipment, water, sunlight, and contaminants. Maintain the protective wrapping during periods of shipment and storage. Do not damage the geotextile or wrapping when unloading or transferring from one location to another. Do not drag the rolls.

During storage, elevate geotextile rolls off the ground and adequately cover to protect them from the following:

- a. Site construction damage;
- b. Precipitation;
- c. Ultraviolet radiation including sunlight;
- d. Chemicals that are strong acids or strong bases;
- e. Flames including welding sparks, temperatures in excess of 140 °F (60 °C); and
- f. Mud, dirt, dust, debris and any other environmental condition that may damage the physical property values of the geotextile

C. CONSTRUCTION REQUIREMENTS

1. General

Prepare the surface on which the geotextile is to be placed so that no damage occurs to the geotextile. Do not drive or operate any construction equipment directly on the geotextile. Dispose of material with defects, rips, holes, flaws, deterioration, or other damage. Do not use

defective material in the work. The manufacturer shall be present on site for a minimum of two days of geotextile installation such that the manufacturer observes any field-sewn seams.

2. Installation Plan

Within thirty (30) calendar days after award of the contract or no later than thirty (30) calendar days before beginning high-strength geotextile installation, the Contractor shall submit to the Department for review a high-strength geotextile installation plan that includes as a minimum the following information:

- a. The Contractor shall certify and provide proof to the Department of experience in the work described. The Contractor shall have successfully installed at least 500,000 square yards of any geotextile that has sewn seams during the last five years. In addition, the Contractor shall have successfully completed at least five projects within the last five years of similar size and complexity to that of the Project.

The Contractor's experience shall be documented by providing a project summary that includes for each referenced project, the project start and completion dates, total quantity of geotextile installed (specifically indicate if high-strength geotextile installed), and a detailed description of the project, site conditions, and subsurface conditions. The project description shall include details of the geotextile materials, the equipment and technique used to install the geotextiles, the average and maximum area of geotextile installed, the client name and address, the name and telephone number of the representative of the consultant and owner for whom the work was performed and who can attest to the successful completion of the work, and any other information relevant to demonstrating the Contractor's qualifications.

- b. Resume of supervisor documenting experience and qualifications in the installation of both normal and high-strength geotextile. The Contractor shall have a full-time supervisor who has been in responsible charge of supervising geotextile installation operations for at least five projects in the last five years. The supervisor shall be present at the work site at all times during installation operations. The acceptability of the supervisor, as well as any replacement for the supervisor, will be subject to the approval of the Department.
- c. Shop drawings showing the planned locations and elevations of all high-strength geotextiles. The installation sequence shall also be provided including any required staging. The shop drawings shall also show the location of the bridge abutment, and the limits of the final embankment and construction staging.
- d. Detailed description of proposed installation procedures
- e. Proposed methods and equipment for sewn seams

3. Site Preparation

Prepare the installation site by clearing, grubbing, and excavating or filling the area to the design grade. This includes removal of topsoil or vegetation. The RCE will identify soft spots and unsuitable areas during site preparation. This may include but not be limited to proof-rolling specific areas defined by the RCE. Excavate these areas and backfill with approved borrow or bridge lift material and compact as specified. The area to be covered by the geotextile shall be graded to a smooth, uniform condition free from ruts, potholes, and protruding objects such as rocks or sticks.

The Contractor may construct a working platform, up to 2 feet in thickness, in lieu of grading the existing ground surface. A working platform is required where stumps or other protruding objects which cannot be removed without excessively disturbing the subgrade are present. These areas shall be prepared in accordance with the 2007 Standard Specifications for

Highway Construction. The stumps shall be covered with at least 6 inches of fill before placement of the first geotextile layer.

4. Geotextile Placement

The geotextile shall be spread immediately ahead of the covering operation. The geotextile shall be laid with the machine direction perpendicular or parallel to centerline as shown in Plans. All seams shall be sewn. Seams to connect the geotextile strips end to end will not be allowed. The geotextile shall not be left exposed to sunlight during installation for a total of more than 14 calendar days. The geotextile shall be laid smooth without excessive wrinkles. Under no circumstances shall the geotextile be dragged through mud or over sharp objects, which could damage the geotextile.

Small soil piles or the manufacturer's recommended method shall be used as needed to hold the geotextile in place until the specified cover material is placed. Remove wrinkles and folds by pulling the geotextile taut as required.

Should the geotextile be torn or punctured or the sewn joints disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or roadbed distortion, the backfill around the damaged or displaced area shall be removed and the damaged area repaired or replaced by the Contractor at no expense to the Department. The repair shall consist of a patch of the same type of geotextile placed over the damaged area. The patch shall be sewn at all edges.

If geotextile seams are to be sewn in the field or at the factory, the seams shall consist of two parallel rows of stitching, or shall consist of a J-seam, Type SSn-2. The two rows of stitching shall be 1 inch apart with a tolerance of plus or minus 0.5 inches and shall not cross, except for re-stitching. The stitching shall be a lock-type stitch. The minimum seam allowance, i.e., the minimum distance from the geotextile edge to the stitch line nearest to that edge, shall be 1.5 inches if a flat or prayer seam, Type SSa-2, is used. The minimum seam allowance for all other seam types shall be 1 inches. The seam, stitch type, and the equipment used to perform the stitching shall be as recommended by the manufacturer of the geotextile and as approved by the RCE.

The seams shall be sewn in such a manner that the seam can be inspected readily by the RCE or his representative. The seam strength will be tested and shall meet the requirements stated herein.

5. Fill Placement.

Embankment construction shall be kept symmetrical at all times to prevent localized bearing capacity failures beneath the embankment or lateral tipping or sliding of the embankment. Place fill over the geotextile by dumping onto previously placed material and pushing the material into place. Stockpiling of fill on the geotextile will not be allowed. Do not operate any construction equipment directly on the geosynthetic material under any circumstances.

Place the fill material in uniform layers so that there is a minimum lift thickness (loose) of 8 inches between the geosynthetic material and equipment tires or tracks at all times. The minimum thickness of the first lift is 8 inches. Do not allow construction equipment to turn on the first lift of material above the geosynthetic material. Do not blade the first lift placed over the geosynthetic material. If the subgrade is very soft with an undrained shear strength less than 500 psf, minimize pile heights to less than 3 feet and spread piles as soon as possible after dumping to minimize the potential for localized subgrade failure due to overloading of the subgrade.

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Do not use sheepsfoot or studded compaction equipment on the first lift placed over the geosynthetic material. Stop vibrator on compaction equipment if pumping occurs. Do not operate any construction equipment that results in rutting in excess of 3 inches on the first lift. If rutting exceeds 3 inches, decrease the construction equipment size and/or weight or increase the lift thickness. Use only rubber-tired rollers for compaction if any foundation failures occur when placing subsequent lifts. Compact all lifts to the moisture and density requirements for each embankment specified in the Standard Construction Specifications. Do not blade material down to remove ruts. Fill any ruts or depressions with additional material and compact to the specified density.

A sandy material that meets the requirements of an A-2 AASHTO soil classification shall be the only borrow excavation soil allowed for placement between the lowest elevation geotextile and the bottom of the pavement section. The embankment fill soils shall be compacted in accordance with the 2007 Standard Specifications for Highway Construction. Fill shall be placed in 12-inch maximum lift thicknesses where heavy compaction equipment is to be used and 6-inch maximum uncompacted lift thicknesses where hand-operated equipment is used.

The geotextile shall be pretensioned during installation using either Method 1 or Method 2 as described herein. The method selected will depend on whether or not a mudwave forms during placement of the first one or two lifts. If a mudwave forms as fill is pushed onto the first layer of geotextile, Method 1 shall be used. Method 1 shall continue to be used until the mudwave ceases to form as fill is placed and spread. Once mudwave formation ceased, Method 2 shall be used until the uppermost geotextile layer is covered with a minimum of 1 foot of compacted fill. These special construction methods are not needed for fill construction above this level. If a mudwave does not form as fill is pushed onto the first layer of geotextile, then Method 2 shall be used initially and until the uppermost geotextile layer is covered with at least 1 foot of compacted fill.

Method 1

After the working platform, if needed, has been constructed, the first layer of geotextile shall be laid as outlined in the project plans and the joints sewn together. The geotextile shall be stretched manually to ensure that no wrinkles are present in the geotextile. The fill shall be end-dumped and spread from the edge of the geotextile. The fill shall first be placed along the outside edges of the geotextile to form access roads. These access roads will serve three purposes: to lock the edges of the geotextile to form access roads, to contain the mudwave, and to provide access as needed to place fill in the center of the embankment. These access roads shall be approximately 16 feet wide. The access roads at the edges of the geotextile shall have a minimum height of 2 feet completed. Once the access roads are approximately 50 feet in length, fill shall be kept ahead of the filling operation, and the access roads shall be kept approximately 50 feet ahead of this filling operation. Keeping the mudwave ahead of this filling operation and keeping the edges of the geotextile from moving by use of the access roads will effectively pre-tension the geotextile. The geotextile shall be laid out no more than 20 feet ahead of the end of the access roads at any time to prevent overstressing of the geotextile seams.

Method 2

After the working platform, if needed, has been constructed, the first layer of geotextile shall be laid and sewn as in Method 1. The first lift of material shall be spread from the edge of the geotextile, keeping the center of the advancing fill lift ahead of the outside edges of the lift. The geotextile shall be manually pulled taut prior to fill placement. Embankment construction

shall continue in this manner for subsequent lifts until the uppermost geotextile layer is completely covered with 1 foot of compacted fill.

(33) SECTION 205: VIBRO COMPACTION:

June 27, 2013

A. DESCRIPTION

This section presents administrative and procedural requirements for ground modification by Vibro-Compaction (VC). Vibro-compaction shall be implemented in and below the existing embankment fill material of both the beginning of bridge approach embankment and the end of bridge approach embankment. VC shall be provided as documented in the plans. The purpose of the vibro-compaction program is to densify the granular soils at the specified locations and depths to mitigate liquefaction potential.

The Contractor shall perform layouts and measurements for VC work. VC points may be surveyed in or located by measuring offsets from surveyed points (e.g., project stations) using a tape measure.

The Contractor shall notify the Engineer a minimum of 48 hours prior to commencement of the VC operations at each approach embankment location.

Any change in the predetermined VC program necessitated by a change in the field conditions shall be immediately reported and submitted to the Geotechnical Engineer. Upon completion of the work, the Contractor shall submit a drawing of as-built locations of vibro-compacted columns.

B. REFERENCES

The Geotechnical Engineer will coordinate all testing to determine compliance with the project design.

1. Applicable Standards: The most recent version of the following testing methods or standards shall be employed:
 - a. ASTM D1586 "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils"
 - b. ASTM D5778 "Standard Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils" (CPT)
 - c. ASTM D6635 "Standard Test Method for Performing the Flat Plate Dilatometer" (DMT)
2. Reference Documents: Reference documents to be used by the Contractor shall include:
 - a. This specification
 - b. Attached plans
 - c. Project geotechnical report prepared by the Geotechnical Engineer.

Prior to commencing work, the contractor shall examine the site, drawings, records of existing utilities and other existing subsurface structures, and soil test boring logs made available in the original bid documents and those performed by the Geotechnical Engineer to help determine VC installation conditions.

C. SUBMITTALS

This section details all submittals required prior to field work, at completion of the test section, during production work, and after the work is completed.

1. Pre-Field Work Submittals: The following shall be submitted to the SCDOT by the Geotechnical Engineer prior to the start of the work. VC operations may not commence until approval by the SCDOT is granted.
 - a. A Work Plan prepared by the Contractor for the production work outlining the anticipated spacing, location and depth to achieve the project design criteria.
 - b. Drawing(s) for review, indicating the spacing, location, and depth of the VC probes to achieve the project design criteria.
2. Post Test Section and Pre Production Work:
 - a. Results of the test section evaluation.
 - b. A revised work plan and VC layout should the test section results require a modification to the original work and production plans.
3. During Production Submittals: The following shall be submitted to the SCDOT by the Geotechnical Engineer during the work:
 - a. Any change in the predetermined VC program necessitated by a change in the field conditions.
4. Closeout Submittal: The following shall be submitted to the SCDOT by the Geotechnical Engineer within 14 days of the completion of the VC work.
 - a. As built drawings: Drawings documenting any significant changes to the shop drawing. If no changes are noted, then no as-built drawings are necessary following completion of the VC program.

D. EQUIPMENT AND MATERIALS

The Contractor shall supply equipment in good operating condition capable of performing the work specified herein. The Contractor shall use equipment capable of efficiently accomplishing the required soil densification. The probe shall have durable markings on one foot intervals allowing a visual determination of the depth of penetration when in use. The probe shall be of sufficient length to extend a minimum depth of thirty (30) feet below existing grade.

The VC procedure is not intended to be a 'wet' operation. Water shall be used sparingly to mitigate clogging of the VC equipment.

Settlement resulting from the VC operations is anticipated. Any required fill placement in the resulting deformations required to meet the design grade(s) shall meet the requirements outlined in the *Special Provision 40 – Section 203: Borrow Excavation* provided in the bid documents.

Groundwater is anticipated to emerge to the ground surface during VC operations. The Contractor shall implement Best Management Practices (BMP's) to efficiently control surface groundwater runoff in accordance with the contract documents.

E. CONSTRUCTION

Production VC criteria shall be as follows:

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1. Depth of treatment: The probe tip shall penetrate to the minimum elevation specified in the above referenced documents and submittals.
2. Locations/Spacing: The center to center probe spacing shall adhere to the requirements in the above referenced documents and submittals. Probes shall be performed within 12 inches of the planned location
3. Limits of work: The limits of the VC work are shown on the drawings described in the above referenced documents and submittals.

F. QUALITY CONTROL

The details of the quality control program are as follows:

1. Technical Oversight: All VC operations shall be performed under the inspection of the Geotechnical Engineer's representative.
2. Monitoring and Logging: Monitoring and logging of all VC operations for the test area and production work shall be done by the Contractor.
3. Test Section: The Geotechnical Engineer's representative shall monitor the performance of the test section and perform the testing indicated below:
 - a. A test section shall be performed before production work, as follows:
 - 1) The test section location shall be agreed upon by the Geotechnical Engineer and the Contractor within the treatment area. The test section will consist of a minimum of twelve (12) VC points in three (3) rows of four (4) points each. For preliminary design considerations, the vibro-densification program will utilize a five (5) foot triangular grid for the indicated treatment area(s).
 - 2) The method of installation, materials, equipment, and procedures shall be the same as those to be used for production work.
 - 3) Based on the results from the test section, modifications to the Work Plan may be implemented, as needed, to meet the project design. Any changes to the Work Plan will be submitted to the SCDOT following completion of the test program.
 - b. The Geotechnical Engineer shall coordinate the following tests of the test section after a minimum wait period of four (4) days from completion of the VC activities of the test program: One (1) CPT (*or* SPT) test performed at the center of a VC probe location, and one (1) CPT (*or* SPT) test performed at the midpoint of adjacent VC probe locations.
 - c. The primary method for determining the post-treatment soil strength parameters for production VC work will be from the phi angle correlations in Chapter 7 of the SCDOT Geotechnical Design Manual. These equations are based on either the blow counts as determined from the SPT test, the cone tip resistance as determined from the CPT test, or the horizontal stress index as determined from the DMT test.
 - d. The production VC criteria will be based on a minimum applied relative energy for a given time rate. Following completion of the test program, the Geotechnical Engineer will establish criteria for the production VC work.
4. Daily Records: Monitoring and logging of VC operations for the test area and production work shall be performed by the Contractor. At a minimum, the following information shall be collected for each VC probe location:
 - a. Equipment details and specifications

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- b. Embankment location
- c. Probe ID (i.e. A-27)
- d. Start and finish time
- e. Maximum recorded energy reading
- f. Depth of treatment
- g. Comments or unusual observations

A sample monitoring log for the VC work is provided with this specification.

- 5. Monitoring of Existing Structures: There are no structures within 500 feet of the planned VC work, and, therefore, a vibration monitoring program is not required for the VC work
- 6. The Contractor shall ensure that procedures and documentation conform to these specifications.

G. METHOD OF MEASUREMENT

The acceptance of the VC work shall be solely based on the results from the pre-treatment test program outlined in this specification. The Geotechnical Engineer shall provide to the SCDOT a signed and sealed statement that the soil improvement conforms to requirements of the project design.

H. RESTRICTIONS

The Contractor shall be responsible for obtaining the necessary State and municipal permits for the intended construction. The Contractor shall be responsible for the precise delineation of all above and below ground utilities and obstructions and shall accurately mark their layout at the site. The following shall also be listed within this section when applicable:

- 1. Environmental restrictions
- 2. Work boundaries
- 3. Hours and days available for construction

(34) SECTION 205: DEEP SOIL MIXING (DSM):

September 22, 2011

A. DESCRIPTION

This work shall consist of using deep soil mixing (DSM) construction techniques (also known as deep mixing methods, DMM) to improve weak subsurface soils by mixing a binder material with in-situ soil to produce a DSM column composed of a soil-binder mixture that has increased compressive strength and stiffness properties compared to the original in-situ soil properties. A column is defined as the extent that the existing ground is improved by insertion and removal of the mixing tool to the full improvement depth required in the plans. DSM column mixing methods allowed are described in subsection A.1 and DSM column spacing requirements are described in subsection A.2. The purpose for constructing DSM columns is to improve weak subsurface soils in order to stabilize and/or improve performance of existing ground prior to constructing bridge foundations, embankments, mechanically stabilized earth (MSE) walls, retaining walls, and other transportation structures or facilities as specified herein and shown on the plans and contract documents. References listed in subsection A.3 may be used in these special provisions and will be used to evaluate this work.

The work covered by this specification includes furnishing all necessary plant, labor, equipment, geotechnical subsurface investigation, pre-production laboratory testing, test section(s), surcharges/berms constructed at the DSM improved locations (if shown in the plans or required to meet DSM column performance requirements), in-situ testing, sampling/coring, QA/QC testing, reporting, and other work described below. The Contractor shall be familiar with project geotechnical conditions and recognize that geotechnical data is available with geotechnical boring logs, laboratory testing results, and other pertinent information.

