



## **EXHIBIT "A"**

# **District Geotechnical & Material Verification Testing Contract Scope of Services**

**FIN: 210995-1-32-27**

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## **Scope of Services**

### **Geotechnical and Materials Testing Contracts**

#### **1.0 Purpose:**

This scope of services describes and defines the consultant services to support the Department in Geotechnical, Coring, and Materials testing activities for projects.

#### **2.0 Consultant Responsibility:**

The consultant will be responsive to the Department's request for services 24 hours a day, 7 days a week, and 365 days a year. It is the consultant's responsibility to pursue and obtain all information, reports, permits, utility/environmental clearances and lane closure approvals necessary to perform services on this Contract.

The consultant will attend meetings as requested by the Department. Coordinate with the Department prior to attendance of meeting. Attendance at meetings not requested by the Department may not be reimbursed. When meetings are hosted by the Consultant, coordinate all activities with the stakeholders, and distribute the minutes to all participants and District Project Manager (DPM).

Perform services at the Department's facility using the Department's resources as requested. The consultant will provide expert witness services if requested by the Department.

In the event the consultant encounters actual or suspected environmental contamination while performing services on this Contract, immediately cease work and notify the Project Manager in writing.

Do not perform services during suspension of the accreditation or qualifications governing the service(s) in question. Do not allow unqualified personnel or personnel with suspended qualifications perform or oversee services. Fees shall be reimburse to the Department for any charges for services performed without appropriate qualifications and/ or accreditations.

Be responsible for properly retaining and handling samples. When samples are lost or cannot determine the Contract compliance of the material due to mishandling, consultant may be responsible for performing an Engineering Analysis\Investigation at no cost to the Department.

Provide timely and accurate supporting documentation for the work to be invoiced including accurate and timely submittal of timesheets as directed by the Department. Minimize discrepancies between reported completed work and work quantities invoiced. Any questions or concerns should be brought to the attention of the Project Manager.

For Non-compliance with Construction Contracts, Consultant may be required at no additional cost to the Department, to provide an Engineering Analysis Report prepared by an independent engineering

firm approved by the DPM when sampling and/ or testing services provided by the firm fails to meet the expectations of the Construction contract.

### **3.0 Department Responsibility:**

The Department will provide technical administration of the contract, conduct laboratory inspections, review actual test methods and procedures, review test results and reports, review invoice submittals, and generally determine compliance with this contract.

### **4.0 General (Reference Documents):**

The services provided by the Consultant in the office, field, and lab shall be in compliance with the current edition -including updates- of all applicable Department Manuals and Guidelines as well as State and Federal regulations. This shall include but not be limited to the following:

- Florida Department of Transportation (FDOT) Standard Specification for Road and Bridge Construction as amended by contract documents
- FDOT Roadway Plans Preparation Manual
- FDOT Design Standards
- FDOT Structures Manual
- FDOT Structure Design Office Standard Drawings
- FDOT Materials Manual
- FDOT Manual of Florida Sampling and Testing Methods
- FDOT Manual for Safety and Control of Equipment Containing Radioactive Materials
- FDOT Construction Project Administration Manual (CPAM)
- FDOT Construction Training and Qualification Manual (CTQM)
- FDOT Soils and Foundation Handbook
- FDOT Right of Way Procedures Manual
- FDOT Radiation Safety Manual
- FDOT Utility Accommodation Manual
- Federal Highway Administration (FHWA) Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications
- American Association of State Highway and Transportation Officials (AASHTO) Test Methods
- American Society for Testing and Materials (ASTM) Standards
- Manual on Uniform Traffic Control Devices
- Code of Federal Regulations (CFRs)
- Safe Work Practices and Compliance Standards Handbook
- Geotechnical Design / Plans Review Checklist (District 5's)
- Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1001 and 1926.58, 49 CFR 171 and 172
- Local Agency Program (LAP) manual
- Chapter 14-103 Construction Aggregate Rule
- CQC Specifications, and related directives
- FDOT Standard Operating Procedure for Evaluation, Approval, and Control of Mineral Aggregate Sources
- FDOT Standard Operating Procedure for Quality Assurance of Mineral Aggregate Sources

- FDOT Records Retention Guideline
- Southern Pine Inspection Board Standards
- Approved Auger Cast pile installation plan (ACPIP)
- Drilled Shaft Installation Plan (DSIP)

## **5.0 Terminology and Definitions:**

AASHTO – American Association of State Highway Transportation Officials

ASTM – American Society of Testing Materials

AFP - FDOT Automated Fee Proposal system

CADD - Computer Aided Drafting & Design

CAPWAP - Case Pile Wave Analysis Program

CPM - Consultant Project Manager

CTQP - Construction Training & Qualification Program

DER - Department of Environmental Regulation (Federal & State)

DMRE - District Materials & Research Engineer.

