



**Discovery Health Sciences Foundation, Inc.
Request for Qualifications for Construction Management at Risk
Project Meeting Minutes**

PROJECT: Discovery Schools Arts and Athletic Performance Center

OWNER: Discovery Health Sciences Foundation, Inc.

LOCATION: 3837 Loyola Drive, Kenner, LA 70065

DATE/TIME: February 8, 2022 at 2:00 pm

PURPOSE: Mandatory Project Meeting for Request for Qualifications

I. Introductions

- Dr. Patty Glaser, CEO & Founding Head of Discovery Schools
- Rachelle Albright, Albright Management Strategies, LLC - Owner's Representative
- Brian Faucheux, Sizeler Thompson Brown Architects - Architect
 - Brian noted the design consultants
 - Schrenk, Endom & Flanagan - Civil and structural engineers
 - Moses Engineering - Mechanical, plumbing and electrical engineers

II. Record of Attendees

- The list of the attendees is attached
- Due to the parking lot at the school's administration area being at full capacity prior to the meeting and check-in time, all proposers included on the sign-in sheet will be permitted to submit an RFQ submittal.

III. RFQ Overview

- Brian Faucheux provided an overview of the project's design elements, construction materials and systems.
- While the scope is currently not included in the Design Development documents, the Owner will likely expand its current parking lot along the Loyola Avenue side of the property as part of the project.
- Dr. Glaser noted the school's student population of 1,400 and the need for the Arts and Athletic Performance Center accommodating the various athletic and performance groups.
- Rachelle Albright noted the project's construction budget of \$7,000,000-\$7,500,000 as referenced in the RFQ. Purpose of the preconstruction process is to evaluate the project's budget in concert with the Design Development scope of work.

➤ RFQ Schedule of Activities

Deadline for Questions:	February 14, 2022 by 2:00 p.m.
Deadline for Addendum:	February 17, 2022 by 2:00 p.m.
Deadline for RFQ Submittal:	February 22, 2022 by 2:00 p.m.
Proposer Interview Notification:	March 8, 2022
CMAR Interviews:	March 16, 2022
CMAR Selection:	No later than March 22, 2022

➤ Addendum #1

- Copies of the addendum were distributed at the meeting.

➤ Questions

- Answers to questions posed during the meeting are included in the attached Addendum #2 in addition to others recently received from the proposers.



Discovery Health Sciences Foundation, Inc.
Request for Qualifications for Construction Management at Risk
Project Meeting Sign-In Sheet
February 8, 2022

	NAME	COMPANY	EMAIL
1	Patrick Descant	Dendene Farnet	patrickd@denefarnet.com
2	Rachelle Dams	AMS LLC	rachelle@ams.mgt.com
3	Brian Fouchaux	STBA	
4	Christian Generes	Landis Construction	cgenres@landisllc.com
5	Nick Caillouet	The Lemoine Company	nick.caillouet@1lemonie.com
6	Katie Webb	McDonnell Group	kwebb@mcdonnell.com
7	Chris Michel	Woodward Design Build	cmichel@woodwarddesignbuild.com
8	Lauren Cowan	Lincoln Builders	Btrbids@Lincolnbldrs.com
9	Jeremy Sandlin	Lincoln Builders	Btrbids@Lincolnbldrs.com
10	Patty Glaser	Discovery Schools	
11	Stephanie Kerr	GIBBS CONSTRUCTION	SKerr@gibbsconstruction.com
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Discovery Health Sciences Foundation, Inc.
Request for Qualifications for Construction Management at Risk
Addendum #1
February 1, 2022

PROJECT: Discovery Schools Arts and Athletic Performance Center

QUESTION #1: Page 2, III, #5, Submittal Deadline says “The Owner will accept the RFQ Submittal electronically, by mail or hand delivery. All RFQ Submittals by mail and hand delivery to: Kenner Discovery Health Sciences Academy ATTN: Dr. Patty Glaser, Head of School. All electronic RFQ submittals to Ms. Rachelle Albright at rachelle@amsmgt.com.

Page 4, III, #9, section B, gives instructions about submitting 5 complete sets of the entire submittal and a digital version on a USB drive.

Please confirm if an electronic copy is acceptable or if electronic and hard copies are required.

RESPONSE TO QUESTION #1:

Both the electronic copy and the five complete sets are required.

QUESTION #2: In VIII, Section B Relevant Project Experience, it asks for similar public projects. Are bid-build projects that are not publicly procured acceptable here?

RESPONSE TO QUESTION #2:

The Owner will allow bid-build projects that are not publicly procured as acceptable references in the Relevant Project Experience section.

QUESTION #3: In VIII, Section B Relevant Project Experience and Section C CMAR/ Alternative Delivery Project Experience, it asks for projects completed or begun in the last five (5) years. Would you consider extending the timeframe further, potentially 7 or 10 years? We all experienced the effects of covid for a good portion of 2020 and 2021, and an extension of the timeframe would allow us to show more appropriate similar project experience.

RESPONSE TO QUESTION #3:

The Owner will accept projects completed or begun in the last 10 years.

END OF ADDENDUM #1



Discovery Health Sciences Foundation, Inc.
Request for Qualifications for Construction Management at Risk
Addendum #2
February 16, 2022

PROJECT: Discovery Schools Arts and Athletic Performance Center

QUESTION #1: Can the Relevant Experience Projects be completed for Private entities as well?

RESPONSE TO QUESTION #1: Yes

QUESTION #2: Under Relevant Project Experience (Section B), item 3 (Personnel Resumes), can resumes be provided in one batch after all the project profile pages, or are resumes to be provided after each project example?

RESPONSE TO QUESTION #2: Revise language in Part VIII.B.1 to read as follows: “Provide project profiles for up to five (5) similar public/bid-build/private projects your firm has completed or begun construction over the past ten (10) years.”

Revise language in Parts VIII.B.3 and VIII.C.3 to read as follows: “Provide personnel resumes of the Project Executive, Project Manager and Project Superintendent, who currently remain employed by the firm, after each project. Duplication of resume(s) is not required if the employee managed more one than one of the submitted projects.”

QUESTION #3: Under Firm History (Section A), the RFQ asks for our sales information and financial statements. Can we provide these in an appendix labeled “Confidential?”

RESPONSE TO QUESTION #3: Sales information and financial statements to be included in an appendix labeled “Confidential” in the hard copies only.

QUESTION #4: Has the Owner considered an early-release agreement with the CMAR for procurement of long-lead material items?

RESPONSE TO QUESTION #4: The Ownership team has not specifically discussed this topic as of yet; but will likely consider in order to expedite the project's completion.

QUESTION #5: Are the project funds currently available?

RESPONSE TO QUESTION #5: One of the funding sources is still being finalized; however, the approval of construction funds is anticipated.

QUESTION #6: After the CMAR is selected, what is the anticipated start date of construction?

RESPONSE TO QUESTION #6: The duration of the preconstruction phase is expected to be no longer than six months from the date of pre-construction services contract and for the construction to commence immediately.

QUESTION #7: What is the expected number of cost estimates/budgets?

RESPONSE TO QUESTION #7: Refer to Parts IV.B, D and E in the RFQ.

QUESTION #8: On page 7 under “Firm History,” Line 3 asks for the firm’s current officers and an organizational chart. Please clarify whether you’re looking for a company-wide organizational chart, or one specifically showing personnel assigned to this project?

RESPONSE TO QUESTION #8: Please provide an organizational chart for both the firm as well as a project-specific organizational chart.

QUESTION #9: Our standard finished proposal sizes at 8” x 10 ¼”. Page 4 of the RFQ states “Submittals are to be formatted and presented as follows: 1. Typed on letter-sized (8-1/2” x 11”) paper.” Is this acceptable for a finished product?

RESPONSE TO QUESTION #9: Yes

QUESTION #10: In the event an org chart or schedule is inserted to this proposal, is it acceptable to print on 11x17 and accordion fold into the proposal?

RESPONSE TO QUESTION #10: Yes

QUESTION #11: Please confirm how you would like to receive the requested digital copy of our firm’s standard safety plan. Is it acceptable to submit via thumb drive?

RESPONSE TO QUESTION #11: Yes

QUESTION #12: The Certificate of Authority requested in Section A1 can only be obtained by foreign/out-of-state business entities. Please confirm a Certificate of Good Standing issued by the Louisiana Secretary of State will suffice for Louisiana businesses.

RESPONSE TO QUESTION #12: Yes

QUESTION #13: Is there an intent to surcharge this site, and should we include the duration of the surcharge in our preliminary schedule?

RESPONSE TO QUESTION #13: The KDHSA site was surcharged several years prior to the Phase 1 project (high school). No additional surcharge will be done.

QUESTION #14: Has a geotechnical report been produced? If so, can the report be made available to proposers?

RESPONSE TO QUESTION #14: Yes - see attached report prepared by Southern Earth Sciences, Inc. dated April 9, 2018.

END OF ADDENDUM #2

Environmental • Construction Materials Testing • Geotechnical • Subsurface Investigations



Environmental • Construction Materials Testing • Geotechnical • Subsurface Investigations



SOUTHERN EARTH SCIENCES, INC.

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Geotechnical, Environmental & Construction Materials Testing
www.soeearth.com

**Proposed Kenner Discovery Health
Sciences Academy
Kenner, LA**

**Report of Subsurface Investigation
and Geotechnical Evaluation**

SESI Project No: B18-020 Rev. 01
April 9, 2018

Baton Rouge Office

11638 Sunbelt Court
Baton Rouge, LA 70809

Tel: (225) 751-1727
Fax: (225) 752-1467
www.soeearth.com



Geotechnical, Environmental & Construction Materials Testing

April 9, 2018

Kenner Discovery Health Sciences Academy
2504 Maine Ave.
Metairie, Louisiana 70003

Attn.: Mr. Don Wheat
CFO

Re: Geotechnical Engineering Study for
Proposed Kenner Discovery Health
Sciences Academy
Kenner, Louisiana
SESI File No.: B18-020 Rev. 01

Dear Mr. Wheat:

Southern Earth Sciences, Inc. (SESI) is pleased to submit our Geotechnical Engineering Study Report for the above referenced project. The report includes the results of field and laboratory testing, recommendations for the foundation and pavement design, and general site preparation as related to soils.

We appreciate the opportunity to perform this Geotechnical Study and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,
SOUTHERN EARTH SCIENCES, INC.

Leigh Brister
Project Manager
Geotechnical Engineering Department



Joe Cobena, P.E.
Branch Manager

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PROJECT INFORMATION

Project Authorization

Southern Earth Sciences, Inc. (SESI) has completed a subsurface exploration for the proposed Kenner Discovery Health Sciences Academy in Kenner, LA. Our services were performed in general accordance with SESI's Geotechnical Engineering Proposal No: 18-0023 dated January 15, 2018. Authorization to proceed with this investigation was received from Mr. Don Wheat, CFO of Kenner Discovery Health Sciences Academy dated February 15, 2018.

Project Description

It is understood that the project will consist of a new, multi-building academy to be constructed in phases. Reportedly, Phase I of this project, which consists of the building for grades 5-12 and the gymnasium, will encompass a total of approximately 180,000+ square feet. The new structures to be built will consist of a three-story high school/middle school building, a lower school building, a natatorium, a gym, and an auditorium. The proposed project site is located at the intersection of Loyola Drive and Vintage Drive in Kenner, Louisiana.

Structural loads were not provided at this time; however, deep foundations systems are anticipated to support the proposed structures. Reportedly, a finished floor elevation of -3.0 NAVD (approximately 1.5 feet above existing grade) is anticipated for the proposed structures.

REPORT LIMITATIONS

While the test locations are representative of subsurface conditions at their respective sites and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and may be encountered. The delineation between soil types shown on the logs is approximate and the description represents our interpretation of subsurface conditions at the designated test location and on the particular date drilled.

This report has been prepared in order to aid in the evaluation of this project and to assist the engineers in design. It is intended for use with regard to the specific project discussed herein and any substantial changes in the project, loads, locations, or assumed grades should be brought to our attention so that we may determine how such changes may affect our conclusions and recommendations. We would appreciate the opportunity to review the plans and specifications for construction to ensure that our conclusions and recommendations are interpreted correctly.

Professional judgments on design alternatives and criteria are presented in this report. These are based partly on our evaluations of technical information gathered, partly on our understanding of the characteristics of the project being planned, and partly on our general experience with subsurface conditions in the area. We do not guarantee performance of the project in any respect,

only that our engineering work and judgments rendered meet the standard of care of our profession.

As the project geotechnical engineer of record that developed the design recommendations, please be aware that we cannot accept responsibility for the performance of the foundation system if we are not afforded the opportunity to confirm that our recommendations have been followed. Accordingly, we recommend that Southern Earth Sciences, Inc. be retained on this project to perform observation and field-testing services during the construction phase of this project. Please see the attached *Construction Materials Testing* sheet for contact information.

This report is exclusively for the use and benefit of the addressee(s) identified on the first page of this report and is not for the use or benefit of, nor may it be relied upon by any other person or entity. The contents of this report may not be quoted in whole or in part or distributed to any person or entity other than the addressee(s) hereof without, in each case, advanced written consent.

PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to explore the subsurface conditions at the site to enable an evaluation for site preparation and foundation design. As proposed by SESI and understood by the addressee, one (1) soil boring to a depth of about 120 feet below existing grade within the footprint of the proposed structure and five (5) borings to a depth of about six (6) feet within the parking/drive areas were drilled and sampled for this project. In addition, 10 CPT soundings were pushed to a depth of about 80 feet below existing grade within the footprint of the new structures. All references to depth are based on the existing grade at the time of our field investigation.

The scope of services also included conducting laboratory tests on selected samples recovered from the test locations. These tests may have included visual description and classification, moisture content, liquid limit, plastic limit, and unconfined compressive strength. Both field and laboratory testing procedures are briefly discussed in Appendix A of this report.

This report includes a site description, discusses the conditions of the existing subsoil materials at the site, and presents recommendations on the following:

- Site preparation;
- Foundation type, depth, and estimated settlement;
- Rigid and flexible pavement recommendations; and,
- Comments regarding factors that will impact construction and performance of the proposed project.

The scope of geotechnical services did not include an environmental site assessment for determining the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater, or air on, below, or around the site. Any statement in this report or on the

boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

In addition, SESI did not provide any service to investigate or detect the presence of moisture, mold, or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence or amplification of the same. The client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. The client further acknowledges that site conditions are outside of SESI's control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, SESI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

FIELD EXPLORATION

The field exploration, performed to evaluate the engineering characteristics of the foundation materials, included drilling the test locations and recovering soil samples.

As previously mentioned, one (1) soil boring to a depth of about 120 feet below existing grade within the footprint of the proposed structure and five (5) borings to a depth of about six (6) feet within the parking/drive areas were drilled and sampled for this project. In addition, ten (10) CPT Soundings were pushed to a depth of about 80 feet below existing grade within the footprints of the new structures. The depths and sites of the test locations were as proposed by the addressee and understood by SESI. The test locations were determined at the site using handheld GPS. The *Test Location Plan* sheet, included in Appendix D, presents the approximate sites of the test locations.

Descriptions of soil and groundwater conditions encountered in the test locations are shown on their respective logs in Appendix D. The boring logs are labeled with their initial letter followed by boring number. For example, log "B-1" represents boring '1' and log "P-1" represents parking boring '1' drilled for this project.

SUBSURFACE CONDITIONS

Subsurface Materials

The general subsurface description presented in the table below is generalized in nature to highlight the major subsurface materials features and characteristics. The *Soil Boring Log* sheets, included in Appendix D, present specific information at individual test location including: soil description, stratification, ground water level, tests' location, and laboratory tests' results. This information represents the actual conditions at the test locations. Variations may occur and should be expected between and beyond test locations. The stratification represents the approximate boundary between subsurface materials and the actual transition may be gradual.

Boring Number	Depth (ft.)	General Classification
B-1	0-2	Very Loose, Tan Fine Sand
	2-8	Loose to Medium Dense, Tan and Gray Fine Sand
	8-13	Very Soft, Brown and Gray Organic Clay
	13-18	Gray Lean Clay
	18-58	Very Soft to Soft, Gray Fat Clay
	58-63	Alternating Layers of Gray Fat Clay and Gray Sandy Silt
	63-78	Gray Fat Clay
	78-88	Medium Stiff, Light Gray Fat Clay
	88-93	Gray Silty Sand
	93-98	Very Stiff, Greenish Gray and Gray Fat Clay
	98-103	Very Stiff, Greenish Gray Lean Clay
	103-120	Stiff, Gray and Greenish Gray Fat Clay
P-1	0-6	Loose, Gray and Tan Fine Sand
P-2	0-6	Very Loose to Loose, Gray and Tan Fine Sand
P-3	0-6	Very Loose to Loose, Gray and Tan Fine Sand
P-4	0-2	Very Loose, Tan Fine Sand
	2-6	Medium Dense, Gray and Tan Fine Sand
P-5	0-2	Very Loose, Tan Fine Sand
	2-4	Medium Dense, Gray Fine Sand
	4-6	Medium Dense, Gray and Tan Fine Sand

Generally, the soils data recovered from the CPTs confirmed the findings at the soil borings locations.

Groundwater

Free groundwater level was detected at all test locations at the time of our field investigation. The depth of free groundwater level at all locations across the site were recorded between one (1) and two (2) feet below existing grade. We caution that the clay soils present at this site will have a tendency to retain moisture and to create perched water conditions after periods of wet weather. Fluctuations in the groundwater level will occur due to variances in rainfall, elevation, drainage, types of soil encountered and other factors not evident at the time measurements were made. Groundwater levels should be verified prior to construction. Groundwater levels encountered at each test location at the time of our investigation are shown on the appropriate *Soil Boring Log* sheets attached in Appendix D. Reference to depth has been made with respect to the existing ground surface.

DISCUSSION

Based on SESI's field exploration and laboratory test results and CPT data, the encountered subsoil materials provided poor strength parameters. The subsurface clay soil encountered at all locations are generally soft to very soft in nature to a depth of about 78 feet below grade and

are underlain by medium stiff to very stiff fat clays to 120 feet, the maximum depth explored. In addition, the upper six (6) feet of the project site generally consist of very loose to medium dense fine sands.

Considering the soft and compressible nature of the soils encountered in the upper 80 feet of the site, it is recommended that the foundation and pavement design take into account the potential settlement that is likely to occur. The potential for settlement will increase as additional fill is placed on site; therefore, SESI should be allowed the opportunity to revise our recommendations, if necessary, once the final grading plan is developed.

After analysis of subsurface conditions and provided/assumed data, SESI determined a deep foundation system consisting of driven piles is suitable to support the proposed structure(s) if and when the following sections and appendices are correctly interpreted and applied.

Please review the following sections for further information on the corresponding site, foundation, and pavement recommendations.

RECOMMENDATIONS

Site Development Recommendations

Site Preparation

Prior to the development of any structure or fill deposit, the complete earthwork area must be properly cleaned. SESI recommends that any existing structural elements, all top soil materials containing organic matter, vegetation or any other foreign matter, debris, deleterious materials, and soft pockets present shall be stripped completely from the site to make the ground surface properly leveled. The actual removal depth shall be determined in the field by SESI's Geotechnical Engineer or his representative. Please note that the stripped materials can only be used in landscaping, but not at any structural area.

For non-pile supported areas (i.e. landings, sidewalks, etc.), SESI also recommends that any surficial soils that are weak and/or high in silt content, observed to rut or deflect excessively (greater than one (1) inch) during site preparation, should be undercut to a competent layer and replaced with properly compacted structural fill material. Please note that the presence of soil with a combination of high silt content and high moisture contents within the foundation areas may cause construction and in-service problems such as pumping action, compaction, etc.

Seismic Site Classification

As requested, the seismic site classification of the proposed site was assessed in accordance with the latest edition of the International Building Code (IBC) 2012.

Review of boring "B-1" revealed the presence of cohesive soils to a depth of about 90 feet. Per section 1613.3.2 of IBC 2012 or Chapter 20 of ASCE 7, the estimated average undrained shear strength (S_u) of cohesive soils is less than 1000 psf and Standard Penetration Resistance (N_{ch}) of cohesive soils is on the order of 15 or less. Based on this information and Table 20.3-1 of Chapter 20 in ASCE 7, the present project site should be qualified as "SITE CLASS E."

Deep Foundation Recommendations

Driven Pile Recommendations

Based on our analysis of subsurface conditions and provided/assumed design data, treated timber-composite pile foundation systems were evaluated for the proposed structures. Allowable compression and tension capacities for the treated timber-composite piles of various sizes are provided in the table below. Pile capacities for pile types and/or lengths other than those listed below can be provided upon request; however, additional fees may be required. The presented allowable capacities for piles are based on a factor of safety (FS) of two (2) in compression and three (3) in tension, assuming that at least one load test will be performed.

Estimated Capacities for Driven Piles ¹				
Pile Type	Size	Pile Embedment Depth ² (feet)	Allowable Compression Capacity ³ (Tons)	Allowable Tension Capacity ³ (Tons)
			FS = 2.0	FS = 3.0
ASTM D-25 Treated Timber-Composite Pile	13-in butt & minimum 7-in tip	75	15	8
		80	19	11
		85	25	13

Notes: 1. These are soil-pile related capacities. The structural capacity of the piles to support design loads is beyond our scope of services and must be verified by others. 2. Pile lengths are referenced from the existing ground surface at the time of field exploration. Additional pile length should be added depending on the design grade. 3. These capacities are based on soil properties encountered at this site during SESI's limited field exploration as well as our experience with similar projects in the vicinity. Due to variances in soil properties across the site, it may be required to adjust the allowable capacities based on the results of the static load test.

We recommend that pile tip elevations be designed not less than 75 feet below existing grade. This will ensure that the piles are properly seated within the bearing stratum of medium dense silts and medium stiff clays encountered at this depth and ensure that the estimated capacities are achieved.

Pile Supported Floor Slab

It should be noted that the soft subsurface soils encountered at the project site are compressible. Therefore, the building floor slab and other elements structurally attached to the building including the stairwells, driveways, and landings immediately adjacent to the building should be pile supported. The floor slab should have an adequate number of joints to reduce cracking resulting from any differential movement and shrinkage. It is also recommended that a polyethylene sheeting vapor barrier be provided at the floor slab/fill soil interface.

All utility lines in the building area should be hung from the slab. Hangers and connections used should be made of stainless steel, meeting the applicable Building Code. Flexible connections must be provided at the interface of pile supported and non-pile supported areas to accommodate at least six (6) inches of settlement.

Lateral Capacity

For deep foundations, the lateral loads are resisted by the soil as well as the rigidity of the pile. If deemed necessary, SESI can perform lateral capacity analyses by methods ranging from chart solutions to finite difference methods once the pile type, length and group dimensions are determined.

Pile Load Test Program

Prior to the installation of production piling, it is recommended that pile capacities be verified by field load tests. SESI recommends performing at least one (1) static pile load test for this project. If different pile types or embedment depths should be used, then it is recommended that pile capacity for each pile type and/or length be verified by a pile load test.

We recommend at least four (4) probe piles be installed at various locations within the project footprint. Based upon our monitoring of the probe piles, Southern Earth Sciences, Inc. will select the location of the static pile load test(s). For driven piles, we also recommend monitoring all probe piles using PDA during their installation.

The test piles shall be installed with the same equipment and in the same manner as is proposed for installation of the production piling. The test pile shall be load tested to failure or three times the design capacity in compression as outlined by ASTM D-1143.

Since adjustments of the pile lengths and/or installation procedures may be made based on the test pile installation and load test results, we recommend the test pile program and production pile installation be performed under the direct supervision of the SESI project geotechnical engineer of record. If suitable to the design engineer, High Strain Dynamic Testing (PDA Testing), in accordance with ASTM Specification D-4945 – *Standard Test Method for High-Strain Dynamic Testing of Deep Foundations* would be an acceptable alternative to static

compression and tension load tests. PDA testing of driven piles should be conducted during the initial installation. A re-strike should be performed after a wait period of at least seven (7) days.

Driven piles should be allowed to set for a minimum of 14 days prior to loading. Pile load test results would be used to verify the placement procedures and that the pile section produces the desired design capacity. PDA data would be evaluated using signal matching through the Case Method Wave Analysis Program (CAPWAP) to estimate the installed capacity of the test pile. The test pile section, equipment, and installation procedures should be the same as those planned for use in the foundation. Since adjustments of the pile lengths or installation procedures may be made based on the test pile installation and load results, we recommend that the test pile program and production pile installation be performed under the supervision of SESI's Geotechnical Engineer or his representative.

Pile Settlement

Settlement of individual piles properly driven to the design depths, and loaded to the allowable design capacities as described in this report are estimated to be approximately one (1) inch or less. **Estimated settlement is based on the assumption that there will be minimal fill placed above existing grade and therefore will be no 'drown drag' effect on the piles. If the finished grade of any area of project site is raised more than two (2) feet above existing grade, SESI must be notified and allowed to reevaluate the estimated settlements and pile capacities.**

Group Efficiency

The ultimate capacity of a pile cluster depends on the characteristics of the supporting soil, pile length, pile spacing, pile shape, and the effects of pile installation. The most frequently used method to evaluate group capacity is that proposed by Terzaghi. This procedure is based on the premise that a pile cluster fails as a unit and may be treated as an equivalent pier. Experience, particularly the results of model tests, has shown that this method is applicable only to clusters of closely spaced piles in clay. The efficiency of pile groups in clay is always equal to or less than one. At relatively close pile spacing, groups in clay fail as blocks.

For this project, we recommend installing piles at a minimum center to center spacing of 3 pile diameters (3d). For this spacing and with the pile cap in firm contact with the soil, a reduction in capacity due to group effects should not be required. We recommend using a group efficiency factor of 1.0.