1. DSM Mixing Methods:

This special provision contains specifications for construction of DSM columns by either the wet or dry mechanical mixing method. The Contractor shall use the DSM mechanical mixing method specified in the plans unless other methods are approved in writing by the Engineer. DSM column mixing method for the wet and dry mixing methods are defined as follows:

- a. **Wet Method:** The wet method consist of mixing a binder in slurry form (i.e. cement grout) with existing soils using auger-type equipment (paddles, augers, and other rigid mixing tools), without use of externally directed high pressure jets, to form a DSM column consisting of a homogeneous mixture of cement grout and in-situ soils. The wet mixing method typically produces spoils in the range of 10 to 60 percent of the treated volume. A soil-cement column formed by the wet mixing method is abbreviated herein as DSM-SCC).
- b. **Dry Method:** The dry method consists of mixing dry binders (i.e. lime-cement or cement) into the in-situ soils. The dry binder is injected into the soil by using air pressure. The mixing tool blends the binder material with the in-situ soil and water to form a DSM column of a homogeneous mixture of binder materials and in-situ soils. The dry mixing method typically produces spoils less than 10 percent of the treated volume. A DSM column (lime-cement or cement) formed by the dry mixing method is abbreviated herein as DSM-LCC.

2. DSM Column Spacing:

The DSM columns shall be spaced and arranged as indicated on the plans or as otherwise directed by the Engineer. DSM columns can be constructed by using group column spacing or by using block column spacing as described below:

- a. **Group Column Spacing (GCS):** DSM group column spacing (GCS) consists of constructing a single column (no overlap with adjacent DSM columns) with a diameter of 20 to 36 inches or as required in the plans. The DSM columns group spacing is defined in the plans by specifying a pattern (i.e. triangular, grid, etc.) and center-to-center spacing between DSM columns.
- b. **Block Column Spacing (BCS):** DSM block columns spacing (BCS) consists of constructing an improved soil zone with DSM columns overlapping adjacent DSM columns. Since the improved soil zone is continuous, the size of the DSM column is not specified in the plans to accommodate variations in the Contractor's equipment dimensions. As a result of Contractor equipment variations in size, any variations in the dimensions of the zone of ground improvement shown in the plans will require written approval by the Engineer. The center-to-center spacing shall be determined by the Contractor based on the DSM construction equipment in order to provide continuous overlapped DSM columns in accordance with the plans and specifications. Continuous column spacing may be achieved by the use of DSM equipment capable of constructing multiple columns simultaneously. The DSM column overlap distance between adjacent DSM columns shall be a minimum of 20 percent of the DSM column diameter or as approved by the Engineer. The DSM column center-to-center spacing between adjacent columns shall be defined as the DSM column diameter minus the column overlap distance.

3. References:

The evaluation of this work, including the DSM Installation Plan, test section(s), QC testing, and QA testing will be based on, but not limited to, the following references:

- a. Bruce, D.A. (2000). "An Introduction to the Deep Soil Mixing Methods as Used in Geotechnical Applications, Volume I," FHWA-RD-99-138.
- b. Bruce, D.A. (2000). "An Introduction to the Deep Soil Mixing Methods as Used in Geotechnical Applications, Volume II: Appendices," FHWA-RD-99-149.
- c. Bruce, D.A. (2001). "An Introduction to the Deep Mixing Methods as Used in Geotechnical Applications, Volume III: The Verification and Properties of treated Ground," FHWA-RD-99-167.
- d. Elias, V., Welsh, J., Warren, J., Lukas, R., Collin, J.G., and Berg, R.R., (2006). "Ground Improvement Methods," Volumes I and II, FHWA NHI-06-019 and FHWA NHI-06-020, US Dept. of Transportation, Federal Highway Administration.
- e. Filz, G. M., Hodges, D. E., Weatherby, D. E., and Marr, W. A. (2005). "Standardized Definitions and Laboratory Procedures for Soil-Cement Specimens Applicable to the Wet Method of Deep Mixing." *Innovations in Grouting and Soil Improvement*, Reston, Virginia, 13.
- f. Filz, G. M. and Stewart, M. E. (2005). "Design of Bridging Layers in Geosynthetic-Reinforced, Column-Supported Embankments." Virginia Transportation Research Council, Charlottesville, VA
- g. Jacobson, J. R., Filz, G. M., and Mitchell, J. K. (2003). "Factors Affecting Strength Gain in Lime-Cement Columns and Development of a Laboratory Testing Procedure," Report prepared for the Virginia Transportation Research Council, Virginia Polytechnic Institute and State University, Report No. 57565, FHWA/VTRC 03-CR16.
- h. Jacobson, J. R., Filz, G. M., and Mitchell, J. K. (2005). "Factors Affecting Strength of Lime-Cement Columns Based on a Laboratory Study of Three Organic Soils." Deep Mixing'05: International conference on deep mixing best practice and recent advances.
- i. Larsson, S. (2005a). "State of Practice Report – Execution, monitoring and quality control," Volume 2, Deep Mixing '05: International Conference on Deep Mixing Best Practice and Recent Advances.
- j. Larsson, S. (2005b). "On the use of CPT for quality assessment of lime-cement columns." Deep Mixing '05: International Conference on Deep Mixing Best Practice and Recent Advances.
- k. McGinn, A. J. and O'Rourke, T. D. (2003). "Performance of deep mixing methods at Fort Point Channel." Cornell University.

B. MATERIALS

1. Wet Method (DSM-SCC):

Cement: Portland cement shall be low alkali Type II conforming to Section 701.2.1 and ASTM C150. Slag cement shall conform to Section 701.2.3 and ASTM C 989. All cement shall be homogeneous in composition and properties, and shall be manufactured using the same methods at one plant by one supplier. Tricalcium aluminate content shall not exceed 7 percent.

Water: Water shall conform to the requirements of Section 701.2.11.

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Admixtures: Cement admixtures will not be allowed without written approval by the Engineer. Cement admixtures are ingredients that are used to permit efficient use of materials and proper workability of the binder material being mixed into the in-situ soils. The Contractor is required to submit any proposed admixtures and their intended effect when the binder mix design is submitted for approval by the Engineer.

Cement Grout: The cement grout shall be a stable homogeneous mixture of cement, admixtures (if approved), and water in proportions determined by the results of the test section and approved by the Engineer. The cement grout is mixed with the in-situ soils to form DSM-SCC columns.

Soil-Cement Mixture: The DSM column shall be composed of a stable and uniform soil-cement mixture of cement grout and in-situ soil that meets the project compressive strength and other requirements in the plans and these special provisions. The proposed ratios of concrete grout to in-situ soils and quantities of various components shall be determined by the results of the test section and approved by the Engineer.

2. Dry Method (DSM-LCC):

Cement: Portland cement shall be low alkali Type II conforming to Section 701.2.1 and ASTM C150. Slag cement shall conform to Section 701.2.3 and ASTM C 989. All cement shall be homogeneous in composition and properties, and shall be manufactured using the same methods at one plant by one supplier. Tricalcium aluminate content shall not exceed 7 percent.

Quick Lime: Quick lime shall have at least 99 percent passing the #8 sieve (3.18 mm) and at least 90 percent passing a No. 12 Sieve (2.12 mm), an active CaO content greater than 80% and a floatability of 70.

Premixed Lime-Cement: If a premixed quick lime and cement is to be used, the manufacturer of the mixture must certify that the proportions of lime and cement provided are in accordance with the design requirements developed from the test section and approved by the Engineer.

Admixtures: Cement admixtures will not be allowed without written approval by the Engineer. Cement admixtures are ingredients that are used to permit efficient use of materials and proper workability of the binder material being mixed into the in-situ soils. The Contractor is required to submit any proposed admixtures and their intended effect when the binder mix design is submitted for approval by the Engineer.

Binder: The binder will be a stable homogeneous mixture of cement, lime (if applicable), and admixtures (if approved), in proportions determined by the results of the test section and approved by the Engineer. The binder material is delivered using air pressure and is mixed with the in-situ soils to form DSM-LCC columns.

Soil-Binder Mixture: The DSM column will be composed of a stable and uniform soil-binder mixture that meets the project design requirements and these special provisions. The proposed ratios of binder material to in-situ soils and quantities of various components shall be determined by the results of the test section and approved by the Engineer.

C. SUBMITTALS

A minimum of 45 calendar days prior to beginning the DSM work, the Contractor shall submit a DSM Construction Plan and Shop Plans/Working Drawings for review and approval by the Engineer. The DSM Construction Plan and Shop Plans/Working Drawings shall be prepared, signed, and sealed by an agent/representative of the DSM Contractor that is a professional

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engineer licensed in the State of South Carolina. The Contractor shall not commence DSM installation without the approval of all submittals by the Engineer. Approval by the Engineer will not relieve the Contractor of its responsibilities to provide materials and equipment necessary to install DSM columns in accordance with the plans and specifications. If, at any time, the Engineer considers that the Contractor's installation operation does not produce a satisfactory DSM column, the Contractor shall alter its method and/or equipment as necessary to comply with the plans and specifications at no additional cost to the Department.

The Contractor shall submit 8 sets of the DSM Construction Plan and 8 sets of Shop Plans/Working Drawings to the Preconstruction Support Engineer (PSE) for review in accordance with the requirements provided herein. Send DSM Construction Plan and Shop Plans/Working Drawings for projects designed for the Department by a design consultant directly to the consultant. For DSM Construction Plan and Shop Plans/Working Drawings sent to the PSE, send a copy of the transmittal letter to the BCE, the OMR, and the RCE. For Shop Plans sent directly to a design consultant, send a copy of the transmittal letter to the PSE, the BCE, the OMR, and the RCE. Obtain the necessary mailing information at the Preconstruction Conference.

1. **DSM Construction Plan:**

The DSM Construction Plan shall document and provide, as a minimum, the following information:

- a. *Qualifications:* Evidence of six years of accumulated experience over a period of 10 years and competence to construct the required DSM columns by the mixing method (i.e. wet or dry) required for the project shall be submitted. As a minimum, the Contractor shall submit a detailed description of three DSM projects completed using the required mixing method within the previous six years that demonstrate the Contractor's experience and competence. Jet grouting or penetration grouting projects will not be acceptable as representative of DSM construction techniques. Each DSM project submitted as proof of experience and competence shall have a minimum total treatment volume of not less than 20 percent of the DSM treatment volume for this project or 30,000 cubic yards of DSM treatment volume, whichever is greater, in high plasticity clay, sand, and silt. At least two of the submitted DSM projects using the required mixing method shall have average treatment depths greater than 60 feet. Each DSM project submitted shall have the following information:

- 1) Project name, location, and completion date
- 2) Current contact information (address, phone number, and email) of project owner, designer, geotechnical consultant, and contract manager
- 3) Surface and subsurface conditions, and strength (average, ranges, and means used to determine strength) of DSM columns installed
- 4) Minimum, maximum, and average rates of DSM installation
- 5) Project cost and duration of DSM installation
- 6) Average depths and ranges of depths of DSM columns installed. Provide total linear footage and volume (cubic yards) of DSM columns installed
- 7) Percent of project total based on QA/QC testing that met the project Acceptance Criteria and percent of project total based on QA/QC testing that required remediation techniques after initial DSM installation

The Contractor shall also submit a list of completed ground improvement projects where they performed DSM column construction techniques over the past six years that includes

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items “a” and “e” listed above, type of DSM mixing, and DSM quantity constructed (similar to item “f” above).

The Contractor's proposed DSM superintendent shall have a minimum of three years of accumulated experience with DSM construction equipment and construction management within the past six years. The DSM superintendent shall have been employed by the Contractor for the most recent three years. The proposed DSM superintendent shall have been superintendent for the Contractor on at least one of the three DSM projects submitted by the Contractor as evidence of their experience. Experience and training records shall be submitted for proposed DSM superintendent and operators of construction equipment. Any changes in DSM construction personnel shall require submittal of qualifications for approval.

The Independent Testing Laboratory shall have at least 5-years' experience as a materials testing laboratory, including the performance of testing comparable to that required herein. The person in charge of the testing work for the Independent Testing Firm shall be a Professional Civil Engineer, registered in the State of South Carolina. The Independent Testing Laboratory's supervisor and each field representative who will take samples in the field shall have at least 5-years' experience in taking concrete samples in the field and performing compressive strength tests in accordance with AASHTO requirements, and be accredited as required by SCDOT to obtain and form concrete test cylinders. The persons who will perform laboratory testing shall have at least 2-years' experience in performing the soil tests required herein.

- b. *Protection of Utilities:* Location of all subsurface utilities in the area and the plan to protect them in place if the utilities are not being relocated out of the affected area.
- c. *Construction Schedule:* A construction schedule for the DSM work identifying start dates and durations for all portions of the work, including equipment mobilization, equipment setup, test section(s) construction, production DSM construction at each location, and QC testing.
- d. *DSM Mixing Method:* Provide the type of mixing method (Wet or Dry) that will be used in accordance with the plan documents to construct the DSM columns in accordance with the plans and these specifications.
- e. *Equipment and Procedures:* A detailed description of the equipment (include catalog cut sheets of equipment dimensions) and procedures to be used during all facets of the project including, but not limited to the conduct of the following:
 - 1) Test section(s)
 - 2) Site preparation
 - 3) Stage construction of DSM test section(s) and production DSM (if required)
 - 4) Locating the DSM columns in the field
 - 5) DSM spoil containment, handling, and disposal
 - 6) Confirming method to check that the DSM are installed plumb
 - 7) Quality control program
 - 8) Monitoring quality control parameters
 - 9) Sample collecting for laboratory confirmation testing
- f. *DSM Test Section Subsurface Information and Location:* Submit the probe testing results used to pre-approve the location of the test section(s). Provide a minimum of two probe test at each test section in accordance with Section H.2 for review and approval by the Engineer of the proposed location of the test section(s). Pre-approval of the test section location(s) shall be required before commencing Pre-production field and laboratory testing

(Section D). Probe testing shall be conducted to the production DSM depths plus 10 feet that the test section represents. Indicate on a plan drawing the location of the test section(s), dimensions and layout of the test section(s), number of DSM columns (include designation of each DSM column), and location of probe testing performed (Section H.2). This information should be included in this submittal even if submitted previously during pre-approval of DSM test section location(s).

- g. *Pre-Production DSM Binder Mix Design Report*: Final report of pre-production laboratory and field testing used to develop proposed wet or dry binder mix design for the construction of the test section(s). The pre-production laboratory and field testing shall conform to Section D of this special provision.
- h. *Cement and Cement Grout Mix Design (Wet Mixing Method, DSM-SCC)*: Proposed cement and cement grout mix design when DSM columns are constructed using the wet mixing method (DSM-SCC). The design shall include the following:
 - 1) Cement type and Cement manufacturer's certificate of compliance.
 - 2) Cement grout water-cement ratio, by weight. Include details to fully describe and illustrate the methods for grout proportioning to achieve the design mix.
 - 3) Cement Factor (also known as Residual Cement Factor) which is the amount of cement, dry weight in pounds, that remains in the ground after mixing, per cubic yard of in-situ soil-cement.

These mix design parameters will be reviewed based on the pre-production field and laboratory testing results developed in accordance with Section D. The acceptance of the proposed grout mix/soil/cement mix design shall be contingent on the test section(s) results meeting the acceptance criteria of Section K. The Contractor may propose to expand the size of the test section to demonstrate that somewhat different grout water/cement ratio and/or cement factor is workable in achieving the required soil-cement strength under actual in-situ conditions. Provide documentation of calibration of the mixing plant.

- i. *Binder Mix Design (Dry Mixing Method, DSM-LCC)*: Proposed binder mix design(s) when DSM columns are constructed using the dry mixing method (DSM-LCC). Binder mix design shall include all materials, quantities, and dosages required to achieve the Acceptance Criteria (Section K). The design shall include the following:
 - 1) Cement type and Cement manufacturer's certificate of compliance
 - 2) Quick lime (if used) manufacturer's certificate of compliance
 - 3) Pre-mixed lime-cement (if used) manufacturer's certificate of compliance
 - 4) Binder mix dosage of each material in the binder mix per volume
 - 5) Proportion of binder material to soil in the soil-binder mixture

These mix design parameters will be reviewed based on the pre-production field and laboratory testing results developed in accordance with section D. The acceptance of the proposed binder and soil/binder mix design shall be contingent on the test section(s) results meeting the acceptance criteria of section K. The Contractor may propose to expand the size of the test section to demonstrate that somewhat different binder mix design is workable in achieving the required soil-binder strength under actual in-situ conditions. Provide documentation of calibration of the mixing plant.

- j. *Independent Laboratory Testing*: Identification of all independent AASHTO certified materials laboratory testing facilities that will be used on the project and the type laboratory testing that will be conducted at each laboratory. All laboratory testing shall be performed at a materials laboratory with current AASHTO certification for the type of test being

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conducted. A single independent AASHTO certified materials testing laboratory shall be used to conduct all of the compressive strength testing that will be performed on the project.

- k. *Calibrations:* Calibration tests for all metering equipment, including mixing systems, delivery systems, alignment systems, mixing tool rotational and vertical speed, injection pressure, rotation penetration/extraction rates, etc. that are applicable to the mixing method being used on the project.
- l. *Surcharges/Berms:* Details of any surcharges/berms being constructed as indicated in the plans or required to obtain DSM column performance in accordance with plans and specifications. Provide a description of materials used (soil type, Atterberg limits, moisture content, etc.), location, and removal schedule (if required). Surcharges that are required to obtain DSM column performance and are not shown in the plans shall be constructed after being approved by the Engineer and at no additional cost to the Department.
- m. *Runoff and Spoil Containment (Wet Mixing Method Only):* Details of all run-off and spoil containment structures will be required when DSM columns are constructed using the wet mixing method (DSM-SCC). These structures will be used to prevent the migration of either cement grout or soil-cement return spoils, disturbed in-situ soils, or other soil material beyond the immediate limits of the soil-cement mixing operation. Also provide description of processes and procedures to be used to collect and retain the soil-cement return and other spoil materials in such manner to allow the spoils to solidify for the necessary time to become a hardened material resembling a hard, dry cohesive material. The resulting hardened spoils shall be disposed of off-site, at no additional cost to the Department.
- n. *Daily Production Control Report and Installation Log:* Provide a sample report and installation log in paper and electronic format that will be used to record the construction of all production DSM columns for the required mixing method. The Daily Production Control Report/Log shall contain at least the following information:
 - 1) Project Name
 - 2) DSM column number and reference drawing number
 - 3) Date
 - 4) Name of DSM Superintendent and equipment operator
 - 5) Start/Finish time of DSM column installation
 - 6) Machine/Rig Number
 - 7) Type of mixing tool and indicate if single or multiple columns formed per stroke
 - 8) DSM column(s) diameter/size
 - 9) DSM column(s) total length (include top and bottom elevations)
 - 10) DSM column center-to-center spacing from adjacent DSM column
 - 11) Verticality of mixing tool in two orthogonal planes for each DSM column
 - 12) Binder mix design designation used
 - 13) A description of obstructions, interruptions, DSM column construction out of tolerance or other difficulties encountered during installation of DSM column and how they were resolved
 - 14) *Material Certifications:* Supplier's certifications of binder materials quality and other additives, if used

Wet Mixing Method (DSM-SCC) reports shall include the following:

- 1) Final current draw for the drilling equipment at the bottom 2 feet of penetration or final hydraulic pressure, if hydraulic motors are used to turn the mixing tools
- 2) Grout injection pressure and volume

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- 3) Estimate of spoil volume
- 4) Target and actual cement factors and grout specific gravity measurements per DSM-SCC column
- 5) Date, time, plan location, and elevation and other details of all soil-cement wet grab samples and any other samples taken during work shift
- 6) The following information shall be logged using automated computer technology for each DSM-SCC installed at intervals no greater than 4 feet and presented in table and graphical forms:
 - a) Elevation in feet
 - b) Mixing tool rotation penetration and withdrawal speed in revolutions per minute vs. depth in feet
 - c) Mixing tool rotation penetration and withdrawal rates in feet per minute vs. depth in feet
 - d) Mixing tool withdrawal rate in mm/revolution vs. depth in feet
 - e) Grout injection rate in gallons per minute vs. depth in feet
 - f) Average quantity of grout injected in gallons per foot injected per vertical foot of DSM-SCC vs. depth in feet

Dry Mixing Method (DSM-LCC) reports shall include the following:

- 1) Installation air pressure at tip and top of the lime-cement column
- 2) Target and actual binder dosage mixed per DSM-LCC column
- 3) The following information shall be logged using automated computer technology for each DSM-LCC installed at intervals no greater than 4 feet and presented in table and graphical forms:
 - a) Elevation in feet
 - b) Mixing tool rotation penetration and withdrawal speed in revolutions per minute vs. depth in feet
 - c) Mixing tool rotation penetration and withdrawal rates in feet per minute vs. depth in feet
 - d) Mixing tool withdrawal rate in mm/revolution vs. depth in feet
 - e) Quantity of binder reagent (i.e. quick lime, cement, and admixtures) injected in kg/ft
 - f) Average binder reagent injected in kg per foot injected per vertical foot of DSM-LCC vs. depth in feet.

