



County of Georgetown, South Carolina

129 Screven Street, Suite 239 · Georgetown, SC 29440-3641
Post Office Box 421270, Georgetown, SC 29442-4200
(843)545-3083 · Fax (843)545-3500 · purch@gtcounty.org

REQUEST FOR QUALIFICATIONS (RFQ)

BID NUMBER: 16-087

ISSUE DATE: Thursday, October 13, 2016

OPENING DATE: Tuesday, November 8, 2016 **OPENING TIME: 3:00 PM (Eastern NIST)**

Bid Opening Location: Georgetown County Courthouse, Suite #239, (Purchasing Conference Room)

Pre-Bid Conference/Site Inspection: [Voluntary-On Own]

PROCUREMENT FOR: **Design/Build of Expandable Speculative Shell Building**
Commodity Code(s): 90638, 96820

Subject to the conditions, provisions and the enclosed specifications, sealed bids will be received at the location and time stated herein and will be publicly opened and read.

MAILING ADDRESS:

County of Georgetown
Post Office Drawer 421270
Georgetown SC 29442-4200
Attn: Purchasing

STREET ADDRESS:

Georgetown County Courthouse
129 Screven Street, Suite 239
Georgetown SC 29440-3641
Attn: Purchasing

IMPORTANT OFFEROR NOTES:

- 1) Bid Number & Title must be shown on the **OUTSIDE** of the delivery package.
- 2) Federal Express does **not** guarantee delivery to Georgetown, SC before 4:30 PM Eastern Time on **Primary Overnight** Service.
- 3) **United Parcel Service (UPS)** **does** guarantee delivery to Georgetown, SC before 10:30 AM Eastern Time on Next Day "Early AM" Service.
- 4) You must register a contact name, company name, fax and/or e-mail with the Purchasing Office as below to ensure your name will be added to the contact list for future amendments and addenda.

Purchasing Contacts:

Nancy Silver
Phone: (843)545-3076
Fax: (843)545-3500
E-mail: nsilver@gtcounty.org

Kyle Prufer
(843)545-3082
(843)545-3500
kprufer@gtcounty.org

This solicitation does not commit Georgetown County to award a contract, to pay any cost incurred in the preparation of the bid, or to procure or contract for goods or services. It is the responsibility of each bidder to see that the Georgetown County Purchasing Office receives bids on, or before, the date and time specified for the bid opening. No bid will be accepted thereafter. The County assumes no responsibility for delivery of bids that are mailed. Georgetown County reserves the right to reject any or all bids and to waive any informalities and technicalities in the bid process.



Intent to Respond

REF: **Bid #16-087, Design/Build of Expandable Speculation Shell Building**

If your company intends to respond to this solicitation, please complete and promptly return this form to assure that you can be included on the mailing list to receive all addenda regarding this project.

It is not necessary to return any other portion of the bid documents if you are not bidding.

Failure to return the Intent to Respond shall not be sufficient cause to rule a submittal as non-responsive; nor does the return of the form obligate an interested party to submit a response. Georgetown County's efforts to directly provide interested parties with addenda or additional information are provided as a courtesy only, and do not alleviate the respondent from their obligation to verify they have received and considered all addenda. All addenda are published and available on the county website at www.gtcounty.org select Quick Links, "Bid Opportunities" and "Current Bids."

Our firm **does** intend on responding to this solicitation.

Our firm **does not** intend on responding to this solicitation.

Company Name: _____

Address: _____

Contact Person: _____

Telephone: _____

FAX: _____

E-Mail: _____

Reason if **not** responding: _____

Please return this completed form to Nancy Silver, Senior Buyer

- by e-mail to purch@gtcounty.org
- or by FAX to (843)545-3500.

[End of Intent to Respond]

Time Line: Request for Proposal #16-087

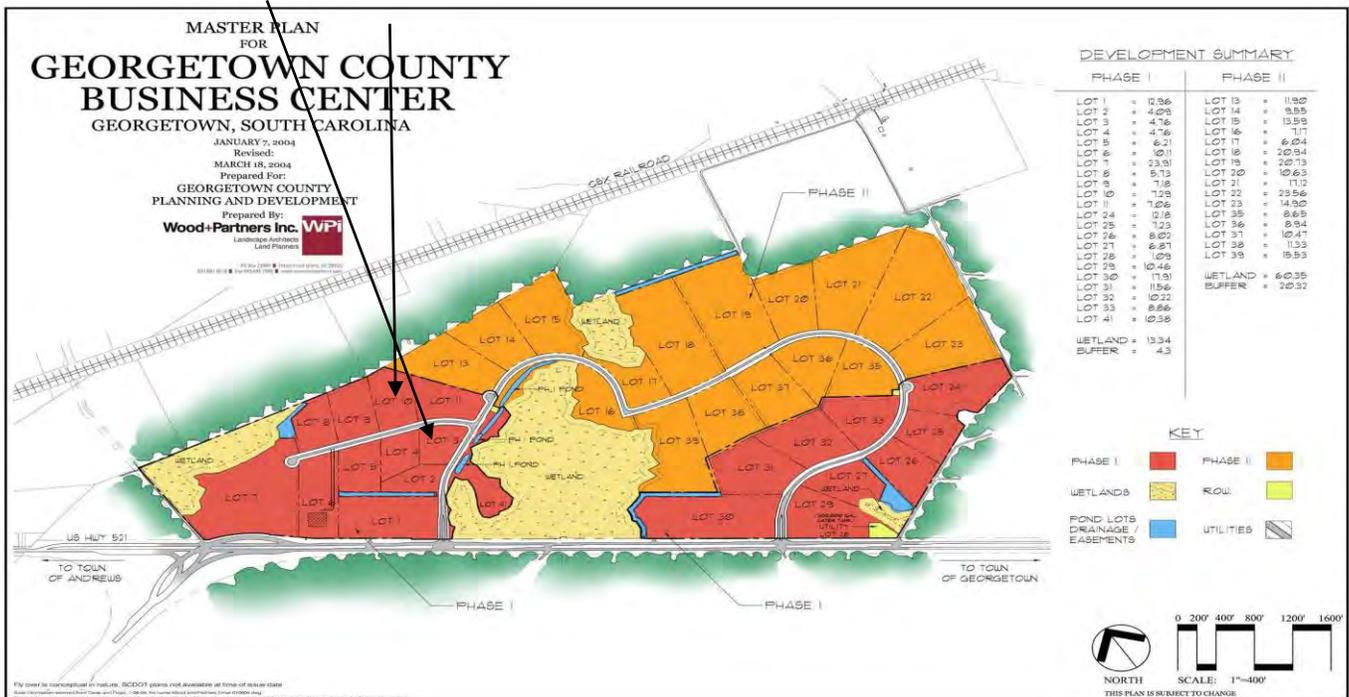
Item	Date	Time	Location*
Advertised Date of Issue:	Thursday, October 13, 2016	n/a	n/a
Pre-Bid & Site Inspection:	Voluntary-On Own	n/a	n/a
Deadline for Questions:	Tuesday, Nov. 1, 2016	3:00 PM ET	Suite 239
RFQ Opening & Tabulation:	Tuesday, Nov. 8, 2016	3:00 PM ET	Suite 239
Interviews/Presentation	Thursday, Nov. 17, 2016	TBD	TBD
County Council Consideration	Tuesday, December 13, 2016	5:30 PM ET	Chambers
Notice to Proceed May be Issued After:	Tuesday, January 3, 2016	n/a	n/a

*All locations in the Old County Courthouse, 129 Screven Street, Georgetown, SC unless otherwise stated.

Bid #16-087
Design/Build of Expandable Speculative Shell Building

The Georgetown County, South Carolina Economic Development Commission is soliciting sealed, public Request for Qualifications (RFQ) for the Design/Build of an Expandable Speculation Shell Building on an already cleared and graded lot #3, TMS 02-0416-035-06-02, and the clearing and grading only of lot #10, TMS 02-0416-035-06-00. A 60,000 square/foot shell building is to be placed on the previously cleared and graded lot #3 in the Georgetown County Business Park (shown below), 259 Technology Drive, located approximately 1½ miles east of the Town of Andrews on the northern side of Highway 521. The awarded Contractor will design and build plans to include floor plans, site plans, all elevations, and provisions for how mechanical services are to be brought into the building. Since there is no knowledge of the type of company who may wish to occupy this structure, final interior design will not be made at this time. Lot #10 will need to be cleared and brought up to grade in preparation for future building expansions but no speculation shell building will be constructed on that lot at this time. In this document, which is a Request for Qualifications, the terms “Request for Qualifications (RFQ)” and “Bid” may be used interchangeably.

PHASE 1, LOT 3 & LOT 10



I) Introduction

1) Purpose of Procurement

- (a) Georgetown County hereinafter referred to as “Owner”, will undertake the design and construction of a 60,000 square/foot expandable speculative shell building on the previously cleared and graded lot #3, TMS 02-0416-035-06-02, in the Georgetown County Business Park located at 259 Technology Drive, Andrews, SC 29510 and the clearing and grading only of lot #10, TMS 02-0416-035-06-00.
- (b) There will be a single solicitation and procurement of one Design-Build firm (Design-Builder) to design and construct the facility.
- (c) Cost estimates indicate a preliminary budget figure of approximately \$1,800,000. This will include the total cost of the entire project with all costs and fees for architectural, design, permitting, and construction services.
- (d) Construction substantial completion date desired approximately is approximately 360 days from NTP.
- (e) The delivery method for this project shall be Design-Build. There will be a single contract from the Owner with a Design-Builder who will be expected to fulfill the terms of the contract through delivery of a finished, fully usable facility, on a turnkey basis, that satisfies the Owner’s Project Requirements. The Design-Builder, as the sole responsible entity architectural design, and construction services, will have a fiduciary role and responsibility to the Owner. The Design-Builder must act in the best interests consistent with the Owner’s Project Requirements and budget. The Design-Builder will be under contract to provide architectural design, and construction services necessary to deliver a completed facility, in a “turnkey” fashion, to the Owner for occupancy. The Design-Builder shall hold all design professional, trade contractor, and trade supplier contracts. The Design-Builder will be responsible for methods of construction and safety, as well as for the scheduled and coordination of the work of all construction and miscellaneous contracts required for completion of the project within its predetermined budget and schedule.
- (f) Selection of professional construction services will be by Requests for Qualifications (RFQ) selection. No formal design competition will be included. Based on submitted qualifications, the Owner may establish a shortlist of firms deemed most qualified. The Owner will designate a top-ranked firm based upon the submitted qualifications and, if deemed necessary by a formal interview. See Selection Process, II a).
- (g) The Owner’s Project Requirements express, in general, non-technical, and non-design terms the nature of the desired facility, its functions, its users’ performance expectations, and other information useful to a design professional for architectural design purposes.
- (h) Although the Owner is requesting separate sealed fee proposals from the responding firms, the fee proposals will not be opened during the selection process and, therefore, will not enter into the selection and ranking process. The sealed fee proposal for the top ranked firm will be opened and used as the basis to begin negotiations with the top ranked firms.

- (i) Award shall be made to the responsive offeror whose proposal is determined to be the most advantageous to the Owner, taking into consideration price and the other evaluation factors set forth in this request. No other factor or criteria will be used in evaluation. The Selection Committee will adhere to the weightings specified for each evaluation factor stated in this request. If Owner should determine that none of the proposals is advantageous to the Owner, the Owner shall have the absolute right to reject any and all proposals.

2) Project Objectives

- (a) The Design-Builder will be responsible for comprehending and programming the Owner's Project Requirements, accurately translating those requirements into a Basis of Design, and incorporating all into complete construction documents. With these, the Design-Builder will deliver a finished facility in satisfaction of the Owner's Project Requirements.
- (b) The Design- Builder will be responsible for pricing and value engineering issues. At an appropriate point during the projects, the Owner anticipates asking the Design-Builder to commit to a Guaranteed Maximum Price (GMP) for all its design and construction services.
- (c) The Design-Builder shall competitively select all construction subcontracts and other work appropriate for competitive selection but is free to use qualification factors other than price of work to select construction subcontractors that will deliver the greatest value to the Owner.
- (d) In selecting a firm, the Owner will emphasize experience of the firm and of assigned personnel in providing like functions on projects of similar magnitude and complexity as the proposed project. Selection preference will be toward firms that have depths of knowledge and resources for facility design, for general contracting, for scheduling, contract coordination and compliance, and budget control, as well as familiarity with laws, ordinances, and codes applicable to this project.
- (e) It is the responsibility of each submitter to examine the entire solicitation, seek clarification in writing, and review its submittal for accuracy before submitting their qualifications and their proposal. Once submission deadlines have passed, all submissions will be final. The Owner will not request clarification from any individual submitter relative to their submission but reserves the right to ask for additional information from all parties that have submitted qualifications. If there are multiple firms proposed as one team, each firm must describe itself according to the solicitation requirement.
- (f) The construction opportunity requires the Owners to make, as an important selection criterion, the ability of firms to place quality personnel on this job ready to work within an effective timeframe.

3) Project Assumptions

- (a) The Owner does not desire to enter into "joint-venture" agreements with multiple firms. At the same time, the Owner recognizes that the Design-Build delivery method often involves partnerships between and among firms to combine design and construction management capabilities. In the event that two or more firms desire to establish a joint venture, it is expected that one firm shall become the Design-Build firm for the purpose of contract execution, with the remaining firms being consultants to it.

- (b) The Owner expects all parties to this project to work closely together and deal appropriately with project conditions to finish the job successfully. A spirit of cooperation and collaboration among professional construction services providers is of utmost importance.
- (c) The Design-Builder, as part of its design and its preconstruction services, will assist with developing a strategy for the best approach for the successful completion of the project. For example, without limitation, the Design-Builder will provide guidance and assistance in preparation of a schedule and a reliable cost estimate.
- (d) The Design-Builder, as a part of its design and preconstruction services will assist with developing a strategy for the best approach for the successful completion of the project. For Example without limitation, the Design-Builder will provide guidance and assistance in the preparation of a schedule and a reliable cost estimate.
- (e) It is the sincere intention of the Owner to make every effort to be fair and equitable in its dealings with all candidates for selection.

4) Definitions of Terms

- (a) Whenever the terms “RFQ”, “proposal”, and “solicitation” are used, the reference is to this Request for Qualifications or portions thereof, together with any exhibits, attachments, or addenda it may contain.
- (b) Whenever the terms “shall”, “will”, “must”, or “is required” are used, the reference task is a mandatory requirement of this RFQ. Failure to meet any mandatory requirements will be cause for rejection of a submittal.
- (c) Whenever the terms “can”, “may”, or “should” are used, the referenced specification is discretionary. Therefore, although the failure to provide any items so termed will not be cause for rejection, the Selection Committee may consider such failure in evaluating the submittal.
- (d) Whenever the terms “apparent successful” or “top-ranked” or “highest-ranking” firm or offeror are used in this document, the reference is to the firm that the Selection Committee ultimately judges to have submitted the case best satisfying the needs of the Owner in accordance with the RFQ. The selection of an apparent successful firm does not necessarily mean the Selection Committee accepts all aspects of the firm’s submittal or proposal.
- (e) Whenever the term “submittal” is used in the RFQ, the reference is to the response offered by a firm in accordance with the RFQ. The initial submittal responds only to the RFQ portion of this document. Subsequently, only firms shortlisted based on their initial submittal will be invited to respond with technical proposal submittals to the RFQ portion of this document.
- (f) Whenever the term “Selection Committee” is used in the RFQ, the reference is to the Owner’s representatives responsible for administering and conduction the evaluation and selection process of the RFQ.
- (g) “Design-Build” refers to the construction project delivery method in which, among other things, the Owner holds a single contract with a business entity that has a responsibility both to design and to construct a project, and that holds the trade contracts.

- (h) “Design Professional” and “Designer of Record” both refer to the project’s architect of design engineer, whose responsibilities generally include programming of the facility. Under the Design-Build delivery methodology, the Design Professional is an integral part of the Design-Builder entity under single contract with the Owner.
- (i) “Owner’s Project Requirements” is a written document that details the functional requirements of a project and the expectations of how it will be used and operated.
- (j) “Qualifications Submittal” and “Initial Written Submittal” both refer to a firm’s initial response to the RFQ.
- (k) “Technical Proposal” refers to a shortlisted firm’s response to the final selection process upon request.
- (l) “Qualifications-Based Selection” and “QBS” both refer to a procurement process for the selection of professional construction services for public projects. It is a competitive contract procurement process whereby consulting firms submit qualifications to a procuring entity (owner) who evaluates and selects the most qualified firm, and then negotiates the project scope of work, schedule, budget, and consultant fee. In Georgetown County, this is termed “Multi-Step” bidding.
- (m) “Firm” shall be interpreted as referencing the design entity, the construction entity, of the combined (e.g., joint venture) entity, as is reasonable.

II. General Instructions

1) Building Program

(a) General

The project will be designed and constructed to a level of quality and timeliness.

(b) Owner / Design-Builder Contract

The final contract will be Actual Cost Plus a Fixed Fee not to exceed the Guaranteed Maximum Price (GMP). The project will be Open Book. All savings, including unused contingency, will be returned to the Owner. Contract documents will be based on AIA Doc. #A141-2004, Standard Form of Agreement between Owner and Design-Builder.

2) Selection Process

(a) Request for Qualifications

This document is a Request for Qualifications (RFQ). An interested firm’s initial response will be **only** to this RFQ portion of this solicitation. If a firm is subsequently shortlisted, it will then be invited to respond in a separate technical proposal.

(b) Selection Committee

The selection of professional service providers will be by a Selection Committee comprising representatives of the Owner. Offeror contact for information and clarification about the Project must be limited to Georgetown County Senior Buyer, Nancy Silver, as identified in Instructions for Bidders.

(c) Shortlisting, Proposals, Interviews

Selection of the Design-Builder

i) Initial Written Submittal (Qualifications Statements)

The selection Committee will receive and review statements of qualifications and performance data in response to the RFQ. The Selection Committee will evaluate all firms first against a set of criteria, provided in Section 3a below, to determine those firms most qualified and suited for this particular project. Qualifications will narrow the field to a shortlist of firms if required and deemed necessary. The Owner has the right to select a single firm after review of the RFQ thus choosing not to conduct interview, therefore moving directly to the fee proposals.

ii) Interview & Final Evaluation (If Required and deemed necessary by the Owner)

As part of the evaluation of the technical proposals, proposing firms will be invited to a formal interview to explain firm and to answer questions from the Selection Committee. From the evaluation of the RFQ, combined with the interview, the Selection Committee will rank the shortlisted firms in order of suitability and appropriateness for the present project.

iii) Fee Proposals to be Submitted with the RFQ

Each firm submitting an offer shall prepare and include a separate, sealed fee proposal to the Owner with their proposal. After final ranking of the shortlisted firms and following all interviews, the Selection Committee will open only the fee proposal from the highest-ranked offeror. This fee proposal will provide part of the basis for initial negotiations subsequently conducted with the highest-ranked offeror. If negotiations with the highest-ranked offeror are not successful, the Owner will then invite the second-ranked firm to negotiate, and so on.

3) Proposal Validity

Any submitted proposal shall remain valid for ninety days after the proposal due date or until the Owner executes a contract, whichever is sooner. In the event the selected proposer fails to perform and/or the contract is terminated, within forty-five days of its initiation, the Owner may request the proposer submitting the next acceptable proposal to honor its proposal.

4) Scope of Work Overview

The Design-Builder's services shall conform to recognized standards of professional practice. The contract will outline the scope of work. The work shall include a Schematic Design Phase, a Construction Documents Phase, and a Construction Phase. Duties during these phases will include but not be limited to activities mentioned in this solicitation.

(a) During the Schematic Design Phase, the Design-Builder will consult with the Owner's team to comprehend the Owner's Project Requirements, which shall be a written document and may be subject to change.

(b) During the Construction Documents Phase, the Design-Builder will take full professional responsibility, through its Designer of Record, to create construction documents that satisfy the Owner's Project Requirements. The Design-Builder will provide cost estimates and cost evaluation, value engineering recommendations, design analysis, constructability reviews, and technical input on methods of construction, materials, details, bidding formats, and types of separate bidding packages. At an appropriate point in the project and subject to contractual negotiations, the Design-Builder shall issue a Guaranteed Maximum Price (GMP) backed by a surety bond. The project shall be constructed within this GMP. The Design-Builder will coordinate applicable permits with permit fees to be paid by

Georgetown County (Owner). To the extent professionally responsible, the Design-Builder will overlap the Design Development and Construction Phases when components are conducive to early construction starts. The Design-Builder shall also develop and maintain a master project schedule.

- (c) During the construction phase, which includes any previously awarded early bid packages, Design-Builder will be responsible for the following things, without limitation:
 - i) Methods of construction
 - ii) Safety programs
 - iii) General conditions
 - iv) Prequalification of potential subcontractors
 - v) Procurement of all work
 - vi) Certification of work-in-place
 - vii) Monthly payment applications
 - viii) Coordination and scheduling of all work of all construction contracts and miscellaneous contracts required for the completion of the project within the predetermined budget and schedule
- (d) Design-Builder shall assist the Owner, the Owner's Project Manager, and Owner's Commissioning Provider, if any and as applicable, in management and administration of the project, except that the Owner at all times shall retain complete control of project funds and disbursements.

6) Schedule of Events

The Schedule of Events Timeline on page three (3) represents the Owner's best estimate of the schedule that will be followed. The Owner reserves the right, at its sole discretion, to adjust this schedule as it deems necessary. Notification of any adjustment to the Schedule of Events shall be provided to all who have requested this RFQ.

III. Initial Written Submittal - Qualifications Submission Format and Requirements (Response to Request or Qualifications or "RFQ")

1) Physical Submittal

One (1) unbound, reproducible ORIGINAL of your proposal must be submitted in a sealed envelope and clearly marked on the outermost container per the Instructions per Bidders (page 20, item 5). Each submittal shall include a transmittal letter. The transmittal letter (or cover letter) will not count toward the page limit (20 pages). The table of contents sheet and the tabs sheets, if used, also do not count toward the page limit. Submitters are encouraged to follow in their responses the sequence of the Initial Written Submittal outlined here. Responses should be concise, clear and relevant. Submitter's cost incurred in responding to this RFQ is submitter's alone and the owner does not accept liability for any such cost.

- (a) Responses are limited to twenty (20) standard (8.5" x 11") pages (may be fewer) using a minimum of a 10-point font. The pages of the qualification submittals must be numbered.
- (b) Submittals of qualifications will be accepted until time and date shown in the Timeline/ Schedule of Events (page 3). This is a firm deadline. The Owner is not responsible for the property or timely delivery of submittals. Failure to meet the deadline for receipt of submittals will result in rejection of the submittal. Submittals received after the deadline will not be considered whether delayed in transit or for any other cause whatsoever. Each firm is

solely responsible for the accuracy and completeness of its submittal. Errors and omissions may constitute grounds for rejection.

- (c) The Owner intends to limit the cost that submitters incur to respond to this solicitation. Therefore, submitters are encouraged to be brief and succinct. Thick volumes of background and general marketing material are not desired. A firm should highlight instead its responsiveness to the evaluation criteria. If there are multiple firms proposed as one team, each component firm should describe its own relevant qualifications within the same submittal.
- (d) Firms should deliver their submittals in a sealed package. The name and address of the firm should appear on the outside of the package, and the package should reference the project, i.e., “RFQ #16-087- Design/Build of Expandable Speculative Shell Building.”
- (e) Any questions that have been submitted in writing before the deadline, will be compiled and answered in writing. The deadline for submission of questions relating to the RFQ is the time and date shown in the Timeline / Schedule of Events (page 3).

2) Initial Written Submittal Prerequisite Criteria

Firms must meet the criteria in the bullet points immediately below. Firms that do not meet these criteria are automatically disqualified from further evaluation:

- Firm’s “Designer” MUST have current South Carolina Architectural and/or Engineering license(s) as appropriate for their portion of the design work.
- Firm’s “Builder” MUST have current South Carolina Contractor’s license with classification BD and group limitation Group 5.
- Builder MUST have a safety Experience Modification Rate average of less than 1.0 over the last three years.
- Firm MUST have bonding capacity to provide a payment and performance bond with coverage equal to the total cost of the project.
- Firm MUST be able to get a Builder’s Risk Insurance Policy for this project with coverage equal to the total cost of the project.
- Firm MUST obtain and maintain liability insurance coverages and must be insurable for a total of \$1 million for commercial general liability and automotive liability, and include coverage for errors and omissions.

In order to be deemed eligible for evaluation, the submitting firm must create, officially sign, and place in its submittal a signed statement that contains the following declarations:

- *We certify that our Design-Build entity’s “Designer” has current South Carolina Architectural and/or Engineering license(s) as appropriate for their portion of the design work.*
- *We certify that our Design-Build entity’s “Builder” has a current South Carolina Contractor’s license with classification BD and group limitation Group 5.*
- *Our building firm has a safety Experience Modification Rate average of less than 1.0 over the last three years.*
- *We certify that our firm has sufficient bonding capacity to provide a payment and performance bond with coverage equal to the total cost of the project.*

- *We certify that our firm will obtain a Builder’s Risk Insurance Policy for this project with coverage equal to the total cost of the project.*
- *We certify that our firm will have and maintain liability insurance coverage for a total of \$1 million for commercial general liability and automotive liability, and that we will include coverage for errors and omissions.*

Such signed statement may be placed in an appendix and will not count toward your page limit.

3) Initial Written Submittal Evaluation

(a) Evaluative Criteria – The Selection Committee will evaluate the submittals uniformly based upon the criteria listed in the table below. The Owner has listed each major category of criteria in order of importance. The services being sought under this RFQ are considered professional in nature. Consequently, the evaluation of submittals will be based upon consideration of the demonstrated qualifications and capabilities of the offerors. Absent modification by addendum, factors to be considered in the evaluation will be limited to the following:

Major Category	Criteria Summaries
Depth or Resources / Personnel Capability with Relevant Experience (POINT VALUE = 25)	<ul style="list-style-type: none"> • Depth of resources with experience ability, qualified and available for Architect / Engineer / Design Professional role. • Depth of resources with experience and ability, qualified and available for Project Superintendent role • Depth of resources with experience and ability, qualified and available for Design-Builder Project Manager role.
Firm’s relevant project experience (POINT VALUE = 25)	<ul style="list-style-type: none"> • Firm’s experience with preconstruction and construction services as a design build team. • Firm’s litigation record – past ten (10) years.
Responsiveness of Submittal (POINT VALUE = 20)	<ul style="list-style-type: none"> • Extent to which the instructions in the RFQ were followed. • Accuracy in reflecting the project’s assumptions & requirements
Financial Information (POINT VALUE = 15)	<ul style="list-style-type: none"> • Firm’s financial stability
Local Vendor Preference (POINT VALUE = 10)	<ul style="list-style-type: none"> • Local / Resident Vendor Preference – Location of Main Office
Statement of Why the Firm Should be Selected	<ul style="list-style-type: none"> • Firm’s unique ability to provide Design-Build services at least to the extent described in this document.

4) Submittal Contents

The qualification submittal should contain the following information in the following order:

- (a) Statement of Interest. Briefly tell why your firm is interested in this project.
- (b) Firm Description
- (c) Basic company information
 - i) Company Name
 - ii) Address & Zip Code
 - iii) Email address & Name of Primary Contact
 - iv) Telephone Number
 - v) Number of Years in Business
- (d) Form of ownership, including state of residency or incorporation: Is the offeror a sole proprietorship, partnership, corporation, Limited Liability Company (LLC), joint venture, or other structure?
- (e) Succinctly describe the history and growth of your firm(s).
- (f) Regarding litigation with owners, subcontractors, and other construction-related entities, list any active or pending litigation and explain. List, and briefly describe any and all legal actions for the past three (3) years in which respondent has been a debtor in bankruptcy, a defendant in a lawsuit for deficient performance under a contract or agreement; a respondent in an administrative action for deficient performance, or a defendant in a criminal action.
- (g) List and briefly describe projects that your firm has completed in the past five (5) years that also required design-build services and were valued at or above \$1,000,000. Also briefly describe the largest project your firm has completed within the past ten (10) years regardless of delivery method, but indicate the delivery method used on that largest project.
- (h) Has the firm ever failed to complete any work awarded to it or has it been removed from any project awarded to the firm? Explain.
- (i) Give three references to whom your company has provided professional services of a nature and quality similar to those required herein. This reference information should include a short paragraph describing the service(s) provided, together with the following:
 - i) The name of the organization to which the services were provided
 - ii) Project location
 - iii) Dates during which services were performed
 - iv) Brief description of project
 - v) A current contact name, together with organization title, at the firm
 - vi) The contact's current address and telephone number (The Selection Committee will not appreciate obsolete contact information).
- (j) Office Submitting Qualifications
If the firm has multiple offices, the qualification statement should include information about the parent company and branch office separately. Identify the office from which project will be managed and that office's proximity to the project site. Parent company (or general office) financial information as totals will be acceptable IF "parent" (or "general office") means that it is financially responsible for the liabilities of the branch office. If the parent company is not so responsible, meaning that its financial resources are not available to the office that will perform the contract, it will be misleading to the Owner to offer the financial of any office other than the one with the prospect of contract with the Owner.
- (k) Financial Responsibility

- i) List your total annual billings for each of the past three (3) calendar years. If forming a partnership, list separately by firm.
- ii) List the contact persons, addresses, and telephone numbers for your insurance carrier and agent.
- iii) List the contact persons, addresses, and telephone numbers for your firm's bonding company and agent.
- iv) What percentage of your firm's work has been negotiated and/or design build during the past three (3) years?
- v) Supply firm's Current Ratio (Current Assets / Current Liabilities) experience for the last five (5) years.

(l) Personnel Capability

Provide general information about the firm's personnel resources, including classifications and numbers of employees and the locations and staffing of relevant offices. Provide list of qualified and available personnel resources, identifying experience and ability for key personnel. The key personnel, at a minimum, are the proposed Designer of Record, supporting project architects and engineers, project superintendent and the Design-Builder's project manager. At this stage, firms may list more than one person qualified and available for the proposed project.