If the pile cap will not be in firm contact with the soil, group effects could reduce the pile capacities and should be evaluated accordingly when the actual pile length and layout are known.

Pile Installation

All pile driving operations shall be performed under experienced supervision and with efficiently operating mechanical equipment. Hammers with minimum rated energy of 15,000 ft-lbs for treated timber piles shall be considered. However, the hammer selection is the responsibility of the contractor and shall be adequately large enough to reach proposed tip elevations and develop the required capacities, but take into account the potential vibrations resulting from pile driving operations.

Piles in large groups should be driven from the center outward. Any piles which have heaved a quarter of an inch ($\frac{1}{4}$ ") or more during driving of subsequent piles shall be re-driven to their original final resistance or their original embedment if originally driven to full penetration.

In no case shall the contractor be allowed to change pile driving equipment, pile types and/or sizes without written approval from SESI's Geotechnical Engineer.

Pile Driving Monitoring

Records of pile size and length, driving equipment, driving resistance versus depth, tip evaluation of piles, etc. shall be permanently kept.

Sometimes premature refusal occurs due to poor performance of the hammer rather than from soil resistance. Any changes in hammer blow counts shall be carefully examined before making any decisions about the pile penetration. In addition, for diesel hammers, this can be influenced by the stroke height of hammer. Therefore, it is strongly recommended to monitor hammer stroke height using Saximeter.

Since testing and inspection services are within SESI's scope of work, we recommend that our firm be retained to assist you to monitor the driving of test piles, select the piles to be tested, monitor the pile load test, evaluate the results of the load test, establish final pile lengths, and maintain vibration and driving records of all piles installed.

Vibration Monitoring During Pile Driving

Due to existing structures close to the project site, we recommend that vibration monitoring be performed during all pile driving activities to ensure that vibrations are less than the threshold value referenced below. If vibrations become excessive, then alternative pile driving techniques may be required to reduce vibrations.

Thresholds of vibration induced cracking are generally site specific and depend on the type and age of the structure, the frequency of ground vibration, and the type of soil supporting the structure. Research by the U.S. Bureau of Mines (USBM) and other investigative groups have established criteria relating the occurrence of structural damage to certain frequencies and level of peak ground

motion. According to the USBM, within the range of four (4) to 12 hertz, the maximum particle velocity recommended to preclude the threshold damage to plaster-on-wood for old structures is 0.5 inch per second (ips) and 0.1 ips established for historic monuments. Considering the type of structures adjacent to the site, a threshold limit for vibration (PPV) of 0.25 ips, which is used in the area by structural engineers, should be maintained to limit vibration and minimize its impact on the adjacent structures.

PAVEMENT RECOMMENDATIONS

Pavement Sections

Actual traffic type and frequency anticipated has not been provided at this time. However, SESI assumes that the average daily traffic (ADT) will consist of mostly passenger vehicles and occasional truck traffic (e.g. Garbage trucks). Moreover, our scope of work did not include extensive sampling and CBR testing of the existing subgrade or potential sources of imported fill for the specific purpose of a detailed pavement analysis. Instead, SESI assumed pavement-related design parameters that are considered to be typical for the area soil types. Please note that if the assumed traffic data varies significantly from actual or anticipated traffic, SESI should be contacted for re-evaluation of pavement recommendations.

The pavement subgrade, base and pavement should be prepared as discussed in the “Site Development Recommendations” section and Appendices B and C of this report. The recommended pavement thicknesses presented below are considered typical and minimum for the assumed parameters at the site. We understand that budgetary considerations sometimes warrant thinner pavement sections than those presented. However, the client, the owner, and the project designers should be aware that thinner pavement sections may result in increased maintenance costs and lower than anticipated pavement life.

Based on our empirical analysis from field and lab test results, a CBR of 3 and a Modulus of Subgrade Reaction (k) of 110 pci should be assigned to the near surface soils. With these assumptions, it is possible to use a typical “standard” pavement section consisting of the following:

RIGID PAVEMENT		
Pavement Materials	Minimum Thickness (in)	
	Parking and Drive Areas for Pedestrian Vehicles	Drives for Trucks up to 10,000-lb Single-axle Loads
Reinforced Portland Cement Concrete	5	6
Compacted Limestone Aggregate Base Course	4	6
Compacted and Proof Rolled Sub-Base	10	10

Rigid concrete pavement consisting of a minimum eight (8) inches of concrete is recommended where trash dumpsters or semi-trailers are to be parked on the pavement or where considerable load is transferred from relatively small steel wheels, such as truck dollies. This thickness should provide better distribution of surface loads to the subgrade without causing deformation of the surface.

The base course should meet the requirements of the latest edition of the Louisiana Standard Specifications for Roads and Bridges Manual (LSSRB), Section 1003.3D. The base course should be compacted to at least 95 percent of maximum dry density near the optimum moisture content in accordance with ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).

Pavement materials may be placed after the subgrade or structural fill has been properly proof rolled or compacted, and fine-graded. These activities shall be accomplished following the Louisiana Department of Transportation and Development Standard Specifications for Road and Bridge Construction guidelines.

Proper finishing of concrete pavement requires the use of appropriate construction joints to reduce cracking. Construction joints shall be designed in accordance with the current Portland Cement Association and the American Concrete Institute guidelines. Joints should be sealed to reduce the potential for water infiltration into the supporting soils. The design of steel reinforcement should be in accordance with current accepted codes.

FLEXIBLE PAVEMENT		
Pavement Materials	Minimum Thickness (in)	
	Parking and Drive Areas for Pedestrian Vehicles	Drives for Trucks up to 10,000-lb Single-axle Loads
Asphaltic Concrete Wearing Course	1.5	1.5
Asphaltic Concrete Binder Course	1.5	2.5
Compacted Limestone Aggregate Base Course	6	8
Compacted and Proof Rolled Sub-Base	12	12

Asphaltic concrete should meet the requirements of the latest edition of the requirements of Part V of the latest edition of the LSSRB. The aggregate base should meet the requirements of the and Sub-Section 1003 of the LSSRB. The base and structural fill should be compacted to at least 95 percent of the maximum dry density near the optimum moisture content in accordance with ASTM D698.

Water should not be allowed to pond behind curbs and saturate the base. In down grade areas, the limestone base shall extend through the slope to provide an exit path for any water accumulating under the pavement.

Alternative Base Course Option

A cement treated base course of a minimum thickness of 12 inches for a flexible pavement section is an acceptable alternative to the aggregate base courses shown in the Flexible Pavement table above. A minimum of 10% by volume of cement is recommended to use for soil-cement base course and shall be prepared in general accordance with LSSRB, Section 303-04. Please note that the cement treatment of the roadways shall be conducted in general accordance with LSSRB, Section 303.

Lime conditioning is required prior to cement treatment in accordance with Section 304 for Type C treatment if the PI (Plasticity Index) of soil is more than 22. Percent by volume of lime required for lime conditioning is 6 when PI of soil is between 22 and 28, and 9 when PI of soil is between 29 and 35. The treated soil should be compacted at least 95% of maximum dry density near the optimum moisture content in accordance with Sub-section 303.11 of LSSRB. Cement treated base course shall yield a compressive strength of at least 300 psi at 7 days as determined by a mix design in accordance with DOTD TR 432 Standard Procedure.

It should be noted that although the cement treated base may be adequate to support the anticipated traffic loads, some reflective cracking should be anticipated in the new pavement as a

result of shrinkage cracks that may develop in the cement treated base prior to asphalt placement. The use of three (3) to four (4) inches of limestone at the cement treated base and asphalt interface will help reduce reflective cracking and extend the life of the pavement.

Please note that caution should be used when cement and/or lime treatment is performed on site in closely populated areas.



APPENDIX

APPENDIX A FIELD AND LABORATORY PROCEDURES

Drilling Methods and Sampling Procedures

The borings were drilled with an ATV (all-terrain vehicle) mounted drill rig using hollow-stem auger or wet rotary drilling techniques to advance the borehole. Undisturbed samples were obtained using three (3) inch diameter thin-walled Shelby tube sampling procedures in general accordance with ASTM D-1587 *Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes*. These samples were extruded in the field with a hydraulic ram, and were identified according to project number, boring number and depth, wrapped in aluminum foil and placed in plastic bags to preserve the natural moisture condition; then, they were transported to the laboratory in containers to minimize disturbance.

When undisturbed samples could not be recovered, disturbed samples were obtained in accordance to the procedures of ASTM D-1586 *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*. These samples were also identified according to project number, boring number and depth, and were placed in plastic bags and transported to the laboratory for testing. The depths at which undisturbed and/or disturbed samples were obtained are shown on the attached boring logs in Appendix E of this report.

Laboratory Testing Program

A supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of the subsurface materials. This program may have included the following procedures:

- Visual description and classification and determination of the moisture content on all samples.
- ASTM D2216 *Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*: This test is performed to determine the water (moisture) content of soils obtained from the field exploration. The water content is the ratio, expressed as a percentage, of the mass of “free” water in a given mass of soil to the mass of the dry soil solids.
- ASTM D4318 *Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils*: These test methods cover the determination of the liquid limit, plastic limit, and the plasticity index of soils which are used to classify the soil and evaluate index properties and residual strength characteristics of the soils.
- ASTM D2166 *Standard Test Method for Unconfined Compressive Strength of Cohesive Soils*: Unconfined Compressive Strength (UC) tests are used to evaluate the shear strength characteristics of soils.

- *ASTM D-422 Standard Test Method for Particle-Size Analysis of Soils*: This test method covers the quantitative determination of the distribution of particle sizes in soils. The distribution of larger particles is determined by sieving (No. 200 sieve), while the distribution of smaller particles is determined by a sedimentation process, using a hydrometer.

The results of these tests are found in the accompanying boring logs located in the Appendix. Please note that the samples obtained and not tested will be retained for a period of thirty (30) days; if further instructions are not received, SESI will dispose the samples at that time.

APPENDIX B

STRUCTURAL FILL SPECIFICATIONS AND CONSIDERATIONS

Structural Fill Materials

After subgrade preparation and observation has been completed, structural fill placement, if necessary, may begin. The structural fill should consist of lean clays and sandy lean clays (CL) or clayey sands (SC) having the following recommended material properties:

- a. Liquid Limit: 40 maximum
- b. Plasticity Index: 12 to 22 maximum
- c. Inert Material (Non-Expansive)
- d. Free of Organics
- e. Maximum Particle Size: 2-in

This material must be certified and approved by the Geotechnical Engineer prior to its use.

Structural Fill Deposit Construction

After all surface preparation and observation has been completed, the structural fill activities may begin. These activities must be performed in a sequential order where lower elevations must be worked before higher ones. The structural fill shall be deposited in lifts of eight (8) inches of loose material. Each lift shall be compacted and certified by the Geotechnical Engineer or a representative prior to placement of other lifts. The passing criteria shall be a 95% of the maximum dry density as determined by ASTM D-698, *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))*, and a moisture content between one (1) below and three (3) above percentages of the optimum moisture content. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by diskings or scarifying. As a guideline, it is recommended that field density tests be performed at a frequency of not less than one test per 2,500 square feet.

It is important to maintain the structural fill thickness as uniform as possible. Uneven fill thicknesses under a structure may cause differential soil responses to the applied loads which can produce cracking, settling, or tilting of the structure. Uniform fill areas shall consider the footprint of the structure plus a five (5) feet strip around its perimeter.

Fill slopes shall be maintained at a maximum 2 Horizontal: 1 Vertical steepness. The runoff of water across the faces of the slopes shall be avoided by appropriate drainage ways. In addition, appropriate drainage ways shall be maintained at all earthwork surface areas in order to not affect compaction.

Proof Rolling

Upon completion of the stripping activities, the exposed areas shall be properly proof rolled in order to prepare the natural terrain to receive the design structural fill and traffic loads. The proof roll consists of compacting the exposed surface with a 20- to 25-ton loaded dump truck. Surface soils that are observed to rut or deflect under the truck load should be undercut and replaced with the proper structural fill. These activities should be performed during a period of dry weather and should be supervised by a Geotechnical Engineer or a representative.



Geotechnical, Environmental & Construction Materials Testing

APPENDIX C CONSTRUCTION CONSIDERATIONS

Observation and Testing

The preceding recommendations require a close supervision of the Geotechnical Engineer or representative; therefore, it is recommended that SESI be retained to provide observation and testing for the complete duration of all earthwork and foundation activities for this project. SESI cannot accept responsibility for any conditions deviated from those described in this report, nor for the performance of the foundation if not engaged to provide construction observation and testing.

Moisture Sensitive Soils/Weather Related Concerns

Most of the subsurface materials encountered at this site are expected to be sensitive to disturbances caused by changes in moisture content. During wet weather periods, the increment of the moisture content of the soil may cause a significant reduction of the soil strength and support capabilities. Furthermore, soils that become wet may be slow to dry, thus significantly retarding the progress of grading and compaction activities. For these reasons, it will be advantageous to perform earthwork and foundation construction activities during dry weather.