DMRO - District Materials & Research Office

DPM - Department Project Manager.

DPSU - District Professional Services Unit

EAR - Engineering Analysis Report

FDOT - Florida Department of Transportation

FM - Florida Method

IA - Independent Assurance

IV - Independent Verification

LIMS - Laboratory Information Management System

LQP - FDOT Laboratory Qualification Program

MAC - Materials Acceptance & Certification System

MM - FDOT Materials Manual

PCR - Pavement Coring & Reporting

PDA - Pile Driving Analysis

QAR - Quality Assurance Review

QC - Quality Control

R - Resolution

SMO - State Materials Office

V – Verification

WEAP – Wave Equation Analysis Program

CSC - Continuing Services Contract. Max 5 yrs. & \$5 Million

DWC - District-Wide Contract. Max 5 yrs. & \$1.5 Million

TWO - must be work of a specified nature. No limit on amount or \$300,000

LOA – Letter of Authorization

SA - Supplemental Amendment

## **6.0 Communication and Reporting:**

Maintain timely and effective communication. Report results electronically to the Department in the most efficient manner and as approved in advance by the Department.

Prepare final analysis and recommendations in the format of final reports. Submit draft recommendations to the Department's Project Manager for review prior to preparing final report. Report shall include all elements requested, as well as any additions, alterations and changes directed by the Department. Reports shall also include, as applicable, topographical maps, aerial photographs, geological maps and reports, soil conservation service surveys existing construction plans, potentiometric maps, and adjacent projects, and other pertaining information.

The final reports and plan sheets shall be signed and sealed by a Professional Engineer registered by the State of Florida. Acceptable formats and number of copies are specified in Department's various policies and procedures.

Upon completion of a work order, deliver to the Department all project files, sketches, work-sheets, plans, and other materials used or generated during the performance of services requested in this Scope in an organized manner.

Communicate assignment related issues during non-business hours directly with the Department's representative overseeing consultant's work, typically District Materials Office personnel.

## **7.0 Reporting Test Results:**

Enter test results into Department database within 24 hours of test completion. Labor associated with test reporting is a unique pay item, and is not included in the cost of the test. For data entry and validation, actual time up to a maximum of 15 minutes per sample is deemed reasonable. Updating should be performed by clerical or testing personnel.

Compare QC results to V and enter the appropriate Approval codes in the Department's database. Labor associated with comparison services is a unique pay item, and is not included in the cost of the test. Actual time up to a maximum of 15 minutes per Verification sample is deemed reasonable for coordination with project personnel and Quality Control Laboratory and data entry. Comparison & approval should be performed by CPM or Senior Technical personnel.

## **8.0 Personnel:**

Provide qualified technical and professional personnel to perform, to Department standards and procedures, the duties and responsibilities assigned under the terms of this agreement.

All consultant personnel/technicians must be approved in writing by the Department prior to performing services. All consultant personnel will be approved under one (1) labor classification per person. Exceptions may be allowed at the sole discretion of the Department. Personnel listed in the final negotiated Contract Audit Package are considered approved without any additional

documentation. Obtain written approval for additional personnel prior to performing services. Approvals are valid for all work to be performed by authorized labor classification throughout the contract period.

All consultant personnel providing services on this Contract must perform to the satisfaction of the DPM. Personnel that do not perform services to the satisfaction of the DPM may be removed from the Contract.

All testing and inspection personnel must participate in Independent Assurance evaluations and other applicable third party audits.

### **8.1 Additional Requirements for Select Geotech Personnel:**

**Dynamic Testing Equipment Operators** must have at least a Rank of Basic on the Pile Driving Contractor's Association (PDCA) Dynamic Measurement and Analysis Proficiency Test. The Operator must also have experience testing at least 5 Department bridges. The experience may be obtained while working under the supervision of another qualified Operator.

The **Dynamic Testing Professional Engineer in responsible charge of Dynamic Testing** must be licensed by the State of Florida and have at least a Rank of Advanced on the Pile Driving Contractors Association (PDCA) Dynamic Measurement and Analysis Proficiency Test. The engineer must also have been in responsible charge of the Geotechnical foundation construction engineering and dynamic testing work on at least five (5) Department bridge projects.