2. Shop Plan/Working Drawing:

The Shop Plan/Working Drawing shall contain the location and extent of all production DSM columns that will be constructed as indicated in the plans. Indicate DSM column spacing and overlap dimensions, including overall dimensions of ground improvement area. Provide the production DSM column numbering system/identification for each location where DSM columns will be constructed. Provide the sequence of DSM column construction that will be used to minimize the effects of ground movements on adjacent existing structures (i.e. MSE walls). The Shop Plan/Working Drawing shall be prepared, signed, and sealed by a professional engineer licensed in the State of South Carolina.

D. PRE-PRODUCTION FIELD AND LABORATORY TESTING

A pre-production field and laboratory testing program will be required to develop the proposed DSM wet or dry binder mix design prior to the construction of the test section(s). The field testing program consists of conducting a geotechnical subsurface investigation in accordance with subsection D.1 of this special provision. Soil samples obtained from the geotechnical subsurface investigation shall be used to develop and conduct the pre-production laboratory testing. The

pre-production laboratory testing will be required to establish a “base line” of the degree of ground improvement that is possible under optimal construction circumstances for various DSM binder mixes for each distinct soil type that will be encountered during the conduct of the DSM ground improvement. It is recognized that the pre-production laboratory testing will be used as a general indicator of ground improvement that may be obtained in-situ because of substantial differences inherent between laboratory and in-situ mixing conditions. The Contractor shall take appropriate account of these differences, based on published documents and the Contractor’s experience, to develop a DSM binder mix design that can be used for constructing the test section(s) based on the results of the pre-production laboratory testing. A pre-production laboratory testing program shall be required for each test section. A DSM binder mix design shall be developed for each major soil type encountered throughout the depth of ground improvement. As a minimum, two binder mix designs for two types of soil shall be required per test section. The minimum pre-production laboratory testing requirements for wet and dry mixing methods are provided in subsections D.2 and D.3 of this special provision, respectively.

The Contractor shall submit the geotechnical subsurface investigation plan of the proposed field sampling and laboratory testing to the Engineer for review and approval a minimum of 14 calendar days prior to commencing the geotechnical subsurface investigation. The Contractor shall submit the results of the geotechnical subsurface investigation and the pre-production laboratory testing plan to the Engineer for review and approval a minimum of 14 calendar days prior to commencing the pre-production laboratory testing. The results of the pre-production field and laboratory testing along with the proposed DSM binder mix designs shall be included in the DSM Installation Plan submittal in accordance with section C.

1. Geotechnical Subsurface Investigation:

In-situ soils used for the pre-production laboratory testing shall be obtained from additional subsurface investigation conducted at or near the location of the approved test section(s) locations. The Contractor shall retain the services of a geotechnical consultant to drill several 3-inch continuously sampled soil borings to obtain sufficient material to perform the pre-production laboratory testing. The sampling shall be performed in such a manner that provides continuous, representative samples of the soil column. This can be effectively accomplished via Geo-probe sampling techniques, undisturbed sampling in fine-grained soils, split-spoon sampling, or any other sampling technique proposed by the Contractor and approved by the Engineer.

Contractor shall check for utility conflicts at boring locations with appropriate utility agencies, survey boring locations and survey locations tied to the project baseline alignment. The borings shall extend from the ground surface to the bottom elevation of the DSM columns shown in the plans to establish general soil and groundwater conditions in the vicinity of the work prior to construction of the test section(s). The geotechnical investigation shall be done in conformance with the latest version of the SCDOT Geotechnical Design Manual (GDM). SCDOT practices including but not limited to boring logs and laboratory data reporting shall be used. The geotechnical consultant shall classify and record soil types within 7 days of obtaining the samples in the field. The Geotechnical consultant shall perform laboratory testing on representative samples of the entire soil profile that will be subject to ground improvement. As a minimum, test six representative samples of cohesive soils taken from different locations and four representative samples of cohesionless soils taken from different locations. The laboratory testing, as a minimum, will consist of the following:

- a. Cohesive and organic soils (i.e. peat) will be subject to laboratory tests that include, but not be limited to, moisture content, Atterberg limits, organic content, and unconfined compression tests.

- b. Cohesionless soils will be subject to laboratory tests that include, but not be limited to, grain size analysis, fraction passing #200 sieve, Atterberg Limits, and moisture content.

All soil samples to be used for the pre-production laboratory testing shall be stored in a manner that prevents any loss of moisture and in accordance with ASTM. Do not allow field samples of the clay to lose moisture between the time of removal from ground and pre-production laboratory mixing/testing.

2. Pre-Production Laboratory Testing.

Pre-Production laboratory testing will require the development of a DSM binder mix testing program for each type of soil where ground improvement will be performed to demonstrate that the required 28-day compressive strength indicated in the plans will be achieved. The soils obtained from the geotechnical subsurface investigation performed (Subsection D.1) will be used to perform the laboratory testing. All soil and mixed samples shall be kept out of sunlight at 70 degrees F and under fully humid conditions throughout storage and curing that prevents loss of sample moisture via evaporation.

DSM constructed using the wet mixing method (DSM-SCC) will require that the testing laboratory prepare the soil, mix the binder reagent (i.e. cement, etc.) and water to make grout, and then mix grout and soil together. The specimens shall be mixed using a minimum of four different DSM binder mixes to provide insight into the relationship of cement factor and grout water/cement ratio on the 28-day compressive strength of the soil-binder specimens. Binder materials and individual proportions of cement or admixtures (if used) used shall be documented for each specimen. The procedures outlined by Filz and Stewart (2005) may be used to provide guidance in developing a laboratory testing program.

DSM constructed using the dry mixing method (DSM-LCC) will require that the testing laboratory prepare the soil, binder reagent, and then mix the soil (at the same in-situ moisture) and binder reagent together. The specimens shall be mixed using a minimum of four different DSM binder mixes to provide insight into the relationship of binder proportions on the 28-day compressive strength of the soil-binder specimens. Binder materials and individual proportions of lime, cement, and admixtures (if used) used shall be documented for each specimen. The procedures outlined by Jacobson et.al (2003, 2005) may be used to provide guidance in developing a laboratory testing program.

All test specimens shall be prepared using the lab mixing energy level similar to energy levels used by the Contractor's field equipment. Test specimen cylinders shall be prepared according to procedures submitted to the Department and approved. Strength test three cylinders of soil-binder mixture at 3, 7, 14, 28, and 56 days following mixing. Strength testing shall be performed in accordance with subsection H.4.

E. DELIVERY, STORAGE, AND HANDLING OF MATERIALS

1. DSM Wet Mixing Method (DSM-SCC):

Portland cement shall be measured, handled, transported, and stored in bulk in accordance with the manufacturer's recommendations. Portland cement packaged in cloth or paper bags shall be sealed with plastic or rubber vapor barriers. The Portland cement shall be stored to prevent damage by moisture. Materials that become caked due to moisture absorption shall not be used. Bags of cement shall be stacked no more than ten bags high to avoid compaction. Cement containing lumps or foreign matter of a nature that may be deleterious to the grout mixing or delivery or injection operations shall not be used.

2. DSM Dry Mixing Method (DSM-LCC):

The quicklime and cement shall be stored in closed pressure tanks suitable to be used as pressure vessels, for all pressures required, including those used to load and unload the materials. Delivery trucks shall be loaded at the manufacturer's plant unless approval is given for an intermediate storage facility. Each truck shall have a certified record of the weight of each load of material. The material shall be transported to the project site and blown into the on-site storage tanks using a pneumatic system. The air evacuated from the storage tanks during the loading process shall be filtered before being discharged to the atmosphere. A sealed refilling machine shall be used to transport material from the storage tanks to the DSM column mixing machine. This machine shall be refilled using a pneumatic system and an air filter, as specified above.

F. INSTALLATION EQUIPMENT

The DSM column construction equipment and support equipment shall be equipped with mixing tools that are capable of thoroughly blending the in situ soils and binder material into a homogeneous column of soil-binder to the depths and size required in the plans. The equipment shall be capable of advancing through previously installed and cured DSM columns as necessary for installing overlapping and end junction DSM columns. The DSM columns shall be constructed using computerized self-contained construction equipment.

1. DSM- SCC Construction Equipment:

The DSM-SCC construction equipment shall meet the following requirements:

- a. DSM-SCC shall be constructed using real-time computerized self-contained DSM-SCC construction equipment capable of monitoring, controlling, and recording installation data. The DSM-SCC construction equipment shall be equipped with electronic sensors, built into the soil mixing equipment, to perform the following:
 - 1) Determine vertical alignment of the leads in two directions: fore-aft and left-right. The verticality shall be measured using instrumentation that is capable of measure deviations from verticality to an equivalent of 1-inch in 100-feet.
 - 2) Monitor cement and water proportioning, grout mixing, and water-cement ratios.
 - 3) Monitor the mixing tool depth and penetration/withdrawal speed, and mixing tool rotation speed.
 - 4) Monitor mixing tool withdrawal speed, and mixing tool rotation speed.
 - 5) Monitor injection quantities and pressure with flow meter and other measuring equipment having precision accuracy not less than 99.5 percent.
 - 6) All output from the sensors shall be routed to a console that is visible to the operator and the Engineer during penetration and withdrawal.
 - 7) The sensors shall be calibrated at the beginning of the project and calibration data provided to the Engineer. The calibration shall be repeated at intervals not to exceed one month.
 - 8) All of these monitored functions shall be fully adjustable during operation of the equipment.
- b. The DSM-SCC construction equipment power source for driving the mixing tool shall be sufficient to maintain the required revolutions per minute (RPM) or injection pressure and penetration rate from a stopped position at the maximum depth required as determined from the test section(s) for group and/or block DSM column spacing. The Contractor shall also consider the wide range of expected subsurface conditions, indicated by the available geotechnical information.

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- c. The DSM-SCC construction equipment shall utilize sufficient mixing and injecting equipment to adequately produce a homogeneous distribution of cement grout throughout the mixed in-situ soils that meet the acceptable criteria. The mixing tools shall uniformly inject cement grout through hollow stem or other piping at locations that distribute the grout across the full diameter of the mixing tools and such that the full auger/mixing paddle assembly passes through the column of soil after the grout is introduced, on both the insertion and withdrawal strokes. Grout shall only be injected in direction within the diameter of the augers or mixing paddles. If grout injection jets are used, they shall not spray beyond the auger diameter.
- d. Continuous auger flights longer than 3 feet or with more than one full, uninterrupted revolution of auger are not allowed as part of the mixing tools. Auger flights and mixing paddles on a shaft shall all reach to the full column diameter, and shall have discontinuous lengths and be so oriented as to thoroughly break up the in-situ soils, and disperse and blend soils with injected cement grout to form a homogeneous soil-cement mixture.
- e. The auger mixing equipment shall form the required diameter and size of the DSM-SCC as submitted by the Contractor's approved submittals.
- f. Injection volume estimates shall be only made by precision inline flow meters. Counting or measuring grout pump strokes shall not be acceptable. Injection quantities must be measured in real time by direct measurements of volume and/or mass for each DSM column having injection capabilities, with flow meters and other measuring equipment having precision accuracy not less than 99.5%. Gages and flow meters and other measuring equipment shall be calibrated and certified as precise and accurate before the start of the equipment's work on the project, and then again every 4 months.
- g. The DSM-SCC construction equipment shall be adequately marked to allow the Engineer to confirm the penetration depth to within 6 inches during construction.
- h. The cement grout batching plant shall include all storage silos and sheds, pumps, scales, mixers, valves, gauges, and regulating devices required to continuously measure and mix cement grout in real time. Grout shall be mixed in a mixing plant, using a batch process, which combines dry materials and water in predetermined proportions. The plant mixer shall consist of grout mixer, grout agitator, grout pump, automatic batching scales, and a computer control unit. The mixing plant shall meet the following requirements:
 - 1) To accurately control grout mix proportions, the addition of water and cement shall be determined by weight using automatic batch scales in the mixing plant.
 - 2) Admixtures, if used, may be delivered to the mixing plant by calibrated auger provided the Contractor can demonstrate that the auger can deliver the material at the same accuracy as by weight.
 - 3) The mixing components shall be calibrated prior to beginning the work and monthly thereafter. The calibration data shall be provided to the Engineer.
 - 4) The mixing plant shall have tanks or silos with adequate storage for continuous production. The tanks shall be equipped with air filters.
- i. Positive displacement pumps shall be used to transfer the grout from the mixing plant to the mixing tool. If the DSM-SCC construction equipment has multiple shafts, and multiple mixing tools, the grout shall be delivered to each shaft by an individual positive displacement pump.
- j. All gauges, flow meters, metering equipment, and other measuring equipment shall be calibrated and certified as precise and accurate before starting DSM column construction (i.e. test section(s) or production DSM columns), and then again every 4 months or at least

every 325,000 feet of DSM column installed, whichever is sooner. The calibrations and certifications shall be supplied to the Engineer.

2. DSM- LCC Construction Equipment:

The DSM-LCC construction equipment shall meet the following requirements:

- a. DSM-LCC shall be constructed using real-time computerized self-contained DSM-LCC construction equipment capable of monitoring, controlling, and recording installation data. The DSM-LCC construction equipment shall be equipped with electronic sensors, built into the soil mixing equipment, to perform the following:
 - 1) Determine vertical alignment of the leads in two directions: fore-aft and left-right. The verticality to an equivalent of 1-inch in 100-feet
 - 2) Monitor the mixing tool depth, penetration/withdrawal speed, mixing tool rotation speed, and injection pressure
 - 3) All output from the sensors shall be routed to a console that is visible to the operator and the Engineer during penetration and withdrawal
 - 4) The sensors shall be calibrated at the beginning of the project and calibration data provided to the Engineer. The calibration shall be repeated at intervals not to exceed one month
 - 5) An alternative display/monitoring system may be used subject to review and approval by the Engineer prior to use
 - 6) All of these monitored functions shall be fully adjustable during operation of the equipment
- b. The DSM-LCC construction equipment power source for driving the mixing tool shall be sufficient to maintain the required revolutions per minute (RPM) or injection pressure and penetration rate from a stopped position at the maximum depth required as determined from the test section. The Contractor shall also consider the wide range of expected subsurface conditions, indicated by the available geotechnical information.
- c. The DSM-LCC construction equipment shall be adequately marked to allow the Engineer to confirm the penetration depth to within 6 inches during construction.
- d. All gauges, flow meters, metering equipment, and other measuring equipment shall be calibrated and certified as precise and accurate before the starting DSM column construction (i.e. test section(s) or production DSM columns), and then again every 4 months or at least every 325,000 feet of DSM column installed, whichever is sooner. The calibrations and certifications shall be supplied to the Engineer.

G. CONSTRUCTION REQUIREMENTS

The Contractor shall furnish all materials, labor and equipment necessary to construct the DSM columns in accordance with the plans and specification. The DSM columns shall be constructed to the lines, grades, and cross sections indicated in the Plans. The completed DSM improved zone shall be a homogeneous mixture of binder material constructed in accordance with the method of mixing and column spacing indicated in the plans.

Production DSM shall be constructed using the same equipment and construction criteria (i.e. mix design, mixing parameters, etc.) established in the accepted test section construction (subsection I). DSM construction that is out of tolerance (subsection G.4) or is subject to unforeseen conditions (subsection G.5) shall be evaluated and corrected as approved by the Engineer with no additional cost or schedule impact to the Department.

1. Site Preparation:

The presence and location of buried pipes, sewers, and other utilities shall be identified and precautions taken to protect the utilities from damage during the construction of the DSM columns. The Contractor shall be responsible for any damage resulting from the construction of the DSM columns. The site shall be cleared and grubbed in accordance with the Contract documents. Limit grubbing to that needed to remove previous construction materials, trees, stumps, and large roots. Fill in holes left by construction materials, stumps and root extraction and grade to provide level working surface. Place bridge lift materials as required in the plans and contract documents.

Establish DSM column limits and locations by a licensed surveyor. Individual column locations shall be marked. Sufficient horizontal and vertical control shall be provided to establish that DSM columns are located accurately and reach the required plan depths.