Foundation Maintenance

Water shall be kept from ponding adjacent to the structure at all times in order to prevent reductions of the soil strength and support capabilities. For this, the following measures shall be implemented:

- a) Surface Drainage – always drain away from the foundation; on vegetated ground, a minimum slope of 5% is required. Never allow water to accumulate close to or around the foundation.
- b) Landscaping:
 - Avoid placing plants immediately adjacent to the foundation.
 - Avoid placing sprinkler system pipes near the foundation (they could leak).
 - Direct sprinkler heads away from the foundation.

Trees shall be planted at a minimum distance of half the anticipated canopy diameter or twenty (20) feet, whichever is larger, from the foundation edge. If existing trees are closer than this, they should be thoroughly soaked at least twice a week during dry periods and once a week during moderate rainfall periods.

Excavations Regulations

In the Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better

insure the safety of workmen entering trenches or excavations. It is mandated, by this federal regulation, that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines.

The contractor is solely responsible for designing and constructing stable, temporary excavations and shall shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. SESI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.



APPENDIX D
SUPPORTING DOCUMENTS



PROPOSED KENNER DISCOVERY HEALTH
SCIENCES ACADEMY
KENNER, LOUISIANA
SESI FILE NO.: B18-020

SOUTHERN EARTH SCIENCES, INC.
Geotechnical, Environmental & Construction Materials Testing
www.soearth.com

FIGURE 1
TEST LOCATION PLAN

BORING LOG

BORING NO.:
PROJECT:
PROJECT LOCATION:
BORING LOCATION:
BORING ELEVATION:
GEOL/ENGR:
METHOD:

PROJECT NO.:
DATE DRILLED:
DATE COMPLETED:
WATER LEVEL:
WATER LEVEL DATE:
LOGGED BY:
DRILLER:
















DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.) or Penetrometer (TSF)	Unconfined Compressive Strength (TSF)	Moisture Content (%)	Dry Unit Weight (PCF)	LL	PI	Symbol	MATERIAL CLASSIFICATION
5									Description of strata as follows: Strength (or Consistency), Color, Minor Constituent, Major Constituent, additional observations, etc.
10									
15									
20									
25									
30									
35									
40									

Field evaluation of shear strength/relative density:
 Standard Penetration Test (ASTM D-1586) in Blows/Ft.
 Pocket penetrometer readings in Tons/Sq. Ft.

Groundwater second reading

Groundwater first encountered

Graphical presentation of material type:

 Fat CLAY	 SILT	 SAND	 FILL
 Lean CLAY	 CLAYEY SILT	 CLAYEY SAND	 GRAVEL
 ORGANIC CLAY	 SANDY SILT	 SILTY SAND	 GRAVELLY SAND
 PEAT	 ORGANIC SILT	 SANDY CLAY	

Laboratory Information



As determined by Unconfined Compression (ASTM D-2166) or Unconsolidated Undrained Triaxial (ASTM D-2850), if noted.



Determined using applicable portions of ASTM D-2166 and ASTM D-2216.

Determined using ASTM D-2216 or D-4959.

Determined using ASTM D-4318. Provides data for application of Unified Classification System (UCS).

COMMENTS:

 Shelby Tube Sample
 Auger Sample

 Split-spoon Sample
 No Recovery

Sample recovery method.

GENERAL NOTES FROM LITERATURE

Unified Soil Classification System

Coarse-grained soils, More than 50% retained on US # 200 Sieve	Gravels: More than 50% retained on US # 4 Sieve	Clean Gravel (little or no fines)	GW	Well graded gravels and gravel-sand mixtures with little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures with little or no fines
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Gravels: More than 50% passing through US # 4 Sieve	Clean sand (little or no fines)	SW	Well graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-grained soils, More than 50% passed through US Sieve # 200	Silts and Clays with liquid limit (LL) less than 50		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			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 with liquid limit (LL) greater than 50		MH	Inorganic silts, micaceous diatomaceous fine sand or silty soil, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
	High organic soils		PT	Peat, muck and other highly organic soils

Classification of Granular Soils as per U.S. Standard Sieve Analysis

Description	Boulders	Cobbles	Gravel		Sand			Silt or Clay
			Coarse	Fine	Coarse	Medium	Fine	
Sieve Size	>12 inches	3-12 inches	0.75 to 3 inches	#4 to 0.75 inches	#10-#4	#40-#10	#200-#40	<#200

Note: #4=5mm, #10=5mm, #40=0.4mm, #200=0.8mm

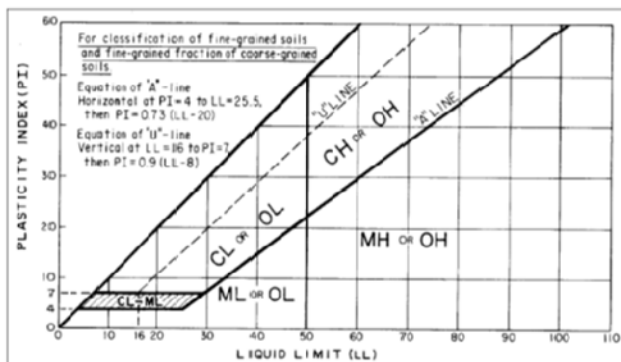
Consistency of Cohesive Soils

Consistency	Unconfined Compressive Strength, (tsf)	SPT* (N)
Very Soft	<0.25	<2
Soft	0.25 to 0.50	2 to 4
Medium Stiff	0.50 to 1.0	5 to 8
Stiff	1.0 to 2.0	9 to 15
Very Stiff	2.0 to 4.0	16 to 30
Hard	>4.0	>30

*Standard Penetration test (SPT) value (N-value) is a number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18 inches penetration with a 140-pound hammer falling from 30 in. height.

Relative Density of Granular Soils

Relative Density	SPT* (N)
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 24
Dense	25 to 50
Very Dense	>50



Plasticity Characteristics

Plasticity	Plasticity Index (PI)
Non-Plastic	0
Slight	1 to 5
Low	5 to 10
Medium	11 to 20
High	21 to 40
Very high	> 40

BORING LOG

BORING NO.: B-1

PROJECT NO.: B18-020

PROJECT: KENNER DISCOVERY HEALTH SCIENCES ACADEMY

DATE DRILLED: 02/05/18

PROJECT LOCATION: KENNER, LA

DATE COMPLETED: 02/05/18

BORING LOCATION: 30° 2'1.36"N; 90°16'9.82"W

DEPTH TO WATER LEVEL: 2 ft

BORING ELEVATION: EXISTING GRADE

WATER LEVEL DATE: 02/05/18

GEOL/ENGR: MJ

LOGGED BY: WW


METHOD: AUGER / WET

DRILLER: SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Unconfined Compressive Strength (tsf)	Moisture Content (%)	Dry Unit Weight (PCF)	LL	PI	SYMBOL	MATERIAL CLASSIFICATION
0		3b/ft ^{1/2/1}		24					Very Loose, Tan Fine SAND (SP)
1		12b/ft ^{2/6/6}		22					Loose to Medium Dense, Tan and Gray Fine SAND with shells and trace silt (SP)
2		7b/ft ^{6/5/2}	(1)	25					
3		8b/ft ^{3/4/4}		26					
10			0.24 ⁽²⁾	186	32	392	242		Very Soft, Brown and Gray Organic CLAY with silt (PT)
15	B			79					Gray Lean CLAY with organics and sand (CL)
20				63		68	35		Very Soft to Soft, Gray Fat CLAY with silty sand layers/streaks (CH)
25			0.23 ⁽³⁾	68	57				
30				79					
35				72		85	56		
40			0.22 ⁽⁴⁾	64	61				
45				73		58	35		
50				73					
55			0.28 ⁽⁵⁾	63	59				
60				45					Alternating Layers of Gray Fat CLAY (CH) and Gray Sandy SILT (ML)
65				44		57	38		Gray Fat CLAY with trace organics, peat layers, silty sand pockets, and trace shells (CH)

COMMENTS: WATER LEVEL INITIALLY = 2'; AFTER 15 MINUTES = 1'

 SPLIT SPOON

 SHELBY TUBE

 BAG

BORING LOG

BORING NO.: B-1

PROJECT NO.: B18-020

PROJECT: KENNER DISCOVERY HEALTH SCIENCES ACADEMY

DATE DRILLED: 02/05/18

PROJECT LOCATION: KENNER, LA

DATE COMPLETED: 02/05/18

BORING LOCATION: 30° 2'1.36"N; 90°16'9.82"W

DEPTH TO WATER LEVEL: 2 ft

BORING ELEVATION: EXISTING GRADE






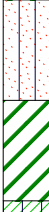













WATER LEVEL DATE: 02/05/18

GEOL/ENGR: MJ


LOGGED BY: WW

METHOD: AUGER / WET

DRILLER: SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Unconfined Compressive Strength (tsf)	Moisture Content (%)	Dry Unit Weight (PCF)	LL	PI	SYMBOL	MATERIAL CLASSIFICATION
70			0.30 ⁽⁶⁾	63	60				-- soft
				67					
80		7b/ft ^{3/3/4}		30					Medium Stiff, Light Gray Fat CLAY with organics, peat layers, and silty sand pockets (CH)
				113		53	35		
90			⁽⁷⁾	27					Gray Silty SAND with clay (SM)
			2.71 ⁽⁸⁾	24	99				Very Stiff, Greenish Gray and Gray Fat CLAY with silt (CH)
100		17b/ft ^{6/7/10}	⁽⁹⁾	30					Very Stiff, Greenish Gray Lean CLAY with fine sand (CL)
				28		50	31		Stiff, Gray and Greenish Gray Fat CLAY with shells and silt (CH)
110		14b/ft ^{5/6/8}		36					
		15b/ft ^{6/6/9}	⁽¹⁰⁾	40					
120		9b/ft ^{4/4/5}		50					
									Bottom at 120 Feet
130									(1) % Passing # 200 = 3.4% (2) UU Triaxial Test at 3.0 psi (3) UU Triaxial Test at 7.9 psi (4) UU Triaxial Test at 12.9 psi (5) UU Triaxial Test at 17.8 psi (6) UU Triaxial Test at 22.8 psi (7) % Passing # 200 = 46.3% (8) UU Triaxial Test at 31.0 psi (9) % Passing # 200 = 95.0% (10) % Passing # 200 = 72.5%

COMMENTS: WATER LEVEL INITIALLY = 2'; AFTER 15 MINUTES = 1'

 SPLIT SPOON SHELBY TUBE BAG

BORING LOG

BORING NO.: P-1**PROJECT NO.:** B18-020**PROJECT:** KENNER DISCOVERY HEALTH SCIENCES ACADEMY**DATE DRILLED:** 02/05/18**PROJECT LOCATION:** KENNER, LA**DATE COMPLETED:** 02/05/18**BORING LOCATION:** 30° 2'4.48"N; 90°16'18.03"W**DEPTH TO WATER LEVEL:** 2 ft**BORING ELEVATION:** EXISTING GRADE**WATER LEVEL DATE:** 02/05/18**GEOL/ENGR:** MJ**LOGGED BY:** WW**METHOD:** AUGER / WET**DRILLER:** SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Moisture Content (%)	SYMBOL	MATERIAL CLASSIFICATION
1		4b/ft ^{1/2/2}	19 ⁽¹⁾		Loose, Gray and Tan Fine SAND with silt (SP)
2					
3		8b/ft ^{1/3/5}	24		
4					
5		7b/ft ^{3/4/3}	24		Bottom at 6 Feet (1) % Passing # 200 = 2.6%
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

COMMENTS:
☒ SPLIT SPOON

BORING LOG

BORING NO.: P-2**PROJECT NO.:** B18-020**PROJECT:** KENNER DISCOVERY HEALTH SCIENCES ACADEMY**DATE DRILLED:** 02/05/18**PROJECT LOCATION:** KENNER, LA**DATE COMPLETED:** 02/05/18**BORING LOCATION:** 30° 2'4.23"N; 90°16'13.09"W**DEPTH TO WATER LEVEL:** 2 ft**BORING ELEVATION:** EXISTING GRADE**WATER LEVEL DATE:** 02/05/18**GEOL/ENGR:** MJ**LOGGED BY:** WW**METHOD:** AUGER / WET**DRILLER:** SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Moisture Content (%)	SYMBOL	MATERIAL CLASSIFICATION
1		3b/ft ^{2/2/1}	24		Very Loose to Loose, Gray and Tan Fine SAND with roots and silt (SP)
2					
3		10b/ft ^{2/5/5}	21 ⁽¹⁾		
4					
5		7b/ft ^{3/4/3}	23		Bottom at 6 Feet (1) % Passing # 200 = 3.3%
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