The experience may be obtained while working under the supervision of another qualified Professional Engineer. The engineer's primary work activities must be dynamic pile testing, signal matching analyses (e.g. CAPWAP analyses) and developing pile lengths and driving criteria.

**Embedded Data Collector (EDC) monitoring** shall be performed by an Operator who has completed the SmartPile EDC training course. The Operator shall work under the supervision of a State of Florida Registered Professional Engineer. This engineer must have been in responsible charge of the geotechnical foundation construction engineering and dynamic testing work on at least 5 Department bridge projects having driven pile foundations.

This "responsible charge" experience shall include dynamic pile testing, signal matching analyses and wave equation analyses computer program experience.

### **9.0 Conflict of Interest:**

It is the consultant's responsibility to prevent real or perceived Conflict-of-Interest. Any concerns or appeals must be brought to the attention of the DPM for interpretation and response.

### **10.0 Independent Assurance Services:**



Provide services in full compliance with the Department's current Independent Assurance Program. Meet or exceed annual goals of the program. Provide these services for Acceptance Programs for asphalt, concrete and earthwork.

#### **11.0 Off-Duty Law Officer with Vehicle:**

List the name of the organization providing Off-Duty Law Officer support services in the Contract as a 2nd-tier consultant. Title of the organization will be "Off-Duty Law Officer with Vehicle". The Contract Rates will be determined from price quotes from each organization.

#### **12.0 Ownership of Works and Inventions:**

The Department shall have full ownership of any works of authorship, inventions, improvements, ideas, data, processes, computer software programs, and discoveries (hereafter called intellectual property) conceived, created, or furnished under this Agreement, with no rights of ownership in Consultant or any sub-consultants/ subcontractors. Consultant and sub-consultants/subcontractors shall fully and promptly disclose to the Department all intellectual property conceived, created, or furnished under this Agreement. Consultant or sub-consultants/-subcontractor hereby assigns to the Department the sole and exclusive right, title, and interest in and to all intellectual property conceived, created, or furnished under this Agreement, without further consideration. This Agreement shall operate as an irrevocable assignment by Consultant and sub-consultants/subcontractors to the Department of the copyright in any intellectual property created, published, or furnished to the Department under this Agreement, including all rights thereunder in perpetuity. Consultant and sub-consultants/subcontractors shall not patent any intellectual property conceived, created, or furnished under this Agreement. Consultant and sub-consultants/subcontractors agree to execute and deliver all necessary documents requested by the Department to effect the assignment of intellectual property to the Department or the registration or confirmation of the Department's rights in or to intellectual property under the terms of this Agreement. Consultant agrees to include this provision in all its subcontracts under this Agreement.

#### **13.0 Consultant Not Employee or Agent:**

The Consultant and its employees, agents, representatives, or sub-consultants/ subcontractors are not employees of the Department and are not entitled to the benefits of State of Florida employees. Except to the extent expressly authorized herein, Consultant and its employees, agents, representatives, or sub-consultants/subcontractors are not agents of the Department or the State for any purpose or authority such as to bind or represent the interests thereof, and shall not represent that it is an agent or that it is acting on the behalf of the Department or the State. The Department shall not be bound by any unauthorized acts or conduct of Consultant.

#### **14.0 Services:**

Provide services that are in compliance with all applicable documents referred to in the “General” paragraph of this document. The Department, at its option, may elect to expand, decrease, or delete the extent of each work element described in this scope of services, provided such action does not alter the intent of this agreement. The Department shall request Consultant services on an as-needed basis. There is no guarantee that any or all of the services described will be assigned during the term of this agreement. Further, the Consultant shall provide these services on a nonexclusive basis. The Department, at its option, may elect to have any of the services set forth herein performed by other consultants, sub-consultants, or Department staff without Consultant recourse.

All firms providing services on this Contract must be specifically listed on the Contract. Each firm must have their own unit rates for pay items and labor classifications defined by the Department. Do not include unit rate for the services and labor classifications not provided by the firm. The Department reserves the right to decline reimbursement if these conditions are not met.

#### **14.1 Asphalt Plant Services:**

Provide Asphalt Plant Inspection services for Verification and Independent Verification.