2. DSM-SCC Soil-Grout Mixing:

Soil shall be broken up and blended with grout in place by the pugmill type action of the soil mixing equipment. The completed DSM-SCC shall be a uniform mixture of cement and the in situ soils. The soil-grout mixture shall achieve an average unconfined compressive strength in 28 days as indicated in the plans. Soil mixing shall be performed with the following minimum requirements:

- a. *Grout Preparation:* The dry materials shall be fed to the mixers for agitation and shearing. The mixing ratio of the grout shall be controlled by measuring the weight of grout components using automatic batch scales in the mixing plant. Grout mixture shall be mixed for a minimum of three minutes, with a maximum holding time of two hours, calculated from the beginning of initial mixing. The specific gravity of the grout (determined in the test section) shall be tested at least once per shift per rig, using the methods outlined in ASTM D 4380, and shall not deviate more than three percent from the calculated specific gravity for the design cement ratio. Additional tests may be required by the Engineer. If the specific gravity or density is lower than the design mix, the Contractor shall add additional cement, remix, and/or recalibrate batch scales and retest the grout until the design density is achieved, at no additional cost to the Department.
- b. *Grout Injection:* The grout shall be pumped through and injected from the mixing tool. The grout injection rate per vertical foot of DSM-SCC shall be in accordance with the requirements of the design mix established during the test section. Injection rates falling below this requirement, shall require the DSM-SCC to be remixed and additional grout injected (at the design grout-soil ratio) to a depth at least three feet below the deficient zone, at no additional cost to the Department. The Contractor may sample using wet grab methods for his own purposes. The Department will not accept results from wet sampling for quality control purposes.
- c. *Rotation Speeds:* The mixing tool rotational speeds (measured in RPM) and penetration/withdrawal rates shall be in accordance with the parameters established during the test section(s). If these parameters are varied more than 15 percent from those determined during the test section(s), the DSM-SCC section shall be remixed while injecting grout at the design grout ratio to a depth at least three feet below the deficient zone, at no additional cost to the Department.
- d. *On-Board Computer:* The preset data in the on-board computer shall be verified for each column as correct and adjusted if necessary. The operator shall monitor and adjust as necessary during column installation the feeding of material, the grout injection rate, the mixing tool rates of rotation, and penetration/withdrawal rates of the mixing tool.
- e. *Changes in Grout Mix Design:* The Contractor may request that the established grout mix be modified during the production DSM-SCC installation. To verify acceptable results for

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the modified mix design, the Engineer may require additional testing or a new test section, at no additional cost to the Department.

- f. *Spoils:* During the course of soil-cement stabilization, return/spoil material shall not be dumped into or otherwise be allowed to enter the soil-cement column. The Contractor shall develop a spoil containment system that allows the channeling of the spoils to the temporary holding pit in such a direction and manner as to keep the spoils away from the site perimeter, and out of the traveled paths. Soil-cement return and spoil material shall be piped or channeled to holding ponds or other retention structures within the work area. The Contractor shall remove all excess grout and grout mixed soil generated from ground improvement activities from the construction site in accordance with the approved DSM Installation Plan.

The Contractor shall take all necessary precautions and implement measures to prevent any soil-cement return, other spoil material or stockpiled materials from entering storm drain structures, drainage courses, other utility lines, or from leaving the site via surface runoff. The Contractor shall prevent soil-cement return, fluid, ponded spoil material, or stockpiled solidified materials from migrating into any water body. In the event soil-cement return, spoil material or stockpiled materials enter storm drain structures, drainage courses, or other utilities, including, but not limited to, surface water bodies beyond site limits of soil-cement mixing operations, the Contractor shall collect and remove all of these materials, and perform all other required/necessary remediation that may be directed by the Engineer or responsible environmental agency, at no additional cost or schedule impact to the Department. The Contractor shall conduct all soil-cement operations to conform to sedimentation and turbidity control requirements of federal, state, and local agencies having jurisdiction over the work.

- g. *Delays:* The installation of each DSM-SCC column shall be continuous without interruption. If an interruption of more than two hour occurs, the DSM-SCC shall be remixed for the entire column height using fresh cement grout as though there had not been any cement grout installed, or the column may be abandoned, at no cost or schedule impact to the Department. The Contractor shall install additional columns if the interrupted columns cannot be acceptably remixed.
- h. *Instability:* Soil-cement column which exhibits partial or total instability at any time, or collapses as a result of mechanical failure of any equipment; inadequacy of cement, water supplies, cement grout; improper drilling, injection or mixing procedures; or other cause, the Contractor shall halt DSM-SCC construction and backfill to ground surface with cement grout. After the backfill has attained sufficient strength to stabilize the ground, complete the required installation by re-drilling from ground surface, at no additional expense to the Department. The Engineer will evaluate the potential impacts of the instability and may require one or more additional re-drilled columns at overlapping or adjacent locations as determined by the Engineer, and at no additional expense to the Department.
- i. *Daily Quality Control Report:* The Contractor shall submit a Daily Quality Control Report for each day that DSM-SCC work is performed. The log shall contain as a minimum the information listed in Section C. The report shall be delivered to the Engineer by the end of the next working day following the report date.
- j. *Protective Covers:* Immediately after completing a soil-cement column, the Contractor shall install protective covers to prevent persons from falling or stepping into the unhardened soil-cement column.

3. **DSM-LCC Soil-Binder Mixing:**

Soil shall be broken up with the mixing tool. As the mixing tool is raised the binder material (i.e. lime-cement or cement) is injected using air pressure. The binder-soil mixture shall

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achieve an average unconfined compressive strength in 28 days as indicated in the plans. Soil mixing shall be performed with the following minimum requirements:

- a. *Binder Injection:* The binder (i.e. lime-cement or cement) volume flow rate per vertical foot of DSM-LCC shall be in accordance with the requirements of the design mix established during the test section. Injection rates falling 10 percent below this requirement, shall require the DSM-LCC to be remixed and additional binder injected (at the design rate) to a depth at least three feet below the deficient zone, at no additional cost to the Department.
- b. *Rotation Speeds:* The mixing tool rotational speeds (RPM) and the penetration/withdrawal rates shall be in accordance with the parameters established during the test section(s). If these parameters are varied by more than 15 percent from those determined during the test section(s), the DSM-LCC section shall be remixed using the design binder volume flow rate to a depth of at least three feet below the deficient zone, at no additional cost to the Department.
- c. *On-Board Computer:* The preset data in the on-board computer shall be verified for each column as correct and adjusted if necessary. The operator shall monitor and adjust as necessary during DSM column installation the feeding of material, the injection air pressure, and the rates of rotation and rise.
- d. *Changes in Binder Mix Design:* The Contractor may request that the established mixing parameters be modified during the production DSM-LCC installation. To verify acceptable results for the modified parameters, the Engineer may require additional testing or a new test section, at no additional cost to the Department.
- e. *Delays:* The installation of each DSM-LCC column shall be continuous without interruption. If an interruption of more than two hours occurs, the DSM-LCC shall be remixed for the entire column height using design binder rates as though there had not been any binder installed, or the column may be abandoned, at no cost or schedule impact to the Department. The Contractor shall install additional columns if the interrupted columns cannot be acceptably remixed.
- f. *Daily Quality Control Report:* The Contractor shall submit a Daily Quality Control Report for each day that DSM-LCC work is performed. The log shall contain as a minimum the information listed in Section C. The report shall be delivered to the Engineer by the end of the next working day following the report date.

4. **DSM Column Construction Tolerances:**

- a. *Horizontal Alignment:* The location of the DSM column shown in the Plans shall be accurately staked by a licensed surveyor before beginning installation. The horizontal alignment of DSM columns with group column spacing (GCS) shall be within 4 inches of the planned DSM top location. The horizontal alignment of DSM columns with block column spacing (BCS) shall be within 20 percent of the DSM column diameter, not to less than four inches, of the planned DSM top location in order to obtain sufficient DSM column overlap.
- b. *Vertical Alignment:* The equipment operator shall control vertical alignment of the equipment and constructed DSM column. Two measures of verticality shall be monitored, longitudinal and transverse to the DSM column alignment. The DSM column shall be installed at an inclination that deviates no more than 1:100 (horizontal to vertical).
- c. *DSM Column Lengths:* The tops of the DSM columns shall begin at the ground surface. The top of DSM column elevations shown in the plans are approximate. Natural soils above the water table, at the completion of DSM installation, shall have been treated to produce the full column design strengths up to within 3 feet of the ground surface. If the top of the

DSM columns is being constructed within a surcharge or berm, the top of DSM column elevations shown in the plans shall be used.

The bottom of DSM columns shall extend to the line and grades shown in the plans. The DSM column bottom elevations indicated in the Plans provide the minimum required penetration of the DSM columns. The Engineer may require the Contractor to shorten or deepen the bottom of DSM columns indicated in the plans.

- d. *DSM-LCC Width*: When DSM columns are constructed using group column spacing (GCS) the DSM column diameter shown in the plans shall be the minimum required diameter. The diameter of DSM columns constructed using block column spacing (BCS) may vary to accommodate variations in the Contractor's equipment dimensions, provided that the plan area of ground improvement does not exceed the dimensions shown in the Plans more than six inches and is approved by the Engineer.

5. Unforeseen Conditions and Corrective Remediation:

Unforeseen conditions that result in deficient DSM column construction shall be remediated by the DSM Contractor at no additional cost to the Department. DSM column construction deficiencies and how they were addressed shall be noted in the DSM Daily Production Control Report and Installation Log. DSM column deficiencies that result from changes in rotation speeds of mixing tools, rate of penetration/withdrawal of mixing tools, changes in the rate of grout/binder injection, delays, or changes in binder mix shall be corrected as indicated in subsections G.2 and G.3 for DSM-SCC mixing and DSM-LCC mixing, respectively.

If unforeseen conditions result in DSM column interruptions that do not meet the DSM construction requirements (subsections G.2 or G.3), the DSM column installation shall be re-drilled a minimum of 1 foot below the elevation of the interruption and the DSM column construction restarted.

When interruption of the installation process occurs because of unknown obstructions or a very dense layer above the planned tip elevation, the Contractor shall document the interruption on the DSM Daily Production Control Report and Installation Log and notify the Engineer in writing by the end of that day of such encounter and shall provide all pertinent information relating to DSM column identification, plan location coordinates, depth, and expected extent of the obstruction. The Contractor shall be prepared to penetrate very dense layers by first removing mixing tools from the excavation and then using auger drilling equipment or other approved methods to allow the installation of the DSM column. When unknown obstructions are encountered, the Contractor shall submit a proposal to the Engineer for review that delineates the Contractor's proposed means and methods to overcome the unknown obstruction, including equipment and labor time estimated for this operation. Such construction to remove an unanticipated obstruction shall only be performed with the written authorization of the Engineer. When the obstruction cannot be penetrated or removed, the DSM column shall be completed to the maximum depth penetrated. The need for an alternate design or remedial construction shall then be determined by the Engineer.

Deficient DSM columns due to out of tolerances (subsection G.4) or not in compliance with DSM construction acceptance (subsection G.6) will require that the DSM Contractor to submit proposed remedial measures to the Engineer for review and approval. Remedial plans shall show the location, depth, construction exceptions requested, and proposed method of remediating the deficient DSM ground improved areas. Remedial plans, if accepted, shall be at no cost or schedule impact to the Department.

6. DSM Construction Acceptance:

The QC reporting (logs), testing, and acceptance procedures for the DSM test section(s) and production DSM columns shall be the same. QC testing methods are described in Section H and Acceptance Criteria are provided in Section K.

H. DSM TESTING METHODS

QC testing of DSM columns consists of using field and laboratory testing techniques to evaluate the integrity, consistency, and strength of the DSM column for the entire full depth of soil improvement. QC testing methods that will be used include probe testing (subsection H.1), soil borings and undisturbed sampling with Shelby tubes (subsection H.2), and coring and sampling (subsection H.3). Samples obtained by undisturbed sampling with Shelby Tubes or coring shall have samples tested for compressive strength testing (subsection H.4). DSM testing shall be conducted in accordance with the SCDOT Geotechnical Design Manual, version 1.1 (2010), or later.

The results of the compressive testing shall be used to develop correlations for use with probe testing and therefore improve the reliability of the probe testing results. This will be accomplished by performing continuous undisturbed Shelby tube sampling and/or coring in one quadrant of the DSM column and probe testing in another quadrant of the same DSM column.

Any of the DSM testing methods presented may be used on production DSM columns to evaluate deficiencies based on construction records or field observations.

1. Probe testing:

- a. Probe testing shall be conducted using the seismic cone penetrometer test with pore pressure measurements (SCPTu). The SCPTu testing results (i.e. tip resistance, friction sleeve resistance, pore pressure, and shear wave velocity vs. depth of penetration) shall be provided graphically and in electronic file format to the Engineer.
- b. Probe testing shall be performed in the presence of the Engineer, unless otherwise directed. The Contractor shall notify the Engineer at least seven calendar days in advance and confirmed 2-days (48 hours) prior to beginning SCPTu operations.
- c. The SCPTu testing shall be conducted in accordance with the SCDOT Geotechnical Design Manual.
- d. Probe testing shall be performed after the soil-binder mixture has hardened sufficiently, but before it has cured to the extent to cause refusal to the SCPTu equipment.
- e. Unless directed otherwise by the Engineer, probe tests shall be performed along an essentially vertical alignment located within one of the quadrants of the DSM column and shall include inclinometer measurements that confirm the verticality of the SCPTu test data such that the entire probe test is determined to have been advanced within the DSM column. The SCPTu shall be taken at a distance of 2/5 the DSM column radius from the center of the DSM column.
- f. If seismic cone shear wave testing results are inconclusive, the SCPTu may be discontinued and cone penetrometer test with pore pressure measurements (CPTu) may be used with written approval from the Engineer.
- g. The CPT testing equipment shall be sized to allow full penetration and testing to the depth of the planned test DSM column plus 10 feet.
- h. If standard full-size CPT truck equipment (i.e. 20-30 ton reaction truck) is not capable of testing to the desired depths, the Contractor shall conduct SPT testing in accordance with the SCDOT Geotechnical Design Manual, at no additional cost to the Department. SPT

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shall be conducted on a maximum five foot center interval to the depth of the planned test DSM column plus 10 feet.

- i. All probe test holes shall be filled with cement grout that will obtain 28-day strength equal to or greater than the DSM column compressive design strength required in the plans.

2. **Soil Borings and Undisturbed Sampling:**

- a. Soil borings and undisturbed Shelby tube sampling shall be performed in the presence of the Engineer, unless otherwise directed. The Contractor shall notify the Engineer at least seven calendar days in advance and confirmed 2-days (48 hours) prior to beginning soil boring operations.
- b. Soil borings and sampling shall be conducted in accordance with the SCDOT Geotechnical Design Manual.
- c. High quality undisturbed sampling shall be obtained after the soil-binder mixture has hardened sufficiently to a minimum compressive strength of 3 psi (430 psf) but not greater than 55 psi (7,900 psf).
- d. Unless directed otherwise by the Engineer, soil borings shall be obtained along an essentially vertical alignment located within one of the quadrants of the DSM column. The soil boring shall be taken at a distance of $\frac{2}{5}$ the DSM column radius from the center of the DSM column.
- e. Sampling shall be conducted using a thin wall Shelby tube sampler and/or pitcher barrel sampler in accordance with the SCDOT Geotechnical Design Manual.
- f. Upon Shelby tube retrieval, the samples shall be logged visually without extraction of the samples from the Shelby tube and sealed to prevent loss of moisture during transport.
- g. Undisturbed samples shall be transported by the Contractor to the independent AASHTO certified materials testing laboratory where the samples will be extracted, stored, and tested.
- h. Upon extraction of the samples at the independent materials testing laboratory, the samples shall be logged and documented by taking pictures. The percent recovery per Shelby tube sampler based on the sampler penetration shall be documented. Samples shall be selected for testing and submitted to the Engineer for approval. Samples shall be stored and cured in accordance with ASTM D 1632 until the test date.
- i. All soil boring holes shall be filled with cement grout that will obtain 28-day strength equal to or greater than the DSM column compressive design strength required in the plans.

3. **Coring and Sampling:**

- a. Coring/sampling shall be performed in the presence of the Engineer, unless otherwise directed. The Contractor shall notify the Engineer at least seven calendar days in advance and confirmed 2-days (48 hours) prior to beginning coring/sampling operations.
- b. High quality continuous core sampling shall be obtained after the soil-binder mixture has hardened sufficiently to approximately a compressive strength of 42 psi (6,050 psf).
- c. Unless directed otherwise by the Engineer, core runs shall be obtained along an essentially vertical alignment located within one of the quadrants of the DSM column. The core run shall be taken at a distance of $\frac{2}{5}$ the DSM column radius from the center of the DSM column.
- d. Coring shall be conducted using double or triple tube samplers to obtain samples of 2.5 inches in diameter or greater. Triple tube core barrel may be required by the Engineer, at

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no additional cost to the Department, if the sample quality of the double tube core barrel is not providing high quality samples suitable for compression strength testing.

- e. Each core run shall be at least four feet in length and contain at least four acceptable test specimens. Three samples per core run are required to perform compressive strength testing with one reserve sample.
- f. A minimum core run recovery of 85 percent for each 4-foot-long core run shall be achieved. During coring, the elevation of the bottom of the holes shall be measured after each core run in order that the core recovery for each run can be calculated. The core recovery and RQD for every core run shall be reported in the logs. Additional cores may be required, at no additional cost to the Department, if core run recovery is less than 85 percent.
- g. Upon retrieval, the samples shall be field logged and documented by taking pictures. Samples shall be selected for testing and submitted to the Engineer for approval.
- h. Following logging and test specimen selection, the entire full-depth sample, including the designated test specimens, shall be immediately sealed in plastic wrap to prevent drying, placed in suitable core boxes, and transported to the materials testing laboratory by the Contractor within 24 hours.
- i. All core holes shall be filled with cement grout that will obtain 28-day strength equal to or greater than the DSM column compressive design strength required in the plans.
- j. Cores shall be transported by the Contractor to the independent AASHTO certified materials testing laboratory where the samples will be stored and tested. Samples shall be stored and cured in accordance with ASTM D 1632 until the test date.

4. **Strength Testing of Samples:**

- a. All samples shall be kept out of sunlight at 70 degrees F and under fully humid conditions throughout storage and curing that prevents loss of sample moisture via evaporation.
- b. Samples suitable for strength testing shall have a height to diameter ratio of 2.0.
- c. Strength testing shall be performed by unconfined compression testing method per AASHTO specification T-208-96, but with strain rate not faster than 0.5% per minute, but not slower than 0.25%/minute, and with test equipment set up to record in both tabular and graphical form the axial stress and strain constant increments of axial strain no larger than every 0.05% axial strain. The Contractor will be permitted to perform UU Triaxial Compressive Tests, with approval of the Engineer, in lieu of performing unconfined compressive strength test, at no additional cost to the Department.
- d. Compressive strength testing results shall be transmitted to the Engineer for review within 24 hours of the compression test completion. The remaining portions of the full-depth samples that are not tested shall be retained by the Contractor, until completion and acceptance of the work, for possible inspection and confirmation testing by the Engineer.

