EXHIBIT "A"

Districtwide Geotechnical & Pavement Coring Services

Scope of Services

FM 25073023204
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SCOPES OF SERVICES

Geotechnical and Pavement Coring Services

1.0 Purpose:

This scope of services describes and defines the consultant services to support the Department in geotechnical investigation, analysis and design, pavement coring and evaluation, as well as geotechnical inspection, testing and analysis of projects under construction. In the execution of its services, the Consultant will work principally with and coordinate its activities with the Department's District 4 & 6 Materials & Research Office (DMRO).

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 reimbursed 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
• 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
BDR – Bridge Development Report
CADD - Computer Aided Drafting & Design
CAPWAP - Case Pile Wave Analysis Program
CPM - Consultant Project Manager
CSC - Continuing Services Contract. Max 5 yrs. & $5 Million
CTQP - Construction Training & Qualification Program
DER - Department of Environmental Regulation (Federal & State)
DGE – District Geotechnical Engineer
DMRE - District Materials & Research Engineer.
DMRO - District Materials & Research Office
DPM - Department Project Manager.
DPSU - District Professional Services Unit
DWC - District-Wide Contract. Max 5 yrs. & $1.5 Million
EAR - Engineering Analysis Report
EDC - Embedded Data Collector
ERC – Electronic Review Comments
FDOT - Florida Department of Transportation
FM - Florida Method
IA - Independent Assurance
IV - Independent Verification
LIMS - Laboratory Information Management System
LOA – Letter of Authorization
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
SA - Supplemental Amendment
SMO - State Materials Office
SPT – Standard Penetration Test
TWO - Task Work Order
V – Verification
WEAP – Wave Equation Analysis Program

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.
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.

Testing and inspection personnel must participate in Independent Assurance evaluations when applicable.

8.1 **Requirements for Select Geotechnical 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 will complete the EDC training course, once available. 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 MOT & Off-Duty Law Officer with Vehicle:

Provide Maintenance of Traffic (MOT) services in accordance with the FDOT Standards. List the name of the organization providing the MOT and Off-Duty Law Officer support services in the Contract as a 2nd-tier consultant. Title of the organization for the officer will be "Off-Duty Law Officer with Vehicle". The Contract Rates will be determined from price quotes from each organization.

11.0 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 affect 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.

12.0 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.

13.0 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.

13.1 Design Services:

Perform the following services for DESIGN-BID-BUILD Projects as required by the District Geotechnical Engineer (DGE). These Services include but are not limited to those listed below:

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.
8. Review Plans and Geotechnical Reports and submit comments.
9. Attend design meetings as required.

13.2 Geotechnical Testing & Inspection Services:
Perform the following geotechnical testing and inspection services as required by the District Geotechnical Engineer (DGE). These Services include but are not limited to those listed below.

13.2.1 Dynamic Pile Testing Services:

Perform the following services for DESIGN-BID-BUILD Projects as required:

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.
12. Attend Construction meetings as required.

13.2.2 Pile Verification Services for Design Build Projects:

Perform the following services for DESIGN-BUILD Projects as required:

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.
13. Attend Construction meetings as required.

13.2.3 Major Structure Drilled Shaft Services:

Perform the following services for DESIGN-BID-BUILD Projects as required:

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.
10. Perform and/or Review Cross-Hole Sonic Logging (CSL) results as needed.
11. Perform and/or review Thermal Integrity results.
12. Attend Construction meetings as required.

13.2.4 Miscellaneous Drilled Shaft Services:

Perform the following services for DESIGN-BID-BUILD Projects as required:

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 Test Shafts & Shaft Inspection Device (SID) surveys.
6. Collect Drilled Shaft inspectors log and test data for the DGE.
7. Perform periodic site visits and inspections.
8. Perform and/or Review Cross-Hole Sonic Logging (CSL) results as needed.
9. Perform and/or review Thermal Integrity results.
10. Attend Construction meetings as required.

13.2.5 Auger Cast Pile Services:

Perform the following services for DESIGN-BID-BUILD Projects as required:

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 and inspections.
8. Trouble shoot problems as needed.
9. Perform and/or review Thermal Integrity results.
10. Attend Construction meetings as required.

13.2.6 Drilled Shaft & Auger Cast Pile Services for Design Build Projects:

Perform the following services for DESIGN-BUILD Projects as required:

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.
11. Perform and/or review Thermal Integrity results.
12. Attend Construction meetings as required.

13.2.7 Other Geotechnical Construction Services:

Perform the following geotechnical construction services as required:

1. Monitor specialized geotechnical methods or equipment during construction.
2. Monitor earthwork and retaining wall construction.
3. Review Foundation Installation Plans & provide comments to DGE.
4. Review Foundation Construction Logs for the DGE.
5. Perform vibration monitoring on structures adjacent to construction.

13.3 Forensic Geotechnical Engineering Services:

Investigate damage, deterioration, or collapse of a structure or roadway. Perform an analysis of a project, site conditions, design calculations and assumptions, or construction methodology. Develop repair and/or monitoring recommendations and prepare report.

Provide the necessary equipment and personnel to perform Ground Penetrating Radar (GPR) scans for near surface depressions and depths up to 20 feet. Perform
analysis of data and provide reports detailing a repair and/or monitoring recommendation.

13.4 Geographic Information System (GIS) Services:

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

1. Determine Latitude and Longitude of all filed tests locations including soil borings, percolation, or drainage tests, and corrosion testing.
2. Update Soil Boring database spreadsheet.
3. Input soil boring Profiles into GIS database.

13.5 Sub-surface Exploration:

Perform Sub-surface Explorations in accordance with the Governing Documents or as directed by the DGE. The geotechnical investigation for roadway and structural foundations but not limited to roadway soil survey, drainage structures, 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.

13.6 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.

13.7 Laboratory Testing:

Perform all tests in accordance with applicable testing Standards.

13.8 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.


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.