(m) Relevant Project Experience of the Designer

Relevant project experience refers especially to buildings comparable to this project in relevant ways. The most relevant experience will be on other Design-Build projects as designer. Describe no fewer than four (4) projects in order of most relevant to least relevant that demonstrate the firm's capabilities to provide design services on the project at hand. For each project, the following information should be provided:

- (i) Project Name
- (ii) Project Location
- (iii) Dates during which services were performed
- (iv) Physical description (e.r., square footage, number of stories, site area)
- (v) Brief description of project
- (vi) Services performed as Designer
- (vii) Statement of performance versus owner expectations in the areas of cost, quality, and schedule
- (viii) Owner reference

(n) Relevant Project Experience of the Builder

Relevant project experience includes similar building type and delivery method relevant to the type of project to be constructed using the Design-Build delivery method or performing as a general contractor on comparable types and sizes of projects. Describe no fewer than four (4) projects in order of most relevant to least relevant that demonstrate the firm's capabilities to perform the project at hand. For each project, the following information should be provided:

- Project Name
- Project Location
- Dates during which services were performed
- Physical description (e.g., square footage, number of stories, site area)
- Brief description of project
- Services performed as Designer
- Statement of performance versus owner expectations in the areas of cost, quality, and schedule
- Owner reference

(o) Safety Information

Provide a letter on the letterhead of the building firm's insurance company stating the Worker's Compensation Experience Modification Rate (EMR) for the past three (3) years. This letter may be placed in the appendix and will not count toward the page limit.

(p) Resident (Local) Business Presence

Indicate whether the offeror is a "local vendor" as indicated by one of more of the following three (3) criteria: a) the vendor has a valid business license issued by one of the municipalities within the county that was issued at least twelve (12) months prior to qualifications submission date; b) the vendor has a physical business address located and operating within the limits of the county and has been doing business in the county for a period of twelve (12) months or more; c) the vendor can prove payment of all applicable county taxes and fees if so requested. The **Residence Certification for Local Preference** submittal form enclosed shall be used for this purpose. This form will not contribute to the twenty (20) page maximum submittal total.

(q) Statement of "Why the Proposing Firm Should Be Selected"

This section provides each firm the opportunity to provide specific information that differentiates them from others in the competition. This statement is limited to two pages of the allowed total.

III. Preliminary Considerations

1) Superior Technical Proposal

Final selection of the Design-Build firm for this project shall be made using the Superior Technical Proposal (Pure QBS) method: the cost of the work (price) is not considered when making the initial selection of the best or most appropriate provider of the professional services required. Fees for services will be negotiated, however, following selection and before contracting.

2) Role of Fee Proposal

Fee proposals will be collected at the time of RFQ submittal. A fee proposal shall be submitted in a sealed envelope, which the Selection Committee will not open until a top-ranked firm is determined and, then, only the envelope from the top-ranked firm will be opened. Other fee proposal envelopes will remain sealed, ensuring that no selection is based on fees. The fee proposal will be used as a basis for subsequent negotiations with the top-ranked firm.

(a) Fees included in the fee proposal shall cover proposed, anticipated, or estimated compensation to the Design-Builder exclusive of the Cost of the Work. Following successful negotiations with the top-ranked firm, during which proposed fees can be adjusted, the Design-Builder's contractual fee will be the amount established by and agreed to by both parties that is the full amount of compensation due to the Design-Builder as gross profit and for any and all expenses of the project not included and identified as a Cost of the Work or the Design-Builder's Overhead Cost, provided that the Design-Builder performs all the requirements of the contract documents within the time limits established. The Design-Builder's Fee consists of the following:

- i) Design Fee. For design services, including the Design Professional's construction contract administration services, the Owner shall pay a Design Fee representing the gross profit relative to the design and construction contract administration services.
- ii) Construction Fee. For the construction services provided by the Design-Builder a Construction Fee representing the gross profit relative to the construction services.

- (b) This RFQ includes a format for the fee proposal. The “Design-Builder Fee Proposal” Form contains a Project Cost Matrix that should be used to list and calculate projected overhead.

Contract Negotiation

Soon after notification of the evaluation outcome, the Owner will initiate negotiations with the top-ranked firm to understand assumptions and to determine the Design-Builder’s fixed fees and the proposed costs for general conditions and overhead. In the event that a satisfactory fee cannot be agreed upon with the highest-ranking firm, the Owner will formally terminate the negotiations in writing and enter into negotiations in turn with the second-ranked firm and so-on until a mutually agreed-upon contract is established. Contract documents will be based on AIA Doc. #A141-2004, Standard Form of Agreement between Owner and Design-Builder on the basis of Actual Cost Plus a Fixed Fee not to exceed the Guaranteed Maximum Price (GMP), or other such format as may be found acceptable to both parties by mutual agreement.

Additional Information

- The Owner reserves the right to withdraw this RFQ or to reject any and all submittals at any time and cancel the project if, in the sole discretion of the Owner, continuation is deemed not to be in the best interest of the Owner.
 - In addition to the Owner’s general right to reject all submittals, a submittal may be rejected if the submittal contains false or misleading statements or references that, in the sole judgment of the Selection Committee, do not support an attribute or condition contended by the firm and, in the sole judgment of the Selection Committee, such statements were intended to mislead the Selection Committee in its evaluation of the submittal.
 - The Selection Committee’s identification of an apparent successful firm does not necessarily mean the Selection Committee accepts all aspects of the firm’s submittal or proposal.
 - All submittals, together with any supporting material submitted by the firm, become the property of the Owner and may be retained, destroyed, or otherwise disposed of at the convenience of the Owner. All submittals, if retained by the Owner, become a matter of public record when final negotiations are completed except, however, that unopened fee proposal envelopes will be returned unopened to the shortlisted firms not selected. The submittal received from the selected firm will become part of the agreement reached by the Owner and the firm.
 - By providing a submittal, each firm agrees not to request access to another firm’s submittals until after a contract has been executed.
 - By providing a submittal, each firm agrees that the Owner will have the right to use any or all ideas or concepts presented in any submittal without restriction and without compensation to the firm.
- VI. Bid Security will be required from only the highest ranked design-builder with whom the Owner begins negotiations. At the appropriate time and upon request the design-builder shall be prepared to submit:
- 1) A Bid Bond, or by a certified check payable to Georgetown County, SC, for an amount equal to five per-cent (5%) of the total base bid as a guarantee that if the bid is accepted, the required Contract will be executed within fifteen (15) days after receipt of written notice of formal award of Contract.
 - 2) The successful offeror must provide a Performance Bond from a surety company qualified to do business under the laws of the State of South Carolina in the amount of 100 percent (100%) of the contract amount, within fifteen (15) days the after receipt of written notice of formal award of the Contract. Pricing for such Performance Bond should be indicated separately on the Vendor Bid Submission Form.

- 3) The successful offeror must provide a Payment and Material Bond from a surety company qualified to do business under the laws of the State of South Carolina in the amount of 100 percent (100%) of the contract amount, within fifteen (15) days after receipt of written notice of formal award of Contract.

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OWNER'S PROJECT REQUIREMENTS

- 1) All wind loads will be submitted by the building manufacture, and must meet or exceed local code requirements.
- 2) Photographic examples of prior work completed must be included in proposal to be considered for award.
- 3) Minimum Technical Requirements:
 - a) Building Code: International Building Code for commercial structure (2015 Version)
 - b) Minimum Floor Space: 60,000 square feet, with provisions for expansion to 100,000 square feet.
 - c) Minimum Clear Height: 24 feet at lowest point (at eave)
 - d) Number of Stories: 1
 - e) Framing: Pre-engineered Steel
 - f) Walls: Pre-stressed or Stand-up Concrete, Brick or Block
 - g) Roof Standing seam
 - h) Minimum Bays: 40 feet x 30 feet
 - i) Floor: 1,000 square feet of concrete slab placed inside building accessible from the front doors
 - j) Site work: Site and expansion pad grading-lot 10. Lot 10 shall be graded to accommodate a future 40,000 sq. ft. building with appropriate parking.
 - k) Access: 12' access drive and 5 parking spaces leading to front door 6" base course and 2" Type 1 asphalt with no curb and gutter.
 - l) Doorways:
 - one (1) glass double man door
 - one (1) hollow metal single man door at rear
 - one (1) metal roll-up loading dock door at rear minimum size 9' x 10'
 - one (1) 12' x 14' on-grade roll-up door
 - two (2) OPTIONAL additional roll-up loading dock door at rear minimum size 9' x 10'
 - m) Loading Dock: should not be sloped, but level with ground elevation so trailer loads do not shift when backing to approach. Additional roll-up doors above will also necessitate widening of dock and paved approach to accommodate additional doors.
 - n) Landscaping: Grassing of disturbed areas
 - o) Electrical Service: The required electrical service should only be what the contractor will require for construction.
 - p) Provision should include a small exhaust fan and intake louver to lessen humidity buildup inside the structure.
 - q) Other Utilities: None at all
 - r) Exterior walls are to be insulated and the contractor must denote the R-factor for all insulation to be used.
 - s) Glasswork will be insulated with specifications provided.
 - t) Warranty: 5 year minimum
 - u) Painting: None required
 - v) Glasswork: 40' wide and 10' high glass on each side of front corner of building (the front door will be placed within the glass on front of building)
 - w) Stormwater: Lot 3 currently has an engineered retention pond to accommodate a 40,000 sq. ft. pad so additional stormwater engineering shall be completed by the Contractor to accommodate the 60,000 sq. ft. speculation shell building. Lot 10 currently has no stormwater retention ponds so proper stormwater engineering shall be provided by the Contractor to accommodate a future 40,000 sq. ft. building with appropriate parking. All public infrastructure is located at curb.

- x) Building elevation is at the discretion of the submitter.
 - y) Visibility of the roof and /or use of parapet walls is a design function and is at the discretion of the submitter.
 - z) Prior foundation exploration engineering studies and analysis have been completed. See copy of report attached. Any additional geo-technical work that may be needed will be at the expense of the contractor awarded the bid.
 - aa) A Certificate of Occupancy (C/O) is not required for owner acceptance.
 - bb) The contractor will be responsible for disposal of any and all removed, unused and surplus materials and any fees and transportation costs associated with the disposal.
 - cc) It shall be the responsibility of the contractor to comply with County Ordinances by securing the necessary permits. Building contractors working within Georgetown County must secure a Contractor's License from the Building Department. This is outside the Georgetown City Limits and so does not require a City Business License. Owner provided OCRM permits are still valid for both sites.
- 4) **PROPERTY:** Lot #3 is approximately 9.46 acres. Lot #10 is approximately 7.35 acres. Both properties are part of the overall Georgetown County Business Park located on Highway 521, approximately 1 ½ miles east of the Town of Andrews, SC.
- 5) **SCHEDULE:** Bid proposals must be submitted to Georgetown County following the timeline on the top of page three (3). One copy of the Bid proposal shall be submitted. Selection of the Design/Build Team is expected by the end of December 2016, and execution of a contract is expected by January 2017. Georgetown County expects the building to be complete and ready for sale by January 2018.
- 6) **SCOPE OF WORK:**
- a) Perform the professional design of the Shell Building project, prepare Technical Specifications and Construction Drawings to include an aesthetically pleasing exterior, and obtain all pertinent Permits. The Contractor shall be responsible for civil engineering drawings for both sites.
 - b) Design/Construct the Shell Building on lot 3 in accordance with the approved Technical Specifications, Construction Drawings, and Building Permits.
 - c) Agree, at Georgetown County's option, to provide up to 4 preliminary up-fit plans and associated cost information for prospective buyers and tenants within 72 hours of receiving a request from Georgetown County.
 - d) Clear the area of trees and stumps on lot 10 and perform the necessary grading to prepare the site to be pad ready for possible future building placement.
- 7) **FINANCING:** Georgetown County plans to finance this shell building using its own funds. The budget for this project is \$1.8 Million.
- 8) **ATTACHMENTS:**
- a) Master Plans for Georgetown County Business Center
 - b) Shell Building Site Location-Lot #3
 - c) Clearing & Grading Site Location-Lot #10
 - d) Report of Preliminary Geotechnical Exploration
- 9) **SITE INSPECTION:**
- a) Each bidder is responsible to become familiar with and take into consideration, site conditions which may affect the work and to check all dimensions at the site. Further, each bidder shall acquaint themselves thoroughly as to the character and nature of the work to be done. Each bidder furthermore shall make a careful examination of the site of the work and inform themselves fully as to the difficulties to be encountered in performance of the work,

the facilities for delivering, storing and placing materials and equipment and other conditions relating to construction and labor.

- b) The bidder shall examine the premises and the site and compare them with any applicable drawings and specifications. He/she shall familiarize themselves with the existing conditions such as obstructive area levels and any problems related to erecting the required systems.
- c) No plea of ignorance of conditions that exist or may hereafter exist on the site of the work, or difficulties that may be encountered in the execution of the work, as a result of failure to make necessary investigations and examinations, will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill in every detail all the requirements of the contract documents and to complete the work for the consideration set forth therein, or as a basis for any claim whatsoever.

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Instructions for Bidders
Bid #16-087
Design/Build of Expandable Speculation Shell Building

1. **Submission of Questions**

Questions must be submitted in writing via electronic mail, facsimile or postal mail to the Issuing Officer no later than the "Deadline for Questions" cutoff identified in the Bid Timeline on page three (3) in order to generate an official answer. All written questions will receive an official written response from the Georgetown County Purchasing Office (GCPO) and will become addenda to the solicitation.

GCPO reserves the right to reject or deny any requests made by the provider.

Impromptu, unwritten questions are permitted and verbal answers may be provided, but are only intended as general direction and will not represent the official GCPO position. The only official position of GCPO is that which is stated in writing and issued in the solicitation as addenda thereto.

No other means of communication, whether oral or written, shall be construed as a formal or official response/statement and may not be relied upon. SEND QUESTIONS TO:

Nancy Silver, Senior Buyer
Post Office Box 421270, Georgetown, SC 29442-2400
Fax: (843) 545-3500
Email: nsilver@gtcounty.org

2. **IMPORTANT OFFEROR NOTES:**

- a) Bid Number & Title must be shown on the OUTSIDE of the delivery package.
- b) Federal Express does NOT guarantee delivery to Georgetown, SC before 4:30 PM Eastern Time on Next Day Service.
- c) UPS WILL guarantee delivery to Georgetown, SC before 10:30 AM Eastern Time on Next Day "Early AM" Service.

3. **Inclement Weather/Closure of County Courthouse**

If the County Courthouse is closed for business at the time scheduled for bid opening, for whatever reason, sealed bids will be accepted and opened on the next scheduled business day, at the originally scheduled time.

- 4. This solicitation does not commit Georgetown County to award a contract, to pay any cost incurred in the preparation of the bid, or to procure or contract for goods or services. It is the responsibility of each bidder to see that the Georgetown County Purchasing Office receives bids on, or before, the date and time specified for the bid opening. No bid will be accepted thereafter. The County assumes no responsibility for delivery of bids that are mailed. Georgetown County reserves the right to reject any or all bids and to waive any informalities and technicalities in the bid process.
- 5. One (1) unbound, reproducible ORIGINAL of your proposal must be submitted in a sealed envelope and clearly marked on the outermost container as follows:

OFFEROR'S NAME
BID ITEM NAME
BID NUMBER

- 6. No offeror may submit more than one response.

7. Correction or Withdrawal of Bids; Cancellation of Awards

An offeror must submit in writing a request to either correct or withdraw a bid to the Procurement Officer. Each written request must document the fact that the offeror's mistake is clearly an error that will cause him substantial loss.

- a) Correction of awards : An offeror shall not be permitted to correct a bid mistake after bid opening that would cause such offeror to have the low bid unless the mistake in the judgment of the Procurement Officer is clearly evident from examining the bid document; for example, extension of unit prices or errors in addition.
- b) Cancellation of awards prior to performance: When it is determined after an award has been issued but before performance has begun that Georgetown County's requirements for the goods or services have changed or have not been met, the award or contract may be canceled and either reawarded or a new solicitation issued.

8. Faxed or E-mailed bids will not be accepted by Georgetown County.

9. If you need any reasonable accommodation for any type of disability in order to participate in this procurement, please contact the purchasing office as soon as possible.

10. Any deviations from the specifications or modification of this bid and any extra or incidental work or reductions in work shall be set forth in writing and signed by both parties prior to making such change. Any increase or decrease in the bid price resulting from such change shall be included in writing.

11. Exceptions: The bidder shall list on a separate sheet of paper any variations from, or exceptions to, the conditions and specifications of this bid. This sheet shall be labeled "Exception(s) to Bid Conditions and Specifications," and shall be attached to the bid. When Proposers find instances where they must take exception with certain requirements or specifications of the bid, all exceptions shall be clearly identified. Written explanations shall include the scope of the exceptions, the ramifications of the exceptions for the County of Georgetown, and a description of the advantage to be gained or disadvantages to be incurred by the County as a result of these exceptions. If no exceptions, write "No Exceptions".

12. The County reserves the right to reject any or all bids, waive any informality in bids and accept in whole or in part such bid or bids as may be deemed in the best interest of the County. Georgetown County reserves the right to reject any bid submitted, at sole option that the vendor may not be able to meet the service requirements of the bid.

13. Publicity releases: contractor agrees not to refer to award of any resulting contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by the user.

14. Material Safety Data Sheets: The County of Georgetown will not receive any materials, products, or chemicals which may be hazardous to an employee's health unless accompanied by a Material Data Sheet when received.

15. Ownership of Copyright: All right, title and interest in all copyrightable materials which vendor shall create in the performance of its obligations hereunder shall be the property of the procurer. Vendor agrees to assign and hereby does assign any and all interest it has in and to such material to procurer. Vendor agrees, upon the request of procurer to execute all papers and perform all other such acts necessary to assist procurer to obtain and register copyrights on such materials. Where applicable, works of authorship

created by the vendor in the performance of its obligations hereunder, shall be considered “works for hire” as defined in the U.S. Copyright Act.

16. Ownership of Documents: Any reports, studies, photographs, negatives or other documents prepared by vendor in the performance of its obligations shall be the exclusive property of the procurer and all such material shall be remitted to the procurer by the vendor upon completion, termination or cancellation of this order. Vendor shall not use, willingly allow or cause to have such material used for any purpose other than performance of its obligations under this order without the prior written consent of the procurer.
17. Affirmative Action: The contractor will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of the handicapped, and concerning the treatment of all employees, without regard or discrimination by reason of age, race, color, religion, sex, national origin or physical handicap. The following are incorporated herein by reference: 41 C.F.R. 60-1.4, 60-250.4 and 60-741.4.
18. ETHICS ACT (JAN 2004): By submitting an Offer, you certify that you are in compliance 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 – Section 8-13-790, (b) Recovery of kickbacks – Section 8-13-790, (c) Offering, soliciting, or receiving money for advice or assistance of public official – Section 8-13-720, (d) Use or disclosure of confidential information – Section 8-13-725, and (e) Persons hired to assist in the preparation of specifications or evaluation of bids – Section 8-13-1150.
19. Bidders must clearly mark as "confidential" each part of their bid which they consider to be proprietary information that could be exempt from disclosure under section 30-4-40, Code of Laws of South Carolina 1976, as amended (Freedom of Information Act). If any part is designated as confidential, there must be attached to that part an explanation of how this information fits within one or more categories listed in section 30-4-40. The County reserves the right to determine whether this information should be exempt from disclosure and no legal action may be brought against the County or its agents for its determination in this regard.
20. CERTIFICATION REGARDING DRUG-FREE WORKPLACE:
The contractor certifies that the vendor(s) will provide a “drug-free workplace” as that term is defined in Section 44-107-30 of the Code of Laws of South Carolina, 1976, as amended, by the complying with the requirements set forth in title 44, Chapter 107.
21. Nothing herein is intended to exclude any responsible vendor, his product or service or in any way restrain or restrict competition. On the contrary, all responsible vendors are encouraged to bid and their bids are solicited.
22. Acknowledgement of Addenda
Each contractor is responsible to verify the number of total addenda issued prior to bid. **Failure to acknowledge all addenda shall disqualify the bidder.** All addenda are posted by the County at the website located at www.gtcountry.org, select “Bid Opportunities” from the Quick Links box on the homepage. It is each proposer’s responsibility to verify that all addenda have been received and acknowledged.
23. Responses must be made in the format specified or will be rejected. Proposals shall be typewritten or written in ink. The person signing the bid shall initial all corrections or erasures.

24. **Builders' Risk Insurance.** Contractor shall provide and maintain, during the progress of the work and until execution of the Certificate of Contract Completion, a Builder's Risk Insurance policy to cover all work in the course of construction including false work, temporary buildings, scaffolding, and materials used in the construction process (including materials designated for the project but stored off site or in transit). The coverage shall equal the total completed value of the work and shall provide recovery at replacement cost.

- a) Such insurance shall be on a special cause of loss form, providing coverage on an open perils basis insuring against the direct physical loss of or damage to covered property, including but not limited to theft, vandalism, malicious mischief, earthquake, tornado, lightning, explosion, breakage of glass, collapse, water damage, and testing/startup.
- b) Coverage shall include coverage for "soft costs" (costs other than replacement of building materials) including, but not limited to, the reasonable extra costs of the architect/engineer and reasonable Contractor extension or acceleration costs. This coverage shall also include the reasonable extra costs of expediting temporary and permanent repairs to, or permanent replacement of, damaged property. This shall include overtime wages and the extra cost of express or other means for rapidly transporting materials and supplies necessary to the repair or replacement.
- c) The policy shall specifically permit and allow for partial occupancy by the owner prior to execution of the final Certification of Contract Completion, and coverage shall remain in effect until all punch list items are completed.
- d) The Builder's Risk deductible may not exceed \$5,000. The Contractor or subcontractor experiencing any loss claimed under the Builder's Risk policy shall be responsible for that loss up to the amount of the deductible.
- e) If Contractor is involved solely in the installation of material and equipment and not in new building construction, the Contractor shall provide an Installation Floater policy in lieu of a Builder's Risk policy. The policy must comply with the provisions of this paragraph.

25. **Comprehensive Insurance**

The successful bidder shall procure, maintain, and provide proof of, insurance coverage for injuries to persons and/or property damage as may arise from or in conjunction with, the work performed on behalf of the County by the bidder, his agents, representatives, employees or subcontractors. Proof of coverage as contained herein shall be submitted fifteen (15) days prior to the commencement of work and such coverage shall be maintained by the bidder for the duration of the contract period; for occurrence policies.

a. **General Liability**

Coverage shall be as broad as: Comprehensive General Liability endorsed to include Broad Form, Commercial General Liability form including Products/Completed Operations.

1. **Minimum Limits**

General Liability:

- \$1,000,000 General Aggregate Limit
- \$1,000,000 Products & Completed Operations
- \$1,000,000 Personal and Advertising Injury
- \$1,000,000 Each Occurrence Limit
- \$50,000 Fire Damage Limit
- \$5,000 Medical Expense Limit

b. **Automobile Liability**

Coverage sufficient to cover all vehicles owned, used, or hired by the bidder, his agents, representatives, employees or subcontractors.

1. **Minimum Limits**

Automobile Liability:

\$1,000,000 Combined Single Limit

\$1,000,000 Each Occurrence Limit

\$5,000 Medical Expense Limit

c. Workers' Compensation

Limits as required by the Workers' Compensation Act of SC. Employers Liability, \$1,000,000.

d. Owners' & Contractors' Protective Liability

Policy will be in name of County. Minimum limits required are \$1,000,000.

e. Professional Liability

Minimum limits are \$1,000,000 per occurrence.

f. Coverage Provisions

1. All deductibles or self-insured retention shall appear on the certificate(s).
2. The County of Georgetown, its officers/ officials, employees, agents and volunteers shall be added as "additional insured" as their interests may appear. This provision does not apply to Professional Liability or Workers' Compensation/Employers' Liability.
3. The offeror's insurance shall be primary over any applicable insurance or self-insurance maintained by the County.
4. Shall provide 30 days written notice to the County before any cancellation, suspension, or void of coverage in whole or part, where such provision is reasonable.
5. All coverage for subcontractors of the bidder shall be subject to all of the requirements stated herein.
6. All deductibles or self-insured retention shall appear on the certificate(s) and shall be subject to approval by the County. At the option of the County, either; the insurer shall reduce or eliminate such deductible or self-insured retention; or the bidder shall be required to procure a bond guaranteeing payment of losses and related claims expenses.
7. Failure to comply with any reporting provisions of the policy(s) shall not affect coverage provided the County, its officers/officials, agents, employees and volunteers.
8. The insurer shall agree to waive all rights of subrogation against the County, its' officers/officials, agents, employees or volunteers for any act, omission or condition of premises which the parties may be held liable by reason of negligence.
9. The bidder shall furnish the County certificates of insurance including endorsements affecting coverage. The certificates are to be signed by a person authorized by the insurance company(s) to bind coverage on its' behalf, if executed by a broker, notarized copy of authorization to bind, or certify coverage must be attached.
10. All insurance shall be placed with insurers maintaining an A.M. Best rating of no less than an A:VII. If A.M. Best rating is less than A:VII, approval must be received from County's Risk Officer.

26. Workman's Compensation Coverage

Georgetown County, SC will require each contractor and service provider to maintain on file with the purchasing officer, a current Certificate of Insurance showing limits as required by the Workers' Compensation Act of SC: Employers Liability, \$1,000,000.

The law also recognizes "statutory employees." These are employees who work for a subcontractor who may be working for a business or another contractor. Employers should inquire whether or not a subcontractor working for them has workers' compensation insurance, regardless of the number of

employees employed by the subcontractor. If the subcontractor does not, the subcontractor's injured employees would be covered under the employer's workers' compensation insurance. If the subcontractor does not carry workers' compensation insurance, then the owner or the principal contractor would be liable just as if the subcontractor's employee was one of their employees.

For answers to additional questions, visit the SC Worker's Compensation Commission website, at:

<http://www.wcc.state.sc.us/Frequently%20Asked%20Questions/FAQ.htm>

27. Hold Harmless Clause

The Contractor shall, during the term of the contract including any warranty period, indemnify, defend, and hold harmless the County, its officials, employees, agents, and representatives thereof from all suits, actions, or claims of any kind, including attorney's fees, brought on account of any personal injuries, damages, or violations of rights, sustained by any person or property in consequence of any neglect in safeguarding contract work or on account of any act or omission by the contractor or his employees, or from any claims or amounts arising from violation of any law, bylaw, ordinance, regulation or decree. The vendor agrees that this clause shall include claims involving infringement of patent or copyright.

28. Condition of Items

All items shall be new, in first class condition, including containers suitable for shipment and storage, unless otherwise indicated herein. Verbal agreements to the contrary will not be recognized.

29. Workmanship and Inspection

All work under this contract shall be performed in a skillful and workmanlike manner. The County may, in writing, require the Contractor to remove any employee from work that the County deems incompetent or careless.

Further, the County may, from time to time, make inspections of the work performed under this contract. Any inspection by the County does not relieve the Contractor from any responsibility regarding defects or other failures to meet the contract requirements.

30. Progress Payments

Contractor's Application for Payment shall be submitted to the Owner on AIA Document G702 and G703--1992 Edition, or such other form as may be mutually agreed upon. The period covered by each Application for Payment shall be not less than one calendar month. The Owner shall make progress payments to the Contractor on undisputed amounts certified by the Architect within twenty-one (21) days from receipt of the Application for Payment by the Owner in accordance with Title 29, Chapter 6 of the Code of Laws of South Carolina, 1976, as amended. Individual contractors shall provide their social security numbers, and proprietorships, partnerships, and corporations shall provide their federal employer identification number on the pricing form.

31. South Carolina Sales Tax

The County of Georgetown, SC is not exempt and pays the appropriate SC sales tax on all applicable purchases.

32. Assignment of Contract

This contract may not be assigned in whole or part without the written consent of the Purchasing Officer.

33. Termination

Subject to the provisions below, the contract may be terminated by the County upon thirty (30) days advance written notice to the other party; but if any work or service hereunder is in progress, but not completed as of the date of termination, then this contract may be extended upon written approval of the County until said

work or services are completed and accepted.

a. Termination for Convenience

In the event that this contract is terminated or canceled upon request and for the convenience of the County, without the required thirty (30) days advance written notice, then the County shall negotiate reasonable termination costs, if applicable.

b. Termination for Cause

Termination by the County for cause, default or negligence on the part of the contractor shall be excluded from the foregoing provision; termination costs, if any, shall not apply. The thirty (30) days advance notice requirement is waived in the event of Termination for Cause.

c. Non-Appropriation:

It is understood and agreed by the parties that in the event funds are not appropriated in the current fiscal year or any subsequent fiscal years, this contract will become null and void and the County will only be required to pay for services completed to the satisfaction of the County.

34. Default

In case of default by the contractor, for any reason whatsoever, the County may procure the goods or services from another source and hold the contractor responsible for any resulting excess cost and may seek other remedies under law.

35. Severability

In the event that any provision shall be adjudged or decreed to be invalid, such ruling shall not invalidate the entire Agreement but shall pertain only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect.

36. Applicable Laws

This Agreement shall be governed by and construed in accordance with the laws of the State of South Carolina, U.S.A.

37. Claims and Disputes:

All claims, disputes and other matters in question between parties arising out of, or relating to, this Agreement, or the breach thereof, shall be decided in the Circuit Court of the Fifteenth Judicial circuit in Georgetown County, South Carolina. By executing this Agreement, all parties specifically consent to venue and jurisdiction in Georgetown County, South Carolina and waive any right to contest jurisdiction and venue in said Court.

38. Rights of County

The County reserves the right to reject all or any part of any bid, waive informalities and award the contract to the lowest responsive and responsible bidder to best serve the interest of the County.

39. Notice of Award

A *Notice of Intent to Award* will be mailed to all respondents.

40. Protest

Bidders may refer to Sections 2-67, 2-73, and 2-74 of Ordinance #2008-09, also known as the Georgetown County, South Carolina Purchasing Policy to determine their remedies concerning this competitive process. The failure to be awarded a bid shall not be valid grounds for protest.

41. Debarment

By submitting a bid, the offeror certifies to the best of its knowledge and belief, that it and its principals, sub-contractors and assigns are not presently debarred, suspended, proposed for debarment, declared

ineligible, or voluntarily excluded from covered transactions by any Federal, State or local department or agency. A copy of the County's debarment procedure in accordance with Section 2-68 of Ordinance #2008-09, also known as the Georgetown County, South Carolina Purchasing Policy is available upon request.