I. **DSM TEST SECTION AND QC TESTING PROGRAM**

The QC testing program for each test section will be submitted to the Engineer within 5 days after test section DSM column installation and shall be based on the results of DSM pre-production laboratory testing, early probe testing (3 and 5 days after column installation), and review of samples obtained for strength testing. The approved compressive strength testing program (i.e. Plan location, sample depth, and elapsed time after construction to perform compressive testing) shall then be submitted to the Contractor's independent AASHTO certified laboratory testing firm.

Unless otherwise directed by the Engineer, a minimum of four Plan locations shall have QC testing, per test section. QC testing at each Plan location shall consist of full-depth continuous soil borings or corings per subsections H.2 and H.3, respectively. Soil boring or coring sampling

shall be performed in one DSM column quadrant, while probe testing, per subsection H.1, shall be performed in another DSM column quadrant. A minimum of six samples at each QC testing Plan location shall be selected by the Contractor and approved by the Engineer for compressive strength testing. Compressive strength testing of cores (subsection H.4) and probe testing (Section H.1) at QC testing Plan locations shall be conducted at 7, 14, 28, and 56 days after test DSM column installation. The results of the compressive testing shall be used to develop correlations for use with probe testing and therefore improve the reliability of the probe testing results. A test DSM column compressive strength testing report shall be compiled by the independent testing company and submitted to the Contractor and the Engineer. The compressive strength testing report shall document the soil boring/core sampling and compressive strength testing conducted on the cores.

In addition to probe testing conducted at QC testing Plan locations, full depth probe testing shall be conducted at two separate plan locations within the test section in separate DSM column quadrants at 3, 7, 14 and 28 days after test DSM column installation. A probe testing report shall be compiled of all testing results in accordance with Section G.2.

The Contractor shall use the results of the test sections to establish the DSM production construction criteria. The DSM production construction criteria shall be developed to produce DSM columns that meet the Acceptance Criteria in Section K. DSM production construction criteria for DSM columns shall include as a minimum, the following criteria.

DSM-SCC Production Construction Criteria:

1. Grout mix design including ratios of all materials mixed to form the grout
2. Grout specific gravity
3. Grout injection rates
4. Type of equipment
5. Mixing tool penetration and withdrawal rates
6. Mixing tool rotation speed
7. Construction procedures and techniques

DSM-LCC Production Criteria:

1. Binder mix design including ratios of all materials (i.e. lime-cement or cement) mixed to form the soil-binder material
2. Lime-cement injection rates
3. Type of equipment
4. Mixing tool penetration and withdrawal rates
5. Mixing tool rotation speed
6. Construction procedures and techniques

The Contractor shall use the results of the test sections to establish the Production Quality Control (QC) testing program per Section J.

Construction of production DSM columns may begin only after written acceptance by the Engineer of the “DSM Production Construction Criteria” and the “Production Quality Control (QC) Testing Program.” If construction criteria, construction procedures, equipment, new mobilizations, or

changes in personnel are made, following acceptance of the test sections, the Department reserves the right to require the Contractor to construct a new test section at no additional cost to the Department.

J. PRODUCTION QC TESTING PROGRAM

The Production QC Testing program shall be developed by the Contractor and approved by the Engineer. The Production QC Testing program will be required to include probe testing per subsection H.1 and strength testing of samples per subsection H.4. The following minimum requirements shall be used to developing the Production QC Testing Program:

DSM QC Testing Program Minimum Requirements:

1. The Production QC Testing Program goal is to establish continuity/integrity of the columns and to obtain a measure of their strength. This is accomplished by using the QC Testing to evaluate if the DSM ground improvement is meeting the Acceptance Criteria in Section K.
2. Provided that acceptable correlations can be developed between probe testing and compression strength testing, QC probe testing per subsection H.1 shall be performed at a minimum frequency of 5 percent of production columns (1:20) but not less than 1 QC probe test for every 200 cubic yards of DSM stabilized volume.
3. One Soil boring/Coring full depth of DSM columns plus 10 feet with a minimum of one strength test per 5 feet of penetration of stabilized soil (Section H) shall be obtained adjacent to probe testing (adjacent DSM quadrant) at a minimum frequency of 0.5 percent of production columns (1:200) but not less than 1 QC probe test for every 2,000 cubic yards of DSM stabilized volume.
4. If acceptable correlations cannot be developed between probe testing and compression strength testing, one Soil boring/Coring full depth of DSM columns plus 10 feet with a minimum of one strength test per 5 feet of penetration of stabilized soil (Section H) shall be obtained adjacent to probe testing (adjacent DSM quadrant) at a minimum frequency of 1.0 percent of production columns (1:100) but not less than 1 QC probe test for every 1,000 cubic yards of DSM stabilized volume.
5. The QC Testing program shall define the limits of the production DSM testing based on the number of rigs operating, anticipated production schedule, and the minimum QC testing criteria defined above.
6. The QC Testing program shall include provisions for revising QC testing frequency as a result of failing DSM Acceptance Criteria, changes in construction criteria, construction procedures, equipment changes, new mobilizations, or changes in personnel that are made following acceptance of the test sections.
7. The Department reserves the right to require the Contractor to perform additional QC testing after review of the daily Quality Control Report/Log of the production DSM columns and/or review of QC Testing results. Although coring and conducting compressive strength testing of cores (Section G.1) is not intended to be a routine QC testing method, the Engineer reserves the right to use this QC testing method based on the results of the probe testing at any time.
8. The Contractor shall determine the time interval between DSM installation and QC testing. QC testing shall be performed on columns cured for a minimum of 3 days but no longer than 28 days, or as directed by the Engineer.
9. Only probe testing equipment and methods that have been calibrated during the test section shall be used for QC testing. If production DSM columns are being installed differently from the test section DSM column installation, a calibration of the probe testing with coring and compression testing shall be required unless approved otherwise by the Engineer.

K. ACCEPTANCE CRITERIA

Determination that the DSM columns meet the Acceptance Criteria (for DSM construction, DSM column continuity, and DSM compressive strength requirements) shall be evaluated solely by the Engineer based on a review of daily Quality Control Report/Log of the production DSM columns and QC testing results conducted by an independent testing company.

1. DSM Construction Acceptance Criteria:

DSM columns shall be considered acceptable when daily Quality Control Report/Log of the production DSM columns and any remediation reports indicate that the:

- a. Location of the top of the columns has been verified to be within design tolerances
- b. Penetration of the column has been verified as correct by the Engineer.
- c. Continuously recorded injection quantity of cement grout for DSM-SCC and binder (lime-cement or cement) for DSM-LCC columns has been verified to be within 10% of the design (preset) value established for the production DSM construction criteria based on the results of approved production DSM construction design criteria.

2. Evaluation of DSM Column Continuity:

Lumps of unimproved soils shall not amount to more than 15 percent of the total volume of any 4-foot section of continuous full-depth evaluation by either conducting continuous probe testing, soil borings, or coring. Any individual or aggregation of lumps of unimproved soil shall not be larger than 6 inches in greatest dimension. For evaluating the volume of unimproved lumps of soil, all of the unrecovered samples shall be assumed to be unimproved soil. In addition, within a sample, the sum length of unmixed or poorly mixed soil regions or lumps that extend entirely across or a portion thereof the diameter of the sample will be considered unimproved.

3. Design Compressive Strength Acceptance:

Unless directed otherwise by the Engineer, all DSM QC compressive strength test results shall indicate a minimum of 60 percent of the design compressive strength at 5 days or less. Failure to meet this criterion shall deem the DSM column to be in non-conformance of the DSM compressive strength acceptance criterion. The DSM column shall be retested (same DSM column, different quadrant) at 28 days where the average QC strength testing shall indicate 100 percent or more of the compressive design strength with no sample testing less than 85 percent of the compressive design strength. Failure to meet the 28 day QC strength testing criterion shall deem the DSM column to be in non-conformance of the DSM compressive strength acceptance criteria. The Contractor may elect to conduct additional QC strength testing in excess of 28 days, with approval of the Engineer, at no additional cost to the Department. Unless otherwise determined by the Engineer, the extent of the non-conformance QC test area shall be considered to include all DSM constructed during all rig shifts that occurred after construction when passing tests were achieved. Non-conforming DSM QC test areas shall be remedied by the Contractor by conducting the following procedures.

The Contractor may conduct two or more additional QC probe tests (locations designated by the Contractor and approved by the Engineer) to better define the limits of the non-conformance and submit the results of those tests for review by the Engineer at no additional cost to the Department. If a minimum of 60 percent of the design strength has been achieved at 5 days or less, the Engineer shall evaluate the DSM construction documentation to determine which DSM columns are in conformance. If compressive strength criteria are achieved, with approval of the Engineer, all or a portion of the production DSM QC testing

area may be approved provided that any deficient production DSM columns are remedied by one of the following two options. Failure to meet the required design strength of the additional DSM QC testing shall require that the DSM QC test area be remedied by one of the following options as approved by the Engineer.

- a. Provide 2 or more additional QC tests (locations designated by the Engineer) within the DSM QC test area which demonstrate that at 28 days, the average QC strength testing is 100 percent or more of the compressive design strength with no sample testing less than 85 percent of the compressive design strength.
- b. Re-drilling all or a portion of the nonconforming DSM QC test area and mixing additional cement grout for DSM-SCC columns or binder material (lime-cement or cement) for DSM-LCC, while raising the mixing tool. The Contractor shall submit a proposed plan for remixing or repair of failed sections for review and approval by the Engineer. Repair work of failed DSM columns shall be performed at no additional cost to the Department. Changing grout or binder quantities may require additional QC testing to calibrate QC probe testing. After reconstruction of the production DSM-LCC testing section, the affected DSM-LCC testing section will be subject to the compressive strength acceptance criteria as defined in this section.

L. AS-BUILT PLANS

Following completion of the production DSM column construction, the Contractor shall furnish to the Engineer a set of as-built plans detailing the locations of the DSM columns in terms of project coordinates, top and bottom elevations, QC compressive strength testing results, and any other dimensions of the DSM columns that are pertinent to the project.

M. MEASUREMENT AND PAYMENT

DSM constructed using group columns spacing (GCS) will be measured per linear foot of DSM column constructed and then accepted by the Engineer. DSM constructed using block column spacing (BCS) will be measured by the total neat-line ground improved volume (in cubic yards) accepted by the Engineer, where the neat-line is the rectangular plan area of the required ground improvement zone times the specified improvement depth. Material located outside of the tolerances specified will not be measured. Material used to remix an area found to be unacceptable to the Engineer will not be measured. The test section(s) will not be measured, and is considered incidental to the production DSM ground improvement.

Payment will be made at the unit contract price per linear feet for DSM constructed using group columns spacing (GCS) and per cubic yard for DSM constructed using block column spacing (BCS). Payment for DSM columns will be full pay to perform the work as specified including construction and testing of test sections, QC testing, construction and removal of surcharges and berms, handling and hauling of excavated spoils, and site cleanup.

Payment will be made under:

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Item No.	Pay Item	Pay Unit
2051201	GROUND IMPROVEMENT (DEEP SOIL MIXING SOIL-CEMENT COLUMNS – BCS)	CY
2051202	GROUND IMPROVEMENT (DEEP SOIL MIXING SOIL-CEMENT COLUMNS - GCS)	LF
2051203	GROUND IMPROVEMENT (DEEP SOIL MIXING LIME-CEMENT COLUMNS- BCS)	CY
2051204	GROUND IMPROVEMENT (DEEP SOIL MIXING LIME-CEMENT COLUMNS- GCS)	LF

(35) SECTION 205: GROUND MODIFICATION – COMPACTION GROUTING COLUMNS:

June 28, 2013

A. GENERAL

1. Scope:

The work under this Section consists of furnishing all supervision, labor, material, equipment, and related services necessary to perform ground improvement by the compaction grout technique as indicated on the Contract Drawings and specified herein.

For this project, the purpose of the compaction grouting is to reinforce the loose sand layers below embankments. The compaction grouting will serve to reinforce loose sand in the event of liquefaction during an earthquake.

The work includes the delivery and placement of all concrete/grout material necessary for compaction grouting construction.

2. Compaction Grout Column Construction

The work is to be accomplished using specifically-designed equipment for compaction grouting. The drill is to be advanced to the specified compaction grouting depth. Concrete/grout shall then be injected through the drill pipe as the pipe is being withdrawn, in such a way as to exert a positive lateral pressure on the soil surrounding the concrete/grout filled grout hole.

3. Methods and Contractor Qualifications:

The Specialty Contractor performing the compaction grouting installation shall be one who can provide a minimum 3-year experience record documenting 5 recent, successful projects completed with these general site conditions and improvement criteria. References asserting this documentation shall be submitted with the bid.

A detailed description of the proposed construction method (including equipment and personnel) and the qualifications of the proposed Specialty Subcontractor shall be submitted with the bid.

4. References:

American Society for Testing and Materials (ASTM) Standards

American Concrete Institute (ACI) Standards

Prior to commencing work, the Contractor shall examine the site, drawings, records or existing utilities and other existing subsurface structures, and soil boring logs made available by the Engineer to help determine compaction grouting installation conditions.

Any subsurface data provided by the Department is provided solely as general information for convenience of Contractor. It is expressly understood that the Department, Engineer, or the Engineer's consultants will not be responsible for interpretations or conclusions drawn there from by the Contractor. The Department and Engineer expressly encourage the Contractor to perform soil test borings or other subsurface explorations to determine whether the Contractor's proposed ground modification method is capable of installing the specified compaction grout columns. Additional test borings and other exploratory operations may be made by the Contractor at no additional cost to the Department.

5. Submittals:

The following data shall be submitted for the approval of the Engineer prior to beginning of work.

- a. A detailed written procedure to be followed in installing the compaction grout columns and confirming that the specified work requirements have been achieved. The written procedure shall include a detailed description of the specialized equipment to be used.
- b. Proposed compaction grout design mix and descriptions of materials to be used. These shall be in sufficient detail to indicate their compliance with the specifications and either 1.) Laboratory tests of trial mixes made with the proposed mix or 2.) Laboratory tests of the proposed mix used on previous projects.
- c. The Contractor shall be responsible for providing all lines and grades for compaction grouting, including locations of all utilities and surveying markers.
- d. The Contractor shall be responsible for all health and safety requirements including those associated with the handling and disposal of contaminated materials. The Contractor shall be responsible for providing written procedures including a Health and Safety Plan.

6. Site Preparation:

The Contractor shall ensure a firm base on which heavy equipment can be operated safely under its own power.

The Contractor shall accurately locate all compaction grout columns in accordance with approved drawings. Compaction grouting shall be adjusted, as approved by the Engineer, to avoid utilities, foundations, and all other underground construction.

The Contractor shall provide access and maintenance thereof, for the compaction grouting equipment, work force and delivery of materials to the work site.

B. PRODUCTS

1. Materials:

- a. Portland Cement: Portland Cement shall conform to current ASTM standards, designation C 150. The use of cement replacement materials will be permitted subject to the approval of the Engineer and provided that they can be shown to have beneficial effects on concrete impermeability, heat generation during setting and general durability. The mix proportions of use shall be approved. For onsite batching, all cement and cement replacement

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materials shall be stored in separate containers according to type in waterproof stores or silos.

- b. Mineral Admixture: Mineral admixture, if used, shall be flyash or natural pozzolan which possesses the property of combining with the lime liberated during the process of hydration of Portland Cement to form compounds containing cementitious properties. The material shall conform to ASTM C 618, Class C or Class F.
- c. Fluidifier: Fluidifier shall be a compound possessing characteristics which will increase the fluidity of the mixture, act as water reducing agent and retardant.
- d. Water: Water shall be potable, fresh, clean and free of sewage, oil, acid, alkali, salts or organic matter.
- e. Fine Aggregate: Sand shall meet the requirements of current ASTM standards, designation C 33.

2. Grout Mixes:

The concrete/grout mix shall consist of Portland cement, sand, and water, and may also contain a mineral admixture and approved fluidifier. The components shall be proportioned and mixed to produce a concrete capable of maintaining the solids in suspension, which may be pumped without difficulty. These materials shall be proportioned to produce a hardened concrete/grout which will achieve the design strength within 28 days. The design 28-day concrete strength for this project shall be 2500 psi.

All materials shall be accurately measured by volume or weight as they are fed to the mixer. Time of mixing shall be not less than one minute at the site. If agitated continuously, the concrete/grout may be held in the mixer or agitator for a period not exceeding two and one half hours at concrete temperatures below 70 degrees F and for a period not exceeding two hours at higher temperatures, not exceeding 100 degrees F. Concrete/grout shall not be placed when its temperature exceeds 100 degrees F.

Protect concrete/grout from physical damage or reduced strength which could be caused by frost, freezing actions or low temperatures or from damage during high temperatures in accordance with ACI 305/306.

The concrete/grout mix shall be tested by making a minimum of six 2-inch cubes for each day during which compaction grouting is performed. A set of six cubes shall consist of two cubes to be tested at seven days, and two cubes to be tested at 28 days and two cubes held in reserve. Test cubes shall be cured and tested in accordance with ASTM C 109. Test the flow of each batch of concrete mix.

3. Concrete/Grout Testing:

- a. Sampling: Concrete/grout for the columns shall be sampled in accordance with ACI standards.
- b. Workability: The workability of concrete/grout shall be determined by the slump test as described in ACI standards or by an alternative approved method.
- c. Cube Tests: For each mix design of concrete, six cubes shall be made from a single batch when required for 65 cy of concrete/grout or part thereof in each day's work. Testing shall be carried out by an independent and approved laboratory. Two cubes shall be tested at an age of 7 days, two at 28 days, and two cubes shall be held in reserve for further testing, if required. Alternatively, cubes may be tested in accordance with an approved accelerated

testing regime. The Contractor shall submit certified copies of the results of all tests to the Engineer.

- d. Standard of Acceptance: The standard of acceptance of the concrete mix cubes shall be in accordance with ACI standards or as otherwise approved.
- e. Record of Tests: The contractor shall keep a detailed record of the results of all tests on concrete/grout and concrete materials. Each test shall be clearly identified with the columns to which it relates.

4. Batching Concrete/Grout:

- a. General: Facilities shall be provided for the Engineer to inspect the concrete/grout mixing plant or plants when requested. Unless otherwise specified the requirements in Clauses 2.5.2, 2.5.3, 2.5.4 shall be met.
- b. Accuracy of Weighing and Measuring Equipment: The weighing and water-dispensing mechanisms shall be maintained at all times to within the limits of accuracy described in ACI standards.
- c. Tolerance in Weights: The weights of the quantities of each size of aggregate and of cement shall be within 2% of the respective weights per batch after due allowance has been made for the presence of free water in the aggregates, which shall be determined by the Contractor by an approved method.
- d. Moisture Content of Aggregates: The moisture content of aggregates shall be measured immediately before mixing and as frequently thereafter as is necessary to maintain consistency of mix.