COMMENTS:
☒ SPLIT SPOON

BORING LOG

BORING NO.: P-3**PROJECT NO.:** B18-020**PROJECT:** KENNER DISCOVERY HEALTH SCIENCES ACADEMY**DATE DRILLED:** 02/05/18**PROJECT LOCATION:** KENNER, LA**DATE COMPLETED:** 02/05/18**BORING LOCATION:** 30° 2'4.00"N; 90°16'8.40"W**DEPTH TO WATER LEVEL:** 1.5 ft**BORING ELEVATION:** EXISTING GRADE**WATER LEVEL DATE:** 02/05/18**GEOL/ENGR:** MJ**LOGGED BY:** WW**METHOD:** AUGER / WET**DRILLER:** SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Moisture Content (%)	SYMBOL	MATERIAL CLASSIFICATION
1 ▽		3b/ft ^{1/2/1}	22		Very Loose to Loose, Gray and Tan Fine SAND with organics and trace silt (SP)
2					
3		8b/ft ^{1/1/7}	22		
4					
5		9b/ft ^{4/5/4}	24 ⁽¹⁾		Bottom at 6 Feet (1) % Passing # 200 = 4.9%
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

COMMENTS:
☒ SPLIT SPOON

BORING LOG

BORING NO.: P-4**PROJECT NO.:** B18-020**PROJECT:** KENNER DISCOVERY HEALTH SCIENCES ACADEMY**DATE DRILLED:** 02/05/18**PROJECT LOCATION:** KENNER, LA**DATE COMPLETED:** 02/05/18**BORING LOCATION:** 30° 2'1.80"N; 90°16'8.03"W**DEPTH TO WATER LEVEL:** 2 ft**BORING ELEVATION:** EXISTING GRADE**WATER LEVEL DATE:** 02/05/18**GEOL/ENGR:** MJ**LOGGED BY:** WW**METHOD:** AUGER / WET**DRILLER:** SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Moisture Content (%)	SYMBOL	MATERIAL CLASSIFICATION
1		2b/ft ^{2/1/1}	23 ⁽¹⁾		Very Loose, Tan Fine SAND with trace silt (SP)
2					
3		15b/ft ^{1/6/9}	20		Medium Dense, Gray and Tan Fine SAND with trace silt (SP)
4					
5		14b/ft ^{6/6/8}	21		
6					Bottom at 6 Feet
7					(1) % Passing # 200 = 2.3%
8					
9					
10					
11					
12					
13					
14					
15					

COMMENTS:
☒ SPLIT SPOON

BORING LOG

BORING NO.: P-5**PROJECT NO.:** B18-020**PROJECT:** KENNER DISCOVERY HEALTH SCIENCES ACADEMY**DATE DRILLED:** 02/05/18**PROJECT LOCATION:** KENNER, LA**DATE COMPLETED:** 02/05/18**BORING LOCATION:** 30° 1'57.29"N; 90°16'8.40"W**DEPTH TO WATER LEVEL:** 1.5 ft**BORING ELEVATION:** EXISTING GRADE**WATER LEVEL DATE:** 02/05/18**GEOL/ENGR:** MJ**LOGGED BY:** WW**METHOD:** AUGER / WET**DRILLER:** SESI

DEPTH (FEET)	SAMPLE	Standard Penetration (Blows/Ft.)	Moisture Content (%)	SYMBOL	MATERIAL CLASSIFICATION
1		2b/ft ^{1/1/1}	25		Very Loose, Tan Fine SAND with trace silt (SP)
2					
3		11b/ft ^{2/5/6}	25 ⁽¹⁾		Medium Dense, Gray Fine SAND with trace silt (SP-SM)
4					
5		27b/ft ^{9/14/13}	17		Medium Dense, Gray and Tan Fine SAND with trace silt (SP)
6					
7					Bottom at 6 Feet
8					(1) % Passing # 200 = 7.7
9					
10					
11					
12					
13					
14					
15					

COMMENTS:
☒ SPLIT SPOON

Kenner Discovery Health Sciences Academy, Kenner, LA

Technical Responsibility: MJ

Quality Assurance Officer: RLJ

Client: Palmisano Group

Project No.: B18-020

PM: MJ

Date of Issue: 2/9/2018

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks	
			D2216	D4318			D2166		D2166	D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	Cohesion		Confining Pressure psi	Grain Size (%)						% Passing #200
				LL	PL	PI			U psf	UU psf		Gravel	Sand	Silt	Clay			
B-1	0-2	Very Loose, Tan Fine SAND	23.9														(SP)	3b/ft Water Level after 15 minutes = 1'
B-1	2-4	Medium Dense, Tan and Gray Fine SAND with shells	22.4														(SP)	Water Level = 2' 12b/ft
B-1	4-6	Loose, Gray Fine SAND with trace silt	25.3													3.4	(SP)	7b/ft
B-1	6-8	Loose, Gray Fine SAND with trace silt	25.5														(SP)	8b/ft
B-1	8-10	Very Soft, Brown and Gray Organic CLAY with silt	186.1	392	150	242	92.6	32.3		244.0	3.0						(PT)	30° 2'1.36"N; 90°16'9.82"W
B-1	13-15	Gray Lean CLAY with organics and sand	79.1														(CL)	Bag
B-1	18-20	Gray Fat CLAY with silt streaks	63.3	68	33	35											(CH)	
B-1	23-25	Very Soft, Gray Fat CLAY with trace silt	68.0				96.3	57.3		226.0	7.9						(CH)	
B-1	28-30	Gray Fat CLAY	79.2														(CH)	
B-1	33-35	Gray Fat CLAY	71.6	85	29	56											(CH)	
B-1	38-40	Very Soft, Gray Fat CLAY with trace silt pockets	64.1				100.0	60.8		220.4	12.9						(CH)	
B-1	43-45	Gray Fat CLAY with silty sand layers/streaks	72.9	58	23	35											(CH)	
B-1	48-50	Gray Fat CLAY with trace silt	72.5														(CH)	
B-1	53-55	Soft, Gray Fat CLAY	62.6				96.5	59.4		279.3	17.8						(CH)	
B-1	58-60	Alternating Layers of Gray Fat CLAY and Gray Sandy SILT	44.5														(CH)(ML)	
B-1	63-65	Gray Fat CLAY with trace organics	44.3	57	19	38											(CH)	
B-1	68-70	Soft, Gray Fat CLAY with trace shells	62.9				97.7	59.9		302.8	22.8						(CH)	
B-1	73-75	Gray Fat CLAY with shells	66.9														(CH)	

Kenner Discovery Health Sciences Academy, Kenner, LA

Technical Responsibility: *MJ*

Quality Assurance Officer: RLJ

Client: Palmisano Group

Project No.: **B18-020**

PM: MJ

Date of Issue: 2/9/2018

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks	
			D2216	D4318			D2166		D2166	D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	Cohesion		Confining Pressure psi	Grain Size (%)						% Passing #200
				LL	PL	PI			U psf	UU psf		Gravel	Sand	Silt	Clay			
B-1	78-80	Medium Stiff, Light Gray Fat CLAY with silty sand pockets	29.8														(CH)	7b/ft
B-1	83-85	Gray Fat CLAY with peat layers and organics	113.4	53	18	35											(CH)	
B-1	88-90	Gray Silty SAND with clay	26.9													46.3	(SM)	
B-1	93-95	Very Stiff, Greenish Gray and Gray Fat CLAY with silt	24.1				123.0	99.2		2709.5	31.0						(CH)	
B-1	98-100	Very Stiff, Greenish Gray Lean CLAY with fine sand	30.2													95.0	(CL)	17b/ft
B-1	103-105	Greenish Gray Fat CLAY	28.1	50	19	31											(CH)	
B-1	108-110	Stiff, Greenish Gray Fat CLAY	36.4														(CH)	14b/ft
B-1	113-115	Stiff, Gray Fat CLAY with shells and silt	39.9													72.5	(CH)	15b/ft
B-1	118-120	Stiff, Gray Fat CLAY	50.4														(CH)	9b/ft
P-1	0-2	Loose, Tan Fine SAND with silt	18.8													2.6	(SP)	Water Level = 2' 4b/ft
P-1	2-4	Loose, Gray and Tan Fine SAND with trace silt	23.8														(SP)	30° 2'4.48"N; 90°16'18.03"W 8b/ft
P-1	4-6	Loose, Gray and Tan Fine SAND with trace silt	23.6														(SP)	7b/ft
P-2	0-2	Very Loose, Tan Fine SAND with trace silt	24.4														(SP)	Water Level = 2' 3b/ft
P-2	2-4	Loose, Gray Fine SAND with roots and trace silt	21.1													3.3	(SP)	30° 2'4.23"N; 90°16'13.09"W 10b/ft
P-2	4-6	Loose, Gray and Tan Fine SAND with trace silt	22.9														(SP)	7b/ft

Kenner Discovery Health Sciences Academy, Kenner, LA

Technical Responsibility: *MJ*

Quality Assurance Officer: RLJ

Client: Palmisano Group

Project No.: **B18-020**

PM: MJ

Date of Issue: 2/9/2018

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION														USCS	Remarks	
			D2216	D4318			D2166		D2166	D2850		D422, C136 or C117							
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	Cohesion		Confining Pressure psi	Grain Size (%)				% Passing #200			
				LL	PL	PI			U psf	UU psf		Gravel	Sand	Silt	Clay				
P-3	0-2	Very Loose, Tan Fine SAND with trace silt	21.5														(SP)	Water Level = 18" 3b/ft	
P-3	2-4	Loose, Tan Fine SAND with trace silt	22.3														(SP)	30° 2'4.00"N; 90°16'8.40"W 8b/ft	
P-3	4-6	Loose, Gray Fine SAND with organics and trace silt	24.0													4.9	(SP)	9b/ft	
P-4	0-2	Very Loose, Tan Fine SAND with trace silt	22.7													2.3	(SP)	Water Level = 2' 2b/ft	
P-4	2-4	Medium Dense, Gray and Tan Fine SAND with trace silt	20.3														(SP)	30° 2'1.80"N; 90°16'8.03"W 15b/ft	
P-4	4-6	Medium Dense, Gray and Tan Fine SAND with trace silt	21.1														(SP)	14b/ft	
P-5	0-2	Very Loose, Tan Fine SAND with trace silt	25.4														(SP)	Water Level = 18" 2b/ft	
P-5	2-4	Medium Dense, Gray Fine SAND with trace silt	24.9													7.7	(SP-SM)	30° 1'57.29"N; 90°16'8.40"W 11b/ft	
P-5	4-6	Medium Dense, Gray and Tan Fine SAND with trace silt	17.0														(SP)	27b/ft	



KENNER SCIENCE ACADEMY
Project No: B18-020

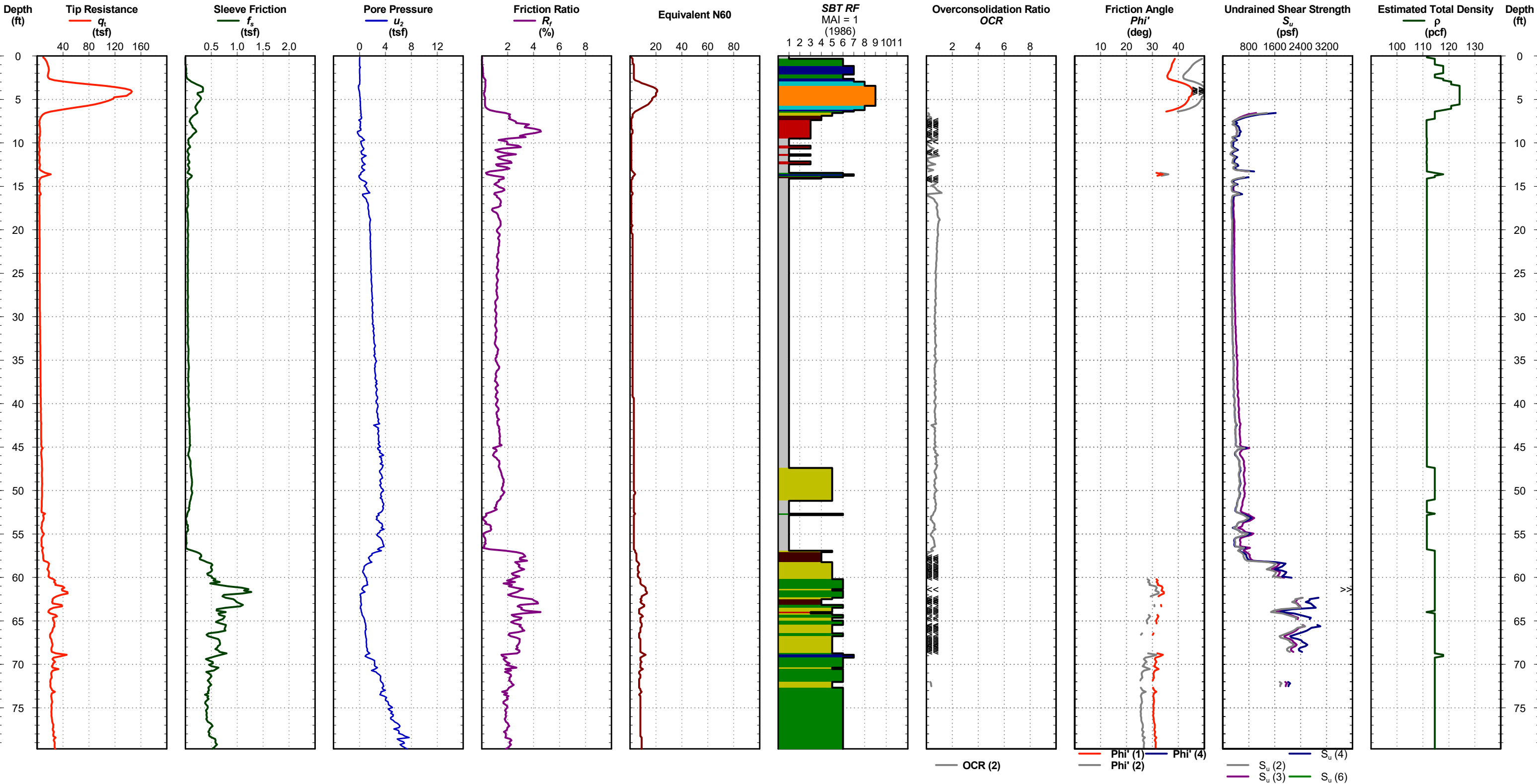
Cone Penetration Test

CPT-1

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 2.1
Total Depth: 79.7 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-1.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