42. Firm Pricing for County Acceptance

Bid price must be firm for County acceptance for 90 days from bid opening date.

43. Unit Prices and Extension

If required, bid unit price on quantity specified -- extend and show total. In case of errors in extension, unit prices shall govern. Bids subject to unlimited price increases will not be considered.

44. Use of Brand Names (If Appropriate)

Unless otherwise stated in an Invitation for Bid, the name of a certain brand, make or manufacturer does not restrict bidders to the specific brand, make or manufacturer named; it conveys the general style, type, character, and quality of the article desired, and any article which the County in its sole discretion determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. Any catalog, brand name or manufacturer's reference used in bid invitation is descriptive - NOT restrictive - it is to indicate type and quality desired. Bids on brands of like nature and quality will be considered. If bidding on other than reference or specifications, bid must show manufacturer, brand or trade name, catalog number, etc. of article offered. If other than brand(s) specified is offered, illustrations and complete description must be submitted with bid. Samples may be required. If bidder makes no other bid and takes no exception to specifications or reference data, he will be required to furnish brand names, numbers, etc., as specified. Bidders must certify that item(s) bid upon meet and/or exceed specifications.

45. Permits

The successful Offeror must be responsible for obtaining all necessary city, county, and state permits/licenses and must comply with all local codes and ordinances. Copies of such permits/licenses shall be made available to the County upon request. Building contractors working within Georgetown County must also secure a Contractor's License from the Building Department. Work within the Georgetown City Limits may require a City Business License. For additional information, please review the "Forms and Fees" section of the Building and Planning web page at the link below:

<http://www.georgetowncountysc.org/building/default.html>

46. Environmental Management:

Vendor/Supplier/Contractor will be responsible for complying with all federal, state and local environmental regulations relating to transportation, handling, storage, spillage and any other aspect of providing the services specified herein, as applicable.

47. Bid Tabulation Results:

Vendors wishing to view the bid tabulation results may visit the Georgetown County, SC web-site at: <http://www.georgetowncountysc.org>. Select "Bid Opportunities" from the Quick Links box, then "Bids Under Review" and double click the link under the individual bid listing.

48. The Bidder hereby certifies that he or she has carefully examined all of the Documents for the project, has carefully and thoroughly reviewed this Request for Bid/Quotation, has inspected the location of the project (if applicable), and understands the nature and scope of the work to be done; and that this Bid is based upon the terms, specifications, requirements, and conditions of the Request for Bid/ Documents. The Bidder further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope of the project as aforesaid.

49. Any attempt by the vendor to influence the opinion of County Staff or County Council by discussion, promotion, advertising, misrepresentation of the submittal or purchasing process or any procedure to promote their offer will constitute a violation of the vendor submittal conditions and will cause the vendor's submittal to be declared null and void.
50. Apparent omission of a detailed description concerning any point, shall be regarded as meaning the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used.
51. Response Clarification
Georgetown County reserves the right to request additional written or oral information from Bidders in order to obtain clarification of their Responses.
52. Georgetown County, SC has a Local Vendor Preference Option by code (Ordinance #2010-45):

Sec 2-50. Local Preference Option

1. A vendor shall be deemed a Local Georgetown County vendor for the purposes of this Section if such vendor is an individual, partnership, association or corporation that is authorized to transact business within the State, maintains an office in Georgetown County, and maintains a representative inventory or commodities within the County on which the bid is submitted, and has paid all taxes duly assessed.
2. This option allows the lowest local Bidder whose bid is the lesser of \$10,000 or within five-percent (5%) of the lowest non-local Bidder to match the bid submitted by the non-local Bidder and thereby be awarded the contract. This preference shall apply only when (a) the total dollar purchase is \$10,000 or more; (b) the vendor has a physical business address located and operating within the limits of Georgetown County and has been doing business in the County for a period of twelve (12) months or more; and (c) the vendor provides proof of payment of all applicable Georgetown County taxes and fees if so requested.
3. Should the lowest responsible and responsive Georgetown County bidder not exercise its right to match the bid as granted herein, the next lowest qualified Georgetown County bidder shall have that right and so on. The right to exercise the right to match the bid shall be exercised within 24 hours of notification of the right to match the non-Georgetown County bidder's bid.
4. In order to qualify for the local preference authorized by this Section, the vendor seeking same shall be required to submit with its bid a statement containing relevant information which demonstrates compliance with the provisions of this Section. This statement shall be on a form provided by the County purchasing department and shall be signed under penalty of perjury. Failure to provide such affidavit at the time the bidder submits its bid shall constitute a waiver of any claim for preference.
5. For all contracts for architecture, professional engineering, or other professional services governed by § 2-56, Architect-Engineer and Land Surveying Services – Public Announcement and Selection Process, the county shall include the local business status of a firm among the factors considered when selecting which firms are “most highly qualified.” In determining which firm is the “most qualified” for purposes of negotiating a satisfactory contract, preference shall be given to a local business where all other relevant factors are equal.
6. Local preference shall not apply to the following categories of contracts: (a) Goods or services provided under a cooperative purchasing agreement or similar “piggyback” contract; (b) Contracts for professional services except as provided for in section five (§5) above; (c) Purchases or contracts which are funded, in whole or in part, by a governmental or other funding entity, where the terms and

conditions of receipt of the funds prohibit the preference; (d) Purchases or contracts made pursuant to a noncompetitive award process, unless otherwise provided by this section; or (e) Any bid announcement which specifically provides that the general local preference policies set forth in this section are suspended due to the unique nature of the goods or services sought, the existence of an emergency as found by either the county council or county administrator, or where such suspension is, in the opinion of the county attorney, required by law.

See the RESIDENCE CERTIFICATION FOR LOCAL PREFERENCE form attached for details.

53. Vendor Checklist

The items indicated below must be returned as a part of the Bid Submission package:

- (a) Twenty (20) Page (maximum) Formatted Response
- (b) Mandatory Vendor Agreement & Declaration Form*
- (c) Resident Certification for Local Preference (2 pgs.)*
- (d) Substitute for W-9*
- (e) Mandatory Exceptions Page*
- (f) **SEPARATELY SEALED** Design-Builder Fee Proposal* including Add/Alternate Fee Proposal*

*These forms do not constitute part of the 20-page limit.

The successful proposer will be required to provide a Certificate of Insurance naming Georgetown County, SC as an additional insured. This must be on file prior to any final award.

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**SUBSTITUTE FOR FORM W-9
MANDATORY BID SUBMISSION FORM**

Pursuant to Internal Revenue Service Regulations, you must furnish your Taxpayer Identification Number (TIN) to Georgetown County. If this number is not provided, you may be subject to a 28% withholding on each payment.

INDIVIDUAL OR OWNER'S NAME _____
(Sole Proprietor Must Provide Individual Name along with Business Name)

LEGAL BUSINESS NAME (d/b/a): _____

ADDRESS: (_____
(_____
(_____

9 DIGIT TAXPAYER IDENTIFICATION NUMBER (TIN)
(Individual Must Provide SS#; Sole Proprietorship may provide SS# or EIN#)

Social Security Number _____ - _____ - _____

Employer Identification Number _____ - _____

BUSINESS DESIGNATION

- Individual, Sole Proprietor, or Single-Member LLC
 - S-Corporation
 - Trust/Estate
 - Non-Profit Organization/501(a)
 - Limited Liability Company: C = Corporation S = S Corporation P = Partnership
 - C-Corporation
 - Partnership
 - Governmental Entity
 - Other: _____
- (Must Circle the appropriate Tax Classification)

Exempt Payee Code (if any): _____
(Exemption codes apply only to certain entities, not individuals; IRS W-9 instructions, page 3):

PRINCIPAL BUSINESS ACTIVITY (List Type of Service or Product Provided):

MEDICAL SERVICES PROVIDER ATTORNEY/LEGAL SERVICES PROVIDER

CERTIFICATION Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person; and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. *The Internal Revenue Service does not require your consent to any provision of this document other than the certifications required to avoid back-up withholding.*

Signature: _____

Date _____



RESIDENCE CERTIFICATION FOR LOCAL PREFERENCE

MANDATORY VENDOR SUBMITTAL FORM

WHEREAS, Georgetown County Council desires to further its support of local businesses when awarding contracts for the provision of supplies and construction services to the County through its established procurement procedures.

THEREFOR pursuant to Georgetown County, SC Ordinance #2014-02 as adopted, §2-50 Local Preference Option, the Georgetown County Purchasing Officer requests each offeror provide Residence Certification. The Local Preference Option provides some restrictions on the awarding of governmental contracts; provisions of which are stated below:

Sec 2-50. Local Preference Option

5. A vendor shall be deemed a Local Georgetown County vendor for the purposes of this Section if such vendor is an individual, partnership, association or corporation that is authorized to transact business within the State, maintains an office in Georgetown County, and maintains a representative inventory or commodities within the County on which the bid is submitted, and has paid all taxes duly assessed.
6. This option allows the lowest local Bidder whose bid is within five-percent (5%) of the lowest non-local Bidder to match the bid submitted by the non-local Bidder and thereby be awarded the contract. This preference shall apply only when (a) the total dollar purchase is \$10,000 or more; (b) the vendor has a physical business address located and operating within the limits of Georgetown County and has been doing business in the County for a period of twelve (12) months or more; and (c) the vendor provides proof of payment of all applicable Georgetown County taxes and fees if so requested.
7. Should the lowest responsible and responsive Georgetown County bidder not exercise its right to match the bid as granted herein, the next lowest qualified Georgetown County bidder shall have that right and so on. The right to exercise the right to match the bid shall be exercised within 24 hours of notification of the right to match the non-Georgetown County bidder's bid.
8. In order to qualify for the local preference authorized by this Section, the vendor seeking same shall be required to submit with its bid a statement containing relevant information which demonstrates compliance with the provisions of this Section. This statement shall be on a form provided by the County purchasing department and shall be signed under penalty of perjury. Failure to provide such affidavit at the time the bidder submits its bid shall constitute a waiver of any claim for preference.

5. For all contracts for architecture, professional engineering, or other professional services governed by § 2-56, Architect-Engineer and Land Surveying Services – Public Announcement and Selection Process, the county shall include the local business status of a firm among the factors considered when selecting which firms are “most highly qualified.” In determining which firm is the “most qualified” for purposes of negotiating a satisfactory contract, preference shall be given to a local business where all other relevant factors are equal.

6. Local preference shall not apply to the following categories of contracts:

- (a) Goods or services provided under a cooperative purchasing agreement or similar “piggyback” contract;
- (b) Contracts for professional services except as provided for in section five (§5) above;
- (c) Purchases or contracts which are funded, in whole or in part, by a governmental or other funding entity, where the terms and conditions of receipt of the funds prohibit the preference;
- (d) Purchases or contracts made pursuant to a noncompetitive award process, unless otherwise provided by this section; or
- (e) Any bid announcement which specifically provides that the general local preference policies set forth in this section are suspended due to the unique nature of the goods or services sought, the existence of an emergency as found by either the county council or county administrator, or where such suspension is, in the opinion of the county attorney, required by law.

I certify that [Company Name] _____ is a

Resident Bidder of Georgetown County as defined in Ordinance #2014-02, and our principal place of business is _____ [City and State].

I certify that [Company Name] _____ is a

Non-Resident Bidder of Georgetown County as defined in Ordinance #2014-02, and our principal place of business is _____ [City and State].

(X) _____

Signature of Company Officer



Georgetown County
DESIGN-BUILDER FEE PROPOSAL

(Submit in a SEPARATELY Sealed Envelope as Project Cost Matrix with back-up materials as necessary)

1. DESIGN-BUILDER'S FEE:

Basis of Fee: The Design-Builder's fee is the amount, established by and agreed to by both parties, which is the full amount of compensation due to the Design-Builder as gross profit, and for any and all expenses of the Project not included and identified as a Cost of Work, provided that the Design-Builder performs all the requirements of the Contract Documents within the time limits established. If applicable, the fees and costs should be broken down by each site within the project.

For the purpose of responding to the RFQ and for potential negotiations subsequent to final selection, candidate Design-Builder may express Fees A, B and C, below, in terms of percentages of this project's Guaranteed Maximum Price Limitation, which is \$1,800,000.00.

A. DESIGN FEE:

Design Fee: For the design services provided by the Design-Builder, the Owner shall pay to the Design-Builder a Design Fee.

Table with 2 columns: Design Fee - FIXED FEE, \$

B. CONSTRUCTION FEE:

Construction Fee: For the construction services provided by the Design-Builder, the Owner shall pay to the Design-Builder a Construction Fee.

Table with 2 columns: Construction Fee - FIXED FEE, \$

Please attach a separate sheet listing any additional costs for Add/Alternate #1 as described within the RFQ and label page as "Add/Alternate Fee Proposal".

2. DESIGN-BUILDER'S OVERHEAD COSTS (Construction):

The Design-Builder's Overhead Costs: The maximum amount in dollars projected for the Design-Builder's Expenses and Construction Overhead Costs and Expenses are inclusive of all direct and incidental expenses. For this Fee Proposal, project these costs and expenses to include field office furniture/furnishing and utilities, office supplies - construction, superintendent truck/phone/cell/phone, temporary construction facilities, workers compensation insurance, liability and property insurance for project and miscellaneous insurance.

Table with 2 columns: Construction Overhead Costs and Expenses - FIXED FEE, \$

Proposer (Firm): _____

Signature: _____

Printed Name: _____

Title: _____



Vendor Agreement & Declaration Mandatory Submittal Form

Each vendor submitting a bid proposal to Georgetown County shall agree to the conditions listed below. If a vendor cannot agree to these terms, or in any way violates the conditions, the response will be judged Non-Responsive and not considered for award. If the conditions are violated during the evaluation process for proposals prior to the execution of a contract by Georgetown County, the proposal of the vendor violating the conditions will become null and void and the vendor's submittal withdrawn from consideration for the award.

The Mandatory Conditions are:

- 1) We certify that our Design-Build entity's "Designer" has current South Carolina Architectural and/or Engineering license(s) as appropriate for their portion of the design work.
- 2) We certify that our Design-Build entity's "Builder" has a current South Carolina Contractor's license with classification BD and group limitation Group 5.
- 3) Our building firm has a safety Experience Modification Rate average of less than 1.0 over the last three years.
- 4) We certify that our firm has sufficient bonding capacity to provide a payment and performance bonds with coverage equal to the total cost of the project.
- 5) We certify that our firm will obtain a Builder's Risk Insurance Policy for this project with coverage equal to the total cost of the project.
- 6) We certify that our firm will have and maintain liability insurance coverage for a total of \$5 million for commercial general liability, and not less than \$1 million per claim for commercial business automobile liability, and that we will include coverage for errors and omissions of not less than \$1 million per claim. We further pledge that Georgetown County will be named as an additional insured party and loss payee on the insurance policies just described.
- 7) Such signed statement shall be placed in an appendix and will not count toward your page limit.

FIRM NAME

DATE

SIGNATURE OF PERSON AUTHORIZING BID _____

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK.]



EXCEPTIONS PAGE

MANDATORY BID SUBMISSION FORM

List any areas where you cannot or will not comply with the specifications or terms contained within the bid documentation. If none, write "NONE".

MASTER PLAN
FOR
**GEORGETOWN COUNTY
BUSINESS CENTER**
GEORGETOWN, SOUTH CAROLINA

JANUARY 7, 2004

Revised:

MARCH 18, 2004

Prepared For:

GEORGETOWN COUNTY

PLANNING AND DEVELOPMENT

Prepared By:

Wood+Partners Inc. WPI
Landscape Architects
Urban Planners

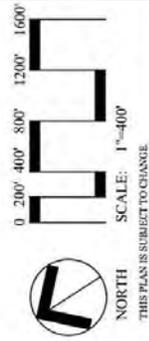
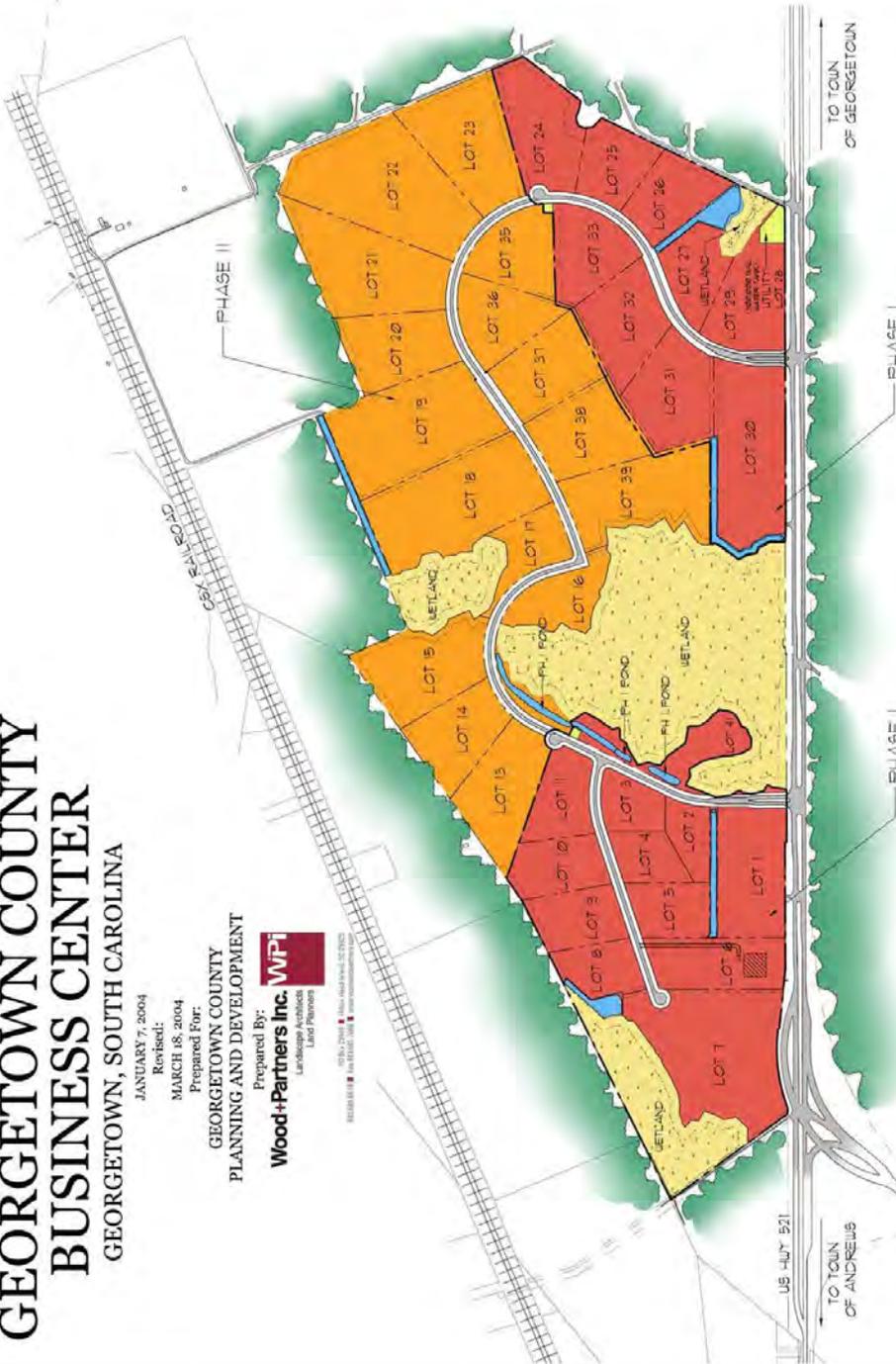
1010 South Main Street, Suite 100, Georgetown, SC 29542
803.535.1111 Fax 803.535.1110 www.woodpartners.com

DEVELOPMENT SUMMARY

PHASE I	PHASE II
LOT 1 = 12.96	LOT 13 = 11.30
LOT 2 = 4.09	LOT 14 = 9.55
LOT 3 = 4.16	LOT 15 = 13.58
LOT 4 = 4.16	LOT 16 = 11.11
LOT 5 = 6.21	LOT 17 = 6.04
LOT 6 = 10.11	LOT 18 = 20.34
LOT 7 = 23.91	LOT 19 = 20.73
LOT 8 = 5.13	LOT 20 = 10.63
LOT 9 = 7.18	LOT 21 = 11.12
LOT 10 = 7.29	LOT 22 = 23.56
LOT 11 = 7.06	LOT 23 = 14.50
LOT 12 = 12.18	LOT 24 = 8.65
LOT 13 = 1.23	LOT 25 = 8.94
LOT 14 = 2.02	LOT 26 = 8.94
LOT 15 = 6.81	LOT 27 = 10.47
LOT 16 = 1.09	LOT 28 = 11.33
LOT 17 = 10.46	LOT 29 = 15.53
LOT 18 = 11.91	WETLAND = 60.35
LOT 19 = 11.56	BUFFER = 20.32
LOT 20 = 10.22	
LOT 21 = 8.56	
LOT 22 = 10.36	
LOT 23 = 13.34	
LOT 24 = 4.3	

KEY

- PHASE I
- PHASE II
- WETLANDS
- POND, LOTS DRAINAGE / EASEMENTS
- ROW
- UTILITIES



File cover is conceptual in nature. SCDOT plans not available at time of issue date. This drawing is the property of Wood+Partners Inc. It may not be reproduced without the written consent of Wood+Partners Inc.

Lot 3 - Building Site

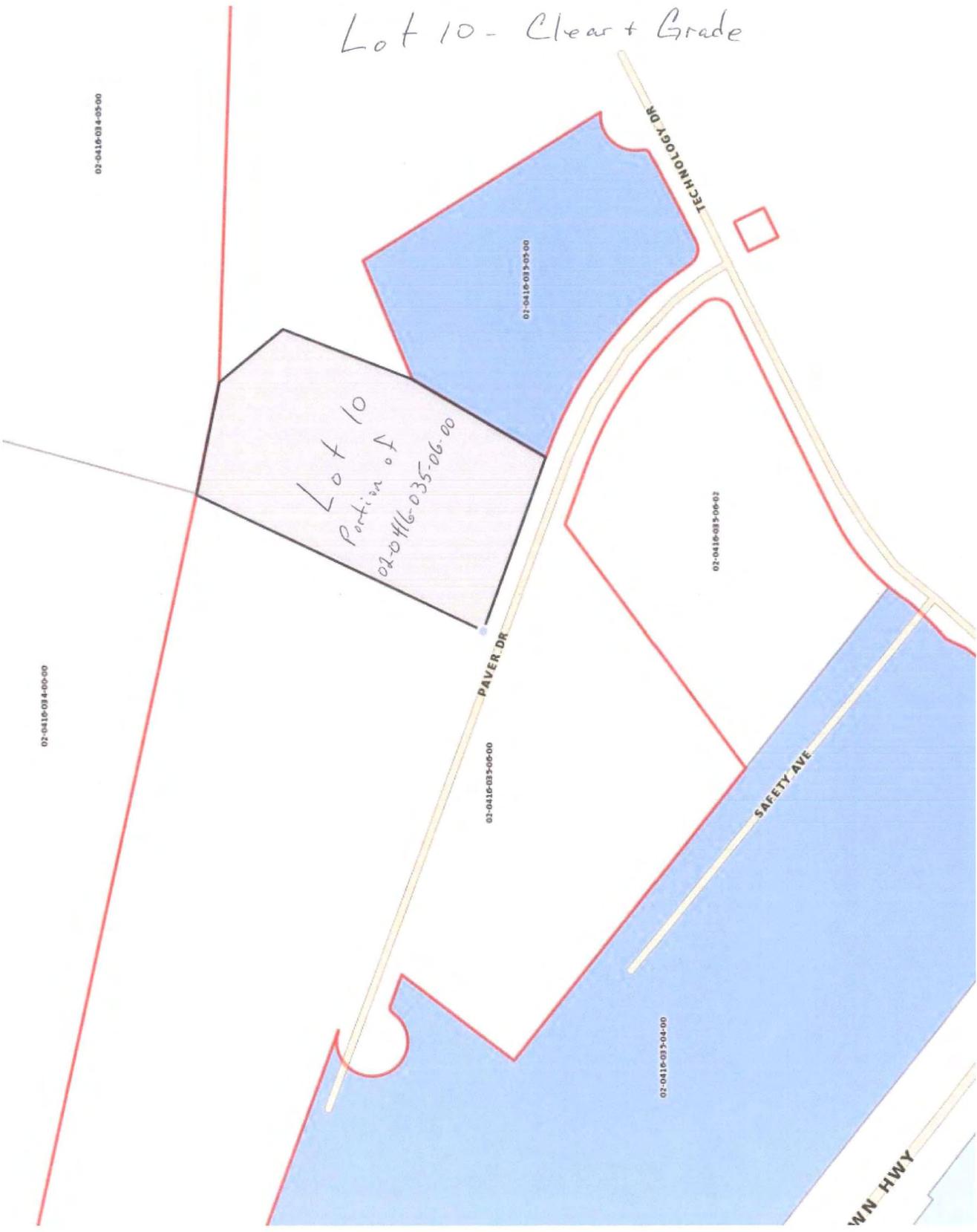


Lot 3 - Building Site			
Parcel: 02-0416-035-06-02 Acres: 9.46			
Name:	GEORGETOWN COUNTY	Land Value	\$30,100.00
Site:	259 TECHNOLOGY DR	Improvement Val	\$0.00
Sale:	\$\$10 on 10-2011 Vacant= Qual=9	Accessory Value	\$0.00
Mail:	P O BOX 421270 GEORGETOWN, SC 29442	Total Value	\$30,100.00



The Georgetown County Assessor's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the last certified taxroll. All data is subject to change before the next certified taxroll. PLEASE NOTE THAT THE PROPERTY APPRAISER MAPS ARE FOR ASSESSMENT PURPOSES ONLY NEITHER GEORGETOWN COUNTY NOR ITS EMPLOYEES ASSUME RESPONSIBILITY FOR ERRORS OR OMISSIONS ---THIS IS NOT A SURVEY---
Date printed: 07/07/16 : 08:49:51

Lot 10 - Clear + Grade



**Georgetown Business Park Lots 3 & 10
Report of Preliminary Geotechnical Exploration
Andrews, South Carolina
S&ME Project No. 1463-16-041**



Prepared for:
Georgetown County
129 Screven Street, Suite 239
Georgetown, South Carolina 29440

Prepared by:
S&ME, Inc.
1330 Highway 501 Business
Conway, South Carolina 29526

October 3, 2016



October 3, 2016

Georgetown County
129 Screven Street, Suite 239
Georgetown, South Carolina 29440

Attention: Nancy Silver

Reference: **Georgetown County Business Park Lots 3 & 10
Report of Preliminary Geotechnical Exploration**
Andrews, South Carolina
S&ME Project No. 1463-16-041

Dear Ms. Silver:

S&ME, Inc. has completed a preliminary subsurface exploration for the referenced project after receiving authorization to proceed from you on September 1, 2016. Our exploration was conducted in general accordance with our Proposal No. 14-1600639, dated August 30, 2016.

The purpose of this study was to preliminarily characterize the surface and subsurface soils on the proposed site, and to provide preliminary recommendations for site preparation, earthwork, building foundation types, seismic site response, and pavement section construction. It is our understanding that a final exploration will be performed once the actual building and pavement layouts have been determined.

This report presents the findings of our preliminary exploration, along with our geotechnical conclusions and recommendations. S&ME appreciates this opportunity to be of service to you. Please call if you have questions concerning this report or any of our services.

Sincerely,

S&ME, Inc.

Ronald P. Forest, Jr., P.E.
Senior Engineer/Project Manager
Registration No. SC 21248
rforest@smeinc.com



William D. Kannon, P.E.
Project Engineer
wkannon@smeinc.com





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❖ Executive Summary

For your convenience, this report is summarized in outline form below. This brief summary should not be used for design or construction purposes.

- ◆ **Important Limitation:** *This is a preliminary exploration.* The tests performed for this study are widely-spaced across the lots; since the site layout has not yet been determined, our tests may or may not fall within the actual building or pavement footprints. Therefore, *do not rely* upon the preliminary conclusions and recommendations presented in this report for design or construction purposes until the need for additional exploratory work has been assessed. Additional exploration may be required to confirm the preliminary conclusions presented in this report once the site layout plans are finalized.

1. **Surface Conditions:** Lot 3 is mostly cleared with some pine trees in the northwest portion of the lot. Lot 10 is thickly wooded with pines throughout.
 - A. Topsoil ranged from 2 to 12 inches in thickness, and averaged about 6 inches overall; rootmat may be thicker in swampy areas.
 - B. Previously-placed fill was encountered on Lot 3 near the existing contractor laydown yard. 6 inches of topsoil was observed *beneath* the fill layer, indicating that the site may not have been completely stripped before the fill was placed for the laydown yard. Because of this observation, we recommend that the previously placed fill material be pushed off to the side, the original topsoil removed, and then the stockpiled fill replaced in compacted lifts.
 - C. Standing water was observed on some portions of both lots; on Lot 3, the standing water was mostly present in the southern portion of the lot; on Lot 10, the standing water was mostly present in the northern portion of the lot. Both lots will need to be ditched prior to grading to help remove ponded water and shallow perched ground water. If any new stormwater management ponds are planned for the site, it may be advantageous to excavate these well in advance of site grading to allow time for drainage to take place.
2. **Subsurface Soils:** A layer of clayey sand fill (Stratum I-A) was encountered to depths of about 2 to 3 feet at test locations SCPT-1 and CPT-2 on Lot 3. Beneath the fill at these two test locations, and beneath the topsoil at all of the other test locations, a layer of clayey sand to sandy lean clay (Stratum I) was encountered to depths of about 4 to 6 feet. Beneath this upper clayey layer, a relatively thin (1 to 2 ft thick) layer of loose, sandy soil (Stratum II) was observed at each test location to depths of about 6 to 8 feet. Beneath Stratum II, each test sounding encountered interbedded silts, silty sands, and clays of soft to firm consistency to depths of about 20 to 27 feet. The thickest zones of soft clay were observed in the southern portion of Lot 3 and the northern portion of Lot 10. Below the silts and clays, each test sounding encountered medium dense to dense sandy soils with a few isolated, thin clay seams to the sounding termination depths of 30 to 35 feet.
3. **Subsurface Water:** In the previously backfilled areas located in the central and northern portions of Lot 3, subsurface water was encountered at depths of 2 ½ to 3 feet. In the southern portion of Lot 3, water was encountered at the surface. On Lot 10, water was encountered at depths of about 6 to 12 inches. These shallow and variable water level measurements are indicative of “perched groundwater” conditions, which often occur within clayey soils during periods of increased rainfall. Water levels may fluctuate seasonally at the site, being influenced by

rainfall variation and other factors. Site construction activities can also influence water elevations. Extensive ditching may be required as part of proper site preparation.