5. Mixing Concrete/Grout

- a. Type of Mixer: The mixer shall be of the batch type, specifically designed for concrete/grout mixing.
- b. Tolerance of Mixer Blades: The mixing blades of pan mixers shall be maintained within the tolerances specified by the manufacturers of the mixers, and the blades shall be replaced when it is no longer possible to maintain the tolerances by adjustment.
- c. Cleaning of Mixers: Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned between the mixing of different types of cement
- d. Minimum Temperature: The temperature of fresh concrete/grout shall not be allowed to fall below 37° F. No frozen material or materials containing ice shall be used. Newly cast columns are to be covered to protect them against freezing unless the final cut off level is at least 0.8 ft. below the final head level as cast. Where a column is cast in frozen ground, appropriate precautions shall be taken to protect any section of the column in contact with the frozen soil where this occurs below the cut off level.

6. Transporting Concrete/Grout

- a. Method of Transporting: The method of transporting concrete/grout shall be submitted for approval. Concrete/grout shall be transported in uncontaminated watertight containers in such a manner that loss of material and segregation are prevented.
- b. Pumping Concrete/Grout: Pumped concrete/grout complying with this Specification may be used. The methods employed in its use shall be subject to approval.

7. Ready-mixed Concrete/Grout

- a. Conditions of Use: Subject to approval, the Contractor may use ready-mixed concrete/grout in accordance with ACI standards. Approval shall be obtained for each

proposed use of ready-mixed concrete/grout in different sections of the Works and for each different mix, which shall comply with this Specification.

- b. Mixing Plant: Unless otherwise agreed by the Engineer, truck mixer units and their mixing and discharge performance shall comply with the requirements of ACI standards.

C. EXECUTION

1. General

The Compaction grout column technology employs a drill stem for both penetration and maintaining borehole stability. The concrete/grout is pumped into the column from the base of the drill stem. All materials and work shall be in accordance with Sections A, B and C of this Specification.

2. Layout

The procedure for layout of columns and checking their positions shall be approved by the Engineer. The actual compaction grout columns shall be installed within 3 inches of the design location shown on the Drawings, approved shop drawings or as otherwise directed by the Engineer.

3. Diameter of Columns

The diameter of a column shall be not less than 24-in.

4. Equipment

The contractor shall use a drill rig capable of penetrating all necessary soil layers or obstructions.

5. Penetration

- a. Penetration Near Recently Cast Columns: Columns shall not be advanced so close to other columns which have recently been cast and which contain workable or unset concrete/grout that a flow of concrete could be induced from or damage caused to any of the columns. A minimum distance of 8 ft (center-to-center) shall be kept between columns less than 24-hours old and on-going column installations.
- b. Removal of Drill Pipe from the Ground: Drill Pipe shall not be extracted from the ground during the penetration or construction of a column in such a way that an open unsupported void or inflow of water into the column section would result.
- c. Depth of Columns: Any failure of a column to reach the required depth, as given in the Specification or shown on the Drawings, shall be reported to the Engineer without delay and a full statement of the reasons given.

6. Placing of Concrete/Grout

- a. Mix Design and Workability: Where not otherwise stated in this Section, the concrete shall comply with Section B of this Specification. The design and workability of concrete to be used in the formation of a column shall produce a mix which is suitable for pumping. It shall have a target slump of 4 to 6 inches unless otherwise approved and a minimum cement content of 580 lbs/yd³. The fine aggregate shall be in accordance with ACI standards. This mix shall be designed so that segregation does not occur during the placing process, and bleeding of the mix shall be minimized.
- b. Equipment for Supply of Concrete/Grout to Columns: Concrete/Grout shall be supplied to the column through suitable tubing and hoses.

- c. Commencement of Concrete/Grout Supply to Each Column: The technique and equipment used to initiate and maintain the concrete flow shall be such that a column of the full specified cross-section is obtained from the maximum depth to the final cut off level.
- d. Rate of Supply of Concrete/Grout: The concrete/grout shall be supplied to the column at a sufficient rate during drill pipe withdrawal to ensure that a continuous monolithic shaft of the full specified cross-section is formed, free from debris or any segregated concrete/grout. The rate of withdrawal of the drill pipe and pressures of concrete/grout shall be measured and recorded throughout the phase of vibrator withdrawal for each column. The Contractor shall submit proposals for his method of monitoring construction for approval prior to the commencement of the Works.
- e. Completion of Columns: If the concrete/grout placing in any column cannot be completed in the normal manner, then the column shall be re-penetrated before concrete/grout has hardened and shall be completely replaced.
- f. Casting Level of Column Head: Concrete shall be cast to the commencing surface level or slightly above unless otherwise specified
- g. Disposal of Contaminated Material: The Contractor is responsible for disposal of all excavated soil, excess water, and spoil generated during installation of the compaction grouting installation at no extra cost. Manifests necessary for waste disposal shall be executed by the Engineer.

7. Cutting of Column Heads

When cutting off and trimming columns to the specified cut off level, the Contractor shall take care to avoid shattering or otherwise damaging the rest of the column. Any laitance, or contaminated, cracked or defective concrete/grout shall be cut away and the column made good in an approved manner to provide a full and sound section up to the cut off level.

8. Documentation:

Any proposed change in the approved construction program, necessitated by a change in the subsurface conditions, shall be submitted in writing to the Engineer for approval.

A daily log shall be submitted to the Engineer by the Contractor to include hole number, start/finish time of treatment, depth of treatment, diameter of drill hole, description of soil penetrated, and volume of grout/concrete placed at depth in no more than 2-ft increments.

D. CONSTRUCTION

The compaction grout columns shall be constructed prior to bridge foundations. Positive site drainage shall be established prior to construction of compaction grouting. Contractor shall control all spoils generated during compaction grouting and prevent spoils from flowing offsite. Spoils generated by compaction grouting shall be disposed of properly and removed from the site by the Contractor. No additional compensation shall be made for handling spoil.

Compaction grouting columns shall be constructed to the lines and elevation shown on the plans, and in accordance with the Special Provisions.

Compaction grout columns shall extend from the existing ground surface to the elevations outlined in the plans. No payment will be made for compaction grout columns installed within areas that are later excavated. The contractor shall be responsible to construct compaction grout columns to the depths required, and shall use the methods necessary to penetrate to the required depth, including but not limited to drilling through stiff and dense layers that may be present, as well as obstructions from existing construction.

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The compaction grout columns shall be installed to the minimum required Area Replacement Ratio. The required minimum area replacement ratio (A_r) achieved at any depth by the compaction grouting shall be that which is equivalent to the diameter of the grout columns at the center-to-center (c-c) spacing shown in the plans and on a triangular pattern. The area replacement ratio shall be defined by the following relationships:

$$A_r = \frac{\text{Column Area}}{\text{Tributary Area}} \times 100\%$$

Tributary Area

Where: Column Area = Area of circle based on column diameter as defined below.

Tributary Area = $0.866 (\text{Column Spacing})^2$ for triangular spacing.

Acceptance of the constructed column will be based on the theoretical column diameter determined from the volume of concrete/grout installed.

The Contractor shall, at all times, protect structures, underground utilities and other construction from damage caused by grouting operations. Damaged material shall be replaced or repaired to the satisfaction of the Engineer at no additional cost to the Department.

E. METHOD OF MEASUREMENT

The bid item for compaction grouting shall include the delivery and placement of all concrete material necessary for compaction grout column construction. It shall also include disposal of all spoil (surface water, soil, etc.) in a manner acceptable to the Department of Health and Environmental Control and to the Engineer.

F. BASIS OF PAYMENT

The quantity of ground modification measured for payments shall be the actual length of the installed compaction grout columns acceptable to the Engineer. No payment will be made for ground modification beyond the limits required by the Contract Documents, unless such increases in the specified area are directed in writing by the Engineer.

The accepted quantity, measured as above, will be paid for at the contract unit price per linear foot for compaction grout columns constructed at the diameter specified in the plans, which price and payment shall be full compensation for furnishing, hauling, treating, compacting of materials, removal of spoils and for all labor, equipment, tools, maintenance, and incidentals necessary to complete this item of work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
8990353	GROUND MODIFICATION–COMPACTION GROUTING COLUMNS	Linear ft

(36) SECTION 401: ASPHALT BINDER ADJUSTMENT INDEX:

No liquid asphalt binder adjustments will be made on this Project.

(37) SECTION 401: DRESSING OF SHOULDERS:

Prior to the placement of asphalt mixtures on existing roadways, the contractor will be required to remove all vegetation adjacent to the edge of pavement which impedes the placement of the asphalt mixture to the specified width. The contractor shall also remove and dispose of all excess asphalt which is disturbed during minor grading for widening, or during removal of debris or grass

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS
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from existing surface during preparation of surface for new lift. After the asphalt mixture has been placed, the contractor shall blade the disturbed material to the extent that the shoulder is left in a neat and presentable condition. All excess material shall be removed from the project. No direct payment shall be made for this work; all costs are to be included in the price of other items of work.

(38) SECTION 401: ASPHALT MIXTURE QUALITY ACCEPTANCE:

Reference is made to the Supplemental Technical Specification "Asphalt Mixture Quality Acceptance." For the purposes of applying this Supplemental Technical Specification, pay factor adjustments will be based on a unit price of \$75 per ton.

(39) SECTION 401: RIDEABILITY OF ASPHALT MIXTURES:

Reference is made to the Supplemental Technical Specification "Rideability for Asphalt Mixtures." For the purposes of applying this Supplemental Technical Specification, pay factor adjustments will be based on a unit price of \$100 per ton.

(40) SECTION 401: FULL DEPTH ASPHALT PAVEMENT PATCHING:

The Contractor's bid shall include 1800 square yards of full depth asphalt pavement patching. Include an additional 300 psy for S-1210 to be placed as directed by the RCE. If more than the estimated square yards of patching are required by SCDOT, the Contractor will be paid a unit price of \$85 per square yard. If less than the estimated square yards of patching are required by SCDOT, the Contractor shall reimburse SCDOT at the same unit price for the quantity of full depth patching that was not needed.

(41) DIVISION 600: FURNISH AND INSTALL DETECTOR LOOPS:

The Contractor is hereby notified that All Catalog descriptions and documentation are to be submitted within (5) days after the bid openings to the Contracts Administrator.

The loops shall be installed in the surface course on all projects in Engineering Districts 3, 4, 5, 6, & 7.

The loops shall be installed in the binder course for all projects in Engineering District 1.

The loops shall be on installed in the binder course on new construction projects, and in the surface for resurfacing projects in Engineering District 2.

(42) DIVISION 600: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES:

The Contractor is advised that all work involving design or installation of traffic control devices, including but not limited to signs, pavement markings, elements of work zone traffic control, signals, etc., shall be in compliance with the FHWA's Manual on Uniform Traffic Control Devices (MUTCD), latest edition. The latest edition is defined as the edition that the Traffic Engineering Division of SCDOT recognizes as having been officially adopted (Engineering Directive, Memorandum 19) at the time the project is let, unless stated otherwise in the Special Provisions.

(43) DIVISION 600: REMOVAL SALVAGE AND DISPOSAL OF EQUIPMENT AND MATERIALS

DESCRIPTION – This item consists of the Removal and Salvage, or the Removal and Disposal of equipment and materials, during the construction of this project. Construction includes new installations, and the modification, or removal of existing ITS devices. It shall be disposed of, as stated below:

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

1. GENERAL

a. Removal and Salvage

These items are to be carefully removed from the job site, salvaged, and returned to the Department. The items of major equipment to be salvaged are listed on the Plans. The Contractor shall deliver, (and obtain a RECEIPT for), the salvaged equipment, to: **SCDOT Intelligent Transportation Systems Maintenance Facility ** in Columbia, SC Contact the ITS Field Operations Manager at (803)-737-0394 for deliveries.

b. Disposal

Material NOT to be salvaged, shall be removed from the job site, become the property of the Contractor; and should be properly disposed of by the Contractor, at an APPROVED LAND FILL (or material reclamation yard). Any materials designated as HAZARDOUS WASTE shall be disposed in accordance with regulations enforced by the SC Department of Health and Environmental Control (DHEC), Bureau of Solid and HAZARDOUS Waste; (803)-734-5000 for information.

c. Inspection

Removal and disposal quantities will not be measured as pay items, but shall be included in the price bid for Removal, Salvage, and Disposal. FINAL ACCEPTANCE and Final Payment will be withheld, if the Contractor has not removed unneeded equipment from the job site, and if the Contractor cannot present RECEIPTS from the Shop showing that the salvaged equipment has been delivered to the Department as specified.

d. Holes

Every hole caused by removing old equipment shall be filled THE SAME DAY. It shall be back-filled, compacted, and reseeded/sodded, to the satisfaction of the Engineer. Holes in PAVEMENT shall be cleanly side-trimmed, then brought to grade and finished with the same paving material as the adjacent pavement. Sidewalk "squares" shall be completely replaced (complete square), using forms and expansion material.

2. SPECIFIC ITEMS

a. Controllers and Cabinets

Controllers and Cabinets to be removed by the Department. Contractor to be responsible for the foundations of ground-mounted cabinets and shall be removed completely or cleared to 0.3 meters (1 ft.) below ground.

b. Cameras

Cameras units to be removed by the Department.

c. Wood Poles

Wood Poles that are not utilized in the new ITS system, and are not required by other utilities, shall be removed and disposed of. Back guys, grounding systems, and miscellaneous hardware shall be disposed of.

d. Concrete Poles

Concrete poles shall be removed and disposed of by contractor.

e. Miscellaneous Equipment

Minor equipment shall be removed from the site and discarded. This includes steel cable, electrical cable, fiber optic cable, concrete pads, and

spliceboxes/pullboxes/handboxes. Underground conduit and detector loops not utilized, shall be abandoned in place.

(44) SECTION 602: PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES IN THE WORK ZONE

A. GENERAL REQUIREMENTS FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES IN THE WORK ZONE

Sub-section 602.2.3.1 Work Zone Sign Substrates (paragraph 1)

Fabricate each sign from one the following types of sign substrates:

1. Aluminum sign blanks that meet the requirements of **Section 651** (0.080 in. or 0.100 in. thick),
2. Aluminum laminated composite material (0.118 in. maximum thickness) included on the *Approved Products List For Traffic Control Devices in Work Zones*, or
3. Roll-up retroreflective fabric material fabricated with a background material constructed of an approved retroreflective fabric material substrate attached to two or more fiberglass battens.

B. TRUCK-MOUNTED CHANGEABLE MESSAGE SIGN (SUB-SECTION 607.3.2)

Sub-section 607.3.2.2 Operational Requirements (paragraph 4)

Provide a truck-mounted changeable message sign to display the “PREPARE TO STOP” message in advance of a traffic queue during a stationary lane closure. When using a truck-mounted changeable message sign to display the “PREPARE TO STOP” message, a truck-mounted attenuator is not required under the following specific conditions:

4. The sign is mounted on a vehicle with a gross vehicular weight (GVW) of 6000 lb or less.
5. The truck remains on the shoulder and does not encroach onto a travel lane open to traffic or a closed travel lane adjacent to a travel lane open to traffic, except to relocate with extreme caution through an area with insufficient shoulder width such as a bridge structure.

C. HIGH VISIBILITY SAFETY APPAREL (SECTION 612)

Sub-section 612.3.3 Performance Class 3 Requirements (paragraph 1)

Ensure that all workers who perform job duties as a “Flagger” during nighttime flagging operations wear hard hats and high-visibility safety apparel consisting of a safety vest and safety pants that meets the ANSI/ISEA 107–2010 High-Visibility Safety Apparel Performance Class 3 requirements.

(45) SECTION 610: Department of Public Safety and Local Law Enforcement:

General

Assistance from the Department of Public Safety (DPS) or local law enforcement (Non-DPS) is required as referenced in Section 600 of the Standard Specifications, Standard Drawings, and as needed to enhance safety and enforce traffic laws within/near the project limits during active traffic control operations. The Contractor shall coordinate traffic control with the RCE and DPS/Non-DPS officers. The priority for employing assistance is utilizing DPS first and then, if DPS is not available, utilize local law enforcement with jurisdiction. This coordination shall be initiated by the Contractor a minimum of two (2) weeks prior to starting work.

(46) SECTION 701: NON-CONFORMING CONCRETE:

For purposes of applying the reduced payment and below strength provisions of Subsection 701.2.12.4 of the Standard Specifications, a unit price of \$1200 dollars per cubic yard will be used for normal weight concrete.

(47) SECTION 714: SMOOTH WALL PIPE:

REFERENCE:

SCDOT Supplemental Technical Specification SC-M-714

(48) SECTION 714: PIPE END TREATMENTS (2/5/2010):

A. REFERENCE

SCDOT Supplemental Technical Specification SC-M-714

B. DESCRIPTION

For exposed pipe culvert ends, provide an end treatment in accordance with this special provision.

C. MATERIALS

Rigid pipe culvert is Reinforced Concrete Pipe (RCP: 714-205-00). Flexible pipe culvert is either Spiral Ribbed Aluminum Pipe (SRAP: 714-610-00), High Density Polyethylene pipe (HDPE: 714-705-00), or Corrugated Aluminum Alloy Pipe (CAAP: 714-605-00).

Use minimum Class B riprap for pipe up to 84" diameter. Use minimum Class C riprap for pipe 84" diameter or larger.

Use minimum Class 4000 concrete (4000P for precast).

Use ASTM A-706 grade 60, low-alloy steel deformed rebar.

Use minimum AASHTO M-196 Alclad 3004-H32 alloy aluminum.

Use Type M Mortar Grout unless specified otherwise.

D. CONSTRUCTION REQUIREMENTS

Use one of the following end treatments as specified in the plans or special provisions:



For all exposed crossline pipe ends, when an end treatment is not specified in the plans, use **Pipe Riprap Protection** (804-3xx-xx). For flexible pipe larger than 24" diameter, install pipe straight headwall, pipe end structure, flared end section, or wingwall section in addition to riprap. For all exposed driveway pipe ends where no end treatment is specified in the plans, use **Pipe Riprap Protection** (804-3xx-xx) unless directed otherwise by the engineer.



Use **Beveling of Pipe End** (719-610-00) when specified in the plans or special provisions. Beveled ends may only be used on flexible pipe up to 24" diameter and on rigid pipe up to 60" diameter. When beveling of pipe ends is specified on flexible pipe larger than 24" diameter, install pipe straight headwall, pipe end structure, flared end section, or wingwall section. Use factory fabricated beveled ends for all pipe types unless approved by the Engineer.