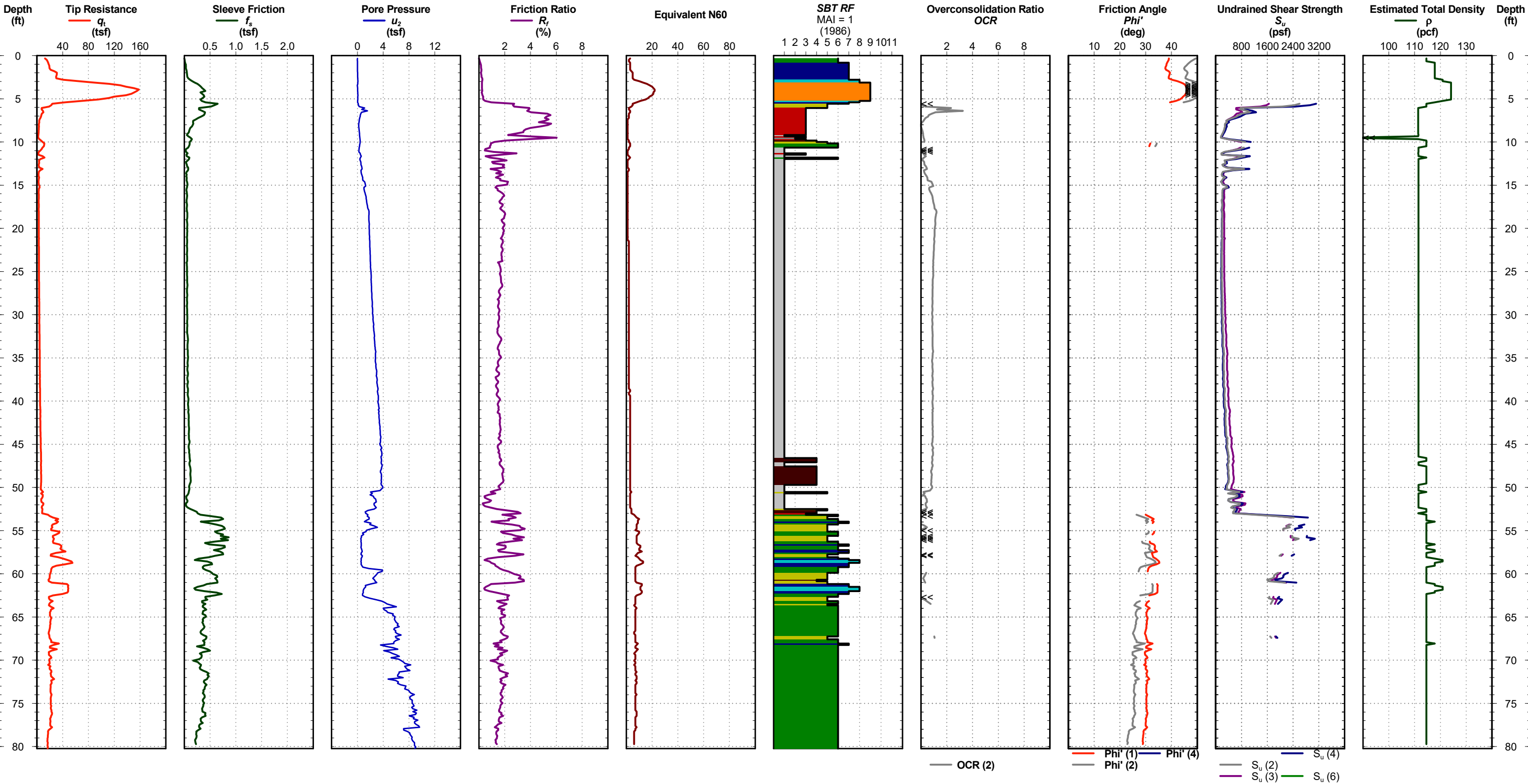
Cone Penetration Test

CPT-2

Date: Feb. 1, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 1.38
Total Depth: 80.2 ft



CPT REPORT - DYNAMIC 11X17 A B18-020 RAPIDCPT.GPJ CPT V3.0.GDT 2/15/18

- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-2.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

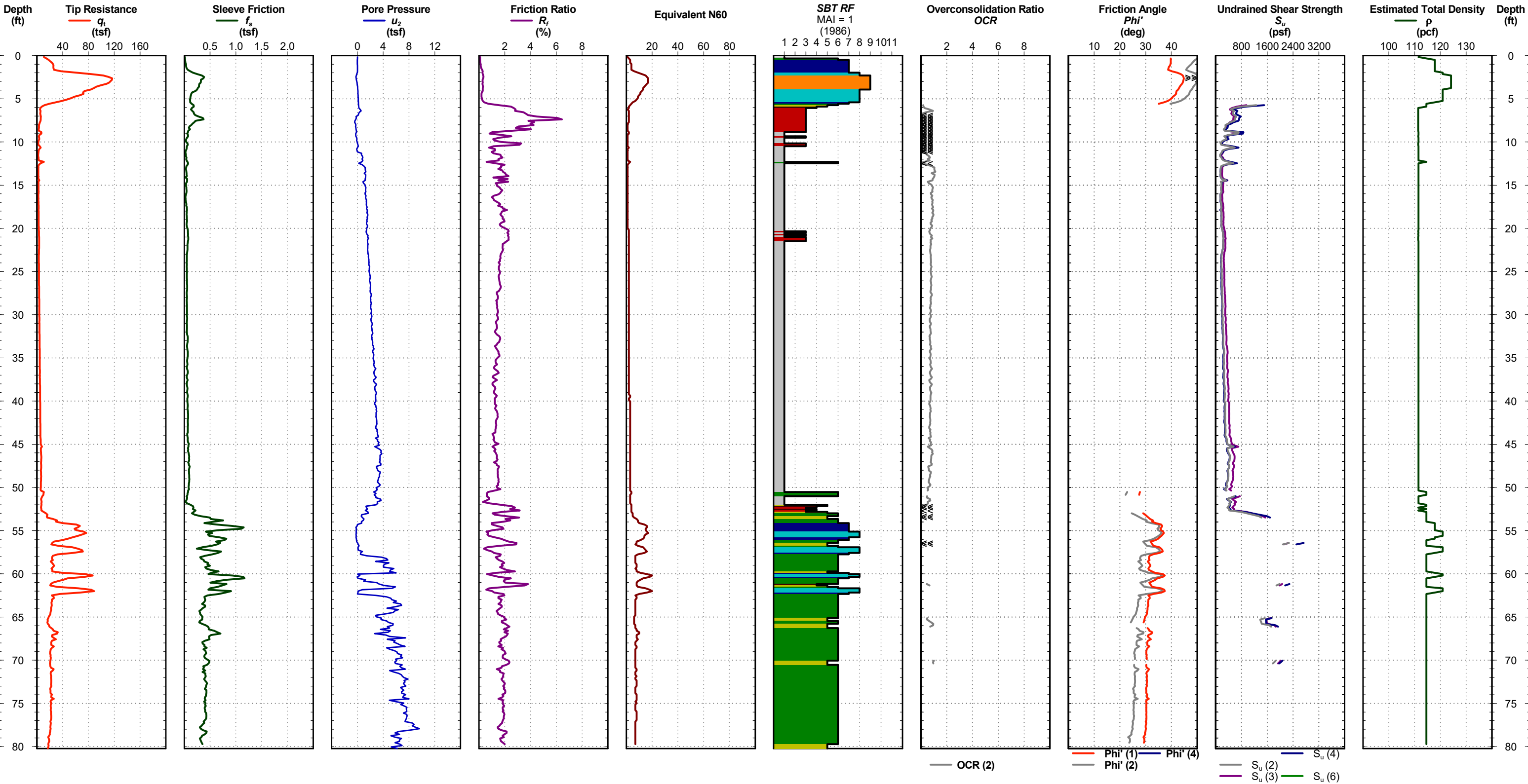
Cone Penetration Test

CPT-3

Date: Feb. 1, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 2.4
Total Depth: 80.2 ft



CPT REPORT - DYNAMIC 11X17 A B18-020 RAPIDCPT.GPJ CPT V3.0.GDT 2/15/18



KENNER SCIENCE ACADEMY
Project No: B18-020

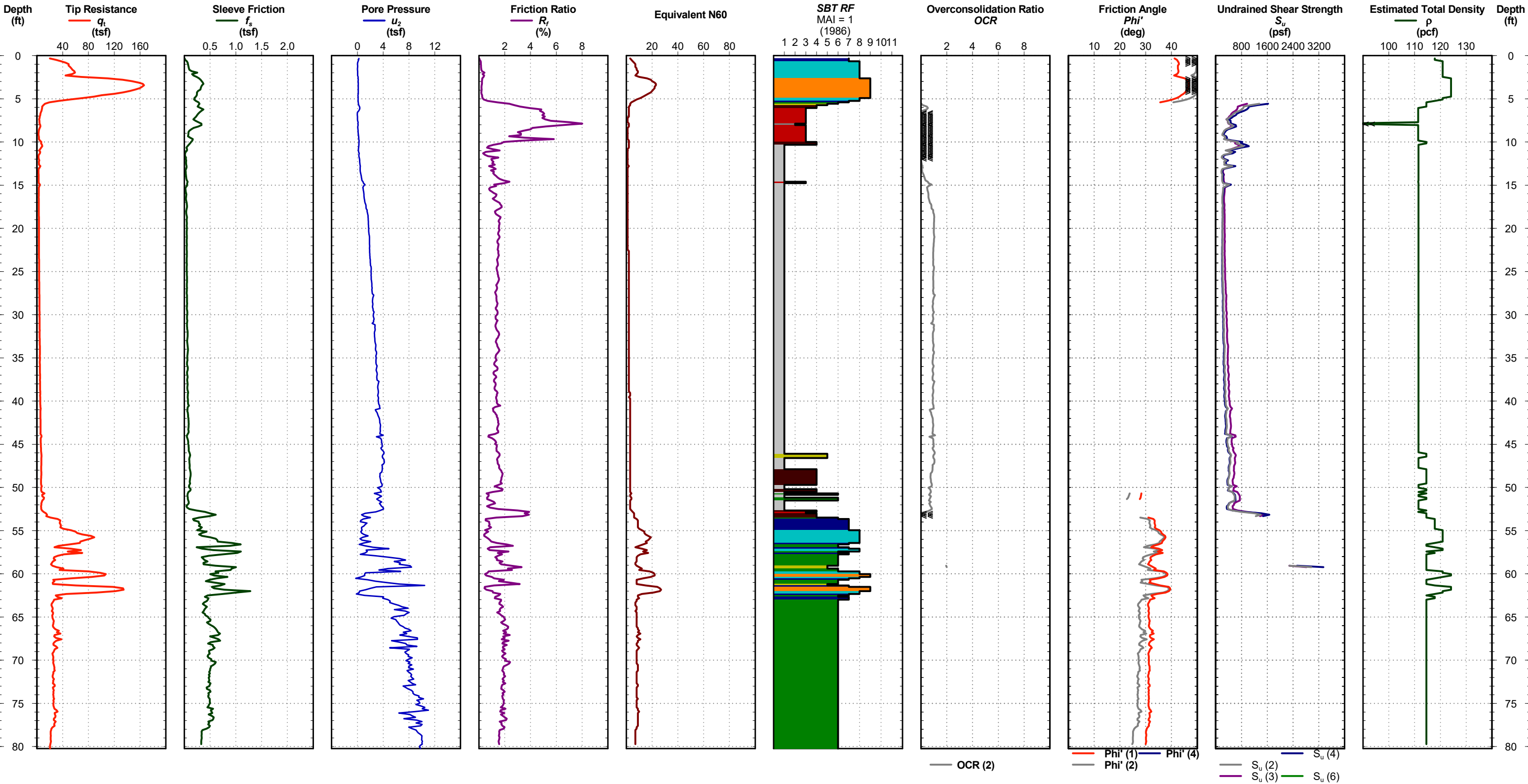
Cone Penetration Test

CPT-4

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 1.18
Total Depth: 80.2 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-4.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