- 4. Liquefaction and Seismic Hazards:** Liquefaction risk ranges from slight to moderate, but is limited by the clayey characteristics of the majority of the soil profile. The greatest risks for liquefaction occur in the loose sands of Stratum II and the silty sand seams of Stratum III, but these layers are relatively thin; the deeper sands of Stratum IV are sufficiently dense that liquefaction risk in this layer is minimal. The greatest risk of liquefaction occurs in the northern portion of Lot 10, and the southern portion of Lot 3 where the sandy soils are loosest.
 - A.** To limit the risk of liquefaction on Lot 3, we recommend that the building be sited in the northern or central portions of the lot.
 - B.** To limit the risk of liquefaction on Lot 10, we recommend that the building be sited in the southern portion of the lot closest to the road.
 - C.** A final determination of the liquefaction risk should be performed once the buildings have been sited. Depending upon where the buildings are sited, there may be a slight to moderate risk of ground settlements during seismic shaking, on the order of 1 to 3 inches, or less. In our experience, most structural designs can tolerate this magnitude of settlement without suffering collapse or loss of life, and without resorting to specialized ground improvement techniques. Some post-earthquake loss of serviceability may occur.

- 5. Seismic Site Class:** The average shear wave velocity for Lot 3 is estimated to be 729 feet per second (fps), and for Lot 10 is estimated to be 663 fps. Based on these average shear wave velocities, and under the assumption that the fundamental period of vibration of the structures is less than 0.5 seconds and assuming that the relatively minor amounts of seismic-related settlement can be tolerated without suffering structural collapse, then *Seismic Site Class D* parameters appear to be appropriate for design of these new facilities. The following seismic design parameters apply to both lots: $S_{D5} = 0.72g$, $S_{D1} = 0.38g$, and Peak Ground Acceleration (PGA_M) = 0.60g. For structures having a seismic use group classification of I, II, III, or IV, the S_{D5} and S_{D1} values obtained are consistent with *Seismic Design Category D* as defined in section 1613.5 of the IBC, 2015 edition.

- 6. Shallow Foundations:** Shallow foundations appear feasible for support of a typical light industrial shell building with either metal walls or concrete panel walls. Soil-supported slabs on grade also appear feasible provided that any soft, near-surface soils are stabilized with proper compactive effort, removal and replacement of unsuitable soft clays or silts, and control of shallow perched ground water.
 - A.** For structures supported near the surface, the predicted soil settlements under static loading will vary depending upon where the buildings are sited on each lot. The thickest zones of soft silt and clay, which contribute most of the static settlement potential, were observed at test locations CPT-4 in the southern portion of Lot 3, and at CPT-8 in the northern portion of Lot 10. Therefore, we recommend siting the Lot 3 building in the central or northern portion of the lot, and we recommend siting the Lot 10 building in the southern portion of the lot closest to the road.
 - B.** An allowable bearing capacity of 2,000 psf is available for design of isolated shallow spread footings.

- C. Static settlements may exceed 1 inch total or ½ inch differential for heavily loaded columns or slabs, but are not expected to exceed these tolerances for typical light industrial frames.
 - D. If you wish to improve the site so that the use of heavily loaded slabs would be available to the future tenant(s), then you should consider “surcharging” the site with a temporary fill embankment to induce settlements to occur prior to building construction. The higher the surcharge mound and the longer it is left in place, the greater the consolidation that will be induced, and the greater the load you could later place on the floor slab without causing significant new settlement. Deep foundations such as driven piles may also be considered; deep foundations would likely be significantly more expensive than surcharging, but may not require as much time to construct.
 - E. Without surcharging, we recommend that floor slab area loads be limited to no greater than 50 pounds per square foot (psf) on Lot 3, and no greater than 100 psf on Lot 10 in order to limit the static settlement magnitudes to 1 inch or less. These recommendations assume that buildings are not sited on northern portion of Lot 10 nor the southern portion of Lot 3, where settlements could exceed 1 inch at similar load magnitudes.
 - F. Careful evaluation of the bearing conditions within the open footing excavations will be important during construction due to the possibility of encountering soft clayey soils in the footing bottoms.
 - G. In order to provide suitable bearing conditions in some portions of the building foundations, undercutting and replacement of the upper few feet of these bearing soils with gravel may be necessary.
7. **Pavements:** Considering the CBR values that our laboratory tests indicate are available in the near-surface clayey sands, the subgrade support conditions at this site are expected to be fair. Some surface stabilization of the native on-site soils is expected to be needed in order to achieve a stable subgrade. Drainage of shallow perched water is also going to be required. Due to the shallow perched water table, we strongly recommend that the civil designer consider including gravel-filled, fabric-wrapped underdrains as part of the pavement design to help permanently control perched water buildup beneath the pavements. Design pavement section thicknesses should be determined once a tenant has been identified and their traffic loads are known. We recommend using a resilient modulus (M_R) of 11,150 psi for flexible pavement section thickness design, and we recommend using an equivalent plate load modulus of subgrade reaction (k) of 175 psi/in for rigid (concrete) pavement and grade slab design.

1.0 Introduction

The purpose of this exploration was to obtain subsurface information to allow us to preliminarily characterize the subsurface conditions at the site and to develop recommendations concerning site earthwork, foundation design, seismic site response, pavement section construction and other related construction issues. This report describes our understanding of the project, presents the results of the field exploration, and discusses our preliminary conclusions and recommendations.

The tests that we performed for this study are widely-spaced across the lots; since the site layout has not yet been determined, our tests may or may not fall within the actual building or pavement footprints. Therefore, please do not rely upon the preliminary conclusions and recommendations presented in this report for design or construction purposes until the need for additional exploratory work has been assessed. Additional exploration may be required to confirm the preliminary conclusions presented in this report once the site layout plans are finalized.

The scope of our geotechnical services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials.

A site plan showing the approximate exploration locations is included in Appendix I. The field test logs, discussion of the exploration procedures, and legends of soil classification and symbols are included in Appendix II. Laboratory test results are included in Appendix III.

2.0 Project and Site Description

2.1 Project Description

Project information was provided via email correspondence between Kyle Prufer (Georgetown County) and Ron Forest (S&ME) on August 26, 2016, and during a telephone conversation between Brian Tucker (Georgetown County) and Chuck Oates (S&ME) on August 16, 2016. We were also provided the following documents:

- ◆ Georgetown County Request for Proposal, Bid Number 16-059, dated August 5, 2016.
- ◆ Geotechnical Report of Lots 10 and 11, by Soil Consultants, Inc., dated April 23, 2007.

The site is located within the existing Georgetown County Business Center on Technology Drive in Andrews, South Carolina. A Site Vicinity Map is included in Appendix I as Figure 1.

We understand that a new 60,000 square foot expandable industrial shell building is planned to be constructed on Lot 3, which is 4.76 acres in size. This lot was previously cleared, but has since grown up with pine saplings and brush of up to about 5 feet in height.

Lot 10, which is 7.29 acres in size, is currently wooded with closely spaced mature pine trees. We understand that Lot 10 is planned to be cleared and rough graded, but that no structure is planned for construction on this lot at this time.

A site layout design has not been completed for either lot, but the County requested that we perform a preliminary geotechnical exploration of both lots in order to provide the design-build team with data indicating the likely geotechnical conditions, with the understanding that once the site layout is finalized, some additional exploratory work may need to be performed to complete any data gaps relative to the final site layout.

2.2 Design Assumptions

Structural load information was not available. Based upon our previous experience with similar industrial shell building projects, we anticipate that the structure may consist of pre-cast concrete (tilt-up) panel walls, or metal walls, supported on a structural steel frame, with a metal roof. Using this assumption, we anticipate that maximum column loads of up to 150 kips and maximum wall loads of up to 8 kips per foot may result. Once the final design parameters are known, these assumptions can be modified in a future geotechnical report.

Topographic survey data was not available at the time of this report. It was assumed for the purposes of this report that the buildings will be constructed near existing grade elevations, with 2 feet or less of new fill required to reach proposed subgrade elevation for the building pads.

It is assumed that pavements will not be constructed until a tenant has been identified; therefore, while we have not provided specific pavement section thicknesses as part of this report, we have characterized the pavement support characteristics of the surface soils and have provided that test data for future use.

3.0 Exploration Procedures

3.1 Field Exploration

On the dates of September 12 through 22, 2016, representatives of S&ME, Inc. visited the site. Using the information provided, we performed the following primary tasks:

- ◆ We performed a site walkover, observing general features of ground cover and surface materials at the project site.
- ◆ We established two seismic cone penetration test (SCPT) locations, one on each lot. SCPT-1 is located on Lot 3, and SCPT-7 is located on Lot 10.
- ◆ We established six additional cone penetration test (CPT) locations, which included four locations on Lot 3, and two locations on Lot 10. A test location sketch is attached in Appendix I as Figure 2.
- ◆ We advanced eight SCPT/CPT soundings to depths ranging from 30 to 35 feet. *Note:* each test sounding was originally proposed to terminate at a depth of 30 feet, but at the discretion of the supervising engineer, SCPT-7 was extended to a depth of 35 feet due to the presence of a soft clay seam at the originally assigned termination depth of 30 feet.
- ◆ At each SCPT/CPT sounding location, we also advanced a hand-auger boring without penetration testing to a depth of about 4 feet, to observe the near-surface soils, and we collected two bulk samples, one from each lot.
- ◆ The subsurface water level at each boring location was measured at the time of drilling, and then the borings were backfilled with soil cuttings.

A brief description of the field tests performed during the exploration are attached in Appendix II.

3.2 Laboratory Testing

After the recovered soil samples were brought to our laboratory, a geotechnical professional examined and/or tested each sample to estimate its distribution of grain sizes, plasticity, organic content, moisture condition, color, presence of lenses and seams, and apparent geologic origin in general accordance with ASTM D 2488, "*Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*". The resulting classifications are presented on the logs included in Appendix II. Similar soils were grouped into representative strata on the logs. The strata contact lines represent approximate boundaries between soil types. The actual transitions between soil types in the field are likely more gradual in both the vertical and horizontal directions than those which are indicated on the logs.

We performed the following quantitative ASTM-standardized laboratory tests on selected samples, to help classify the soils and formulate our conclusions and recommendations:

- ◆ Two bulk samples tested in general accordance with ASTM D 2216, "*Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*", to measure the in situ moisture content of the soil.
- ◆ Two bulk samples tested in general accordance with ASTM D 1140, "*Standard Test Methods for Amount of Material in Soils Finer than No. 200 (75- μ m) Sieve*", to measure the percent clay and silt fraction.
- ◆ Two bulk samples tested in general accordance with ASTM D 4318, "*Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils*", to measure the plasticity of the soil.
- ◆ Two bulk samples tested in general accordance with ASTM D 1557, "*Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 lbf/ft³)*", to measure the moisture-density relationship of the soil.
- ◆ One specimen from each bulk sample was re-compacted and tested in general accordance with ASTM D 1883, "*Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils*", to evaluate soil support characteristics for pavements.

The laboratory test results and procedures for the above listed tests are attached to this report in Appendix III.

4.0 Site and Surface Conditions

This section of the report describes the general site and surface conditions observed at the time of our exploration.

4.1 Topography

We observed that the proposed construction area appears to vary in elevation by several feet, with the higher ground generally being located in the central and northern portions of Lot 3. Ground surface elevations were not directly surveyed for the purposes of this report, and no site specific topographic plan was made available to us; therefore, the soil boring logs do not indicate a ground surface elevation. It was beyond the scope of our exploration to survey ground surface elevations at our test locations.

4.2 Existing Structures & Ground Cover

We observed no existing structures on the proposed building sites; however, the central portion of Lot 3 is currently being used as a laydown yard, and contained a significant amount of steel building framing and other staged construction materials.

Ground cover in the laydown yard was bare earth. Ground cover in most of the remainder of Lot 3 consisted of weeds, shrubs, and small trees about 5 feet tall. In the northwestern corner of Lot 3, closely-spaced mature pines were present. Lot 10 was covered throughout with closely-spaced mature pines of medium height and diameter.

Except at the laydown yard where the surface was disturbed bare earth, topsoil ranged from 2 to 12 inches thick at the test locations and averaged about 6 inches overall. Please note that topsoil and rootmat may be thicker in the more heavily wooded or swampy areas of the site.

5.0 Subsurface Conditions

The generalized subsurface conditions encountered at the site are described below. For more detailed descriptions and stratifications at a test location, the logs in Appendix II should be reviewed.

5.1 Regional Geology

The site lies within the Coastal Terraces Region of the Lower Coastal Plain of South Carolina. The topography of this region is dominated by a series of archaic beach terraces, exposed by uplifting of the local area over the last one million years. The lower coastal plain terraces are relatively young Quaternary features, exhibit only minor surface erosion, and can be traced large distances on the basis of surface elevation. Each terrace forms a thin veneer over older, consolidated marine shelf or terrestrial Coastal Plain residual soils that are Cretaceous to Tertiary in age.

Materials comprising the terraces typically consist of a strand or beach ridge deposit of clean sands at the seaward margin. Between the strand and the toe of the next inland terrace are mainly finely interlayered clays and sands termed backbarrier deposits. In most areas, the terrace deposits are sufficiently old for a fully developed residual soil profile to have formed from the parent material, but old swamp deposits, stumps, and buried trees have in some areas been covered by the terraces and are usually not evident at the surface.

A review of local geologic mapping indicates that surface soils penetrated in our borings represent a part of the Socastee Formation, consisting of recent marine deposits laid down approximately 200,000 years ago. Beneath the upper formation, soils are mapped as sands and silts of the Black Mingo Formation. These are Paleocene-age (early Tertiary) materials that were laid down approximately 55 to 65 million years ago. The Black Mingo formation was not penetrated by the test soundings performed as part of this particular exploration.

5.2 Interpreted Subsurface Profiles

Two subsurface cross-sectional profiles of the site soils are attached in Appendix I as Figures 3 and 4. Figure 3 shows the interpreted soil profile of Lot 3, and Figure 4 shows the interpreted soil profile of Lot

10. The cross-section orientations in plan view are shown on Figure 2. The strata indicated in the profiles are characterized in the following sections of this report. Note that the profiles are not to scale; they are vertically exaggerated to better depict the soil stratigraphy. The subsurface profiles were prepared for illustrative purposes only; subsurface stratifications may be more gradual than indicated, and conditions may vary between test locations.

Soils encountered by each of the test soundings presented on the profiles were grouped into four general strata and one substratum based on estimated physical properties derived from subsurface data and the recovered soil samples. The strata encountered are labeled I through IV on the soil profiles to allow their properties to be systematically described.

5.3 Description of Subsurface Soils

This section summarizes the soil conditions observed at our test locations. Soil conditions may vary between test locations. The depths and cone penetration resistance data for each stratum is briefly described in the table below, and is further described in the following subsections.

Table 5-1: Generalized Subsurface Data

Stratum (Name)	Depth Range (ft)		Typical Relative Density/ Consistency and Soil Description	CPT Tip Stress Range (tsf)	Typical CPT Tip Stress (tsf)	Remarks
	Top	Bottom				
I-A (Fill)	0	2 to 3	Very Loose to Loose, Clayey Sand (SC)	10 to 40	20	Only observed in HA-1 & HA-2
I (Upper Clayey Soils)	0.5*	4 to 6	Firm to Stiff, Sandy Lean Clay (CL)	10 to 30	10	*Starts at 2 to 3 ft. depth in HA-1 & HA-2
II (Upper Sands)	4 to 6	6 to 8	Loose to Medium Dense, Sand (SP) or Silty Sand (SM)	40 to 60	40	This layer is only about 1 to 3 feet thick
III (Interbedded Silt & Clays)	6 to 8	20 to 27	Soft to Firm, Sandy Silts (ML), Sandy Clays (CL/CH), and sand mixes	5 to 80	10	Occasional thin sand lenses
IV (Lower Sands)	20 to 27	30 to 35	Medium dense to very dense, Sands (SP) and sand mixes	20 to 400	200	Occasional silt/clay seams

5.3.1 Stratum I-A: Previously-placed Fill

At test locations HA-1 and HA-2, fill soils consisting primarily of clayey sand (USCS Classification "SC") were encountered to depths of about 2 to 3 feet. These soils were generally moist to wet, and were brown in color. CPT tip resistance ranged from about 10 tsf to 40 tsf, indicating very loose to loose relative density. In the hand auger boring advanced at test location HA-1, a layer of topsoil about 6 inches thick was observed beneath the fill material.

One bulk sample was collected from the previously-placed fill material and tested in the laboratory. The tested material exhibited a natural moisture content of 13.4 percent, a silt/clay fines content passing the No. 200 sieve of 21.6 percent by weight, a liquid limit of 22 percent, a plastic limit of 12 percent, and a plasticity index of 10 percent. Modified Proctor testing indicated a maximum dry density of 108.8 pounds per cubic foot at an optimum moisture content of 10.4 percent. A California Bearing Ratio (CBR) test performed upon a remolded sample at about 95 percent compaction indicated an available CBR value of 13 percent.

5.3.2 *Stratum I: Upper Clayey Soils*

Underlying Stratum I-A at test locations SCPT-1/HA-1 and CPT-2/HA-2, and underlying the topsoil at the other test locations, a layer of moist to wet, cohesive soils consisting primarily of sandy lean clays (CL) was encountered to depths of about 4 to 6 feet. Each of the hand auger borings were terminated within this stratum at a depth of 4 feet. These soils exhibited CPT sleeve friction ranging from about 0.5 to 2 tsf and typically measuring around 1 tsf. The CPT tip resistance in these soils ranged from about 10 tsf to about 30 tsf. This is consistent with firm to stiff cohesive soils.

The soils penetrated by our hand auger borings were typically moist, and were brown-gray mottled in color. One bulk sample was collected from this material and tested in the laboratory. The tested material exhibited a natural moisture content of 18.8 percent, a silt/clay fines content passing the No. 200 sieve of 36.9 percent by weight, a liquid limit of 44 percent, a plastic limit of 21 percent, and a plasticity index of 23 percent. Modified Proctor testing indicated a maximum dry density of 111.2 pounds per cubic foot at an optimum moisture content of 11.2 percent. A California Bearing Ratio (CBR) test performed upon a remolded sample at about 95 percent compaction indicated an available CBR value of 34 percent.

5.3.1 *Stratum II: Upper Sands*

Underlying Stratum I, a layer of saturated sands was encountered by the CPT to depths of about 6 to 8 feet. These soils exhibited CPT tip resistance ranging from about 40 tsf to 60 tsf, which is consistent with loose to medium dense sandy soils. No physical samples were recovered from this stratum. This stratum ranged from about 1 to 3 feet thick and averaged about 2 feet thick.

5.3.2 *Stratum III: Soft to Firm Interbedded Silts, Clays, and Silty Sands*

Underlying Stratum II, beginning at depths of 6 to 8 feet and continuing to depths of about 20 to 27 feet, each of the test soundings encountered a stratum of interbedded silts, clays, and cohesive sand mixes. CPT sleeve friction in this stratum ranged from about 0.1 tsf to 1.0 tsf, and averaged less than 0.5 tsf. CPT tip resistance ranged from about 5 to 15 tsf in the silty and clayey zones, increasing to as high as 80 tsf in some of the thin sandy seams that were observed within this stratum. Typical tip resistance was around 10 tsf, indicating soft to firm consistency soils. No physical samples were recovered from this stratum. The thickness of this stratum ranged from as little as 11 to 12 feet at test locations SCPT-1, CPT-2 and CPT-3, to as much as 18 to 20 feet at test locations CPT-4 and CPT-8.

5.3.3 *Stratum IV: Lower Dense Sands*

Underlying Stratum III, beginning at depths of 20 to 27 feet and continuing to our exploration termination depths of 30 to 35 feet, a layer of dense sands was encountered. These soils exhibited CPT tip resistances

ranging from about 20 tsf to 400 tsf. The lower readings were obtained in some thin clayey seams that were observed within this stratum. Test sounding SCPT-7 was extended an additional 5 feet because a clay seam was observed between depths of 29 to 32 feet. In the sandy zones of this stratum, tip resistances were typically around 200 tsf or greater, indicating dense to very dense conditions. All of the cone soundings were terminated within this stratum.

5.4 Summary of Laboratory Test Results

We performed laboratory testing on two bulk grab samples to assess the engineering index properties of the subsurface soils. The laboratory soil index test results are presented in Appendix III and are summarized in the following two tables.

Table 5-2: Soil Index Test Results

Lot No. / Sample I.D.	Sample Depth (ft.)	Natural Moisture Content (%)	Silt/Clay Fines Content (%)	Atterberg Plasticity Limits (%)			USCS Soil Class.
				LL	PL	PI	
Lot 3 / "Bulk 1"	1	13.4	21.6	22	12	10	SC
Lot 10 / "Bulk 2"	1	18.8	36.9	44	21	23	SC

*NP = Non-plastic

Table 5-3: Moisture-Density and CBR Test Results

Lot No./ Sample I.D.	ASTM D 1557 Maximum Dry Density (MDD) (pcf)	ASTM D 1557 Optimum Moisture Content (%)	ASTM D 1883 California Bearing Ratio (CBR) at 95% MDD Compaction
Lot 3 / "Bulk 1"	108.8	10.4	13
Lot 10 / "Bulk 2"	111.2	11.2	34

5.5 Subsurface Water

In the previously backfilled areas located in the central and northern portions of Lot 3, subsurface water was encountered in the hand auger borings at depths of 2 ½ to 3 feet. In the southern portion of Lot 3, water was encountered at the surface. On Lot 10, water was encountered in the hand auger borings at depths of about 6 to 12 inches. The stabilized ground water level measured in the CPT soundings ranged from 3 ½ to 7 feet below the ground surface. These water level measurements are indicative of perched water conditions, which often occur within clayey soils during periods of increased rainfall. Water is slow to percolate into the clayey soils below the fill zone, and builds up on top of the clay.

Water levels may fluctuate seasonally at this site, being influenced by rainfall variation and other factors. Site construction activities can also influence water elevations.

6.0 Building Code Seismic Provisions

Seismic induced ground shaking at the foundation is the effect taken into account by building code seismic-resistant design provisions. Other effects, such as soil liquefaction, are not addressed explicitly in building codes but must also be considered.

6.1 Seismic Site Class

As of July 1, 2016, the 2015 edition of the International Building Code (IBC) has been adopted for use in South Carolina. We classified the site as one of the Site Classes listed in IBC Section 1613.3, using the procedures described in Chapter 20 of ASCE 7-10.

6.1.1 *Evaluation of the Potential for Site Class F Conditions*

The initial step in site class definition is a check for the four conditions described for Site Class F, which would require a site-specific evaluation to determine site coefficients F_A and F_V . Soils vulnerable to potential failure under item 1) including quick and highly sensitive clays or collapsible weakly cemented soils were not observed in the soundings. Three other conditions, 2) peats and highly organic clays; 3) very high plasticity clays ($H > 25$ feet); and 4) very thick soft/medium stiff clays were also not evident in the soundings performed.

One other determining characteristic, liquefaction potential under seismic conditions, was assessed. Soils were assessed qualitatively for liquefaction susceptibility based on their age, stratum, mode of deposition, degree of cementation, and size composition. This assessment considered observed liquefaction behavior in various soils in areas of previous seismic activity.

Our analysis, which is more fully described in Section 6.3 below, indicates that some liquefaction of the subsoils appears likely to occur at this site in the event of the design magnitude earthquake. Soundings indicated that the loose sands of Stratum II and the loose zones of cohesive sands within Stratum III lie beneath the water table, appear to contain relatively few clayey fines, and exhibit relatively low density characteristics. We therefore consider the soil conditions within this site to be Site Class F, due to the liquefaction potential at the site.

The IBC requires a site-specific evaluation for Site Class F, but it allows an exception for structures having fundamental periods of vibration equal to or less than 0.5 seconds, which includes most short, stiff structures. We expect that the structure proposed for this site would meet this criterion for this exception. For these stiff structures, which include most buildings below 4 to 5 stories tall, site-specific evaluations are not required to determine spectral accelerations for sites with liquefiable soils. Rather, the site class may be determined in accordance with the soil profile, assuming no liquefaction, and the corresponding values of F_A and F_V may be determined from the tables contained in the code provisions, as long as the risks of liquefaction are considered in design. Under these criteria, site response factors F_A and F_V that correspond to Site Class D would be applicable for this site to determine spectral acceleration values for design. This recommendation is provided based on the recorded shear wave velocity measurements.

6.1.2 Average Shear Wave Velocity

We have determined that site response factors F_A and F_V corresponding to Site Class D would be applicable to determine spectral values for design for both Lot 3 and Lot 10. This recommendation is provided based on the average weighted shear wave velocities measured to a depth of 30 feet and extrapolated to a depth of 100 feet.

The average shear wave velocity for Lot 3 is estimated to be 729 feet per second (fps), and for Lot 10 is estimated to be 663 fps. Both of these values are greater than the 600 fps that is required for Site Class D design parameters. See figures 4 and 5 in Appendix II for the shear wave velocity profiles used in this analysis.

6.2 Seismic Design Category and Design Spectral Values

We recommend that the project be designed using the ground motion parameters given in the following table. For a summary of the procedures used to develop these parameters, please see the Summary of Exploration Procedures attached in Appendix II.

Table 6-1: Seismic Design Coefficients

Criteria	Site Class	S_s	S_1	S_{DS}	S_{D1}	PGA_M	Seismic Design Category
2015 IBC	D	0.96	0.32	0.72	0.38	0.60	D

For a structure having a Risk Category classification of I, II, III, or IV, the S_{DS} and S_{D1} values obtained are consistent with "Seismic Design Category D" as defined in section 1613.3.5 of the IBC.

6.3 Liquefaction Potential

Liquefaction of saturated, loose, cohesionless soils occurs when they are subjected to earthquake loading that causes the pore pressures to increase and the effective overburden stresses to decrease, to the point where large soil deformation or even transformation from a solid to a liquid state results.

To help evaluate the consequences of liquefaction, we have computed the Liquefaction Potential Index (LPI), which is an empirical tool used to evaluate the potential for liquefaction to cause damage. The LPI considers the factor of safety against liquefaction, the depth to the liquefiable soils, and the thickness of the liquefiable soils to compute an index that ranges from 0 to 100. An LPI of 0 means there is no risk of liquefaction; an LPI of 100 means the entire profile is expected to liquefy. The level of risk is generally defined below.

- ◆ **LPI < 5** – surface manifestation and liquefaction-induced damage not expected.
- ◆ **5 ≤ LPI ≤ 15** – moderate liquefaction with some surface manifestation possible.
- ◆ **LPI > 15** – severe liquefaction and foundation damage is likely.

The risk of subsurface liquefaction varies across these lots, and ranges from slight to moderate. The table below provides the LPI value at each test location, along with the estimated magnitude of earthquake-related settlement that could be expected at each test locations.

Table 6-2: Liquefaction Potential Index (LPI) and Estimated Settlements

Lot No.	Test Location	LPI Value	Subsoil Liquefaction Risk	Estimated Earthquake-related Settlement (inches)
3	SCPT-1	7	Moderate	1 ¼
	CPT-2	2	Slight	< 1
	CPT-3	3	Slight	< 1
	CPT-4	4	Slight	< 1
	CPT-5	9	Moderate	1 ½
	Average	5	Slight	1 inch
10	CPT-6	13	Moderate	2 ¾
	SCPT-7	6	Moderate	1 ¼
	CPT-8	15	Moderate	3
	Average	11	Moderate	2 ½ inches

Based upon these results, it is our opinion that the risk of liquefaction on Lot 3 is “slight”, particularly if the building is sited in the central to northern portions of the lot. Volumetric compression on the order of 1 inch could occur at the ground surface during an earthquake for a structure founded on this lot.

There is a “moderate” risk of liquefaction on Lot 10. Volumetric compression on the order of 1 to 3 inches of settlement could occur at the ground surface during an earthquake for a structure founded on this lot.

In our experience, most structural designs can tolerate these magnitudes of settlement without suffering collapse or loss of life, and without resorting to specialized ground improvement techniques, although some post-earthquake loss of serviceability could occur. A final determination of the liquefaction risk should be performed once the buildings have been sited.

7.0 Conclusions and Recommendations

The conclusions and recommendations included in this section are based on the project information outlined previously and the data obtained during our exploration. If conditions are encountered during construction that differ from those encountered by the soil borings, then S&ME, Inc. should be retained to review the following recommendations based upon the new information and make any necessary changes.

7.1 Seismic Considerations

The 2015 IBC requires that the design account for the effects of liquefaction in order to prevent structural collapse and the potential for loss of life, but does not require prevention of the loss of building

serviceability. Loss of serviceability would include the economic loss due to cracking and distress of the floor slabs, sheetrock walls and other interior finishes, possible distress or cracking of exterior facia, windows, and distress to conduits, service lines, and building contents, all requiring partial or complete replacement after an earthquake.

The structural engineer should consider the anticipated earthquake-induced settlements during foundation design to evaluate the potential for loss of serviceability of the structure without below-ground mitigation of the soil liquefaction potential. If the design can prevent structural collapse, the owner may choose to accept the level of risk associated with any loss of serviceability that would occur in the event of the code-level earthquake.

Designers and owners on similar projects in this area have typically accepted some risk of earthquake-related differential settlement and loss of serviceability, while strengthening structural connections in the building frame to prevent collapse under the resultant angular distortions. In our experience, the magnitudes of settlement predicted herein have typically been found acceptable from a life safety standard; however, if it is determined that the structural design cannot accommodate the potential combined static and dynamic settlements without collapse or loss of life, or if the project owner does not wish to accept the risk of losing serviceability of the structure post-earthquake, then other alternatives for support of the structure may need to be considered.