Use **Pipe Straight Headwall** (719-605-00) when specified in the plans or special provisions. Use straight headwall only in locations where pipe exposed end does not face the direction of traffic.



Use **Pipe End Structure** (719-615-00) when specified in the plans or special provisions. Use pipe end structure in locations where pipe exposed end faces the direction of traffic. Pipe end structures may be used in other locations if approved by the RCE.



Use **Pipe Flared End Section** when specified in the plans or special provisions.



Use **Pipe Wingwall Section** when specified in the plans or special provisions.

Completely seal interface between pipe and end treatment with grout. If bricks or shims are used to place pipe, take care to remove all air pockets and voids when grouting.

For systems not designed in the SCDOT Standard Drawings, provide shop drawings, installation procedure and design calculations for review by RCE. Design must include provision to control erosion around the structure and prevent the separation of the end treatment from the pipe system. Design must provide for a proper seal at all construction joints including the interface between the pipe and the structure. Design must be self-supporting and not induce any additional loads on the pipe. Submit designs for consideration as new standard drawings to the Design Standards Engineer at the address listed in the SCDOT Standard Drawings book.

(49) SECTION 719: CAST IN PLACE CONCRETE PIPE COLLAR:

A. DESCRIPTION

A cast in place concrete pipe collar is used to provide a permanent connection between two pipe culverts of the same diameter but different joint profiles. Pipe collars can be used between two pipe of the same material or different material. Use only pipe that conforms to SC-M-714, Permanent Pipe Culverts.

B. MATERIAL

Use minimum class 4000 concrete.

Use reinforcement steel conforming to ASTM A706 Grade 60.

See SCDOT Standard Drawings or Project Plans for other material requirements and design details.

C. CONSTRUCTION REQUIREMENTS - GENERAL

Follow SCDOT Standard Drawings 719-705-xx for minimum dimensions and details. Use geotextile wrap on joint to minimize concrete intrusion into the joint during the forming and curing process.

(50) SECTION 805: TL3 TYPE T TANGENT END TERMINALS:

Qualified Product List 49 provides minimum length of continuous w-beam from the impact head for each proprietary Test Level 3 product. All radius, kinks, and transition sections must occur outside of the pay limits of the Leading End Treatments shown on SCDOT Standard Drawings for MASH MT3 and PREMASH Type T TL3 devices. Use only PREMASH devices in locations where existing guardrail installations are retained or adjusted. Where the design requires immediate transition from w-beam to thrie-beam at the end of the tangent end treatment pay limits, provide adequate space and guardrail shoulder break in advance of the impact head to conform or exceed the geometry shown on the corresponding standard drawings. Alternate PREMASH guardrail shoulder break (Standard Drawing 805-605-11 detail 2) may only be considered in locations where upgrading to standard guardrail shoulder break geometry does not fit within SCDOT Right-of-way.

(51) SECTION 805: NON-MOW STRIP UNDER GUARDRAIL:

A. GENERAL

Provide non-mow strip under guardrail as shown in the plans, in accordance with plan details, standard drawings 805-525-01 & 805-525-02, and these special provisions. Non-mow strips under guardrail shall only be placed where shown in the plans, specified in the RFP or as directed by the Engineer.

B. MATERIALS

Construct the non-mow strip using a minimum 4" HMA Surface Course or a 4" Class 2500 Portland Cement Concrete. Proprietary non-mow strip products are not allowed.

(52) SECTION 806: REPAIR EXISTING CONTROL OF ACCESS FENCE:

Repair, replace or reset any damaged control of access fencing or fence components within the project limits, as directed by the RCE. Remove and dispose of existing fences, trees, brush, stumps, logs, weeds, or other debris that interfere with the construction of the fence. CONTRACTOR's bid shall include 1000 linear feet of Repair of Existing Control of Access Fence. Should the actual length of fence rehabilitation vary from this estimated value by more than 25%, a change order will be generated by the RCE to adjust the contract value based on the actual rehabilitated length of fence as measured by SCDOT inspectors, utilizing a unit price of **\$15.00/LF**, regardless of fence type. Ensure all waste materials and debris generated during this work is disposed of promptly and at appropriate waste facilities.

(53) SECTION 806: TEMPORARY BARRIER FENCE FOR ENVIRONMENTAL BOUNDARY:

See attached Supplemental Specification dated **July 1 , 2021**.

The Contractor is hereby advised that all Jurisdictional Waters (i.e. streams & wetlands) that are adjacent to or within the construction limits shall be protected with a double row of Silt Fence or other means of double perimeter control as approved by RCE.

(54) SECTION 809: RIGHT OF WAY PLAT:

A. ROW Plat will be required by the Standard Specifications

(55) SECTION 815: EROSION CONTROL MEASURES:

In accordance with the NPDES General Permit, the Contractor must sign a Contractor Certification. The Contractor shall refer to the Construction Extranet for the certification form. By signing this form, the Contractor acknowledges that upon award and execution of the Contract, he/she accepts/ understands the terms and conditions of the *Storm Water Pollution Prevention Plan (SWPPP)* as required by the NPDES General Permit and may be legally accountable to SCDES for compliance with the terms and conditions of the *SWPPP*. In addition, the Contractor certifies that the NPDES certification statement status is made part of all its subcontracts.

The Contractor will complete and forward an updated SCDOT approved *Notice of Intent (NOI)* to the SCDOT Construction office to submit to SCDHEC. If the Coastal Zone Consistency (CZC) permit has not been approved it shall be forwarded by the Contractor to SCDOT to submit to SCDHEC as part of *NOI* package. If SCDHEC does not send a letter within 10 business days of receipt of the *NOI*, authorizing coverage, or denying coverage, coverage will be automatically granted.

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag

Vessels: ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier

subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the

FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will

be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

d. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the

contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA- 1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act ([29 CFR part 3](#))), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act ([40 U.S.C. 3141\(2\)\(B\)](#)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in [29 CFR part 1](#), a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

- (i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;
- (ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. Conformance. (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits

where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. Fringe benefits not expressed as an hourly rate. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. Unfunded plans. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. Interest. In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. Withholding requirements. The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. Priority to withheld funds. The Department has priority to funds withheld or to be withheld in accordance with paragraph 2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation

performance bond sureties and payment bond sureties;

(2) A contracting agency for its procurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. Basic record requirements (1) Length of record retention. All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. Certified payroll requirements (1) Frequency and method of submission. The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts- covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires

a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in [29 CFR part 3](#); and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH-347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above

certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29

CFR 5.5)

a. *Apprentices (1) Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeymen on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeymen under this part must be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid

highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

11. Anti-retaliation. It is unlawful for any person to

discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

4. **Subcontracts.** The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. **Anti-retaliation.** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten,

restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor

components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety

Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered

transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or

civily charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier

Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31

U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great

Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B) This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.
3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.
4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.
5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.
6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidders attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area are as follows:

Goals for Women Apply Nationwide

GOALS AND TIMETABLES

<i>Timetable</i>	<i>Goals (percent)</i>
From Apr. 1, 1976 until March 31, 1979-----	3.1
-	
From Apr. 1, 1979 until March 31, 1980-----	5.1
-	
From Apr. 1, 1980 until March 31, 1981-----	6.9
-	

Goals for Minority Participation

South Carolina

SMSA Counties:.....	16.0
Greenville, Pickens, Spartanburg	
Non-SMSA Counties:.....	17.8
Abbeville, Anderson, Cherokee, Greenwood, Laurens, Oconee, Union	
SMSA Counties:.....	23.4
Lexington, Richland	
Non-SMSA Counties:.....	32.0
Calhoun, Clarendon, Fairfield, Kershaw, Lee, Newberry, Orangeburg, Saluda, Sumter	
Non-SMSA Counties:.....	33.0
Chesterfield, Darlington, Dillon, Florence, Georgetown, Horry, Marion, Marlboro, Williamsburg	
SMSA Counties:.....	30.0
Berkeley, Charleston, Dorchester	
Non-SMSA Counties:.....	30.7
Colleton	
Non-SMSA Counties:.....	29.8
Beaufort, Hampton, Jasper	
Non-SMSA Counties:.....	15.7
Chester Lancaster York	
Non-SMSA Counties:.....	32.8
Barnwell, Edgefield, McCormick, Allendale, Bamberg	
SMSA Counties:.....	27.2
Aiken	

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor

performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical areas where the work is actually performed. With regard to this second area, the Contractor is also subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 Shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees of trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number, estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.
4. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county, and city, if any). The "covered area is the SMSA County or Counties or Non-SMSA County or Counties in which the contract work is performed.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:
 - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
 - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
 - c. "Employer identification number" means the Federal Social Security number used on the Employers Quarterly Federal Tax Return, U. S. Treasury Department Form 941.
 - d. "Minority" includes:
 - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin regardless of race);

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

- (iii) Asian or Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- 2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
- 3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
- 4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in which it has employees in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notices form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
- 5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
- 6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.
- 7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority of female individuals working at such sites or in such facilities.
 - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available and maintain a record of the organization's responses.
 - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may taken.
 - d. Provide immediate written notification to the Director when union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet his obligations.
 - e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
 - f. Disseminate the Contractor's EEO policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
 - g. Review at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initialization of construction work at any job site. A written record shall be

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

- made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
 - i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.
 - j. Encourage present minority and female employees to recruit other minority persons and women and where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
 - k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
 - l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
 - m. Ensure that all seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
 - n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - p. Conduct a review, at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
 9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
 10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
 11. The Contractor shall not enter into any Subcontract with any person or firm debarred from the Government contracts pursuant to the executive Order 11246.
 12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and the Equal Opportunity Clause, including suspensions, termination and cancellation of the existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended. and its implementing regulations, by the Office if the Federal Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of the specifications and Executive Order 11246, as amended.
 13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4-8.
 14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any employee identification number when assigned, social security number, race, sex status(e.g., Mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and location at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that the existing records satisfy this requirement, contractors shall not be required to maintain separate records.
 15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents(e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

GENERAL DECISION NUMBER SC42

"General Decision Number: SC20250040 01/03/2025

Superseded General Decision Number: SC20240040

State: South Carolina

Construction Type: Highway

Counties: Allendale, Bamberg, Barnwell, Beaufort, Colleton, Georgetown, Hampton, Jasper, Newberry, Orangeburg and Williamsburg Counties in South Carolina.

DOES NOT INCLUDE SAVANNAH RIVER SITE IN ALLENDALE AND BARNWELL COUNTIES

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract.	
	. The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.	
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract.	
	. The contractor must pay all covered workers at least \$13.30 per hour (or the	

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

	applicable wage rate listed
	on this wage determination,
	if it is higher) for all
	hours spent performing on
	that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/03/2025

SUSC2011-038 09/15/2011

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 14.47	**
CEMENT MASON/CONCRETE FINISHER...	\$ 14.11	**
IRONWORKER, REINFORCING.....	\$ 15.64	**
LABORER		
Asphalt, Includes Asphalt Distributor, Raker, Shoverler, and Spreader.....	\$ 10.96	**
Colleton.....	\$ 10.16	**
Common or General		
Beaufort.....	\$ 10.15	**
Colleton.....	\$ 10.16	**
Georgetown, Hampton, Jasper.....	\$ 10.07	**
Newberry, Allendale, Bamberg, Barnwell.....	\$ 11.82	**
Orangeburg.....	\$ 12.63	**
Williamsburg.....	\$ 10.01	**
Luteman.....	\$ 11.71	**
Pipelayer.....	\$ 13.87	**
Traffic Control-Cone Setter		
Allendale, Bamber, Barnwell, Newberry, Orangeburg.....	\$ 12.98	**
Beaufort, Colleton, Georgetown, Hampton,		

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

Jasper, Williamsburg.....\$ 12.84 **
Traffic Control-Flagger.....\$ 11.68 **

POWER EQUIPMENT OPERATOR:

Backhoe/Excavator/Trackhoe
Allendale, Bamberg,
Barnwell, Newberry,
Orangeburg.....\$ 17.56 **
Beaufort.....\$ 15.20 **
Colleton.....\$ 17.78
Georgetown, Hampton,
Jasper, Williamsburg.....\$ 17.23 **
Bulldozer.....\$ 20.12
Crane.....\$ 16.62 **
Grader/Blade.....\$ 16.62 **
Loader (Front End).....\$ 15.51 **
Mechanic.....\$ 18.22
Milling Machine.....\$ 18.83
Paver
Allendale, Bamberg,
Barnwell, Newberry,
Orangeburg, Williamsburg...\$ 15.01 **
Beaufort.....\$ 14.96 **
Colleton, Georgetown,
Hampton, Jasper.....\$ 13.67 **
Roller.....\$ 12.76 **
Screed.....\$ 13.01 **
Tractor.....\$ 13.26 **

TRUCK DRIVER

Dump Truck.....\$ 12.00 **
Lowboy Truck.....\$ 14.43 **
Single Axle, Includes
Pilot Car.....\$ 12.04 **
Tractor Haul Truck.....\$ 16.25 **

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher
minimum wage under Executive Order 14026 (\$17.75) or 13658
(\$13.30). Please see the Note at the top of the wage
determination for more information. Please also note that the
minimum wage requirements of Executive Order 14026 are not
currently being enforced as to any contract or subcontract to
which the states of Texas, Louisiana, or Mississippi, including
their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave
for Federal Contractors applies to all contracts subject to the
Davis-Bacon Act for which the contract is awarded (and any

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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"General Decision Number: SC20250035 01/03/2025

Superseded General Decision Number: SC20240035

State: South Carolina

Construction Type: Highway

Counties: Calhoun, Fairfield, Kershaw, Lexington, Richland
and Saluda Counties in South Carolina.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered	. Executive Order 14026	
into on or after January 30,	generally applies to the	
2022, or the contract is	contract.	
renewed or extended (e.g., an	. The contractor must pay	
option is exercised) on or	all covered workers at	
after January 30, 2022:	least \$17.75 per hour (or	
	the applicable wage rate	
	listed on this wage	
	determination, if it is	
	higher) for all hours	
	spent performing on the	
	contract in 2025.	
If the contract was awarded on	. Executive Order 13658	
or between January 1, 2015 and	generally applies to the	
January 29, 2022, and the	contract.	
contract is not renewed or	. The contractor must pay all	

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

extended on or after January 30, 2022: 	covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/03/2025

SUSC2011-033 09/15/2011

	Rates	Fringes
CARPENTER (Form Work Only)		
Fairfield, Kershaw,		
Richland, Saluda.....	\$ 15.04	**
Lexington.....	\$ 14.50	**
CEMENT MASON/CONCRETE FINISHER...	\$ 13.65	**
GUARDRAIL INSTALLER (Includes		
Guardrail/Post Driver Work).....	\$ 12.49	**
IRONWORKER, REINFORCING.....	\$ 15.02	**
LABORER		
Asphalt Includes Asphalt		
Distributor, Shoveler, and		
Spreader.....	\$ 11.54	**
Common or General		
Calhoun.....	\$ 10.09	**
Fairfield.....	\$ 9.55	**
Kershaw.....	\$ 9.88	**
Lexington.....	\$ 9.78	**
Richland.....	\$ 9.97	**
Saluda.....	\$ 9.88	**
Luteman.....	\$ 11.61	**
Mason Tender-		
Cement/Concrete.....	\$ 10.40	**

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS
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Pipelayer.....	\$ 14.46	**
Traffic Control-Cone Setter		
Calhoun, Fairfield,		
Kershaw, Richland, Saluda..	\$ 10.87	**
Lexington.....	\$ 11.26	**
Traffic Control-Flagger.....	\$ 11.07	**

POWER EQUIPMENT OPERATOR:

Backhoe/Excavator/Trackhoe		
Calhoun, Fairfield,		
Kershaw, Richland, Saluda..	\$ 15.98	**
Lexington.....	\$ 16.02	**
Bulldozer.....	\$ 17.38	**
Crane.....	\$ 18.93	
Grader/Blade		
Calhoun, Fairfield,		
Kershaw, Richland, Saluda..	\$ 18.44	
Lexington.....	\$ 18.54	
Hydroseeder.....	\$ 11.00	**
Loader (Front End).....	\$ 17.22	**
Mechanic.....	\$ 15.25	**
Milling Machine.....	\$ 11.84	**
Paver.....	\$ 13.93	**
Roller		
Calhoun, Fairfield,		
Kershaw, Richland, Saluda..	\$ 14.98	**
Lexington.....	\$ 15.10	**
Scraper.....	\$ 12.71	**
Screed.....	\$ 13.56	**
Tractor.....	\$ 13.28	**

TRUCK DRIVER

Dump Truck		
Calhoun, Fairfield,		
Kershaw, Richland, Saluda..	\$ 13.29	**
Lexington.....	\$ 13.22	**
Lowboy Truck.....	\$ 14.11	**

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS
--

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

EXHIBIT 5 – SPECIAL PROVISIONS AND CONTRACT REQUIREMENTS
--

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

=====

END OF GENERAL DECISION"

EXHIBIT 6

ENVIRONMENTAL DESIGN CRITERIA

1. GENERAL

The CONTRACTOR shall avoid impacts to the environment to the most practicable extent. In cases where impacts cannot be avoided, the CONTRACTOR shall minimize impacts to the environment to the most practicable extent.

As a minimum, the CONTRACTOR shall include the following in the Project:

- The CONTRACTOR shall stake out and delineate the jurisdictional area using temporary barrier fence as set forth in Supplemental Specification and in accordance with the preliminary jurisdictional determination issued by USACE.
- The CONTRACTOR shall coordinate all permitting through SCDOT's Environmental Services Office (ESO).
- CONTRACTOR shall provide a summary report documenting how all commitments that fall within its responsibility have been satisfied.

2. ENVIRONMENTAL DOCUMENT COMMITMENTS

The CONTRACTOR shall comply with all Environmental Commitments set forth in the Programmatic Categorical Exclusions (PCEs) for all sites along with other environmental information that is provided in Attachment B.

2.1 The following list of Environmental Commitments and instructions outline requirements and responsibilities for SCDOT and the CONTRACTOR regarding fulfilling the Environmental Commitments for all project sites.

- a. The CONTRACTOR(s) will be required to minimize possible water quality impacts through implementation of BMPs, reflecting policies contained in 23 CFR 650B and the SCDOT's Supplemental Specification on Erosion Control Measures (latest edition) and Supplemental Technical Specifications on Seeding (latest edition). Other measures including seeding, silt fences, sediment basins, etc. as appropriate will be implemented during construction to minimize impacts to water quality.

The CONTRACTOR shall comply with this commitment.