- a. Ensure that all Bituminous Verification requirements are met.
- b. Provide recommendations regarding the disposition of substandard materials.
- c. Generate the Random Numbers and notify the Quality Control (QC) technician after the mixture is produced and instruct when the QC technician shall take the sample.
- d. Perform testing and inspection as directed in the Contract documents within the allotted timeframe as defined in the Contract documents. Perform daily inspections of the Producer’s Facility to ensure that the Producer is complying with their QC Plan and the Contract documents. Document all inspections in daily journal.
- e. Keep a daily journal using a format or electronic system directed by bituminous staff documenting the arrival and departure time, failures, QC, Process Control (P.C.), and Independent Verification (IV) samples taken (time and load numbers), time of IV technicians arrived and departed, all verification inspections performed, any production related problems, and any other pertinent information that the District Bituminous Staff directs the Verification Technician to document. Electronically submit the daily journal to the District Bituminous Staff at the completion of production for the day.
- f. Observe the QC testing for accuracy (on a random yet consistent basis) to ensure that the QC staff is accurately documenting the weights and calculations of the test results performed. Submit the copy of handwritten data to District Materials Staff as requested.
- g. Be familiar with the Producer’s QC Plan for the facility and ensure that QC staff is following the Plan.
- h. Notify the District Bituminous Staff immediately when repeating problems are encountered or serious lapses with the QC staff following their Producer QC Plan or the Project Requirements.
- i. Be knowledgeable of the Contract documents pertaining to Asphalt Production and testing at the Producer facilities.
- j. Document all material sample failures and all specification violations in the daily journal, and notify the Project Administrator (PA) and the District Bituminous Staff immediately.

- k. Perform a daily review of the QC worksheets and records for accuracy and completeness. Notify the PA and the District Bituminous Staff if the QC staff fails to complete the testing and pertinent paperwork within 24 hours and/or fails to enter the QC test results into the Department's database system within one working day of the testing. Make every effort to verify lots within the 24 hour timeframe, and on days the plant is producing.
- l. If resolution testing is required, notify the PA and the District Bituminous Staff immediately. After obtaining the resolution test results from the District Materials Office, update the Composite Pay Factor (CPF) Worksheet and other pertinent Department forms. Enter necessary information into the Department's database system, and reissue revised forms to the PA within 24 hours of receiving the results from the District Materials Office unless directed otherwise.
- m. One Verification Technician may be required to cover more than one active asphalt plant as directed by the District Bituminous Staff.

Provide the following additional plant inspection and testing related services as requested:

- 1. Label and sign V and R sample boxes.
- 2. Inspect the asphalt plant, review and analyze both QC and V test results and verify QC technician reports in Department's database are accurate.
- 3. Collect roadway cores for each IV sample collected.
- 4. Notify the Materials lab when Lot is completed and when Verification Technician needs to be sent to verify the completed lot.
- 5. Update the daily production spreadsheet.
- 6. Deliver IV samples to Materials Lab by the end of the day.
- 7. Recommend to stop or restrict asphalt plant production.
- 8. Approve, monitor, revise, transfer, and terminate Asphalt Mix Designs as applicable.

#### **14.2 Pavement Services:**

Perform pavement survey/evaluation and report the results to the District Bituminous Engineer in general accordance with the most current governing documents.

The field investigation for roadway design may include but not limited to:

- a. Review available and/or pertinent information such as the most recent pavement condition survey (accessible on the Department's website), previous construction plans, major repair information, the proposed rehabilitation, etc.
- b. Inform the Department of the tentative schedule of work to be performed during the field survey and coring program.
- c. Perform a field survey and document the pavement condition (rutting, cracking, pushing, shoving, etc.)
- d. Perform Preliminary site visit reviews and present a coring plan in accordance with the governing documents.

- e. Obtain cores. Consult with the District Bituminous Staff for number of cores to be obtained. Immediately fill all core holes after the core sample is extracted. The equipment, materials and procedure used for filling the holes must be approved by the Department.
- f. Perform appropriate laboratory testing (extraction, gradation, etc.) on roadway cores where required.
- g. After photographing, label, maintain, and retain the cores in storage as requested. When cores are no longer needed confirm with DPM prior to disposal.
- h. Determine and report thickness and types of pavement, base, and stabilization layers.
- i. Analyze the information and data collected in accordance with Materials Manual Section 3.2, and prepare a draft report. Include all pictures in the report.
- j. Perform data entry into the Department's Pavement Core Reporting (PCR) system and/or in other systems as directed, and provide digital copies of pictures to the Department.