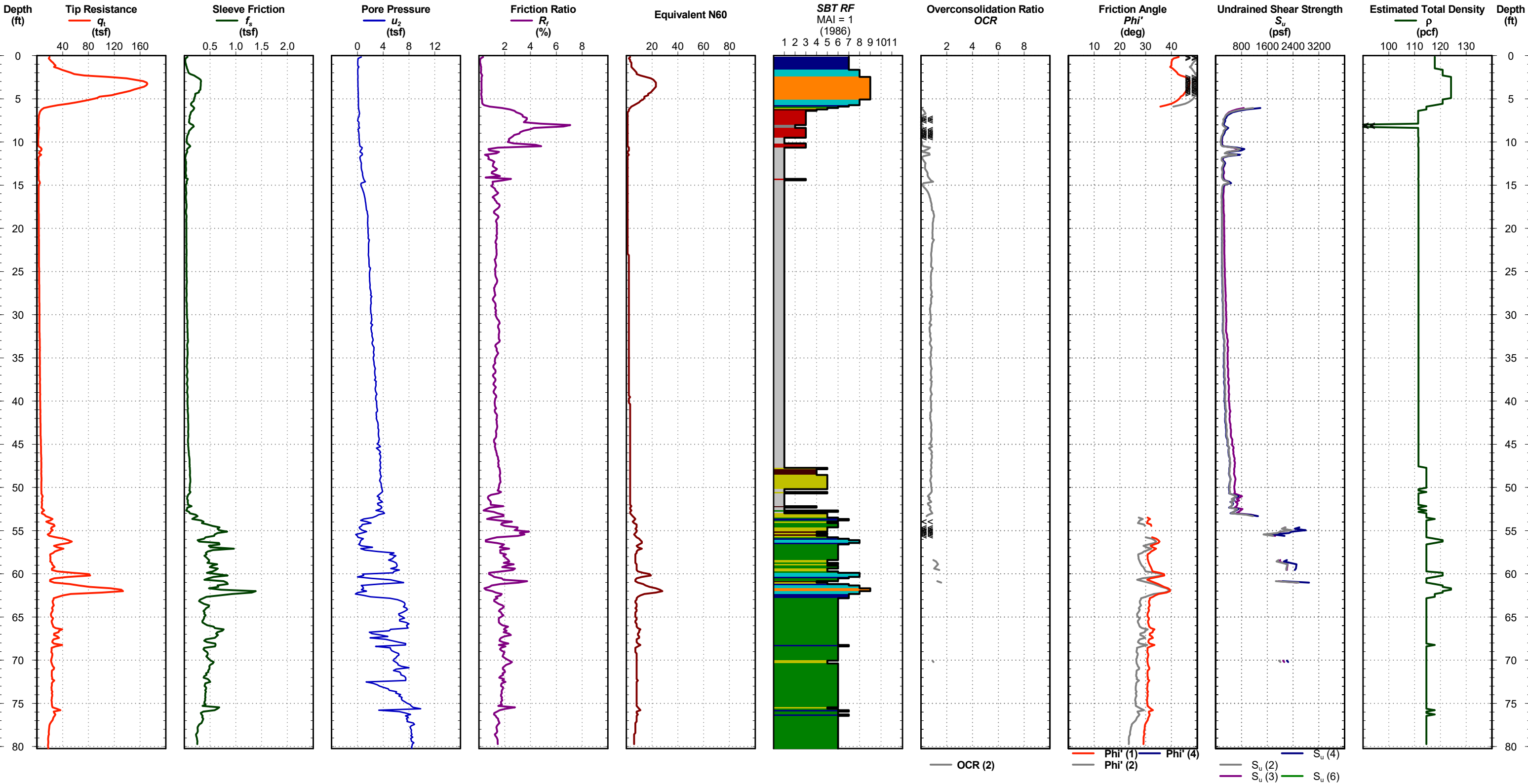
Cone Penetration Test

CPT-5

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 1.08
Total Depth: 80.2 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-5.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

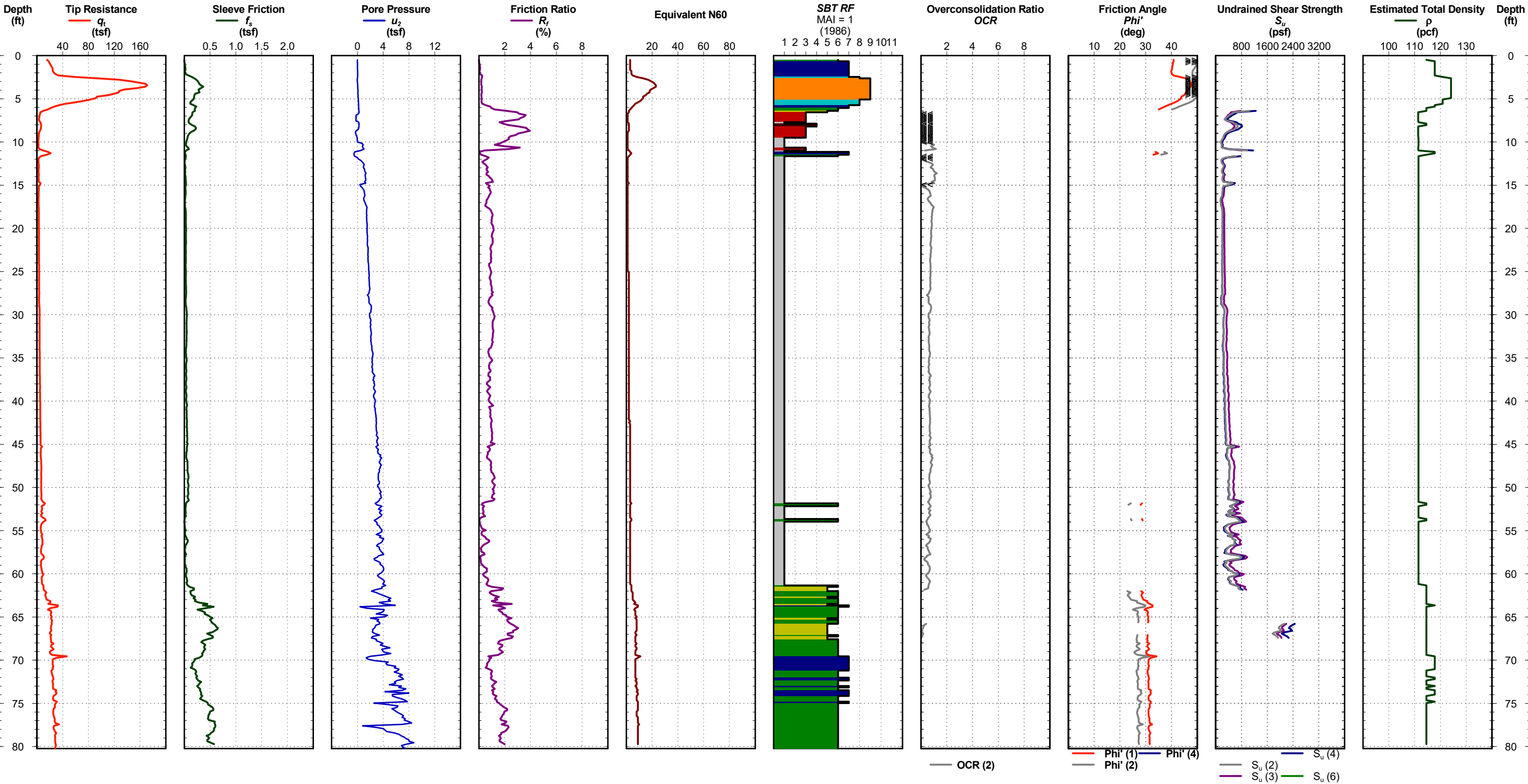
Cone Penetration Test

CPT-6

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 0
Total Depth: 80.2 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-6.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

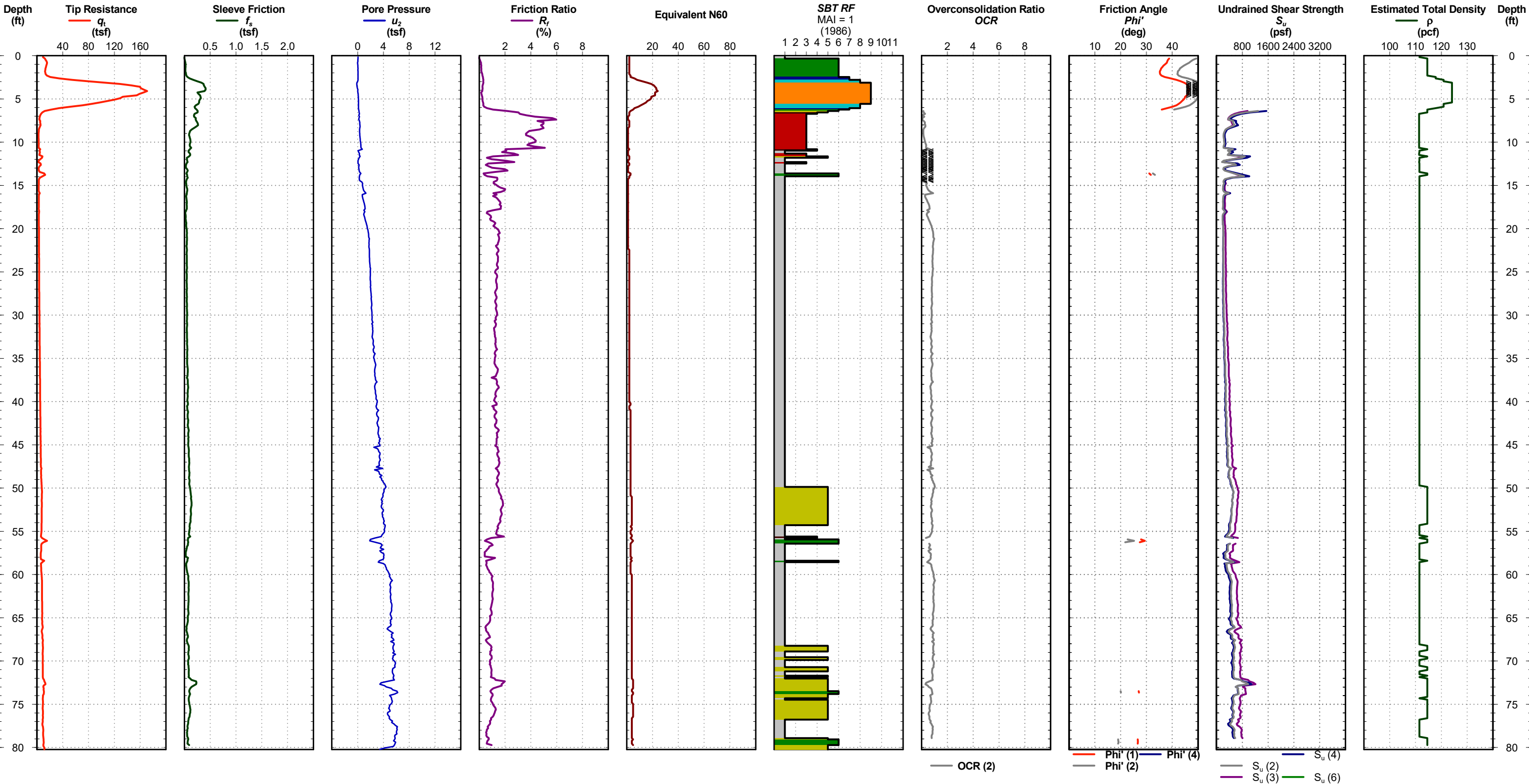
Cone Penetration Test

CPT-7

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 1.38
Total Depth: 80.2 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-7.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