- b. The federal Migratory Bird Treaty Act, 16 USC § 703-711, states that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. The South Carolina Department of Transportation (SCDOT) will comply with the Migratory Bird Treaty Act of 1918 in regard to the avoidance of taking of individual migratory birds and the destruction of their active nests.

The CONTRACTOR will notify the Resident Construction Engineer (RCE) at least four (4) weeks prior to construction/demolition/maintenance of bridges and box culverts. The RCE will coordinate with SCDOT

Environmental Services Office (ESO), Compliance Division, to determine if there are any active birds using the structure. After this coordination, it will be determined when construction/demolition/maintenance can begin. If a nest is observed that was not discovered after construction/demolition/maintenance has begun, the CONTRACTOR will cease work and immediately notify the RCE, who will notify the ESO Compliance Division. The ESO Compliance Division will determine the next course of action.

The use of any deterrents by the CONTRACTOR designed to prevent birds from nesting, shall be approved by the RCE with coordination from the ESO Compliance Division. The cost for any CONTRACTOR provided deterrents will be provided at no additional cost to SCDOT

The CONTRACTOR shall comply with this commitment. The CONTRACTOR is advised that this commitment applies to existing, temporary, and new structures including but not limited to bridges, box culverts, and large diameter pipes.

- c. Stormwater control measures, both during construction and post-construction, are required for SCDOT projects with land disturbance and/or constructed in the vicinity of 303(d), TMDL, ORW, tidal, and other sensitive waters in accordance with the SCDOT's MS4 Permit. The selected CONTRACTOR would be required to minimize potential stormwater impacts through implementation of construction best management practices, reflecting policies contained in 23 CFR 650 B and SCDOT's Supplemental Specifications on Seed and Erosion Control Measures (latest edition).

The CONTRACTOR shall comply with this commitment.

- d. The CONTRACTOR and subcontractors must notify their workers to watch for the presence of any prehistoric or historic remains, including but not limited to arrowheads, pottery, ceramics, flakes, bones, graves, gravestones, or brick concentrations. If any such remains are encountered, the RCE would be immediately notified and all work in the vicinity of the discovered materials and site work shall cease until the SCDOT Chief Archaeologist directs otherwise.

The CONTRACTOR shall comply with this commitment.

- e. The Engineer of Record will send a set of final plans and request for floodplain management compliance to the local County Floodplain Administrator.

The CONTRACTOR shall comply with this commitment.

2.2 Commitment Specifically Applicable for S-39 over Cooper Swamp

- a. To minimize potential impacts to the Northern Long Eared Bat (NLEB) and Tricolored Bat (TCB) (proposed endangered species), tree clearing will be prohibited from December 1 through February 28 for the hibernation season and from May 1 through July 31 for the pup season. All tree clearing/removal must be completed outside these time frames. However, other activities associated with tree clearing operations (i.e., removal of felled trees, grubbing, etc) are allowed during this time period.

The CONTRACTOR shall comply with this commitment.

3. 404 AND NAVIGABLE WATERS PERMIT CONDITIONS

No SC Department of Environmental Services (SCDES) Navigable Waters permits are anticipated for any of the sites. All sites are proposed to be covered under the USACE 404 Nationwide 3 Permit (NW3). Copies of the NW3 checklists and conditions are included in Attachment B. The CONTRACTOR shall comply with all applicable permit conditions included in the USACE NW3 including the Regional and General Conditions.

The Team shall delineate all waters of the US within the project boundary prior to construction and show on plans for reference.

EXHIBIT 7

UTILITIES

1. GENERAL PROVISIONS:

CONTRACTOR is responsible for all utility coordination activities per Section VII of the Agreement. This exhibit provides information on early coordination efforts between SCDOT and the utilities that have been identified within the project limits. SCDOT has provided information from the utilities received to date in the Project Information Package.

2. UTILITIES IDENTIFIED IN PROJECT:

The utilities identified within this project are:

S-458 over Indian Camp Branch (Bamberg County)

Edisto Electric Coop (Electric)

Edisto Electric Coop has indicated they have overhead distribution facilities near this bridge. Contact information for this utility is:

Kevin Varner
Phone: (803) 245-5141
Email: kvarner@edistoelectric.com

Charter (Cable)

Charter has indicated they may have facilities near this bridge. Contact information:

Nathan Scott
Email: Nathaniel.scott1@charter.com

Steve Jones
Phone: (803) 744-5514
Email: Steve.jones@charter.com

Palmetto Rural Telephone (Phone)

Palmetto Rural Telephone has indicated they may have facilities near this bridge. Contact information:

Brian Polk
Phone: (843) 538-9318
Email: Brian.Polk@PRTC.us

Frontier Communications

Frontier Communications has indicated they may have facilities within the project limits. Contact information:

John Edsall
Phone: (315) 725-3471

Email: John.edsall@ftr.com

S-22 over Caw Caw Creek (Calhoun County)

Tri County Electrip (Electric)

Tri County Electric has indicated they have overhead electric distribution facilities and fiber near this bridge. Contact information for this utility is:

Matthew Martens

Phone: (803) 874-1215

Email: Mmartens@TCE.Coop

Windstream (Phone)

Windstream has indicated they have a line near this bridge. Contact information:

J. Todd Davis

Phone: (803) 356-1444

Email: Todd.Davis@windstream.com

S-39 over Cooper Swamp (Orangeburg County)

Orangeburg DPU (all utilities)

Orangeburg DPU has indicated they have facilities within the project limits. A water line is located on the north/west side of the roadway. Contact information for this facility is:

Eric Odom

Email: Eodom@orbgdpu.com

AT&T (phone)

AT&T has indicated they have a three active underground lines and two abandoned underground lines. All are on the south/east side of the road. Contact information:

Robert Brinson

Phone: (803) 539-2729

Email: Rb0265@att.com

Charter (Cable)

Charter has indicated they have two fiber lines on the north/east side of the road. Contact information:

Nathan Scott

Email: Nathaniel.scott1@charter.com

Steve Jones

Phone: (803) 744-5514

Email: Steve.jones@charter.com

Orangeburg County Broadband (Fiber)

Orangeburg County Broadband may have facilities within the project limits. Contact information:

Will Bozard

Phone: (803) 274-4243

Email: Willb@metts.com

S-191 over Roberts Swamp (Orangeburg County)

Edisto Electric (Electric)

Edisto Electric has overhead distribution facilities within the project limits. Contact information for this facility is:

Kevin Varner

Phone: (803) 245-5141

AT&T (phone)

AT&T has indicated they have an active underground lines on the south side of the road. Contact information:

Robert Brinson

Phone: (803) 539-2729

Email: Rb0265@att.com

Charter (Cable)

Charter has indicated they have two fiber lines within the project limits. Contact information:

Nathan Scott

Email: Nathaniel.scott1@charter.com

Steve Jones

Phone: (803) 744-5514

Email: Steve.jones@charter.com

Silver Springs Rural Water (Water)

Silver Springs Rural Water has indicated they have a water line near the bridge. Silver Springs is a small water provider and intends to go in-contract under Act 36 if relocation is required. Contact information:

Adam Livingston

Phone: (803) 682-4812

Email: Silverspringswaterdistrict@gmail.com; LivingstonAL@Koppers.com

Norway Telephone (Phone)

Norway Telephone may have facilities within the project limits. Contact information:

Robert Yongue

Email: Robert.Yongue@tdstelecom.com

S-634 over Cooper Swamp (Orangeburg County)

Edisto Electric (Electric)

Edisto Electric has overhead distribution facilities within the project limits. Contact information for this facility is:

Kevin Varner

Phone: (803) 245-5141

Bamberg Public Works (all utilities)

Bamberg Public Works has indicated they have no facilities within the project limits. Contact information:

Camden Kittrell

Phone: (803)707-1030

Email: Cbkittrell@bambergbpw.com

AT&T (phone)

AT&T has indicated they have an active underground lines on the south side of the road. Contact information:

Robert Brinson

Phone: (803) 539-2729

Email: Rb0265@att.com

S-1210 over Tampa Creek (Orangeburg County)

Aiken Co-op (Electric)

Aiken Co-op has overhead electric facilities within the project limits. Contact information:

Karen Dyer

Phone: (803) 247-2121

Email: Kdyer@aikenco-op.org

Williston Telephone (Phone)

Norway Telephone may have facilities within the project limits. Contact information:

Robert Yongue

Email: Robert.Yongue@tdstelecom.com

Carolina Gas Transmission (Gas)

Carolina Gas Transmission has indicated they have facilities to the south/west of the project limits and may not be in conflict. Contact information:

Matthew Walker

Phone: (803) 394-9262

Email: Matthew.Walker@bhegts.com

3. SCOPE OF UTILITY COORDINATION SERVICES:

CONTRACTOR will be responsible for coordinating with utilities during construction as the utilities determined to be in direct conflict relocate to the farthest practical extent from the roadway as part of the Project, and will be responsible for avoiding conflicts with relocated utilities. On a case-by-case basis, communications utilities may be allowed access to conduits provided within the new bridge parapet.

CONTRACTOR shall perform vegetation clearing for purposes of utility relocation in accordance with Article VII of the Agreement.



South Carolina
Department of Transportation

March 28, 2025

Chris Boyd
Crowder Construction Company
6409 Brookshire Blvd.
Charlotte, NC 28216

NOTIFICATION OF AWARD

Contract No.: 5772040
Project No.: Multiple
Work Type: Design-Build Bridge Package 32 Bamberg, Calhoun, and Orangeburg Counties

Dear Mr. Boyd:

This letter serves as the official notification of award for the above reference project based upon the cost proposal submitted on March 18, 2025 in the amount of **\$15,233,000.00** in response to the South Carolina Department of Transportation's (SCDOT) proposal request.

Also, SCDOT will need the following items in order to fully execute the Design-Build Contract:

- Insurance Requirements – Agreement VI.A
- Bonding Requirements – Agreement VI.B
- Schedule of Values – submitted to you via email

Subcontractor Request forms can be found on the SCDOT Extranet website under the Miscellaneous Construction tab. If required, please submit Sub1, Sub2, and Subreq3 to the Alternative Delivery Construction Manager.

Ensure all of the required items are returned to my office within **Ten (10) days** from the date of this letter.

Following receipt of the required items, SCDOT will submit the Contract for your execution. Ensure the partially executed Contract is returned to my office for full execution within **Twenty (20) days** from the date of this letter.

Please contact Darryl Kennerly with the Orangeburg Construction Office at Phone # 803-395-7182 in order to schedule the preconstruction conference as set forth in Section 108.2 of the 2007 Standard Specifications for Highway Construction.

Sincerely,

Carolyn P. Fisher, P.E.
Construction Alternative Delivery Engineer



ec: Chris Gaskins, Director of Alternative Delivery
Tyler Clark, Alternative Delivery Program Manager
Carmen Wright, CPO for Project Delivery
Clay Richter, Director of Construction
Wei Johnson, Construction Metrics Engineer
Matthew Yuhas, Preconstruction Support Specialist
Bree Funches, Prequalification Contract Coordinator
Travis Driggers, Contract Administrator
Gary Linn, Director DBE Mega Projects Support, Compliance & Technical Assistance
Barbara Beagles, Director of Civil Rights Programs
Lyle Davis, District 7 Construction Engineer
Darryl Kennerly, RCE for Orangeburg County

CPF: cpf

File:




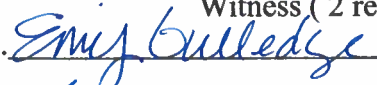

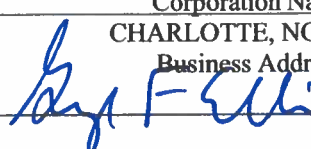


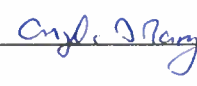
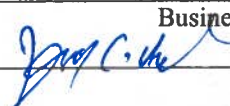

South Carolina Department of Transportation Form No. 672A	Rev. 03-01-2016 PERFORMANCE AND INDEMNITY BOND	Date Bond Executed:
Principal: CROWDER CONSTRUCTION COMPANY		Bond Number: 018240942
Surety: LIBERTY MUTUAL INSURANCE COMPANY		
Penal Sum of Bond: \$15,233,000.00		Date of Contract:
Project S.C. File No.: 5772040 Proj. No(s). P044267, P044268, P044269, P044270, P044271, P044315		Contract Number: 19219

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL AND SURETY above named are held and firmly bound unto the South Carolina Department of Transportation, hereinafter called the Department, in the penal sum of the amount stated above which shall be equal to the full amount (100%) of the contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Department, numbered and dated as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Department, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Attest  Corporate Secretary In Presence of: Witness (2 required) 1.  Emily Bulledge 2.  Stephanie Coppola	FOR CORPORATE PRINCIPAL CROWDER CONSTRUCTION COMPANY Corporation Name CHARLOTTE, NC 28206 Business Address By:  Title: George F. Ellis, Executive Vice President 
In Presence of: Witness (2 required) 1.  Amy Daugherty 2.  Angela D. Ramsey	SURETY/INSURER Liberty Mutual Insurance Company Surety/ Insurers Name 175 Berkeley Street, Boston, MA 02116 Business Address By:  Title: Jennifer C. Hoehn, Attorney-In-Fact 

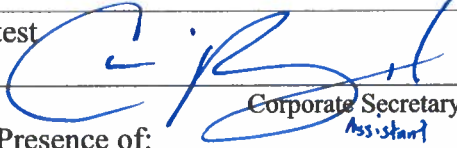


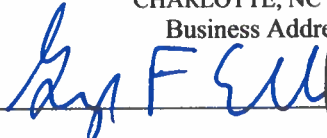

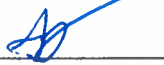
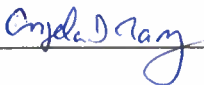
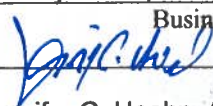

South Carolina Department of Transportation Form No. 673	Rev. 03-01-2016	Date Bond Executed:
PAYMENT BOND		
Principal: CROWDER CONSTRUCTION COMPANY		Bond Number: 018240942
Surety: LIBERTY MUTUAL INSURANCE COMPANY		
Penal Sum of Bond: \$15,233,000.00		Date of Contract:
Project S.C. File No.: 5772040 Proj. No(s). P044267, P044268, P044269, P044270, P044271, P044315		Contract Number: 19219

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL AND SURETY above named are held and firmly bound unto the South Carolina Department of Transportation, hereinafter called the Department, in the penal sum of the amount stated above which shall be equal to the full amount (100%) of the contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Department, numbered and dated as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor and material, such being construed to include, but not limit to, that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment directly applicable to the contract, in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice by which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Attest  Corporate Secretary Assistant In Presence of: Witness (2 required) 1.  Emily Bulledge 2.  Stephanie Coppola	FOR CORPORATE PRINCIPAL CROWDER CONSTRUCTION COMPANY Corporation Name CHARLOTTE, NC 28716 Business Address By:  Title: George F Ellis, Executive Vice President 
In Presence of: Witness (2 required) 1.  Amy Daugherty 2.  Angela D. Ramsey	SURETY/INSURER Liberty Mutual Insurance Company Surety/ Insurers Name 175 Berkeley Street, Boston, MA 02116 Business Address By:  Title: Jennifer C. Hoehn, Attorney-In-Fact  Affix Corporate Seal



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8209659-969489

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Amy Daugherty, Angela D. Ramsey, Elizabeth D. Drum, G. Timothy Wilkerson, J. David Pollack, Jr., Jennifer C. Hoehn, Katherine Fowler, Laura W. Dennison all of the city of Charlotte state of NC each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 22nd day of March 2023.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company



By: 

David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 22nd day of March, 2023, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: 

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company do hereby certify that this power of attorney executed by said Companies is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this ___ day of _____



By: 

Renee C. Llewellyn, Assistant Secretary

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.



CROWDCON1

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

3/31/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Commercial Lines – (800) 868-8834 USI Insurance Services LLC 6100 Fairview Rd Ste 1400 Charlotte, NC 28210	CONTACT NAME: Hannah Field PHONE (A/C, No, Ext): E-MAIL ADDRESS: hannah.field@usi.com FAX (A/C, No):														
INSURED Crowder Construction Company 6425 Brookshire Boulevard Charlotte, NC 28216	<table border="1"><thead><tr><th>INSURER(S) AFFORDING COVERAGE</th><th>NAIC #</th></tr></thead><tbody><tr><td>INSURER A: Liberty Mutual Fire Insurance Co</td><td>23035</td></tr><tr><td>INSURER B: Westchester Fire Insurance Company</td><td>10030</td></tr><tr><td>INSURER C: Liberty Mutual Insurance Co.</td><td>23043</td></tr><tr><td>INSURER D: Illinois Union Insurance Company</td><td>27960</td></tr><tr><td>INSURER E: Pacific Insurance Company</td><td>10046</td></tr><tr><td>INSURER F:</td><td></td></tr></tbody></table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: Liberty Mutual Fire Insurance Co	23035	INSURER B: Westchester Fire Insurance Company	10030	INSURER C: Liberty Mutual Insurance Co.	23043	INSURER D: Illinois Union Insurance Company	27960	INSURER E: Pacific Insurance Company	10046	INSURER F:	
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COVERAGES**CERTIFICATE NUMBER:** 15959765**REVISION NUMBER:** See below

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> XCU & Contract. Liab. GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:	X	X	TB2651093450045	4/1/2025	4/1/2026	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 Fire Damage \$ 1,000,000 COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> MTC <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	X	X	AS2651256779215	4/1/2025	4/1/2026	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 10,000	X	X	G22037948020	4/1/2025	4/1/2026	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below Y/N <input checked="" type="checkbox"/> N		X	WC5651256779175	4/1/2025	4/1/2026	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E L EACH ACCIDENT \$ 1,000,000 E L DISEASE - EA EMPLOYEE \$ 1,000,000 E L DISEASE - POLICY LIMIT \$ 1,000,000
D	Pollution Liability			CPYG71110552003	04/01/2024	4/1/2027	\$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Crowder Project No. 61278

Contract No. 19219

Certificate holder is included as additional insured under the Commercial General Liability (CGL) arising out of both the on-going operations and completed operations of CONTRACTOR. Such additional insured coverage shall be endorsed to Contractor's CGL policy using ISO Additional Insured Endorsement form CG 2010 (10/01) and CG 2037 (10/01) or a substitute providing equivalent coverage and included under the commercial umbrella.

CERTIFICATE HOLDER**CANCELLATION**

SCDOT ATTN: Bresheca Funches
955 Park Street
Columbia, SC 29201

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Certificate of Insurance (Con't)

OTHER Coverage

INSR LTR	TYPE OF INSURANCE	ADDL INSR	WVD SUBR	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMIT
E	Professional Liability			22CPIBI8918	04/01/2025	04/01/2026	\$2,000,000