7.2 Options for Ground Improvement to Increase Available Load Capacity

Due to the soft silts and clays of Stratum III, both Lot 3 and Lot 10 are susceptible to excessive consolidation settlements if subjected to heavy loads.

- ◆ In order to minimize the static settlement potential on Lot 3, we recommend that the building be located in the central to northern portions of the lot, and that the southern portion of the lot be avoided to the extent possible.
- ◆ In order to minimize the static settlement potential on Lot 10, we recommend that the building be located in the southern portion of the lot, nearest the road, and that the northern portion of the lot be avoided to the extent possible.

Even with these precautions and strategic siting of the buildings on each lot, the native soils are estimated to reach 1 inch of total settlement if a floor slab area load of greater than about 50 to 100 psf is applied. This floor load should be sufficient for many light industrial applications, but may be limiting to heavier industrial or manufacturing usage, or heavy warehousing and storage facilities. To make these lots available for these heavier usages, we would recommend improving the ground with a "surcharging" program to induce some settlements to occur prior to building construction.

7.2.1 Surcharging

Ground modification by surcharging includes the application of a temporary fill embankment within the building footprint and within a narrow zone surrounding the building footprint to preload the bearing soils, thereby causing consolidation of the underlying soft clays and reducing the future settlements of the building to acceptable levels.

This method would involve placement of heaped fill above the final design soil subgrade elevations and allowing adequate time for the surcharge load to consolidate the underlying soils. The surcharge embankment height can be adjusted based upon the future building load that the site needs to accommodate. The minimum surcharge embankment height would likely need to be about 7 or 8 feet, due to the thickness of the soft clay layer, but could be increased to 10 feet, or more, if a heavily loaded building or slab is desired to be constructed on the site.

By surcharging the surface prior to constructing footings, a significant portion of the settlements can be induced during a planned time frame prior to initiation of building construction, such that remaining post-construction settlements are within tolerable limits.

The rate and magnitude of settlement should be monitored with at least six settlement plates installed within the fill embankment. Plates must be installed prior to placement of the first lift of structural fill and protected from any movement during construction. Fill soils should be carefully placed and compacted in areas above and immediately surrounding the settlement plates, and fill soils should not be dumped in the immediate areas of the settlement plates. Settlement plate locations should be barricaded after completion of filling to prevent the plates from being disturbed.

Surcharge soils should be constructed to their full height for a minimum of 10 feet laterally beyond the limits of proposed building footprint, and sloped down from that point at about an 1 to 1 height to lateral ratio (1H:1V). The surcharge material does not necessarily need to consist of select fill soils. Clays borrowed from on-site may be used, if desired; however, it will be necessary to measure the moist unit weight of the material being placed to confirm that it meets the assumed weight value used in the surcharge calculations. If the unit weight of the material is lighter than assumed, the surcharge embankment height may need to be increased to compensate.

It is possible that some portion of settlements under the weight of the fill will have already occurred by the time subgrade elevation is reached or during surcharge placement above subgrade elevation. Upon completion of the surcharge embankment, the site should be allowed to consolidate until the settlement data, as interpreted by the Geotechnical Engineer, indicates that settlements have achieved the desired minimum required magnitude.

Accurate surveying of the elevation of the plates should begin immediately after their installation and continue weekly, with results reported in a timely manner to the Geotechnical Engineer.

Please note that the actual time required for the surcharge is highly dependent upon the subsurface drainage pathways provided by subsurface sand seams; where these seams are vertically close to each other the soils will compress more rapidly than where the sand seams are more widely spaced with depth. However, based on past experience with similar projects, and these subsurface conditions, we recommend the project schedule allow a waiting period of at least 60 days and up to 90 days.

While the time of surcharging of 60 to 90 days is presented for planning purposes, the actual time to remove the surcharge load should be a decision made by the geotechnical engineer based on surveyed settlement data and should be anticipated to vary from the duration estimate given above.

Following removal of surcharge materials, building loads can then be supported on approved shallow footings and soil-supported slabs-on-grade. The contractor should be required to re-compact exposed subgrade soils after surcharge embankment removal, possibly in conjunction with moisture conditioning, until field density testing indicates that the specified degree of compaction is achieved.

7.2.2 *Deep Foundation Alternative*

As an alternative to surcharging, deep driven pile or drilled pier foundations could be used to support the building frame and floor slabs to increase the available load carrying capacity of the building. However, we anticipate that this alternative would be significantly more expensive than surcharging with a temporary fill embankment. The primary reason that a deep foundation alternative may be preferable is to reduce the construction time, since the surcharging option may add up to 90 days to the total construction schedule. We have not provided detailed deep foundation recommendations in this report. If this option is desired to be explored further, it should be considered during the next phase of geotechnical exploration once the site layout has been completed.

7.3 **Site Preparation**

The following recommendations are provided regarding site preparation and earthwork:

1. Because perched water was observed near the ground surface at some of the test locations, the site will likely need to be ditched to facilitate initial earthwork and building construction. Drainage by ditching should be implemented and maintained prior to and during construction to lower the shallow water table level and divert water away from the construction area. Surface and subsurface water conditions that occur during construction will determine the need for and extent of the drainage measures.
2. Strip surface vegetation and topsoil, where encountered, and dispose of outside the building and pavement area footprints.
3. Near the existing laydown yard on Lot 3, a layer of topsoil was observed in the borings beneath the fill. Therefore, the previously-placed fill should be removed and temporarily stockpiled to the side, then the original topsoil should be stripped. The contractor may wish to excavate some test pits on the site to determine the lateral extent and quantity of the area that needs to be treated in this manner. This could also be done during a future phase of geotechnical exploration.
4. After the stripping operation is complete and site drainage has been established, the stripped surface in areas to receive fill should be proofrolled under the observation of the geotechnical engineer (S&ME) by making repeated passes with a loaded dump truck or similar equipment.
 - A. The proofrolling should be conducted only during dry weather and after drainage has been allowed time to function.
 - B. Areas of rutting or pumping soils indicated by the proofroll may require selective undercutting or further stabilization prior to fill placement or slab or pavement construction, as determined by the Geotechnical Engineer.
5. Where soft, clayey or silty soils are exposed by the stripping operation, they should also be proofrolled, but not until they have first been stabilized. Stabilization may take the form of removal and replacement, plowing and drying, or other means as determined by the geotechnical engineer. Because of the soft, cohesive characteristics of the upper native soils at this site,

significant stabilization of the surface should be expected to be required. Implementing good drainage prior to mass grading in order to control as much of the near-surface perched water as possible will be key to facilitating a successful start to the earthwork.

7.4 Fill Placement and Compaction Recommendations

Prior to construction of any temporary surcharge embankments, the permanent fill needed to raise the building pads to the design subgrade elevation should be placed. Where new permanent fill soils are to be placed, the following recommendations apply:

- 1.** Prior to fill placement, sample and test each proposed fill material to determine suitability for use, maximum dry density, optimum moisture content, and natural moisture content.
 - A.** It is recommended that the fill soils used to build up the pad for the structure and pavements meet the following minimum requirements: plasticity index of 6 percent or less; clay/silt fines content of not greater than 15 percent. Typically this would include USCS soil classifications SW, SP, SW-SC, SW-SM, SP-SC, and SP-SM.
 - B.** Due to the silty and clayey characteristics of the native on-site soils, we recommend that plans be made to import any new structural fill soils from an approved off site borrow source.
- 2.** Where structural fill soil is required, it should be compacted throughout to at least 95 percent of the modified Proctor maximum dry density (ASTM D 1557).
 - A.** Compacted soils should not exhibit pumping or rutting under equipment traffic.
 - B.** Loose lifts of fill should be no more than 10 inches thick prior to compaction.
 - C.** Structural fill should extend at least 5 feet from the edge of structures and pavements before either sloping or being allowed to exhibit a lower level of compaction.
 - D.** Fill placement should be observed by an experienced S&ME soils technician working under the guidance of the Geotechnical Engineer.
 - E.** At least one field density test should be performed for every 5,000 square feet for each lift of soil placed in building areas, and at least one field density test should be performed for every 10,000 square feet for each lift of soil placed in pavement areas, with a minimum of 2 tests per lift. At least one field density test should be conducted per each 150 linear feet of fill placed in confined areas such as isolated undercuts and in trenches, with a minimum of 1 test per lift.
- 3.** Where present, the subsurface water level should be maintained at least 2 feet below any surface to be densified prior to beginning compaction. This is to reduce the risk of the compaction operations drawing water up to the surface and deteriorating it.
- 4.** Following the construction of the permanent fill embankment, the surface should be proofrolled at final soil subgrade elevation under the observation of the Geotechnical Engineer (S&ME). If any areas of instability are observed during the proofroll, further stabilization should be performed, as determined by the Geotechnical Engineer.
- 5.** It is not uncommon for some rework and recompaction of the building pad to be required after removal of temporary surcharge embankments, due to the amount of water that is generated by the soil consolidation process. If a surcharge embankment is implemented, the contractor should plan on reworking the building pad surface after removal of the temporary embankment.

7.5 Shallow Foundation Construction

The soil profile encountered within the building area appears generally suitable to support the anticipated loads on shallow foundations, considering static loading conditions, following the surcharging program described above. Depending upon the depth of embedment of the foundations relative to the original ground surface elevation, some shallow soil improvement immediately beneath the footings may be required.

1. We recommend an allowable bearing capacity of 2,000 psf for design of isolated shallow spread footings. Based upon the assumed maximum structural loadings of 150 kips for the maximum column load and 8 kips per linear foot for the maximum wall load, and limiting the floor slab area load to 50 psf on Lot 3 and 100 psf on Lot 10, the post-construction static settlements are estimated to be less than 1 inch total and ½ inch differential.
2. It should be anticipated that where footings bear directly on fill, the previously placed fill soils exposed in the bottom of the footings may need to be tamped to increase their density prior to the placement of foundation concrete.
3. Where footings extend into the native clayey soils, it may become necessary to over-excavate the bearing soils several feet and replace them with gravel fill. This should be a decision made at the time of construction in consultation with the Geotechnical Engineer.
4. It will be necessary to have the Geotechnical Engineer's representative observe each cleaned footing excavation prior to concrete placement to observe that the required level of soil compaction and bearing capacity is present at the foundation bearing surface. Also, have the representative observe any undercut areas in footings prior to backfilling, in order to observe that poor soils have been removed and that the exposed subgrade appears suitable for support of footings or backfill.
5. Lateral capacity of foundations includes a soil lateral pressure and coefficient of friction as described in IBC Section 1806. Unless the site is built up with sandy fill, foundations will likely be embedded in sandy lean clay, material similar to those described as Class 5 as described in Table 1806.2. Where footings are cast neat against the sides of excavations in natural soils, an allowable lateral bearing pressure of 100 psf per foot depth below natural grade may be used in computations. An allowable cohesion of 130 pounds per square foot, multiplied by the contact area (as limited by IBC Section 1806.3.2), may be used for computation of lateral sliding resistance.
6. Even if smaller dimensions are theoretically allowable from a bearing pressure consideration, the minimum individual spread footing widths should be at least 30 inches, and minimum wall footing width should be 16 inches, to avoid punching shear. Spread footings should be embedded to a minimum depth of 12 inches, or the depth specified on the drawings, whichever is greater.

7.6 Soil-Supported Grade Slabs

The following recommendations are given for the support and construction of soil-supported grade slabs on these lots. Please note that in order to prevent excessive settlements (of greater than 1 inch), slab area loading should be limited to the values previously discussed in this report. To increase the allowable load on the slab, either pre-consolidation by surcharging or deep foundation support may be required.

1. Soils similar to those penetrated by the borings should provide adequate support to proposed soil-supported grade slabs, assuming preparation and compaction of the subgrade as recommended. A modulus of subgrade reaction (k) of 175 lbs/in³ may be used for reinforcing design.
2. Structural design should incorporate installation of a vapor barrier prior to placing concrete for grade slab systems, to limit moisture-infiltration into finished spaces, where appropriate.
3. Below the floor slab place a layer of at least 4 inches of compacted granular materials to provide a capillary break between the subgrade and the floor slab in finished spaces.
 - A. Granular materials used may consist of clean sandy soils meeting USCS Classification SP or SW and having a silt-clay fines content of 5 percent or less by weight, or, granular materials may consist of a crushed, well-graded gravel blend such as SCDOT Graded Aggregate Base Course (GABC), or an open-graded, manufactured washed gravel such as SCDOT No. 57 or No. 67 stone.
 - B. If sand or washed gravel is used as the underslab layer, then the contractor should plan on using a pump truck to place the floor slab concrete since these materials are cohesionless and are difficult to drive vehicles on.
 - C. If GABC is used, then either a pump truck or direct discharge from concrete batch trucks may be appropriate depending upon the circumstances.
 - D. If sand or GABC is used, this underslab layer should be compacted to at least 95 percent of the modified Proctor maximum dry density (ASTM D 1557).
4. Have the Geotechnical Engineer observe a proofroll of all slab subgrades prior to concrete placement. Softened soils may need to be undercut or stabilized before concrete placement.

7.7 Lateral Earth Pressures

The equivalent fluid pressures given below may be used to design below grade earth-retaining structures, such as loading dock walls. The values given in the following table assume that the walls are excavated into soils generally classified as sand (SP), silty sand (SM), or clayey sand (SC) according to the Unified Soil Classification System.

- ◆ **Important Note:** If the below grade structures extend into the native sandy lean clays (CL), these earth pressure coefficients may not apply to those soils.

Table 7-1: Lateral Earth Pressure Coefficients

Support Condition	Angle of Internal Friction (ϕ')	Moist Unit Weight (γ)	DRAINED CONDITION	
			Static Earth Pressure Coefficient (K)	Dynamic Earth Pressure Coefficient PGA=0.60g (K)
Active (K_a)	32°	120 pcf	0.31	0.56
At-Rest (K_o)	32°	120 pcf	0.47	0.84
Passive (K_p)	32°	120 pcf	3.3	2.6

- ◆ The above values represent a fully-drained soil condition at or near the optimum moisture content. Where backfill soils are not fully drained, the lateral soil pressure must consider hydrostatic forces below the water level, and submerged soil unit weight.
- ◆ A coefficient of sliding friction ($\tan \delta$) of 0.4 may be used in computation of the lateral sliding resistance.
- ◆ Lateral earth pressure coefficients may vary if compacted backfill is used around the pile caps.
- ◆ These earth pressure coefficients assume cohesionless soils. The actual soils may have a small amount of cohesion, which is ignored for the purposes of this recommendation.

If the walls are over-excavated and formed, and then backfill is placed and compacted behind the walls in accordance with the compaction recommendations given in the next section of this report, then the earth pressures may vary from those given in the above table. If this is the case, please contact us for additional information.

7.8 Pavement Recommendations

We understand that site pavements will consist of both flexible pavements using Hot-Mixed Asphalt (HMA), and rigid pavements consisting of Portland cement concrete.

Considering the CBR values that our laboratory tests indicate are available in the near-surface clayey sands, the subgrade support conditions at this site are expected to be fair. Some surface stabilization of the native on-site soils is expected to be needed in order to achieve a stable subgrade. Drainage of shallow perched water is also going to be required. Due to the shallow perched water table, we strongly recommend that the civil designer consider including gravel-filled, fabric-wrapped underdrains as part of the pavement design to help permanently control perched water buildup beneath the pavements.

Design pavement section thicknesses should be determined once a tenant has been identified and their traffic loads are known. We recommend using a resilient modulus (MR) of 11,150 psi for flexible pavement section thickness design, and we recommend using an equivalent plate load modulus of subgrade reaction (k) of 175 psi/in for rigid (concrete) pavement and grade slab design.

Flexible pavement design should assume an initial serviceability index of 4.2 and a terminal serviceability index of 2.0, and a reliability factor of at least 85 percent. ESALs per axle should be estimated using data provided in AASHTO literature. Assuming that only SCDOT approved source materials will be used in flexible pavement section construction, a structural layer coefficient of 0.44 may be assumed for the HMA layers and a coefficient of 0.18 may be assumed for the graded aggregate base course (GABC) layer.

Rigid pavement design should assume an initial serviceability index of 4.5 and a terminal serviceability index of 2.5, and a reliability factor of at least 90 percent. Assuming that appropriately designed load transfer devices (dowels) will be used at all of the joints in the heavy-duty rigid pavement, we recommend an average load transfer coefficient of 3.2. We also recommend a minimum 28-day design compressive strength of at least 4,000 psi for the PCC.

7.8.1 General Recommendations for Pavement Areas

1. At least one laboratory California Bearing Ratio (CBR) test should be performed upon a representative soil sample of each soil type which is planned to be used as pavement subgrade material. This is to establish the relationship between relative compaction and CBR for the soil in

question, and to confirm that the obtained CBR value at the required level of compaction is equal to or greater than the CBR value utilized during design of the pavement section.

2. All fill placed in pavement areas should be compacted as recommended under Section 7.4 "Fill Placement and Compaction". Prior to placement of graded aggregate base course stone, all exposed pavement subgrades should be methodically proofrolled under the observation of the Geotechnical Engineer (S&ME), and any identified unstable areas should be repaired as directed.
3. In order to provide permanent stabilization for pavements, underdrain systems are recommended to be designed for the pavement area subgrades (parking lots and roadways), due to the presence of some shallow perched groundwater observed at the time of our exploration.
 - A. The site civil engineer should be consulted regarding the type and location of the underdrains. Our experience is that two types of underdrain systems are commonly used in this locality, depending upon the traffic application and the preferences of the civil engineer. One commonly used system is a gravel-filled, fabric-wrapped trench containing an embedded perforated plastic HDPE pipe. Another type of system that we see used is an edge drain product such as AdvantEdge by ADS, Inc. This is a fabric-wrapped, perforated HDPE slot style drain. Some engineers have used a combination of these two systems. Typically, the underdrains are tied into the storm water system to maintain positive gravity flow.
 - B. Do not fill landscaped islands in the parking lot with clayey or silty (impermeable) spoils that may impede the movement of water into the underdrains.

7.8.2 *Base Course and Pavement Section Construction*

The following recommendations are provided for base course and pavement section construction:

1. Prior to placement of base course stone, all exposed pavement subgrades should be methodically proofrolled by the contractor under the observation of the Geotechnical Engineer (S&ME), and any identified unstable areas should be repaired. Pavement subgrades should not exhibit rutting or pumping under the proofroll load. Rutting or pumping areas shall be undercut and replaced and/or stabilized as directed by the engineer.
2. Crushed stone aggregate base material used in pavement section construction should consist of graded aggregate base course (GABC) as defined by Section 305 of the South Carolina Department of Transportation Standard Specifications for Highway Construction (2007). The base course should be compacted to at least 100 percent of the modified Proctor maximum dry density (SC-T-140).
3. Heavy compaction equipment is likely to be required in order to achieve the required base course compaction, and the moisture content of the material will likely need to be maintained near optimum moisture content in order to facilitate proper compaction.
4. After placement of base course stone, the surface should be methodically proofrolled at final base grade elevation by the contractor under the observation of the Geotechnical Engineer (S&ME), and any identified unstable areas should be repaired. The base course material should not exhibit pumping or rutting under equipment traffic. Rutting or pumping areas shall be undercut and replaced and/or stabilized as directed by the engineer.
5. Construct the surface and intermediate course HMA in accordance with the specifications of Sections 401, 402, and 403 of the South Carolina Department of Transportation Standard Specifications for Highway Construction (2007 edition).

6. Sufficient testing should be performed during flexible pavement installation to confirm that the required thickness, density, and quality requirements of the pavement specifications are followed.
7. Experience indicates that a thin surface overlay of asphalt pavement may be required in about 7 to 10 years due to normal wear and weathering of the surface. Such wear is typically visible in several forms of pavement distress, such as aggregate exposure and polishing, aggregate stripping, asphalt bleeding, and various types of cracking. There are means to methodically estimate the remaining pavement life based on a systematic statistical evaluation of pavement distress density and mode of failure. We recommend the pavement be evaluated in about 7 years to assess the pavement condition and remaining life.
8. For rigid pavements, we recommend air-entrained ASTM C 94 joint reinforced Portland cement concrete that will achieve a minimum compressive strength of at least 4,000 psi at 28 days after placement, as determined by ASTM C 39. We also recommend that the pavement concrete be constructed in a manner which at least meets the minimum standards recommended by the American Concrete Institute (ACI).
9. We recommend that at least 1 set of 5 cylinder specimens be cast by S&ME per every 50 cubic yards of concrete placed or at least once per placement event in order to measure achievement of the design compressive strength. We also recommend that S&ME be present on site to observe concrete placement.

8.0 Limitations of Report

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations in this report are based on the applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

The analyses and recommendations submitted herein are based, in part, upon the data obtained from the subsurface exploration. The nature and extent of variations of the soils at the site to those encountered at our boring and sounding locations may not become evident until construction. If variations appear evident, then we should be provided a reasonable opportunity to re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions modified or verified in writing by the submitting engineers.

Assessment of site environmental conditions; sampling of soils, ground water or other materials for environmental contaminants; identification of jurisdictional wetlands, rare or endangered species, geological hazards or potential air quality and noise impacts were beyond the scope of this geotechnical exploration.

Appendices

Appendix I – Maps & Figures

Figure 1: Site Vicinity Map

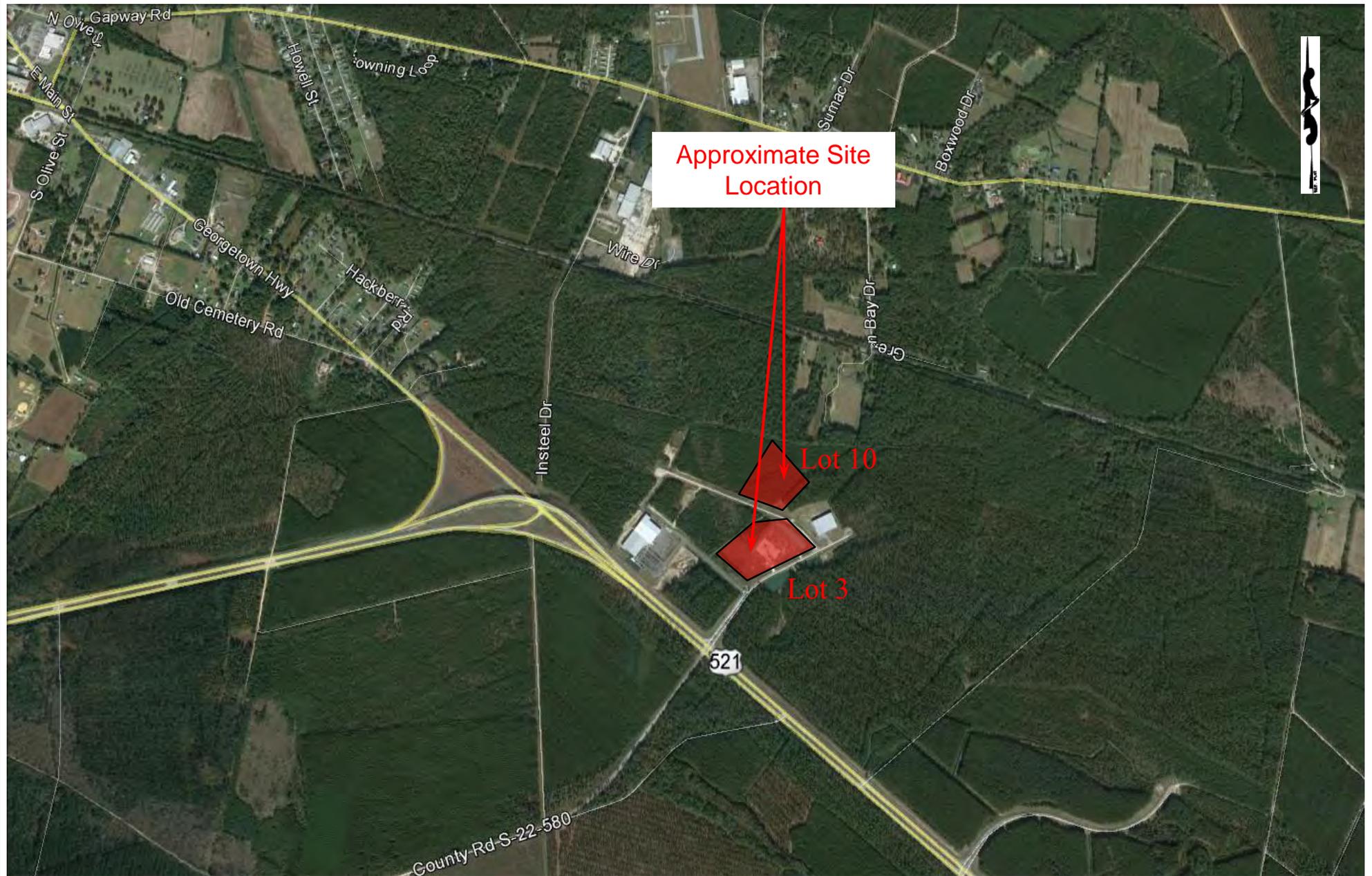
Figure 2: Test Location Sketch

Figure 3: Interpreted Subsurface Soil Profile A – A' (Lot 3)

Figure 4: Interpreted Subsurface Soil Profile B – B' (Lot 10)

Figure 5: Shear Wave Velocity Calculations – Lot 3

Figure 6: Shear Wave Velocity Calculations – Lot 10



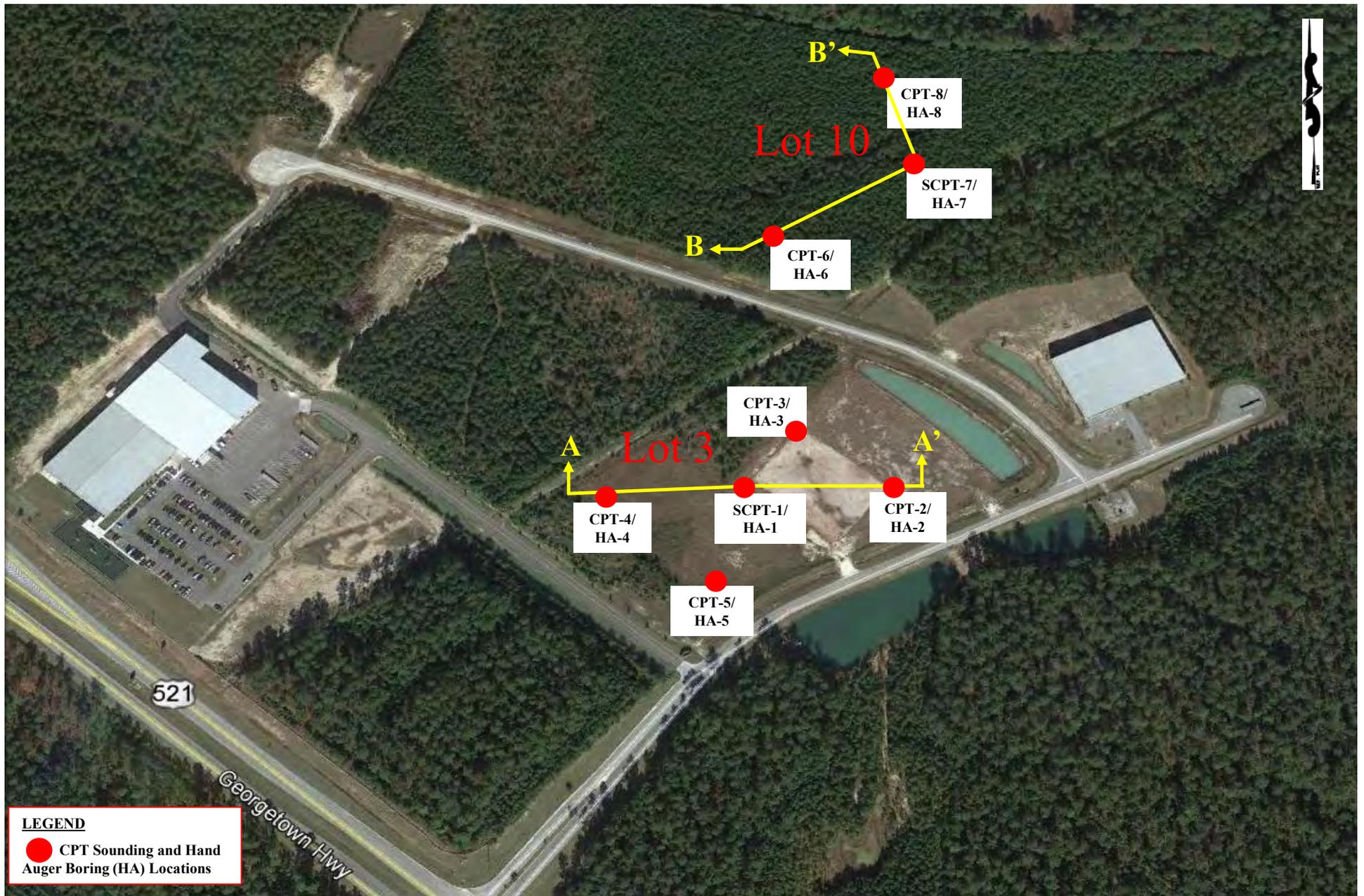
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DATE:	September, 2016
DRAWN BY:	RFO #16-087 CDJ

Georgetown County, SC JOB NO.

SITE VICINITY PLAN
GC Business Center Lots 3 & 10
Andrews, South Carolina

1463-16-041

FIGURE NO	1
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LEGEND

● CPT Sounding and Hand Auger Boring (HA) Locations

SCALE:	Not To Scale
SOURCE:	Google Earth
DATE:	September, 2016
DRAWN BY:	RFQ #16-087 CDJ



Georgetown County, SC JOB NO.

