

REPORT ON
SUBSURFACE CONDITIONS AND FOUNDATION DESIGN
RECOMMENDATIONS
PROPOSED 12-STORY MIXED-USE BUILDING
STEVENSON COMMONS – BUILDING B3
BRONX, NEW YORK

by
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Parsippany, New Jersey

for
Stevenson B3, LLC
c/o Camber Property Group
New York, New York

File No. 0211067-000
January 2025





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15 January 2025
File No. 0211067-000

Stevenson B3 LLC
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116 East 27th Street, 11th Floor
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Attention: Ms. Alejandra Ramos

Subject: Report on Subsurface Conditions and Foundation Design Recommendations
Proposed 12-Story Mixed-Use Building
Stevenson Commons – Building B3
Bronx, New York

Dear Ms. Ramos:

This report presents the results of our subsurface exploration program and provides geotechnical engineering recommendations for the subject project. This work was undertaken in accordance with our revised proposal dated 27 August 2024 and your subsequent authorizations.

We appreciate the opportunity to serve your project team during the design phase of the project and look forward to our continued association with you through final design and construction. Please contact us if you require additional information or wish to discuss the contents of this report.

Sincerely yours,

H & A OF NEW YORK ENGINEERING AND GEOLOGY, LLP

A blue ink signature of Anthony DeZenzo.

Anthony DeZenzo, P.E.
Project Manager

A blue ink signature of Paul B. Pizzimenti.

Paul B. Pizzimenti, P.E.
Senior Associate

Enclosures

https://haleyaldrich.sharepoint.com/sites/CamberPropertyGroup/Shared Documents/0211067.Stevenson Commons B3 - Bronx NY/Deliverables/Report/2025_0115_HANY_Stevenson B3_Report_F.docx

SIGNATURE PAGE FOR

REPORT ON

**SUBSURFACE CONDITIONS AND FOUNDATION DESIGN RECOMMENDATIONS
PROPOSED 12-STORY MIXED-USE BUILDING
STEVENSON COMMONS – BUILDING B3
BRONX, NEW YORK**

PREPARED FOR

**STEVENSON B3, LLC
C/O CAMBER PROPERTY GROUP
NEW YORK, NEW YORK**

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1. Introduction

1.1 GENERAL

This report presents the results of our subsurface exploration program and provides geotechnical engineering recommendations for the proposed 12-story mixed-use building known as Building B3 and the associated tennis courts located at 1850 Lafayette Avenue, Bronx, New York (NY) which is contained within a portion of Lot 4 and Lot 15, Block 3600, of the local Municipal Tax Map. The site is located south and east of the intersection of Lafayette Avenue and Thieriot Avenue. The general site location is shown on Figure 1.

1.2 PURPOSE AND SCOPE

This investigation was undertaken to obtain subsurface information in support of the development of geotechnical engineering recommendations for use in the design and construction of foundations for the proposed development. The scope of our work included the following:

- Planning and monitoring a geotechnical subsurface exploration program;
- Performing geotechnical engineering evaluations;
- Developing geotechnical engineering recommendations;
- Developing construction considerations; and
- Summarizing our explorations, engineering evaluations, and recommendations in this report.

1.3 ELEVATION AND DATUM

Elevations (El.) herein are reported in feet (ft) and refer to the North American Vertical Datum of 1988 (NAVD 88). Elevations were estimated from the survey information provided by Montrose Surveying Co., LLP of Richmond Hill, NY, for Tax Block 3600, Lots 4, 10, 15, 20, 25, 30, 40, and 50, City of New York, The Bronx, NY, with a latest revision date of 23 May 2024.

1.4 EXISTING SITE CONDITIONS

The site is located at 1850 Lafayette Avenue, Bronx, NY (Block 3600, Lots 4 and 15) and is part of a multi-phased development known as Stevenson Commons. The proposed B3 Building and tennis court portions of the site are currently vacant and generally overgrown by brush, except for the northwestern portion of the proposed tennis court which is currently occupied by an asphalt paved parking lot. This area was formerly utilized as a football and baseball field and contained irrigation lines. An existing multi-story building is located on the eastern portion of the site and will remain. Buildings B4, B5, and B6 are currently under construction and located within the southern portion of the development. Buildings B4, B5, and B6 are pile-supported and the multi-story building to the east is presumed pile-supported.