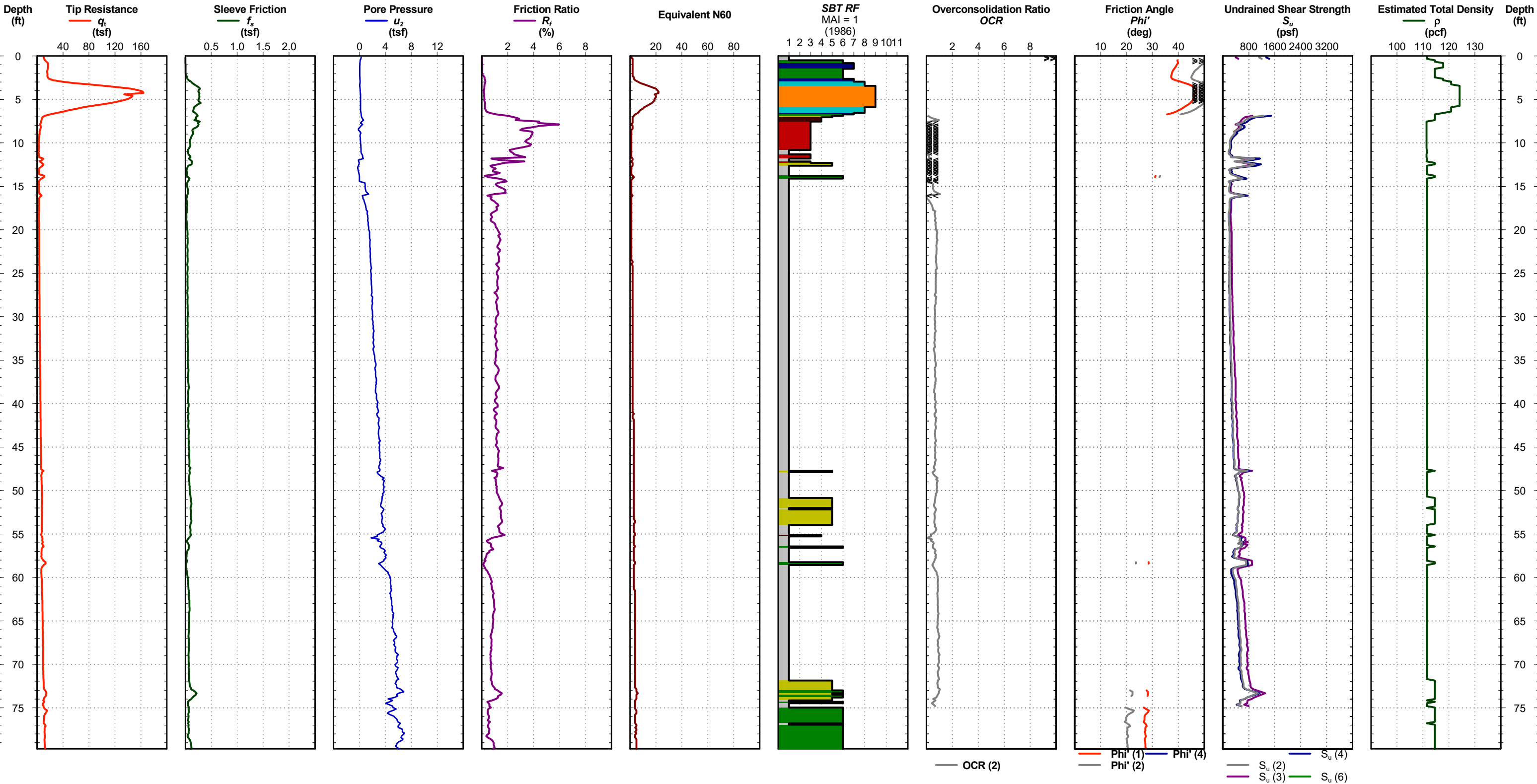
Cone Penetration Test

CPT-8

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 0
Total Depth: 79.7 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-8.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

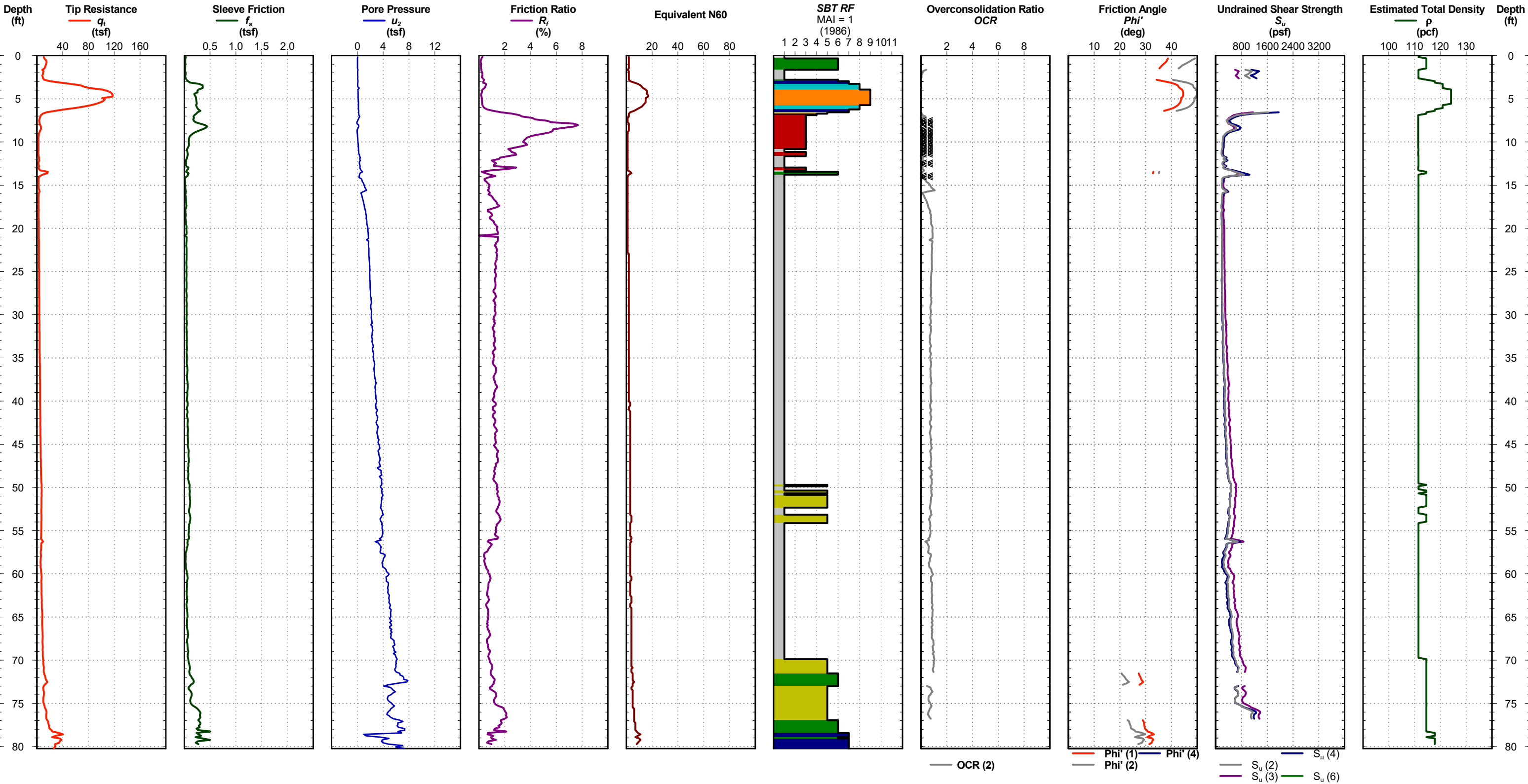
Cone Penetration Test

CPT-9

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 1.18
Total Depth: 80.2 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-9.cpt



KENNER SCIENCE ACADEMY
Project No: B18-020

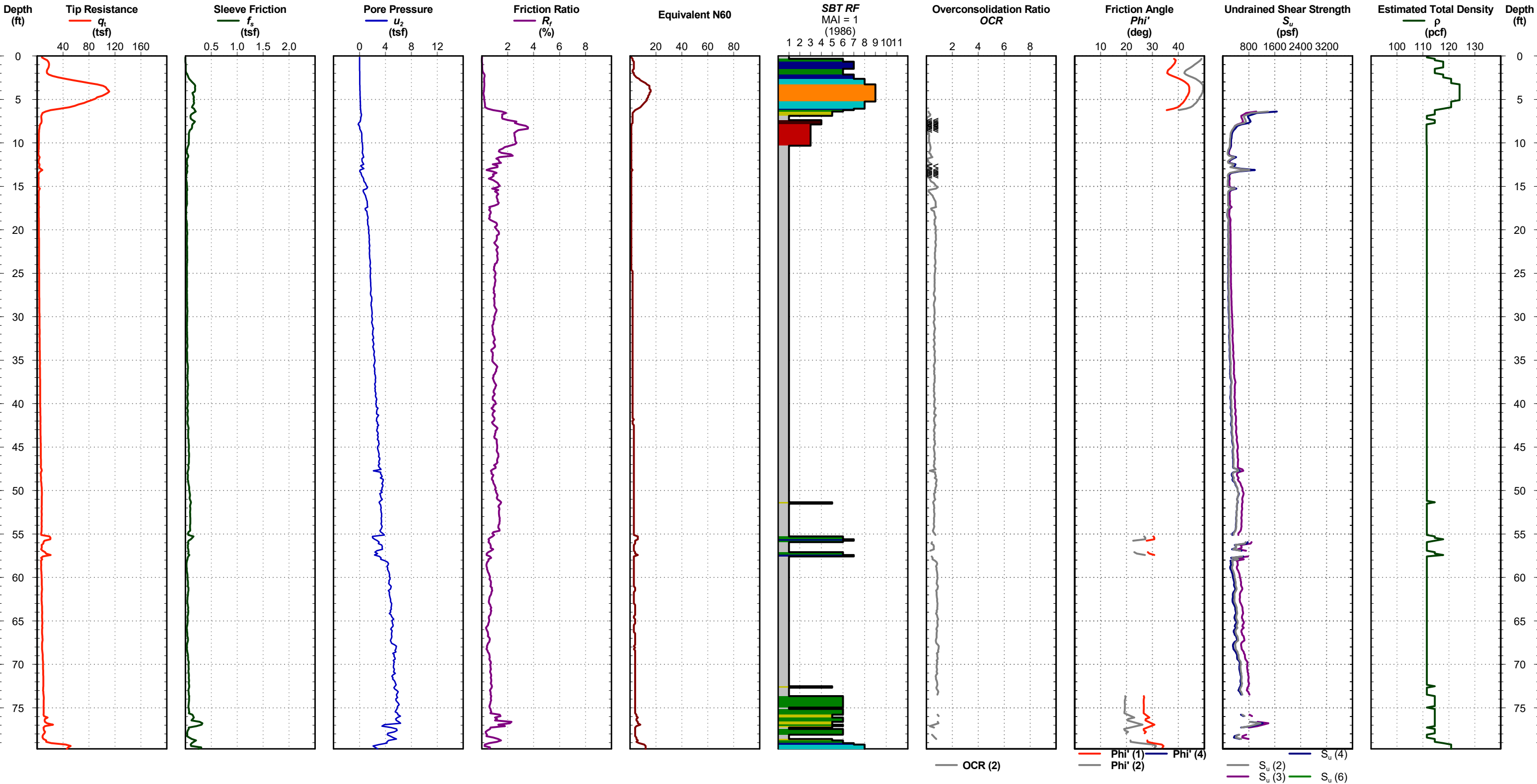
Cone Penetration Test

CPT-10

Date: Feb. 2, 2018
Operator: Brandon Green

Northing:
Easting:
Elevation:

Water Depth: 1.77
Total Depth: 79.7 ft



- | | | | |
|-----------------------------|-----------------|------------------------|----------------------------------|
| 1 - Sensitive, Fine Grained | 4 - Silty Clay | 7 - Silty Sand | 10 - Gravelly Sand |
| 2 - Organic Material | 5 - Clayey Silt | 8 - Sand to Silty Sand | 11 - Very Stiff Fine Grained (*) |
| 3 - Clay | 6 - Sandy Silt | 9 - Sand | 12 - Sand to Clayey Sand (*) |

* overconsolidated or cemented
Electronic File Name: B18-020CPT-10.cpt

Important Information about Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

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CONSTRUCTION MATERIALS TESTING

Full Range of Services and Unparalleled Response

Southern Earth Sciences, Inc. laboratories are certified by AASHTO, AMRL, CMEC and the U.S. Army Corps of Engineers to perform soil, concrete, asphalt and materials testing. Our professional inspectors and technicians continually participate in proficiency testing programs to ensure internal quality control.

FIELD TESTING AND INSPECTION

In addition to our laboratory testing facilities, SESI maintains a fully outfitted mobile field laboratory available for on-site testing. This allows our OSHA safety certified technicians to perform both call-out services on small projects or full-time quality control testing and inspection on major projects. The on-site testing lab offers a full range of services.

Services

- Dipstick technology for flatness testing of concrete slabs
- Soil testing—compaction, pile load testing, pile and caisson inspection, plate load bearing tests
- Asphaltic concrete testing—core density and thickness, evaluation of aggregates, mix designs, plant and field control
- Portland cement concrete—batch plant and field control, core drilling, molding, curing and testing cylinders
- Slump testing, air content and unit weight
- Pipe and block inspection
- Soundness and abrasion of aggregates
- Bridge inspection
- Pile integrity testing
- Pile dynamic analysis (PDA)
- Vibration monitoring
- Rebar location/depth of cover
- Post tensioning inspection
- Welding and steel framing inspections



LABORATORY TESTING OF MATERIALS

Strategically located laboratories make testing of soils, concrete, asphalt and metals quick and convenient. Branch managers supervise all lab operations in accordance with ASTM Specifications E-329 and E-699. All equipment is calibrated annually to ensure accurate data. SESI technicians are certified by appropriate accrediting agencies on a routine basis.

Services

- Consolidation testing
- Flexible wall permeability testing
- Triaxial testing
- Soil classification testing
- Concrete strength testing
- Steel strength testing



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