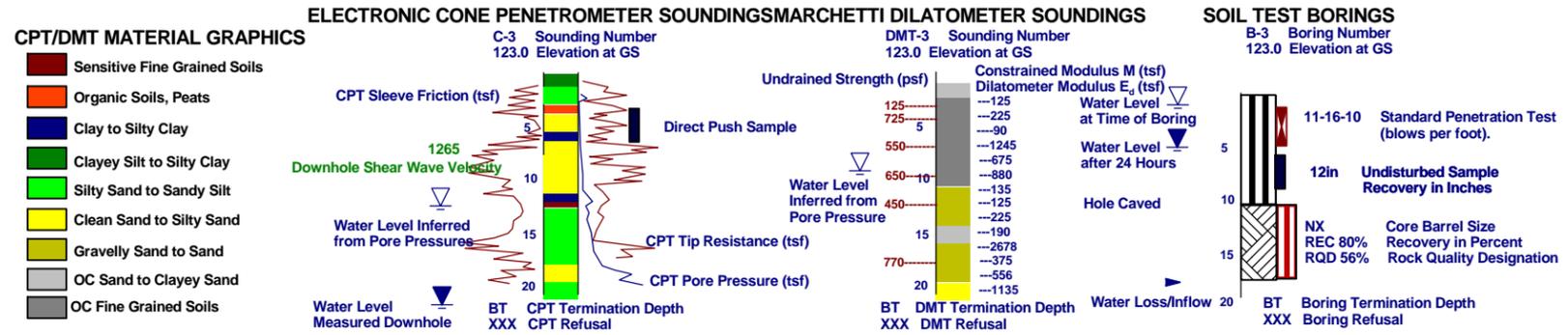
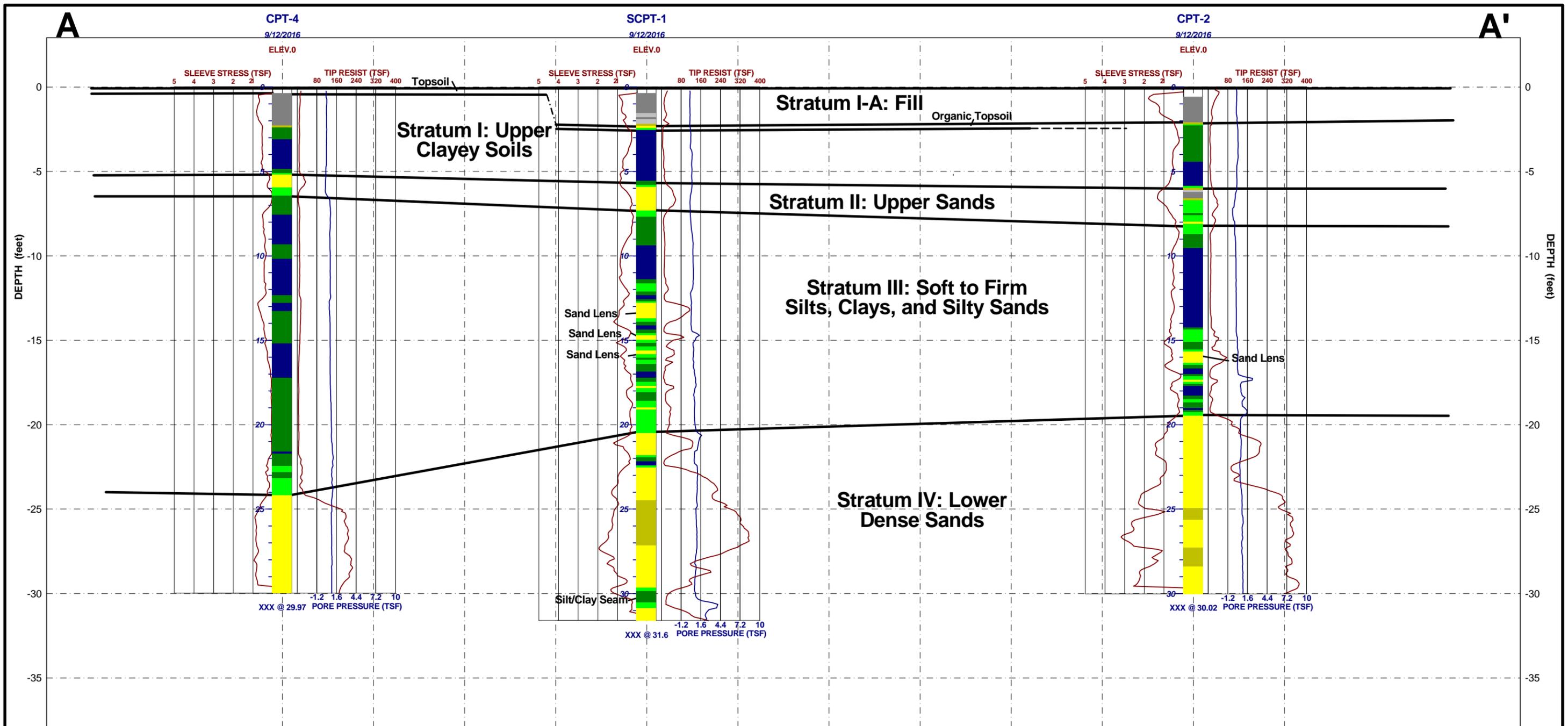
Test Location Sketch
GC Business Center Lots 3 & 10
Andrews, South Carolina

1463-16-041

FIGURE NO

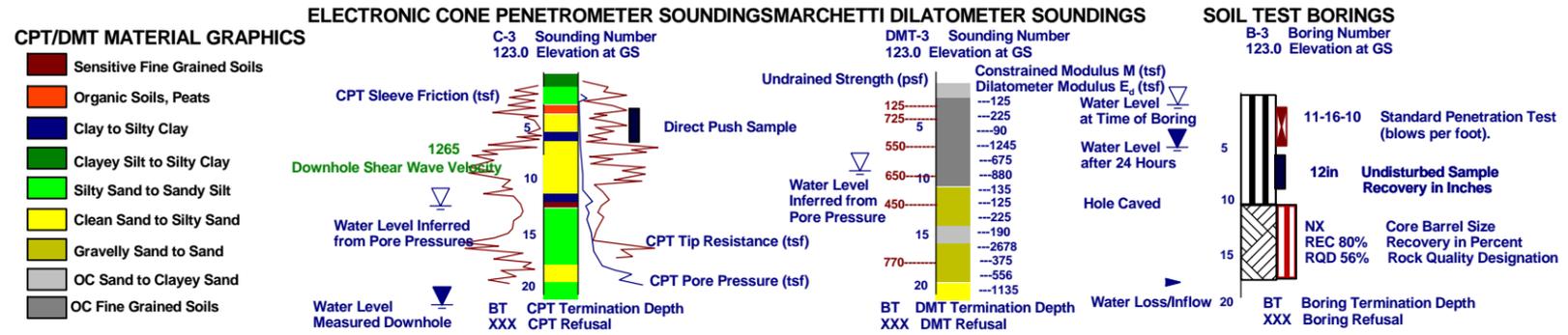
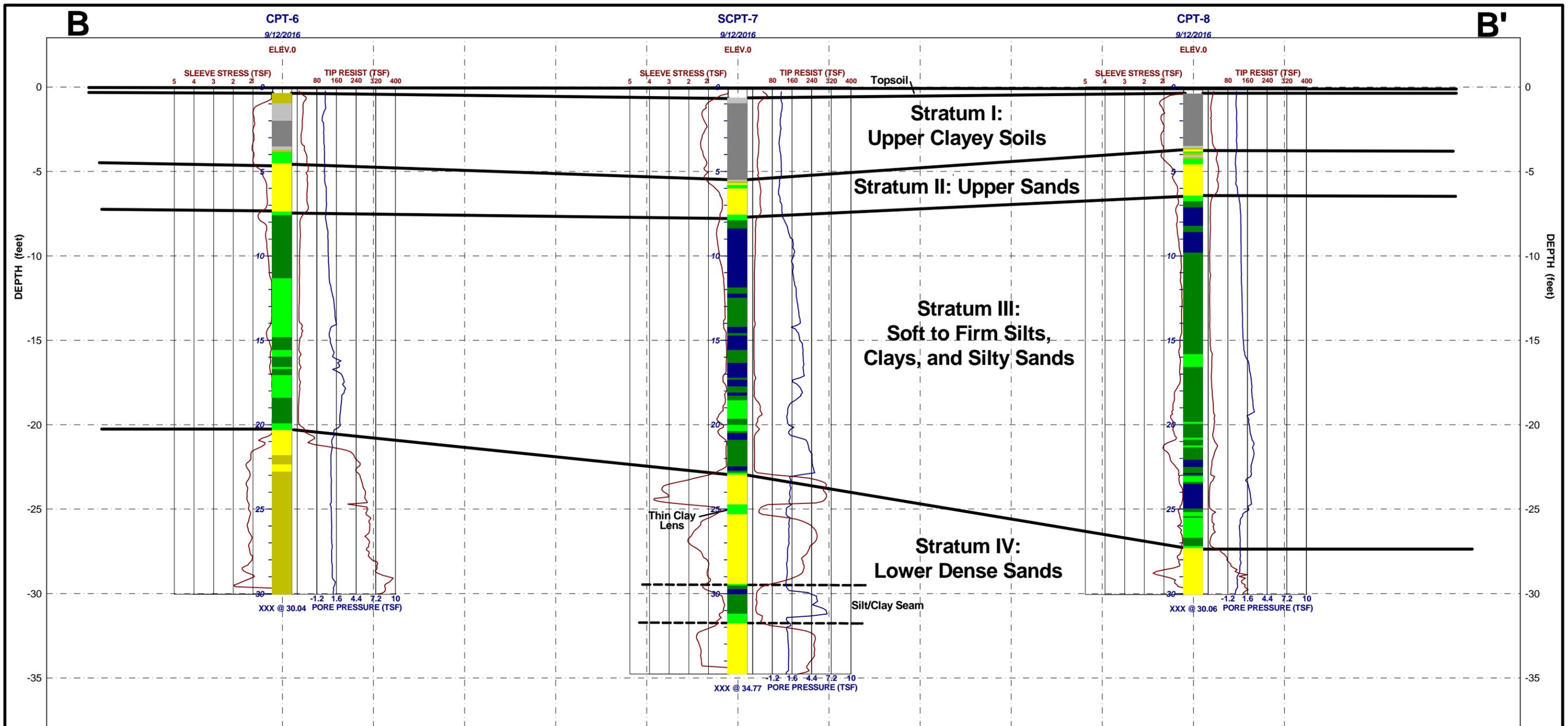
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The depicted stratigraphy is shown for illustrative purposes only and is not warranted. Separations between different strata may be gradual and likely vary considerably from those shown. Profiles between nearby borings have been estimated using reasonable engineering care and judgment. The actual subsurface conditions will vary between boring locations.

SUBSURFACE PROFILE		JOB NO: 1463-16-041	
PROJECT: Georgetown Co. Business Park Lots 3 & 10		DATE: 9/27/16	
LOCATION: Andrews, South Carolina			
FIGURE: #3			



The depicted stratigraphy is shown for illustrative purposes only and is not warranted. Separations between different strata may be gradual and likely vary considerably from those shown. Profiles between nearby borings have been estimated using reasonable engineering care and judgment. The actual subsurface conditions will vary between boring locations.

SUBSURFACE PROFILE		
PROJECT: Georgetown Co. Business Park Lots 3 & 10	JOB NO: 1463-16-041	
LOCATION: Andrews, South Carolina	DATE: 9/27/16	
FIGURE: #4		

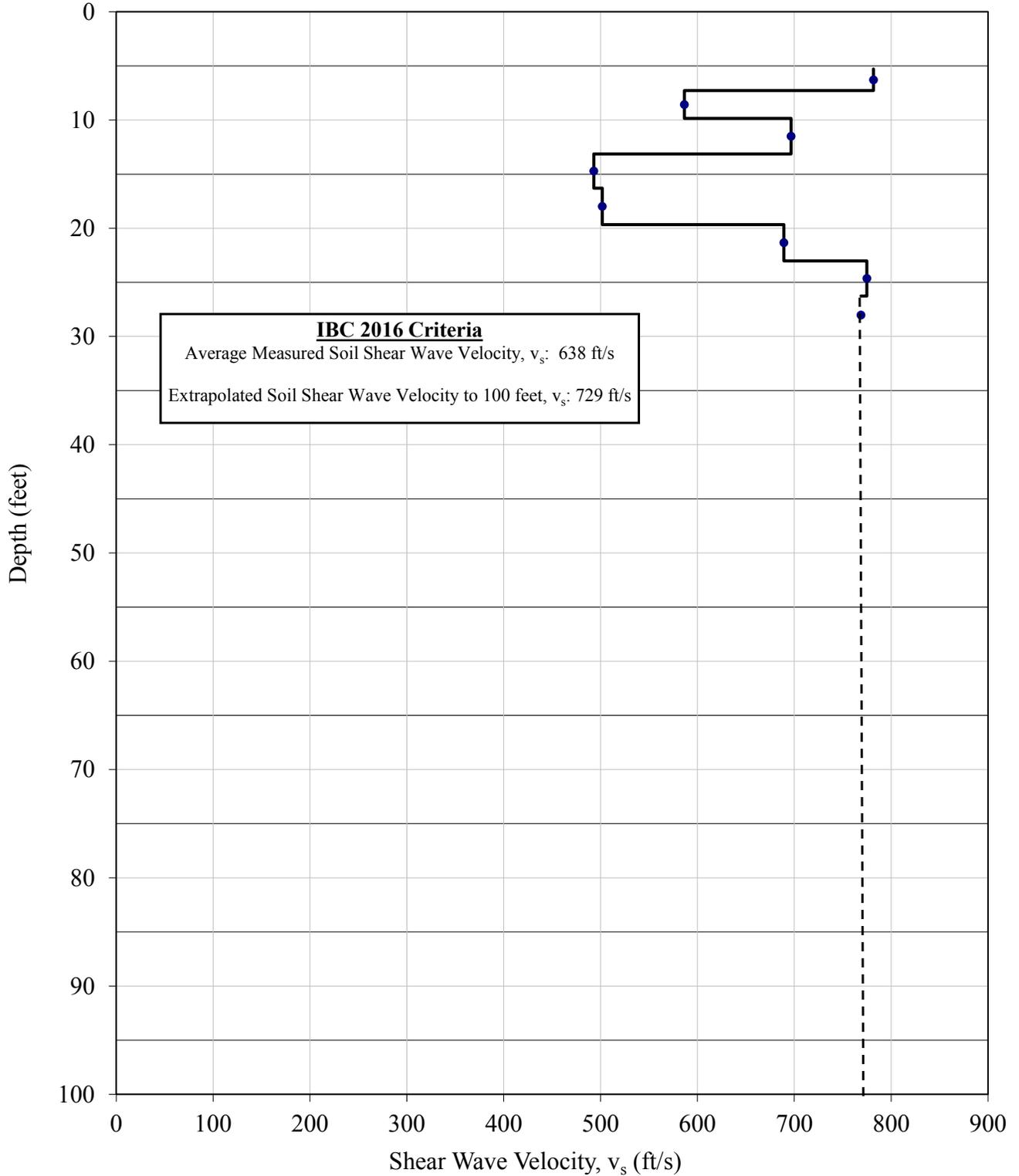


Figure 5: Shear Wave Velocity Calculations

Georgetown Business Park Lot 3
Andrews, SC

Sounding ID: **SCPT-1**
Date: 09/12/16

Project Number: **1463-16-041**



* Site Class based on 2016 International Building Code - Table 1613.5.2 - SITE CLASS DEFINITIONS

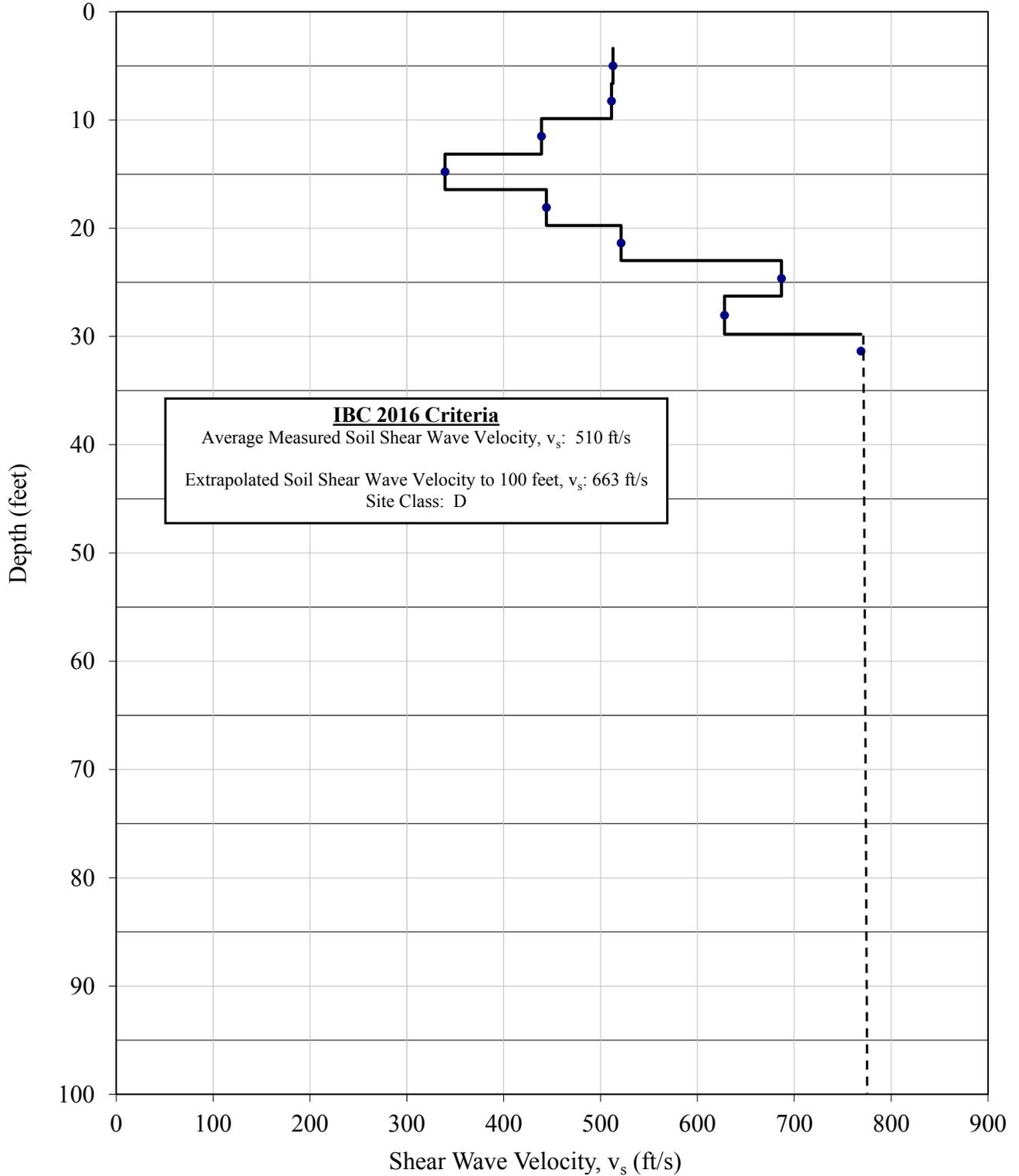


Figure 6: Shear Wave Velocity Calculations

Georgetown Business Park Lot 10
Andrews, SC

Sounding ID: SCPT-7
Date: 09/12/16

Project Number: 1463-16-041



* Site Class based on 2016 International Building Code - Table 1613.5.2 - SITE CLASS DEFINITIONS

Appendix II – Field Exploration

Summary of Exploration Procedures

CPT Soil Classification Legend

SCPT/CPT Sounding Logs

Soil Classification Chart

Hand Auger Boring Logs

❖ Summary of Exploration Procedures

The American Society for Testing and Materials (ASTM) publishes standard methods to explore soil, rock and ground water conditions in Practice D-420-98, "*Standard Guide to Site Characterization for Engineering Design and Construction Purposes.*" The boring and sampling plan must consider the geologic or topographic setting. It must consider the proposed construction. It must also allow for the background, training, and experience of the geotechnical engineer. While the scope and extent of the exploration may vary with the objectives of the client, each exploration includes the following key tasks:

- ◆ Reconnaissance of the Project Area
- ◆ Preparation of Exploration Plan
- ◆ Layout and Access to Field Sampling Locations
- ◆ Field Sampling and Testing of Earth Materials
- ◆ Laboratory Evaluation of Recovered Field Samples
- ◆ Evaluation of Subsurface Conditions

The standard methods do not apply to all conditions or to every site. Nor do they replace education and experience, which together make up engineering judgment. Finally, ASTM D 420 does not apply to environmental investigations.

❖ Reconnaissance of the Project Area

We walked over the site to note land use, topography, ground cover, and surface drainage. We observed general access to proposed sampling points and noted any existing structures.

Checks for Hazardous Conditions - State law requires that we notify South Carolina 811 (SC 811) before we drill or excavate at any site. SC 811 is operated by the major water, sewer, electrical, telephone, CATV, and natural gas suppliers of South Carolina. PUPS forwarded our location request to the participating utilities. Location crews then marked buried lines with colored flags within 72 hours. They did not mark utility lines beyond junction boxes or meters. We checked proposed sampling points for conflicts with marked utilities, overhead power lines, tree limbs, or man-made structures during the site walkover.

❖ Boring and Sampling

Electronic Cone Penetrometer (CPT) Soundings

CPT soundings consist of a conical pointed penetrometer which is hydraulically pushed into the soil at a slow, measured rate. Procedures for measurement of the tip resistance and side friction resistance to push generally follow those described by ASTM D-5778, "*Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils.*"

A penetrometer with a conical tip having a 60 degree apex angle and a cone base area of 10 cm² was advanced into the soil at a constant rate of 20 mm/s. The force on the conical point required to penetrate the soil was measured electronically every 50 mm penetration to obtain the *cone resistance* q_c . A friction sleeve is present on the penetrometer immediately behind the cone tip. The force exerted on the sleeve was measured electronically at a minimum of every 50 mm

penetration and divided by the surface area of the sleeve to obtain the *friction sleeve resistance value* f_s . A pore pressure element mounted immediately behind the cone tip was used to measure the pore pressure induced during advancement of the cone into the soil.

Shear Wave Velocity Tests

Shear wave velocity measurements were performed using a cone penetrometer equipped with geophones, or a seismic cone penetrometer (SCPT). The seismic cone penetrometer measures the travel times of surface generated vibrations to geophones mounted on the penetrometer at various incremental depths in the sounding. At a given depth, the travel time of the first arrival is measured and corrected for the horizontal offset of the source at the surface from the sounding. Interval velocities are calculated by dividing the difference in travel times by the vertical distance between successive measurement depths. Measurements were made at 1 meter intervals – the length of commonly available CPT extension rods – unless otherwise noted.

Refusal to CPT Push

Refusal to the cone penetrometer equipment occurred when the reaction weight of the CPT rig was exceeded by the thrust required to push the conical tip further into the ground. At that point the rig tended to lift off the ground. Refusal may have resulted from encountering hard cemented or indurated soils, soft weathered rock, coarse gravel, cobbles or boulders, thin rock seams, or the upper surface of sound continuous rock. Where fills are present, refusal to the CPT rig may also have resulted from encountering buried debris, building materials, or objects.

CPT Soil Stratification

Using ASTM D-5778 soil samples are not obtained. Soil classification was made on the basis of comparison of the tip resistance, sleeve resistance and pore pressure values to values measured at other locations in known soil types, using experience with similar soils and exercising engineering judgment.

Plots of normalized tip resistance versus friction ratio and normalized tip resistance versus penetration pore pressure were used to determine soil classification (Soil Behavior Type, SBT) as a function of depth using empirical charts developed by P.K. Robertson (1990). The friction ratio soil classification is determined from the chart in the appendix using the normalized corrected tip stress and the normalized corrected tip stress and the normalized friction ratio.

At some depths, the CPT data fell outside of the range of the classification chart. When this occurred, no data was plotted and a break was shown in the classification profile. This occasionally occurred at the top of a penetration as the effective vertical stress is very small and commonly produced normalized tip resistances greater than 1000.

To provide a simplified soil stratigraphy for general interpretation and for comparison to standard boring logs, a statistical layering and classification system was applied the field classification values. Layer thicknesses were determined based on the variability of the soil classification profile, based upon changes in the standard deviation of the SBT classification number with depth. The average SBT number was determined for each successive 6-inch layer, beginning at the surface. Whenever an additional 6-inch increment deviated from the previous increment, a new layer was started, otherwise, this material was added to the layer above and the next 6-inch

section evaluated. The soil behavior type for the layer was determined by the mean value for the complete layer.

Hand Auger Borings

Auger borings were advanced using hand operated augers. The soils encountered were identified in the field by cuttings brought to the surface. Representative samples of the cuttings were placed in glass jars or plastic bags and later transported to the laboratory. Soil consistency was qualitatively estimated by the relative difficulty of advancing the augers. In some of the hand auger borings, at selected intervals, the augers were withdrawn and soil consistency measured with a dynamic cone penetrometer. The conical point of the penetrometer was first seated 1-3/4 inches to penetrate any loose cuttings in the boring, then driven two additional 1-3/4 inch increments by a 15 pound hammer falling 20 inches. The number of hammer blows required to achieve this penetration was recorded. When properly evaluated by qualified professional staff, the blow count is an index to the soil strength and ability to support foundations.

Water Level Measurement

Subsurface water levels in the hand auger boreholes were obtained during the exploration by measuring depths from the existing grade to the current water level using a tape measure. Water levels in the CPT soundings was interpreted from pore pressure measurements made in the test soundings.

Backfilling of Borings & Soundings

Once subsurface water levels were obtained, boring spoils were backfilled into the open bore holes that were advanced with a hand auger. Bore holes were backfilled to the existing ground surface. The CPT sounding holes were not backfilled; these holes are only 2 inches in diameter.

Determination of Seismic Spectral Acceleration Coefficients

Selection of the base shear values for structural design for earthquake loading is the responsibility of the structural engineer. However, for the purpose of evaluating seismic hazards at this site, S&ME has evaluated the spectral response parameters for the site using the general procedures outlined under the 2015 International Building Code Section 1613.3. This approach utilizes a mapped acceleration response spectrum reflecting a targeted risk of structural collapse equal to 1 percent in 50 years to determine the spectral response acceleration at the top of seismic bedrock for any period. The 2015 IBC seismic provisions of Section 1613 use the 2008 Seismic Hazard Maps published by the National Earthquake Hazard Reduction Program (NEHRP) to define the base rock motion spectra.

The Site Class is used in conjunction with mapped spectral accelerations S_5 and S_1 to determine Site Amplification Coefficients F_A and F_V from tables 11.4-1 and 11.4-2 in section 11.4.7 of ASCE 7-10. For purposes of computation, the Code includes probabilistic mapped acceleration parameters at periods of 0.2 seconds (S_5) and 1.0 seconds (S_1), which are then used to derive the remainder of the response spectra at all other periods. The mapped S_5 and S_1 values represent motion at the top of seismic bedrock, defined as the Site Class B-C boundary. The surface ground motion response spectrum, accounting for inertial effects within the soil column overlying rock, is then determined for the design earthquake using spectral coefficients F_A and F_V for the appropriate Site Class.

The design ground motion at any period is taken as 2/3 of the smoothed spectral acceleration as allowed in section 1613.3.4. The design spectral response acceleration values at short periods, S_{DS} , and at one second periods, S_{D1} , are tabulated below for the unimproved soil profile using the IBC 2015 criteria.

The 2015 IBC specifically references ASCE 7-10 for determination of peak ground acceleration value for computation of seismic hazard. Peak ground acceleration is separately mapped in ASCE 7-10 and corresponds to the geometric mean Maximum Credible Earthquake (MCE_G). The mapped PGA value is adjusted for site class effects to arrive at a design peak ground acceleration value, designated as PGA_M .

To evaluate liquefaction potential, we performed analyses using the data obtained in the soundings, considering the characteristics of the soil and water levels observed in the soundings. When considering the design earthquake, as specified by the IBC, liquefaction was determined to be unlikely at this site. The liquefaction analysis was performed based on the design earthquake prescribed by the 2015 IBC, the "simplified procedure" as presented in Youd et al. (2001), and recent research concerning the liquefaction resistance of aged sands (Hayati & Andrus, 2008; Andrus et al. 2009; Hayati & Andrus, 2009).

CPT Soil Classification Legend

Zone	Color	Q _t /N	Description
1		2	Sensitive, Fine Grained
2		1	Organic Soils-Peats
3		1.5	Clays-Clay to Silty Clay
4		2	Silt Mixtures-Clayey Silt to Silty Clay
5		3	Sand Mixtures-Silty Sand to Sandy Silt
6		4.5	Sands-Clean Sand to Silty Sand
7		6	Gravelly Sand to Sand
8		1	Very Stiff Clay to Clayey Sand*
9		2	Very Stiff, Fine Grained*

(*) Heavily Overconsolidated or Cemented

Robertson's Soil Behavior Type (SBT), 1990			
Group #	Description	I _c	
		Min	Max
1	Sensitive, fine grained	N/A	
2	Organic soils - peats	3.60	N/A
3	Clays - silty clay to clay	2.95	3.60
4	Silt mixtures - clayey silt to silty clay	2.60	2.95
5	Sand mixtures - silty sand to sandy silt	2.05	2.60
6	Sands - clean sand to silty sand	1.31	2.05
7	Gravelly sand to dense sand	N/A	1.31
8	Very stiff sand to clayey sand (High OCR or cemented)	N/A	
9	Very stiff, fine grained (High OCR or cemented)	N/A	

Soil behavior type is based on empirical data and may not be representative of soil classification based on plasticity and grain size distribution.