Provide the following other pavement related services as requested:

- a. Provide Maintenance of Traffic (MOT) services for coring operations in accordance with the FDOT Standards.
- b. Upload Distance Measuring Instrument (DMI) data to create a Keyhole Markup language Zipped (KMZ) file for viewing on Google Earth or make it available on the Department's Geographic Information System (GIS).
- c. Provide milling recommendations.
- d. Coordinate and receive feedback on the draft Preliminary Pavement Evaluation Report and Milling Recommendation by the District Materials Office.
- e. Prepare a signed and sealed Final Pavement Evaluation Report and Milling Recommendation incorporating all elements of the Preliminary Reports and any additions, alterations, and changes directed by the DPM. Include all pictures in the report.
- f. Approve alternate corrective methods for straightedge deficiency repair.
- g. Investigate failing asphalt pavements.
- h. Provide traffic speed laser profile testing and reporting.
- i. Provide travel lane cross slope testing and reporting.
- j. Provide recommendations for pavement warranty and value added repairs.
- k. Obtain soil samples.

### **14.3 Laboratory Testing:**

Perform all tests in accordance with applicable testing Standard. Comply with all provisions of the Laboratory Qualification Program. Maintain appropriate accreditations\qualifications for the duration of the Contract. Notify the Department immediately when Laboratory accreditations\qualifications are lost for any reason, and then reinstated. Update the Department on Laboratory accreditations\qualifications status for each Laboratory every 6 months. Notify the Department prior to any scheduled inspection by an accreditation agency.

The consultant laboratories are subject to periodic quality assurance reviews by the Department. The consultant will cooperate with the Department during these reviews and promptly correct any noted deficiencies.

Deliver samples to the Resolution laboratories and the State Materials Office upon request in the most efficient manner.

Promptly notify project stakeholders in the event of QC\V non-comparison that results in Resolution testing.

#### **14.4 Concrete Plant Inspection and Testing:**

Inspect, sample, test and report on Concrete Production Plants to insure compliance with approved specifications, standard operating procedures and/or approved QC Program.

#### **14.5 Pre-Stress and Precast Production Facility Inspection and Testing:**

- a. Inspect, sample, test and report on Pre-Stress\Pre-Cast Production Facilities to insure compliance with governing documents and approved QC Program.
- b. Perform structural concrete evaluations as requested. Services may include the following: evaluate concrete form removal, release strength and member handling of cast-in-place or pre-cast concrete structures, evaluate cracks and determine structural adequacy, evaluate structural concrete repair proposals, evaluate EARs, develop and/or review mass concrete temperature control plans, evaluate mass concrete temperature problems.
- c. Report any noted deficiencies to the District Structural Materials Engineer.

#### **14.6 Earthwork:**

Inspect, sample, test and report on field Earthwork activities as requested by the Department.

#### **14.7 Geotechnical Testing:**

##### **14.7.1 Dynamic Pile Testing Services:**

Perform the following **Dynamic Pile Testing** services for **DESIGN-BID-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review Plans, Specifications, Geotechnical Reports, etc.
2. Attend Preconstruction Conference.
3. Review Pile Installation Plan/Hammer Submittal & provide comments to DGE.
4. Attend Construction pre-work meeting.
5. Perform Dynamic Load Tests on Test Piles.
6. Provide printed/plotted (PDF) and electronic copies of Test Pile data to the DGE.
7. Perform Wave Equation Analyses (CAPWAP, WEAP, etc.) of Test Pile data.
8. Develop Pile Length & Driving Criteria letters for DGE review.
9. Review Production Pile Driving logs as driving progresses.
10. Troubleshoot Production pile driving problems and perform Set-Checks as needed.
11. Submit Final summary report to the DGE.

#### **14.7.2 Pile Verification Services:**

Perform the following **Pile Verification** services for **DESIGN-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review Plans, Specifications, Geotechnical Reports, etc.
2. Attend Preconstruction Conference.
3. Review Pile Installation Plan/Hammer Submittal & provide comments to DGE.
4. Attend Construction pre-work meeting.
5. Observe Test Pile Dynamic Load Tests.
6. Collect printed/plotted (PDF) and electronic copies of Test Pile data for the DGE.
7. Review Design-Build Team's Pile Lengths & Driving Criteria; send comments to DGE.
8. Perform periodic site visits.
9. Review Production Pile Driving logs as driving progresses.
10. Review Design-Build Team's Foundation Certification Packages; send comments to DGE.
11. Recommend Pile Verification & perform tests as needed.
12. Analyze and report the results of Pile Verification Tests to the DGE.