Based on available aerial imagery and information provided, the site appeared to be developed in the late 1960s or early 1970s. Historic mapping indicates the block formerly contained Pugsley's Creek which meandered through the eastern portion of the site. The creek was filled in at an unknown time prior to the development of the site in the 1960s or 1970s.

Generally, the proposed B3 Building and tennis court portion of the site slopes down from west to east from about El. +20 ft to El. +16 ft. Within the footprint of the proposed B3 structure, the surface grades range from approximately El. +15.5 ft to El. 18.5 ft. Within the proposed tennis court area, existing grades range from El. +17.5 ft to El. +20.5 ft.

Based on our conversations with you, a review of the available surveys (1977 and 2024), and a site walkthrough with you, signs of settlement throughout the greater Stevenson Commons development area are present, as well as in the area of the proposed B3 Building and tennis court. Within the development, visual undulations in the paved fire lane (the internal roadway located between the ball fields and the existing multi-story building) and the adjacent curbs, sidewalks, and lawn areas were apparent and indicative of significant settlement since initial construction of the development. In addition, sloped sidewalks adjacent to the southwest corner of the multi-story building were present which were believed to be initially installed flat and currently sloped due to the edge along the building being hung up and supported by the pile-supported building. Also, a step and railing were added to the sidewalk along the rear of the multi-story building in the southwest corner, which indicates that the area settled enough to require the installation of an additional step and a railing to safely enter the building. Also, it was reported that a sink hole opened up near the southwest corner of the multi-story building within the fire lane. This required the repair of the water main located within the southern portion of the fire lane and subsequent backfill of the repair excavation and remaining sink hole. It is suspected that the water main settled and subsequently broke due to the stress on the pipes from the settlement, and the water flow from the leaking pipe washed away the soil over a period of time. The surficial pavement eventually caved in when subjected to the weight of a delivery truck.

In addition, wide-spread settlement throughout the surrounding neighborhood was observed, especially to the north along Lafayette Avenue where the roadway pavement was severely undulated and contained a local crown at the location of underground utilities, which are presumed to be pile-supported, and did not settle with the surrounding area. In addition, stairs leading to the entrances of the residential buildings to the north appeared to be recently replaced and appeared to be settling, indicating that settlement is still occurring in the area. Little to no undulations in the pavement and sidewalks were observed to the west along Thieriot Avenue.

1.5 PROPOSED CONSTRUCTION

Our understanding of the proposed development is based on the following documents provided to us by Camber Property Group (Camber) unless otherwise noted:

- Site plans titled, “Stevenson Commons – Building B3 100% SD Submission,” prepared by Dattner Architects of New York, NY, dated 19 July 2024.
- Revised 1st Floor Plan titled, “Floor Plans – 1st Floor,” prepared by Dattner Architects of New York, NY, dated 06 December 2024 and received on 18 November 2024.
- Progress foundation plans from the 100% DD Submission prepared by prepared by Dattner Architects of New York, NY, dated 06 December 2024 and received on 12 December 2024 from DeSimone Consulting Engineering of New York, NY (DeSimone).
- Landscape site diagram titled, “Stevenson Commons – Site Diagram,” prepared by Abel Bainson Butz, LLP of New York, NY, dated 7 November 2024 and received on 2 December 2024.
- Title survey titled, “Stevenson Commons, Bronx, New York,” prepared by the City of New York, dated 20 June 1975 and revised 15 June 1977.

- Architectural survey titled, “Survey No. 65808-1,” for Tax Block 3600, Lots 4, 10, 15, 20, 25, 30, 40, and 50, City of New York, The Bronx, NY, prepared by Montrose Surveying Co., LLP (Montrose) of Richmond Hill, NY, dated 25 April 2019 and revised 23 May 2024.

We were also provided with the following reports: a report titled, “Proposed 14-Story Building, Stevenson Commons, Building B2,” prepared by GEO Design, Inc., P.C of New York, NY, dated February 2020, and a report titled, “Proposed 6 to 12-Story Building, Stevenson Commons, Building B3,” prepared by GEO Design, Inc., P.C. of New York, NY, dated November 2019. It should be noted that the work performed and reported on by GEO Design, Inc., P.C. was done under contract by Camber but for different proposed building configurations.