Relative Density and Consistency Table			
SANDS		SILTS and CLAYS	
Cone Tip Stress, qt (tsf)	Relative Density	Cone Tip Stress, qt (tsf)	Consistency
Less than 20	Very Loose	Less than 5	Very Soft
20 - 40	Loose	5 - 15	Soft to Firm
40 - 120	Medium Dense	15 - 30	Stiff
120 - 200	Dense	30 - 60	Very Stiff
Greater than 200	Very Dense	Greater than 60	Hard



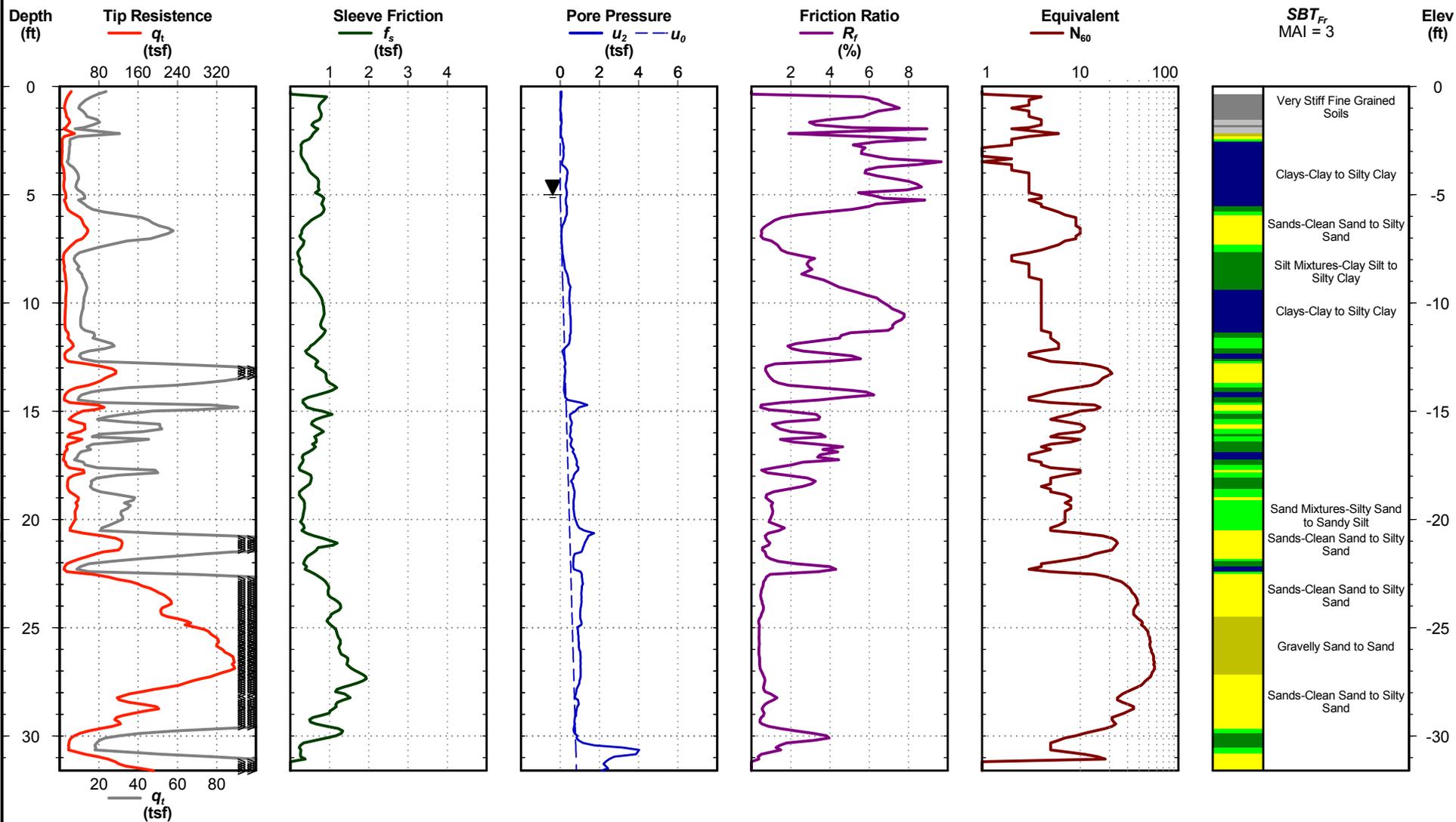
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

SCPT-1

Date: Sep. 12, 2016
 Estimated Water Depth: 5 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 31.6 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ S&ME 2008.06.24.GDT 9/30/16



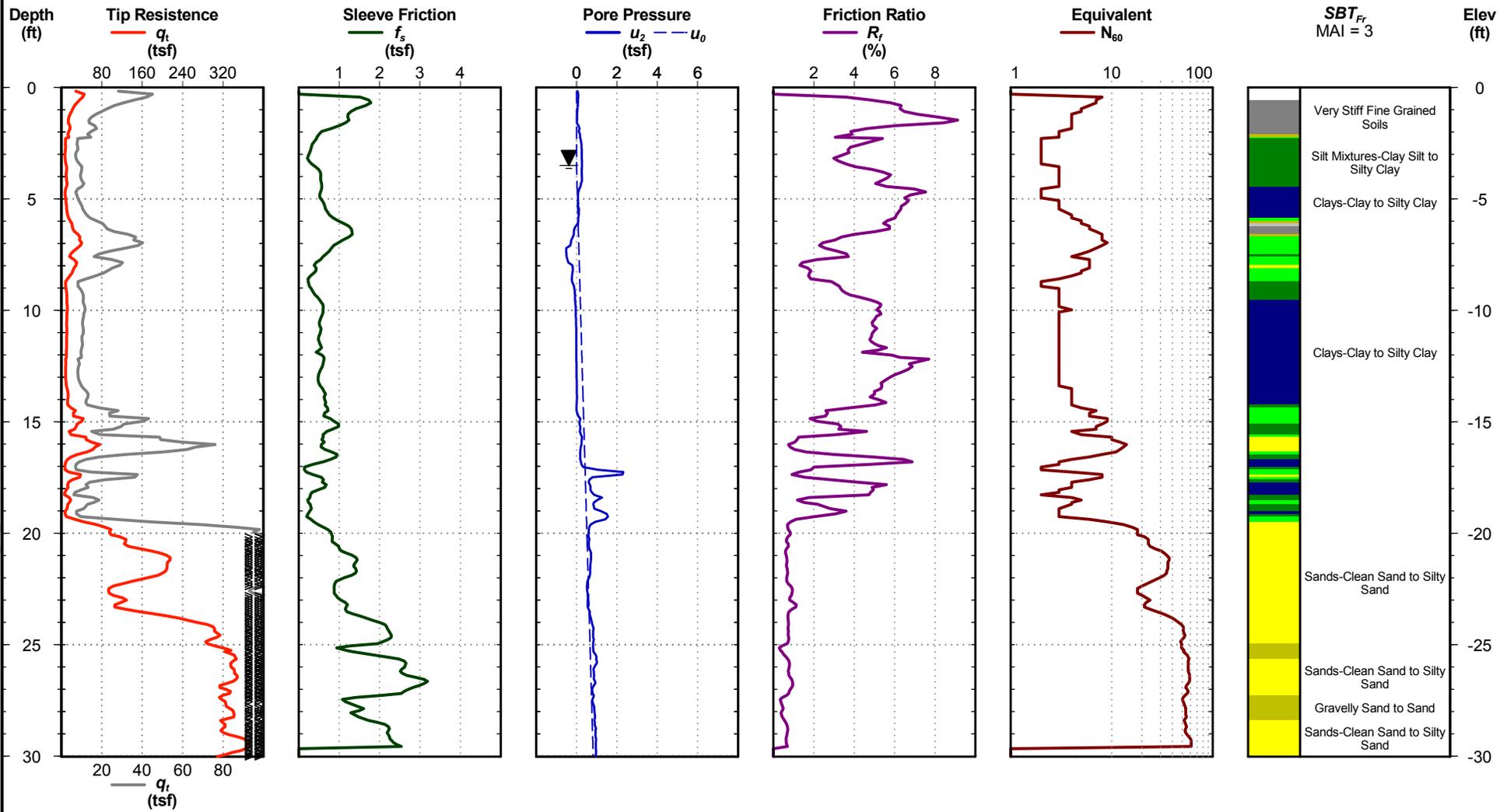
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

CPT-2

Date: Sep. 12, 2016
 Estimated Water Depth: 3.5 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 30.0 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ_S&ME 2008.06.24.GDT 9/30/16

CPT-2



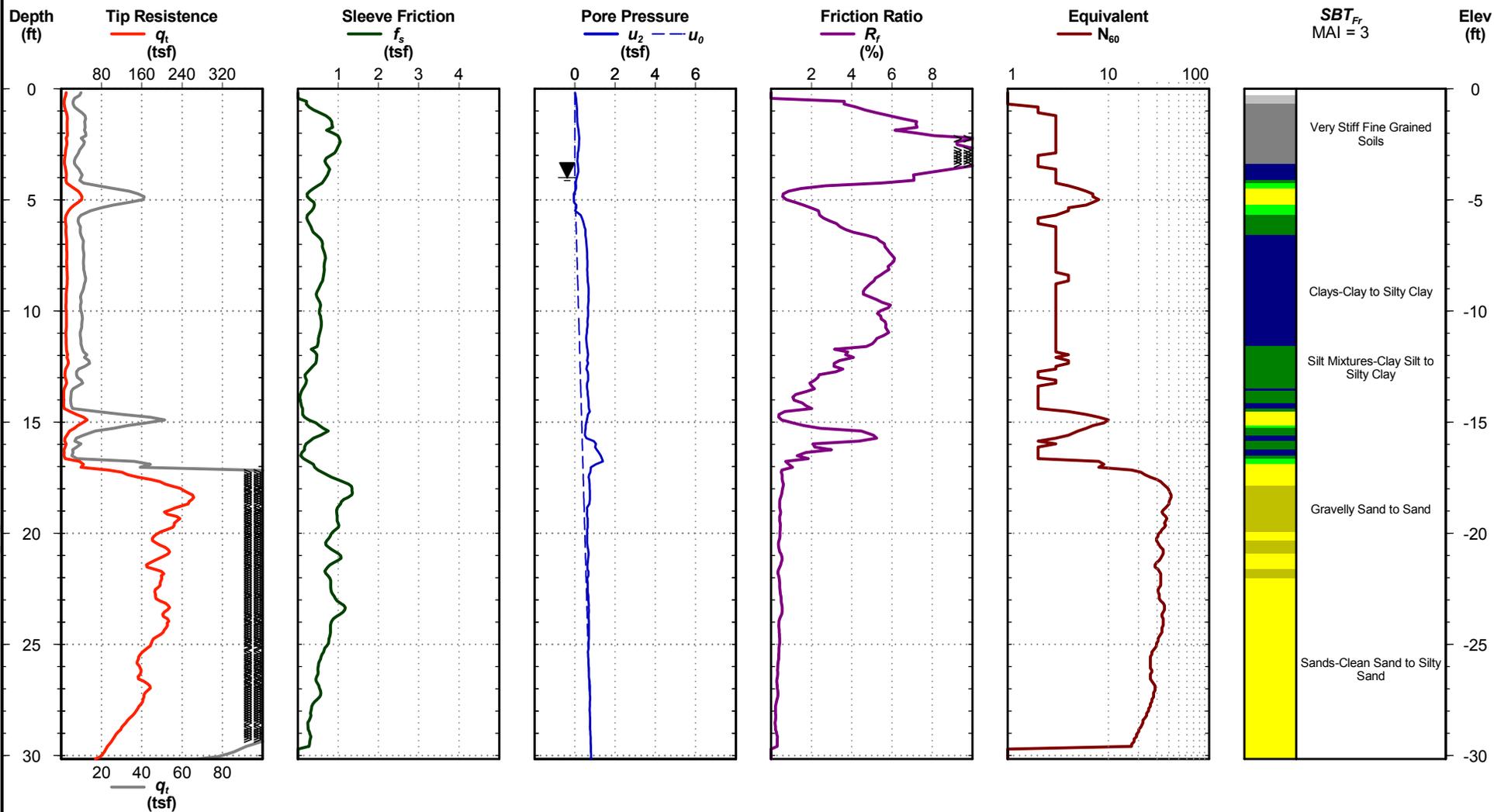
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

CPT-3

Date: Sep. 12, 2016
 Estimated Water Depth: 4 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 30.2 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ_S&ME 2008_06_24.GDT 9/30/16

CPT-3



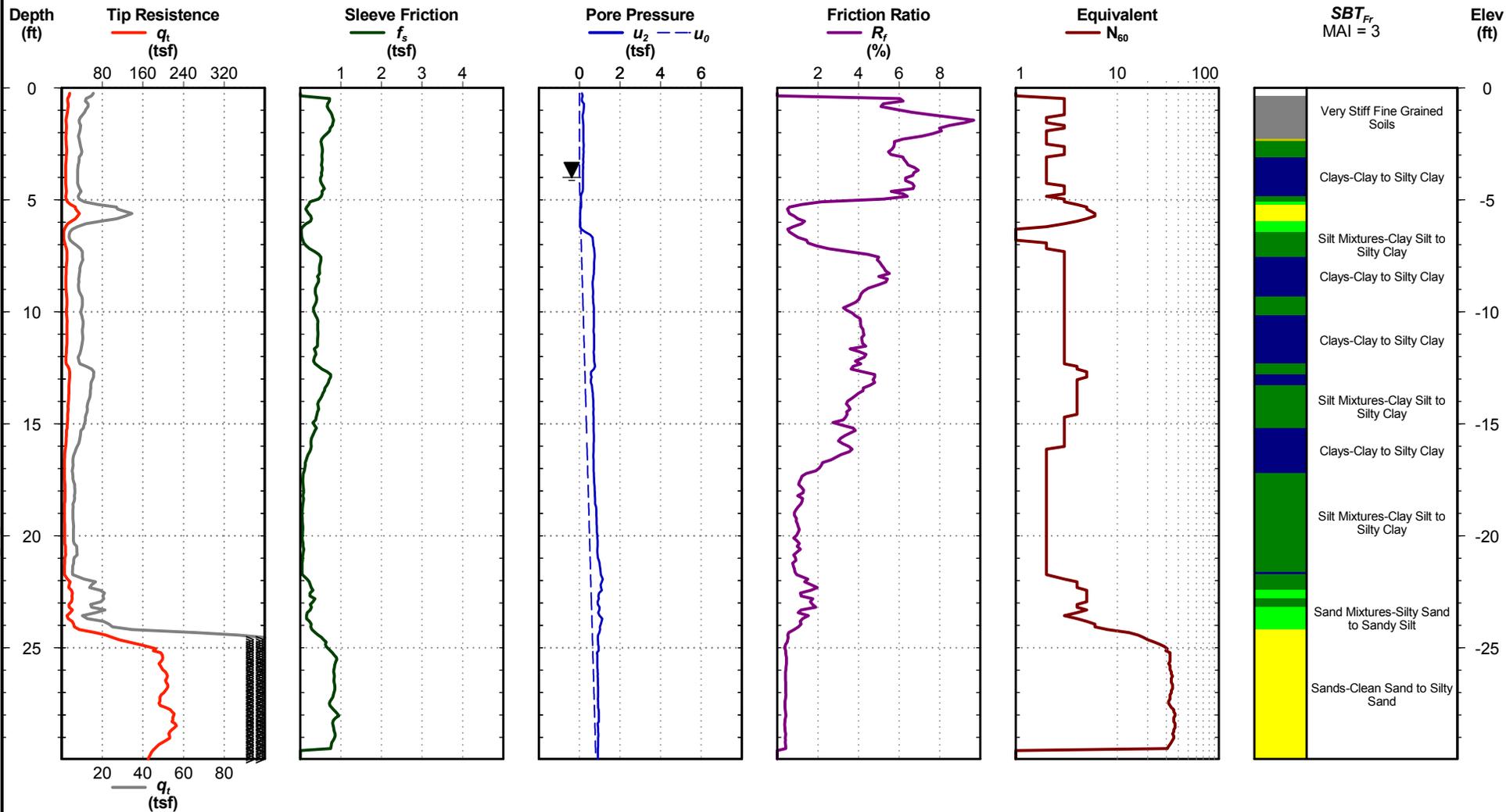
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

CPT-4

Date: Sep. 12, 2016
 Estimated Water Depth: 4 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 30.0 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ S&ME 2008.06.24.GDT 9/30/16

CPT-4



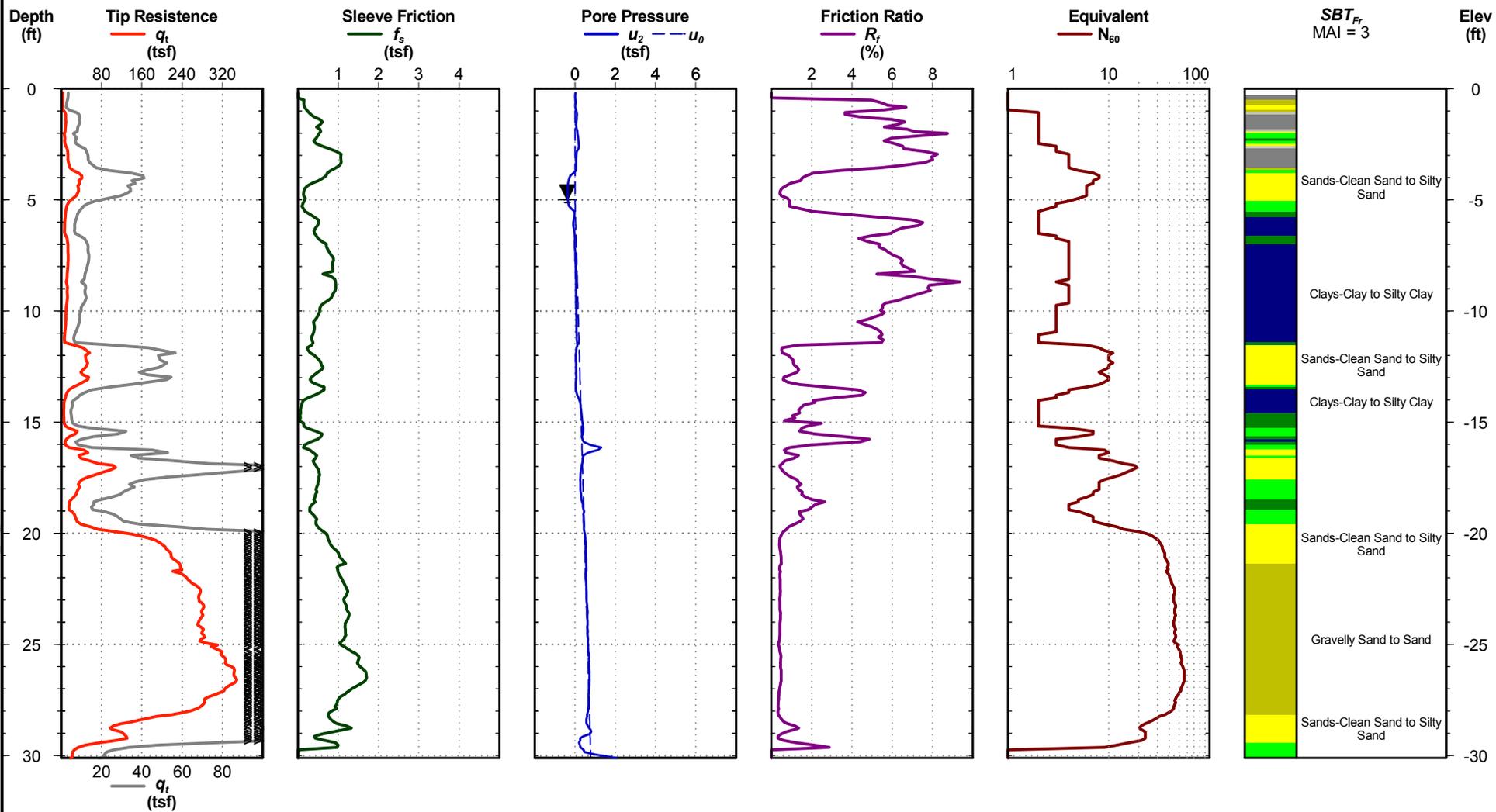
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

CPT-5

Date: Sep. 12, 2016
 Estimated Water Depth: 5 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 30.1 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ_S&ME 2008.06.24.GDT 9/30/16

CPT-5



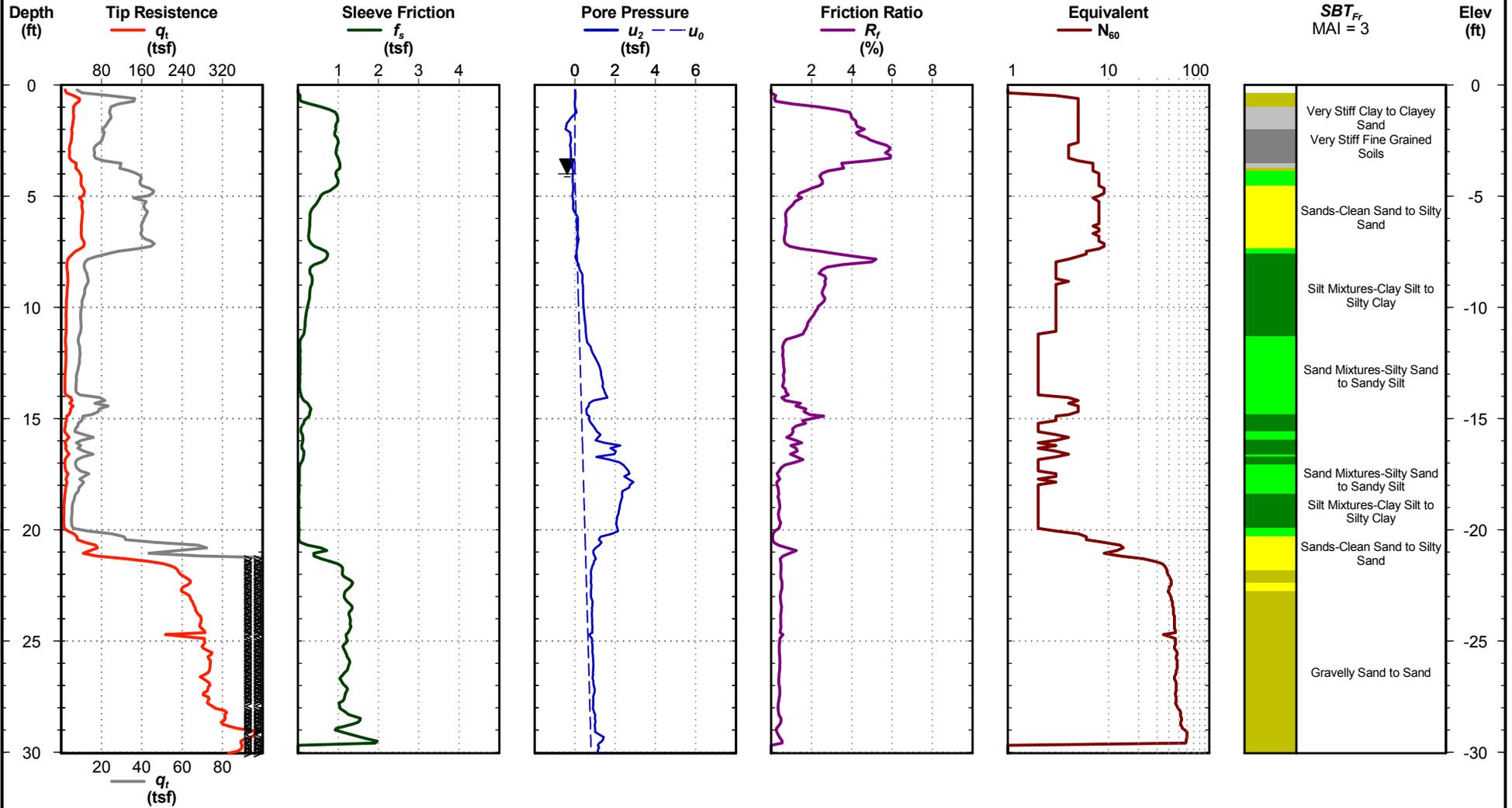
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

CPT-6

Date: Sep. 12, 2016
 Estimated Water Depth: 4 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 30.0 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ_S&ME 2008.06.24.GDT_9/30/16

CPT-6



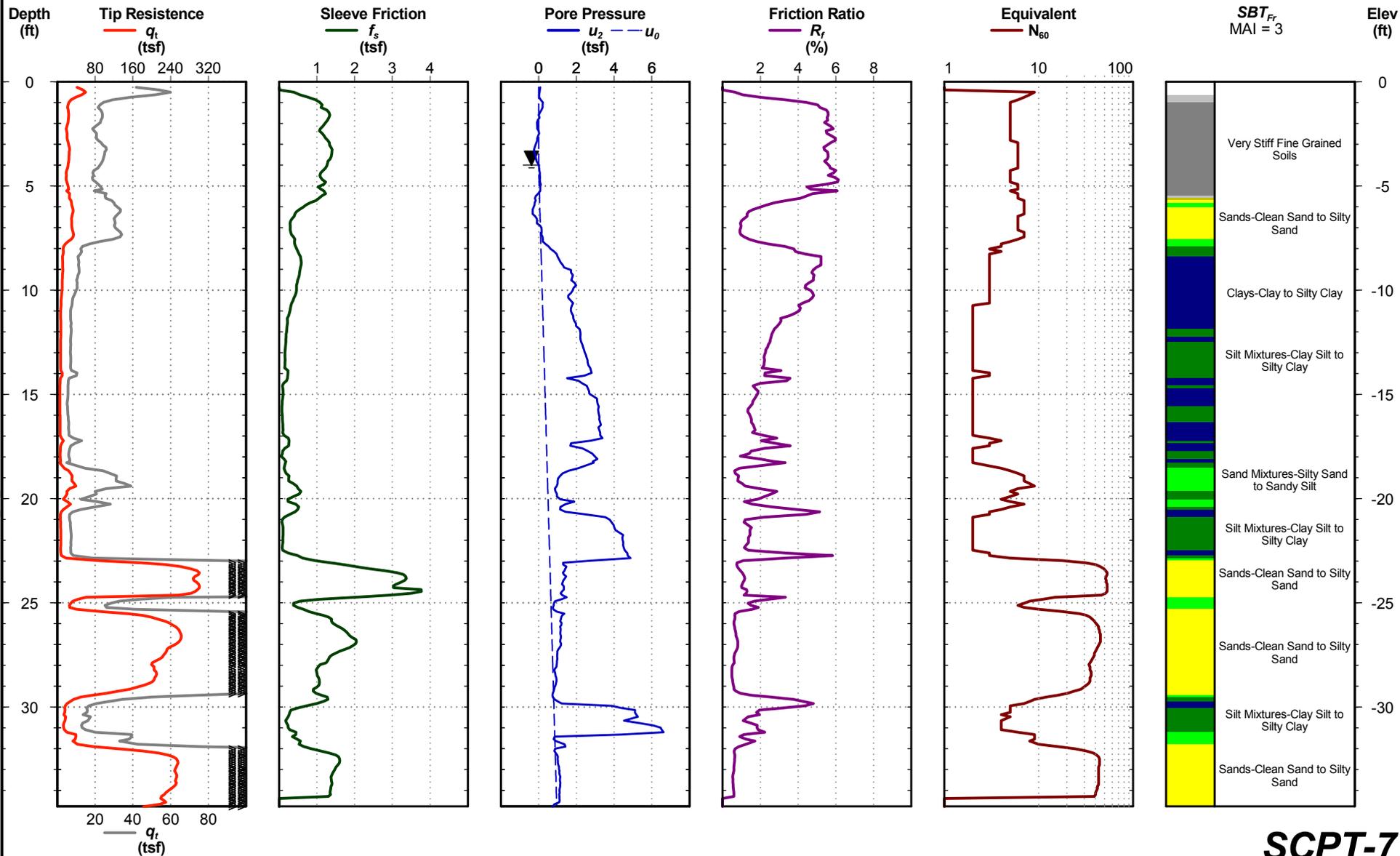
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

SCPT-7

Date: Sep. 12, 2016
 Estimated Water Depth: 4 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 34.8 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC 1463-16-041 GINT FILE.GPJ S&ME 2008.06.24.GDT 9/30/16

SCPT-7



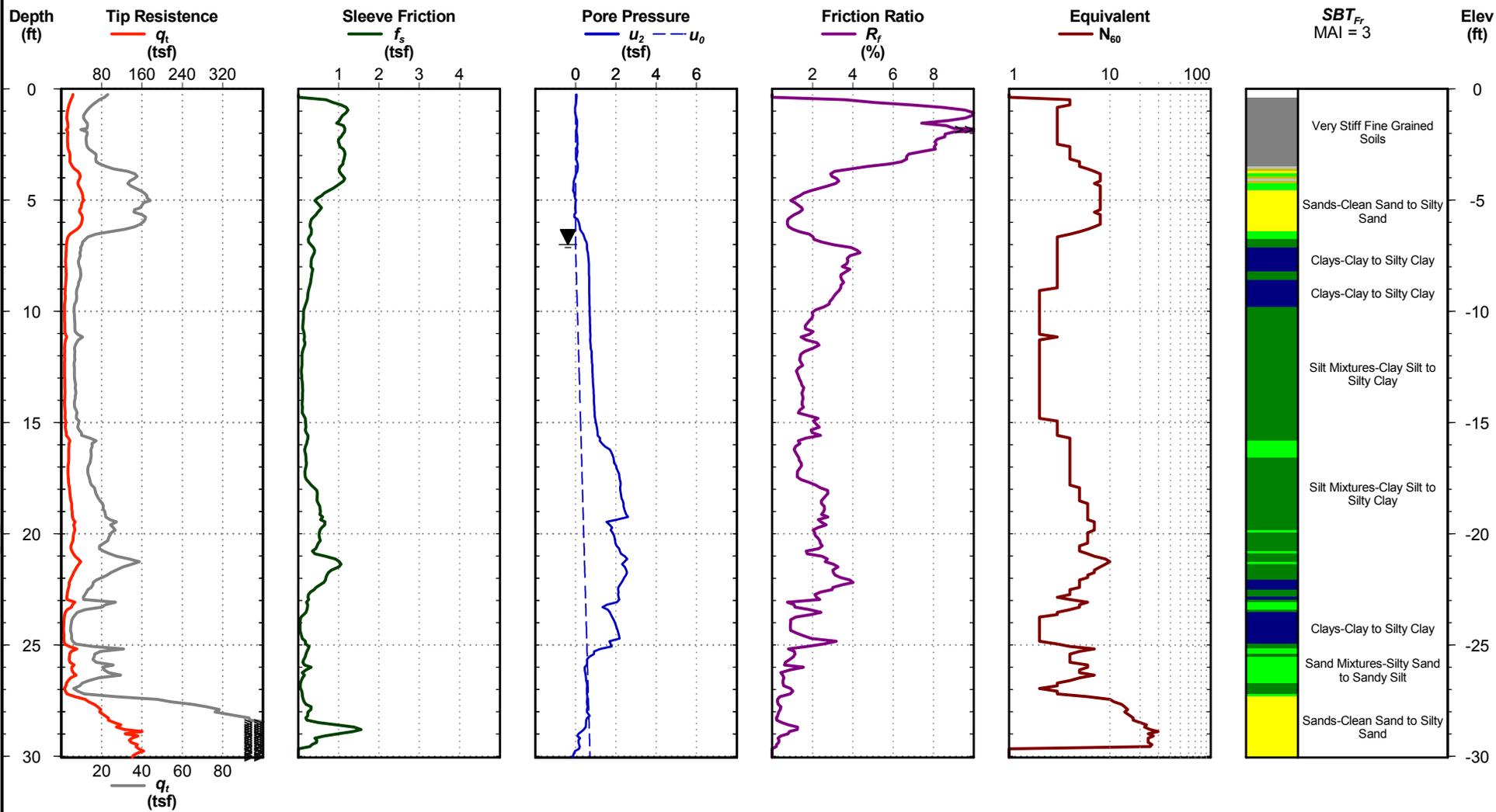
Georgetown Co. Business Park Lots 3 & 10
 Andrews, South Carolina
 S&ME Project No: 1463-16-041