#### **14.7.3 Major Structure Drilled Shaft Services:**

Perform the following **Major Structure Drilled Shaft** services for **DESIGN-BID-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review Plans, Specifications, Geotechnical Reports, etc.
2. Attend Preconstruction Conference.
3. Review Drilled Shaft Installation Plan & provide comments to DGE.
4. Attend Drilled Shaft pre-work meeting.
5. Document any pilot hole results & provide information to DGE
6. Observe Test Shafts & Shaft Inspection Device (SID) surveys.
7. Collect Drilled Shaft inspectors log and test data for the DGE.
8. Recommend Drilled Shaft tip elevations to DGE.
9. Perform periodic site visits.
10. Perform and/or Review Cross-Hole Sonic Logging (CSL) results as needed.
11. Perform and/or review Thermal Integrity results

#### **14.7.4 Miscellaneous Drilled Shaft Services:**

Perform the following **Miscellaneous Drilled Shaft** services for **DESIGN-BID-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review Plans, Specifications, Geotechnical Reports, etc.
2. Attend Preconstruction Conference.
3. Review Drilled Shaft Installation Plan & provide comments to DGE.

4. Attend Drilled Shaft pre-work meeting.
5. Observe first Drilled Shaft installed.
6. Collect Drilled Shaft inspectors log and test data for the DGE.
7. Perform periodic site visits.
8. Perform and/or Review Cross-Hole Sonic Logging (CSL) results as needed.
9. Perform and/or review Thermal Integrity results.

#### **14.7.5 Drilled Shaft Services:**

Perform the following **Drilled Shaft** services for **DESIGN-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review Plans, Specifications, Geotechnical Reports, etc.
2. Attend Preconstruction Conference.
3. Review Drilled Shaft Installation Plan & provide comments to DGE.
4. Attend Drilled Shaft pre-work meeting.
5. Observe any pilot hole field work and provide information to DGE.
6. Observe Test Shafts & Shaft Inspection Device (SID) surveys.
7. Collect Drilled Shaft inspectors log and test data for the DGE.
8. Perform periodic site visits.
9. Review Design-Build Team's Foundation Certification Packages; send comments to DGE.
10. Perform Verification Cross-Hole Sonic Logging (CSL) as needed.
11. Perform and/or review Thermal Integrity results.

#### **14.7.6 Auger Cast Pile Services:**

Perform the following **Auger Cast Pile** services for **DESIGN-BID-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review Plans, Specifications, Geotechnical Reports, etc.
2. Attend Preconstruction Conference.
3. Review Auger Cast Pile Installation Plan & provide comments to DGE.
4. Attend Auger Cast Pile pre-work meeting.
5. Observe first Auger Cast Pile installation.
6. Review Inspector's Logs for the DGE.
7. Perform periodic site visits.
8. Trouble shoot problems as needed.
9. Perform and/or review Thermal Integrity results.

#### **14.7.7 Design Services:**

Perform the following **Geotechnical Design** services for **DESIGN-BID-BUILD** Projects as required by the District Geotechnical Engineer (DGE):

1. Review proposed Field Exploration program with DGE representative.
2. Perform Field Explorations in accordance with the Governing Documents or as directed by the DGE.
3. Perform Laboratory Testing in accordance with the Governing Documents or as directed by the DGE.
4. Perform Engineering Analyses in accordance with the Governing Documents or as directed by the DGE.
5. Submit periodic (i.e. BDR, 60%, 90% & Final) draft reports for DGE review.

#### **14.7.8 Geographic Information System (GIS) Services:**

Perform the following services required by the District Geotechnical Engineer (DGE):

1. Determine Latitude and Longitude of Soil Boring Locations.
2. Scan Soil Boring Profiles for input into GIS database.
3. Update Soil Boring database spreadsheet.

#### **14.7.9 Sub-surface Exploration:**

The geotechnical investigation for roadway and structural foundations includes bridges, box culverts, retaining walls, sea walls, high-mast lighting, overhead signing, mast arm signals, high embankment fills as required, sinkholes, depressions and other emergency situations.

#### **14.7.10 Sinkhole Services:**

Perform field recon for sink holes. Perform boring to determine recommendations. Give recommendations for treatment including grout points. Provide guidance for grouting procedure and expertise on the site as requested. Obtain and perform associated laboratory testing as directed.

If the drilling program expects to encounter artesian conditions, the Consultant's Geotechnical Engineer shall submit a methodology(s) for plugging the borehole to FDOT for approval prior to commencing with the boring program.