Cone Penetration Test

CPT-8

Date: Sep. 12, 2016
 Estimated Water Depth: 7 ft
 Rig/Operator: Gyrotrack/Andy | Dave

Total Depth: 30.1 ft
 Termination Criteria: Target Depth
 Cone Size: 1.75



CPT REPORT - DYNAMIC_1463-16-041 GINT FILE.GPJ S&ME 2008.06.24.GDT 9/30/16

CPT-8

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS		
			GRAPH	LETTER			
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES		
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES		
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES		
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES		
	SAND AND SANDY SOILS	CLEAN SANDS	(LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
			(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES	
		SANDS WITH FINES	(LITTLE OR NO FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES	
			(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES	
		FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
						CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL				ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS		
				CH	INORGANIC CLAYS OF HIGH PLASTICITY		
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		



PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-1		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: 2.5' ATD				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		ROOTMAT - Approximately 2 inches.		
1		FILL CLAYEY SAND (SC) - Mostly fine to medium sand, some low to medium plasticity fines, light brown, moist. FILL.		-
2				-
		TOPSOIL - Approximately 6 inches.		▽
3		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, gray mottled with light brown, wet.		-
4		Boring terminated at 4 ft		-



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-2		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: 3' ATD				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 3 inches.		
1		FILL CLAYEY SAND (SC) - Mostly fine to medium sand, some low to medium plasticity fines, brown, moist. FILL.		
2		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, dark brown mottled with light gray, wet.		
3				▽
4		Boring terminated at 4 ft		



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-3		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: 3' ATD				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 12 inches.		
1		CLAYEY SAND (SC) - Mostly fine to medium sand, some low to medium plasticity fines, sand seams, light brown, light gray, moist.		-
2				-
3				▽
4		Boring terminated at 4 ft		



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-4		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: Standing Water				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 6 inches.		▽
1		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, gray mottled with light brown, moist.		-
2				-
3				-
4		Boring terminated at 4 ft		-



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-5		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: Standing Water				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 6 inches.		▽
1		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, light brown, light gray, orange, moist.		-
2				-
3				-
4		Boring terminated at 4 ft		-



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-6		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: 0.5' ATD				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 6 inches.		
		SILTY SAND (SM) - Mostly fine to medium sand, some low plasticity fines, light brown, moist to wet.		▽
1		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, light brown, light gray, orange, moist.		
2				
3				
4		Boring terminated at 4 ft		



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-7		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: 1' ATD				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 6 inches.		
		CLAYEY SAND (SC) - Mostly fine to medium sand, some low to medium plasticity fines, light brown, moist.		▽
1		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, light brown, light gray, orange, moist to wet.		
2				
3				
4		Boring terminated at 4 ft		



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

PROJECT: Georgetown Co. Business Park Lots 3 & 10 Andrews, South Carolina 1463-16-041		HAND AUGER BORING LOG: HA-8		
DATE STARTED: 9/22/16	DATE FINISHED: 9/22/16	NOTES: Elevation Unknown		
SAMPLING METHOD: Hand Auger	PERFORMED BY: S. Nelson			
WATER LEVEL: 1' ATD				
Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		TOPSOIL - Approximately 6 inches.		
		SILTY SAND (SM) - Mostly fine to medium sand, some low plasticity fines, light brown, moist to wet.		
1		SANDY LEAN CLAY (CL) - Mostly low to medium plasticity fines, some fine sand, light brown, light gray, orange, moist to wet.		▽
2				-
3				-
4		Boring terminated at 4 ft		



DCP INDEX IS THE DEPTH (IN.) OF PENETRATION PER BLOW OF A 10.1 LB HAMMER FALLING 22.6 IN., DRIVING A 0.79 IN. O.D. 60 DEGREE CONE.

Appendix III – Laboratory Testing

Summary of Laboratory Test Procedures

Laboratory Test Data Sheets

❖ Summary of Laboratory Procedures

Examination of Recovered Soil Samples

Soil and field records were reviewed in the laboratory by the geotechnical professional. Soils were classified in general accordance with the visual-manual method described in ASTM D 2488, "*Standard Practice for Description and Identification of Soils (Visual-Manual Method)*".

Representative soil samples were selected for classification testing to provide grain size and plasticity data to allow classification of the samples in general accordance with the Unified Soil Classification System method described in ASTM D 2487, "*Standard Practice for Classification of Soils for Engineering Purposes*". The geotechnical professional also prepared the final boring and sounding records enclosed with this report.

Moisture Content Testing of Soil Samples by Oven Drying

Moisture content was determined in general conformance with the methods outlined in ASTM D 2216, "*Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil or Rock by Mass.*" This method is limited in scope to Group B, C, or D samples of earth materials which do not contain appreciable amounts of organic material, soluble solids such as salt or reactive solids such as cement. This method is also limited to samples which do not contain contamination.

A representative portion of the soil was divided from the sample using one of the methods described in Section 9 of ASTM D 2216. The split portion was then placed in a drying oven and heated to approximately 110 degrees C overnight or until a constant mass was achieved after repetitive weighing. The moisture content of the soil was then computed as the mass of water removed from the sample by drying, divided by the mass of the sample dry, times 100 percent. No attempt was made to exclude any particular particle size from the portion split from the sample.

Liquid and Plastic Limits Testing

Atterberg limits of the soils was determined generally following the methods described by ASTM D 4318, "*Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.*" Albert Atterberg originally defined "limits of consistency" of fine grained soils in terms of their relative ease of deformation at various moisture contents. In current engineering usage, the *liquid limit* of a soil is defined as the moisture content, in percent, marking the upper limit of viscous flow and the boundary with a semi-liquid state. The *plastic limit* defines the lower limit of plastic behavior, above which a soil behaves plastically below which it retains its shape upon drying. The *plasticity index* (PI) is the range of water content over which a soil behaves plastically. Numerically, the PI is the difference between liquid limit and plastic limit values.

Representative portions of fine grained Group A, B, C, or D samples were prepared using the wet method described in Section 10.1 of ASTM D 4318. The liquid limit of each sample was determined using the multipoint method (Method A) described in Section 11, or the one-point method (Method B) described in Section 13. The liquid limit is by definition the moisture content where 25 drops of a hand operated liquid limit device are required to close a standard width groove cut in a soil sample placed in the device.

Multi-Point Method

After each test, the moisture content of the sample was adjusted and the sample replaced in the device. The test was repeated to provide a minimum of three widely spaced combinations of N versus moisture content. When plotted on semi-log paper, the liquid limit moisture content was determined by straight line interpolation between the data points at N equals 25 blows.

One-Point Method

The procedure for the one-point method is the same as the multi-point method except that the number of blows required to close the groove is 20 to 30. If less than 20 or more than 30 blows are required, the water content of the soil is adjusted and the procedure is repeated. The liquid limit is determined in accordance with Section 14.

The plastic limit was determined using the procedure described in Sections 15 through 17 of ASTM D 4318. A selected portion of the soil used in the liquid limit test was kneaded and rolled by hand until it could no longer be rolled to a 3.2 mm thread on a glass plate. This procedure was repeated until at least 6 grams of material was accumulated, at which point the moisture content was determined using the methods described in ASTM D 2216

Grain Size Analysis of Samples

The distribution of particle sizes greater than 75 mm was determined in general accordance with the procedures described by ASTM D 421, "*Standard Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants*", and D 422, "*Standard Test Method for Particle Size Analysis of Soils*," except that the hydrometer portion of the test standard was not utilized. During preparation samples were divided into two portions. The material coarser than the No. 30 U.S. sieve size fraction was dry sieved through a nest of standard sieves as described in Article 6. Material passing the No. 30 sieve was independently passed through a nest of sieves down to the No. 200 size.

Percent Fines Determination of Samples

A selected specimen of soils was washed over a No. 200 sieve after being thoroughly mixed and dried. This test was conducted in general accordance with ASTM D 1140, "*Standard Test Method for Amount of Material Finer Than the No. 200 Sieve*." Method A, using water to wash the sample through the sieve without soaking the sample for a prescribed period of time, was used and the percentage by weight of material washing through the sieve was deemed the "percent fines" or percent clay and silt fraction.

Compaction Tests of Soils Using Modified Effort

Soil placed as engineering fill is compacted to a dense state to obtain satisfactory engineering properties. Laboratory compaction tests provide the basis for determining the percent compaction and water content needed to achieve the required engineering properties, and for controlling construction to assure the required compaction and water contents are achieved. Test procedures generally followed those described by ASTM D1557, "*Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 lbf/ft³)*."

The relationship between water content and the dry unit weight is determined for soils compacted in either 4 or 6 inch diameter molds with a 10 lbf rammer dropped from a height of 18 inches, producing a compactive effort of 56,000 lbf/ft³. ASTM D 1557 provides three alternative procedures depending on material gradation:

Method A

All material passes No. 4 sieve size

4 inch diameter mold

Shall be used if 20 percent or less by weight is retained on No. 4 sieve

Soil in 5 layers with 25 blows per layer

Method B

All material passes 3/8 inch sieve

4 inch diameter mold

Shall be used if 20 percent by weight is retained on the No. 4 sieve and 20 percent or less by weight is retained on the 3/8 Inch sieve.

Soil in 5 layers with 25 blows per layer

Method C

All material passes 3/4 inch sieve

6-inch diameter mold

Shall be used if more than 20 percent by weight is retained on the 3/8 inch sieve and less than 30 percent is retained on the 3/4inch sieve.

Soil in 5 layers with 56 blows per layer

Soil was compacted in the mold in five layers of approximately equal thickness, each compacted with either 25 or 56 blows of the rammer. After compaction of the sample in the mold, the resulting dry density and moisture content was determined and the procedure repeated. Separate soils were used for each sample point, adjusting the moisture content of the soil as described in Section 10.2 (Moist Preparation Method). The procedure was repeated for a sufficient number of water content values to allow the dry density vs. water content values to be plotted and the *maximum dry density* and *optimum moisture content* to be determined from the resulting curvilinear relationship

Laboratory California Bearing Ratio Tests of Compacted Samples

This method is used to evaluate the potential strength of subgrade, subbase, and base course material, including recycled materials, for use in road and airfield pavements. Laboratory CBR tests were run in general accordance with the procedures laid out in ASTM D 1883, "*Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.*" Specimens were prepared in standard molds using two different levels of compactive effort within plus or minus 0.5 percent of the optimum moisture content value. While embedded in the compaction mold, each specimen was inundated for a minimum period of 96 hours to achieve saturation. During inundation, the specimen was surcharged by a weight approximating the anticipated weight of the pavement and base course layers. After removing the sample from the soaking bath, the

soil was then sheared by jacking a piston having a cross sectional area of 3 square inches into the end surface of the specimen. The piston was jacked 0.5 inches into the specimen at a constant rate of 0.05 inches per minute.

The CBR is defined as the load required to penetrate a material to a predetermined depth, compared to the load required to penetrate a standard sample of crushed stone to the same depth. The CBR value was usually based on the load ratio for a penetration of 0.10 inches, after correcting the load-deflection curves for surface irregularities or upward concavity. However, where the calculated CBR for a penetration of 0.20 inches was greater than the result obtained for a penetration of 0.10 inches, the test was repeated by reversing the specimen and shearing the opposite end surface. Where the second test indicated a greater CBR at 0.20 inches penetration, the CBR for 0.20 inches penetration was used.

Liquid Limit, Plastic Limit, and Plastic Index



ASTM D 4318 AASHTO T 89 AASHTO T 90

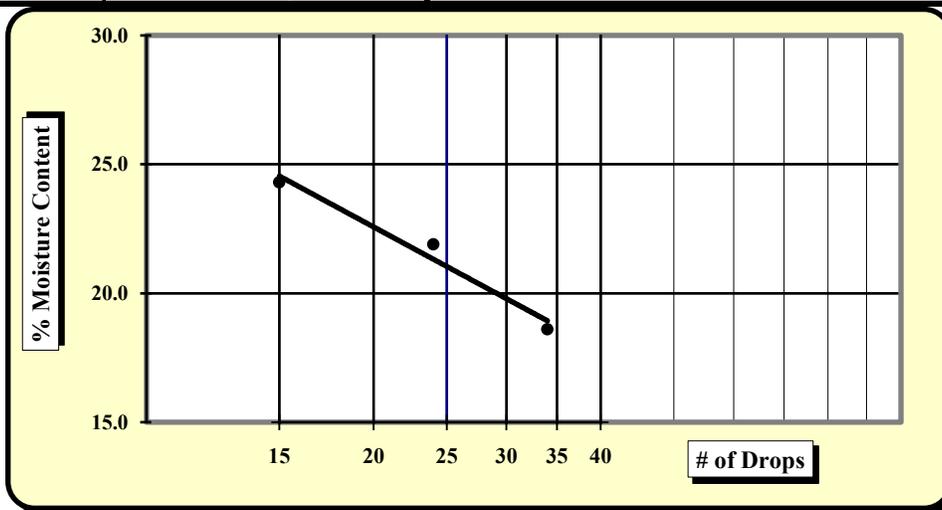
Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1463-16-041	Report Date:	10/3/2016
Project Name:	Geo. County Business Center Lots #3 and #10	Test Date(s)	9/25/2016
Client Name:	Georgetown County		
Client Address:	129 Screven Street, Suite 239, Georgetown, SC 29440		
Boring #:	SCPT-1	Sample #:	Lot 3/ Bulk #1
Location:	Lot #3	Lab #:	3902
		Sample Date:	9/23/2016
		Depth (ft.)	-1
Sample Description:	Dark Brown Clayey Sand (SC)		

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	00401	2/18/2016	Grooving tool	11368	5/1/2016
LL Apparatus	18801	5/1/2016			
Oven	17745	5/6/2016			

Pan #	Tare #:	Liquid Limit					Plastic Limit			
		23	63	69	4	5	6	52	65	9
A	Tare Weight	14.25	14.37	14.63				14.77	14.56	
B	Wet Soil Weight + A	31.22	31.26	31.28				21.22	21.35	
C	Dry Soil Weight + A	28.56	28.22	28.02				20.55	20.65	
D	Water Weight (B-C)	2.66	3.04	3.26				0.67	0.70	
E	Dry Soil Weight (C-A)	14.31	13.85	13.39				5.78	6.09	
F	% Moisture (D/E)*100	18.6%	21.9%	24.3%				11.6%	11.5%	
N	# OF DROPS	34	24	15				Moisture Contents determined by ASTM D 2216		
LL	LL = F * FACTOR									
Ave.	Average							11.6%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	<input type="checkbox"/>
Liquid Limit	22
Plastic Limit	12
Plastic Index	10
Group Symbol	SC

Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried

Notes / Deviations / References:

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Ron Forest, P.E.
 Technical Responsibility

Ron Forest, Jr.
 Signature

Senior Reviewer
 Position

10/3/2016
 Date

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Liquid Limit, Plastic Limit, and Plastic Index



ASTM D 4318 AASHTO T 89 AASHTO T 90

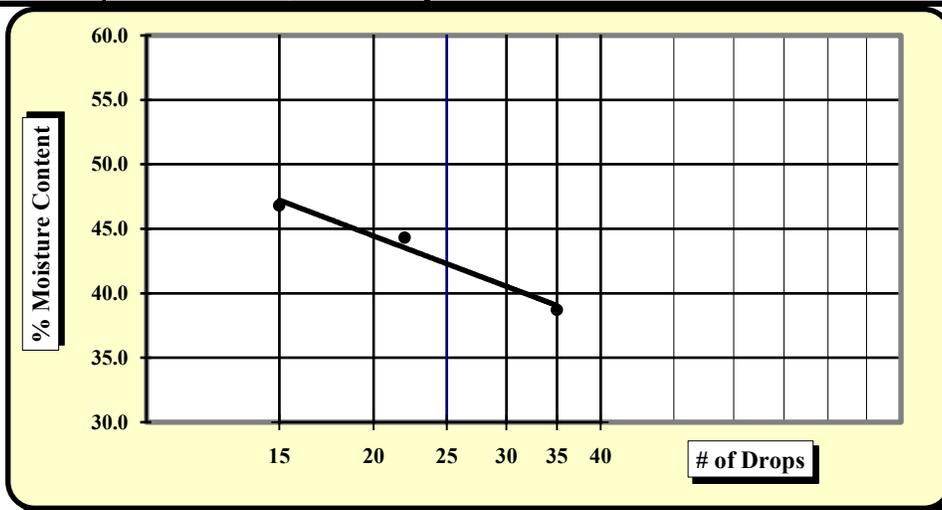
Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1463-16-041	Report Date:	10/3/2016
Project Name:	Geo. County Business Center Lots #3 and #10	Test Date(s)	9/25/2016
Client Name:	Georgetown County		
Client Address:	129 Screven Street, Suite 239, Georgetown, SC 29440		
Boring #:	SCPT-7	Sample #:	Lot 10 / Bulk#2
		Sample Date:	9/23/2016
Location:	Lot #10	Lab #:	3902
		Depth (ft.)	-1

Sample Description:	Brown Clayey Sand (SC)				
<i>Type and Specification</i>	<i>S&ME ID #</i>	<i>Cal Date:</i>	<i>Type and Specification</i>	<i>S&ME ID #</i>	<i>Cal Date:</i>
Balance (0.01 g)	00401	2/18/2016	Grooving tool	11368	5/1/2016
LL Apparatus	18801	5/1/2016			
Oven	17745	5/6/2016			

Pan #	Tare #:	Liquid Limit					Plastic Limit			
		114	69	87	4	5	6	47	58	9
A	Tare Weight	14.33	14.54	14.87				14.85	14.96	
B	Wet Soil Weight + A	31.02	31.36	31.28				21.44	21.63	
C	Dry Soil Weight + A	26.36	26.20	26.05				20.33	20.48	
D	Water Weight (B-C)	4.66	5.16	5.23				1.11	1.15	
E	Dry Soil Weight (C-A)	12.03	11.66	11.18				5.48	5.52	
F	% Moisture (D/E)*100	38.7%	44.3%	46.8%				20.3%	20.8%	
N	# OF DROPS	35	22	15				Moisture Contents determined by ASTM D 2216		
LL	LL = F * FACTOR									
Ave.	Average							20.6%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	<input type="checkbox"/>
Liquid Limit	44
Plastic Limit	21
Plastic Index	23
Group Symbol	SC

Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried

Notes / Deviations / References:

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Ron Forest, P.E.
 Technical Responsibility

Ron Forest, Jr.
 Signature

Senior Reviewer
 Position

10/3/2016
 Date

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Moisture - Density Report



ASTM D1557- D698

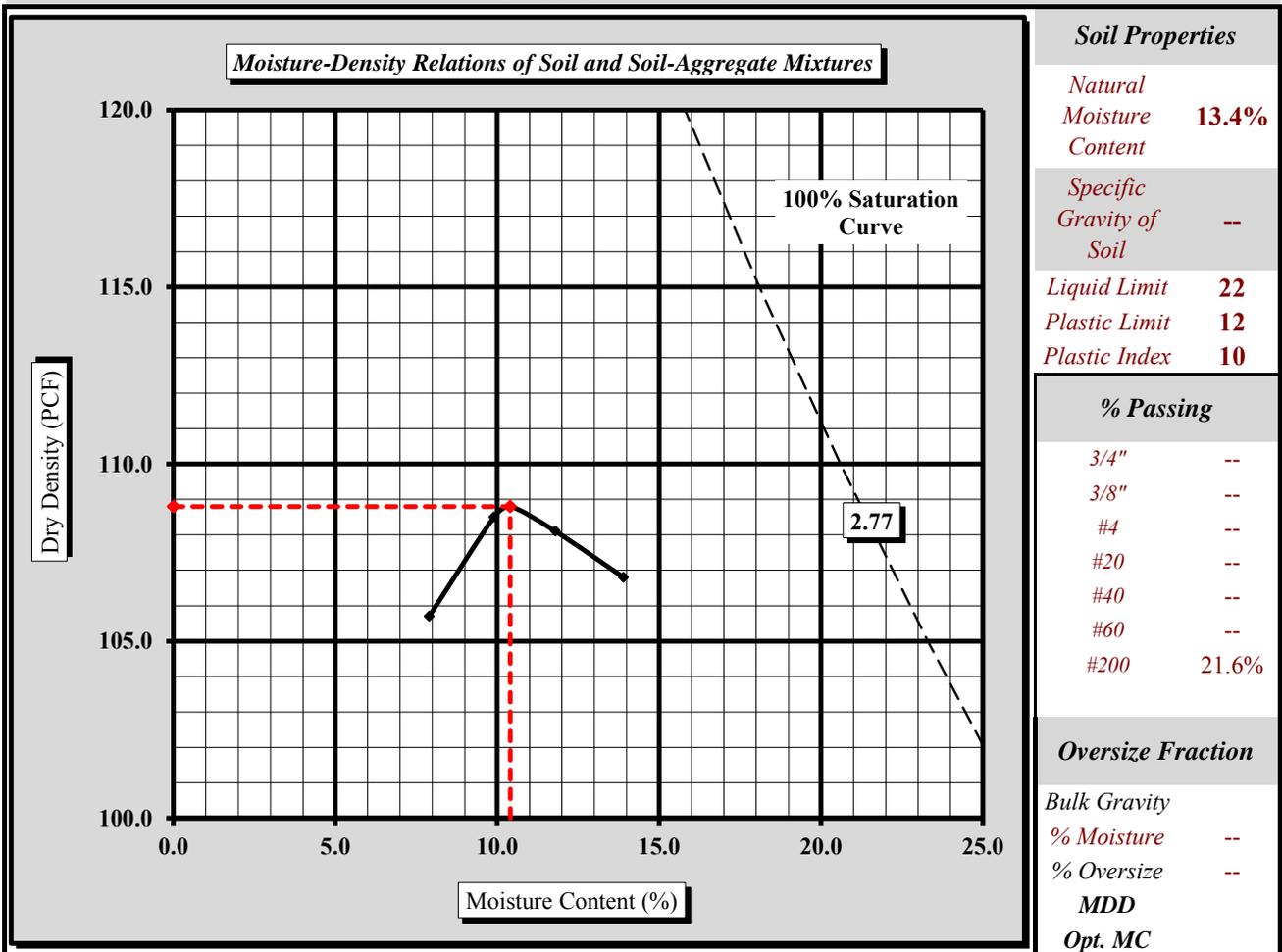
Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1463-16-041	Report Date:	10/3/2016
Project Name:	Geo. County Business Center Lots #3 and #10	Test Date(s):	9/26/2016
Client Name:	Georgetown County		
Client Address:	129 Screven Street, Suite 239, Georgetown, SC 29440		
Boring #:	SCPT-1	Sample #:	Lot 3 / Bulk#1
Location:	Lot #3	Lab #:	3902
		Sample Date:	9/23/2016
		Depth (ft):	-1
Sample Description:	Dark Brown Clayey Sand (SC)		

Maximum Dry Density 108.8 PCF. Optimum Moisture Content 10.4

ASTM D1557 -- Method A



Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

Ron Forest, P.E.
 Technical Responsibility

Ron Forest, Jr.
 Signature

Senior Reviewer
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Moisture - Density Report



ASTM D1557- D698

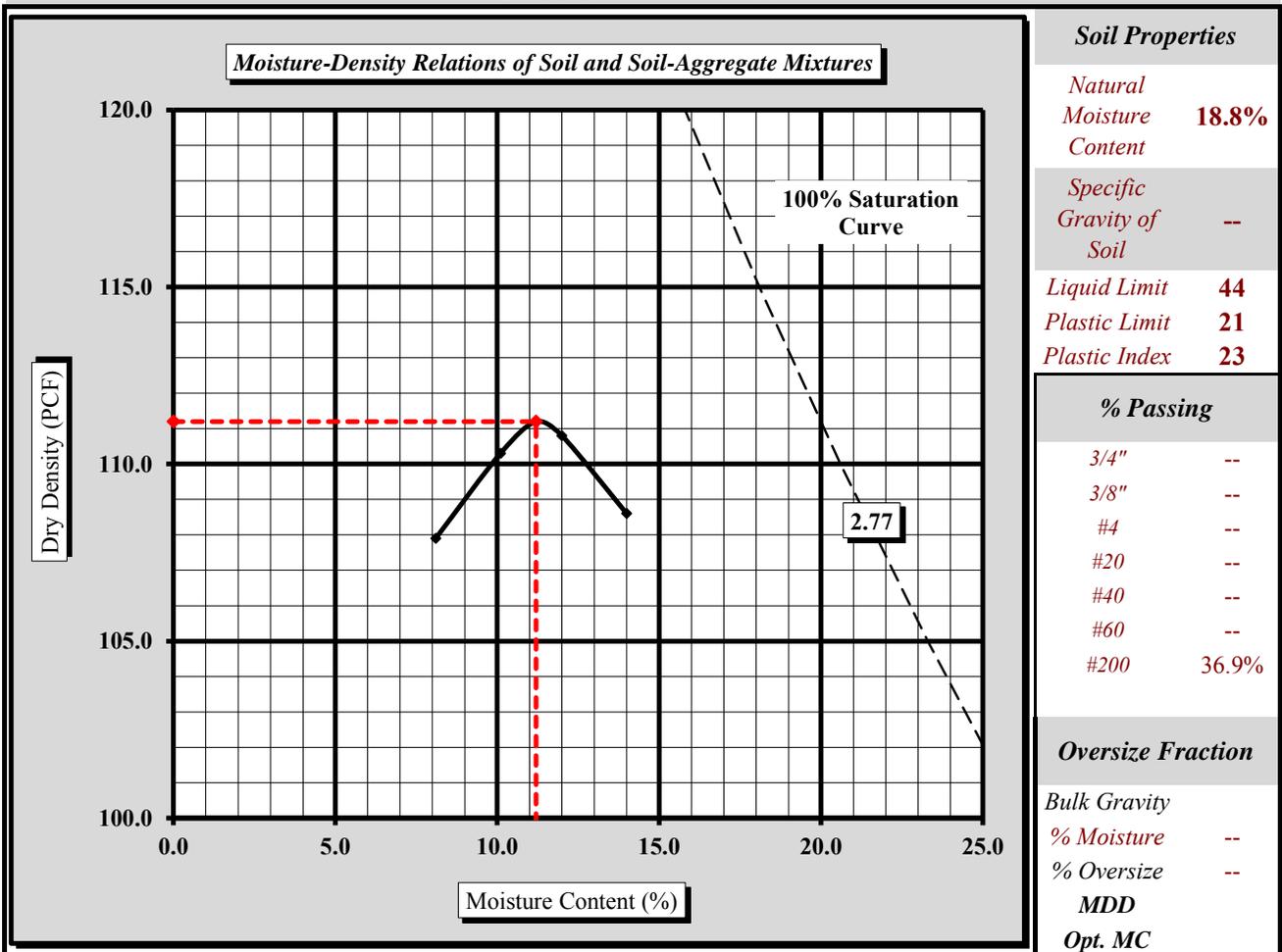
Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1463-16-041	Report Date:	10/3/2016
Project Name:	Geo. County Business Center Lots #3 and #10	Test Date(s):	9/26/2016
Client Name:	Georgetown County		
Client Address:	129 Screven Street, Suite 239, Georgetown, SC 29440		
Boring #:	SCPT-7	Sample #:	Lot 10 / Bulk #2
		Sample Date:	9/23/2016
Location:	Lot #10	Lab #:	3902
		Depth (ft.):	-1
Sample Description:	Brown Clayey Sand (SC)		

Maximum Dry Density 111.2 PCF. Optimum Moisture Content 11.2

ASTM D1557 -- Method A



Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

Ron Forest, P.E.
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Ron Forest, Jr.
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Senior Reviewer
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10/3/2016
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**CBR (California Bearing Ratio) of Laboratory
Compacted Soil**

ASTM D 1883



Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1463-16-041	Report Date:	10/3/2016
Project Name:	Geo. County Business Center Lots #3 and #10	Test Date(s)	9/26/2016
Client Name:	Georgetown County		
Client Address:	129 Screven Street, Suite 239, Georgetown, SC 29440		
Boring #:	SCPT-1	Sample #:	Lot 3 / Bulk#1
		Sample Date:	9/23/2016
Location:	Lot #3	Lab #	3902
		Depth (ft.):	-1

Sample Description: Dark Brown Clayey Sand (SC)

ASTM D1557 Method A	Maximum Dry Density:	108.8 PCF	Optimum Moisture Content:	10.4%
	Compaction Test performed on grading complying with CBR spec.		% Retained on the 3/4" sieve:	0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	13.5	CBR at 0.2 in.	13.7
CBR at 0.1 in.	13.5	CBR at 0.2 in.	13.7



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	25	Final Dry Density (PCF)	99.1
Initial Dry Density (PCF)	103.6	Average Final Moisture Content	14.9%
Moisture Content of the Compacted Specimen	10.3%	Moisture Content (top 1" after soaking)	16.0%
Percent Compaction	95.2%	Percent Swell	0.3%

Soak Time:	96 Hrs	Surcharge Weight	20.0	Surcharge Wt. per sq. Ft.	101.9
Liquid Limit	22	Plastic Index	10	Apparent Relative Density	---

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Classification: ASTM D 2487

<u>Ron Forest, P.E.</u> Technical Responsibility	<u>Ron Forest, Jr.</u> Signature	Senior Reviewer Position	10/3/2016 Date
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