Stevenson B3, LLC has proposed to construct a new 12-story mixed-use building. The proposed building will reportedly occupy a plan area of approximately 33,850 square feet (sq ft). The first floor will be established approximately 3 ft above existing grades with a Finished Floor (FF) elevation of El. +20 ft, with the exception of the basketball court which will be established approximately 8 ft below existing grade with an FF elevation of El. +9 ft. No other below-grade levels are planned. Exterior grades immediately outside of the building would be raised up approximately 3 ft to reach the desired elevated ground floor level, sloping up from surrounding grades of El. +17 ft to the first-floor level of El. +20 ft, by a series of ramps and sidewalks within 15 to 20 ft of the exterior limits of the new building on all four sides.

The new building will be designed and filed under the 2022 New York City Building Code (NYCBC). Based on conference call discussions with DeSimone (Structural Engineer), it is our understanding that the building would be supported by deep foundations and the lowest level slab would be constructed as a structural slab connected to the columns and supported by the deep foundation elements. Preliminary foundation plans prepared by DeSimone indicate that the building will be supported by driven steel H-Piles with allowable capacities of 150 tons in compression and 25 tons in tension. The H-Pile size was not specified. DeSimone indicated that the maximum anticipated column loads are 750 kips dead-load (DL) and 300 kips live-load (LL). Maximum anticipated wall loads are 35 kips per foot (kips/ft) DL and 10.5 kips/ft LL. Evaluation of the lateral system of the building to determine wind and seismic loads is still in progress. No permanent uplift demands on piles are planned assuming groundwater is below the lowest slab level, although, temporary uplift and transient uplift due to wind and/or seismic loads may be present and resolved with tension capacities of the deep foundations.

A proposed tennis court is planned west of Building B3. The reported original footprint of the tennis courts was approximately 26,000 sq ft with a two-by-two configuration and oriented north to south. The tennis court area was revised since our subsurface investigation and is planned to be three across, east to west, instead of the prior north-to-south configuration with a new, revised area of approximately 19,000 sq ft. Site landscaping designs are in progress at this time by the landscape architect and site engineer and may change.

As discussed in the prior section, the subject property was previously occupied by the former Pugsley’s Creek and associated wetlands based on our review of the available Baskerville and Sanborn maps. The extents of the former creek and wetlands were overlayed on the boring location plan, Figure 2, along with the footprints of the proposed Building B3, tennis courts, and open space areas. It should be noted that the accuracy of these overlays is approximate as the Baskerville map was scaled down from a large-scale map to fit the site and the Sanborn maps are over 100 years old. The overlays indicate the creek was located within the footprint of Building B3 and was oriented in generally a northeast-to-southwest

direction within the footprint of the proposed building. The extents of the creek vary slightly between the Baskerville and Sanborn maps due to the approximate accuracy but both show that the river meandered throughout the building footprint. The overlay also indicates that the wetlands terminated within the southern portion of the eastern two tennis courts and within the western third of the open space area.

It is our understanding that stormwater management facilities are planned at the site, however, are currently under design by the site engineer. As such, stormwater management-related geotechnical tasks were not included in the scope of work for this study.

1.6 LIMITATIONS

This report has been prepared for specific application to the project as it is planned at this time. In the event that changes in the nature, design, or location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed, and conclusions of this report modified or verified in writing. The analyses and recommendations submitted in this report are based in part upon data obtained from referenced explorations. The nature and extent of variations between the exploration may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

This report is prepared for the exclusive use of Stevenson B3, LLC c/o Camber, and its design team in connection with the geotechnical aspects of the project. This report does not include recommendations for the fire lane and stormwater-related items which were not included in the scope of work for this study.

1.7 SPECIFICATION AND PLAN REVIEW

We recommend that H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York) be provided the opportunity to review final plans and specifications to confirm that the recommendations in this report were interpreted as intended.

2. Subsurface Exploration

Haley & Aldrich of New York planned and monitored a subsurface exploration program consisting of 12 test borings, designated HA-1 (OW) through HA-12, where the -OW designation indicates an observation well was installed following the completion of the boring. Borings HA-01(OW) through HA-04(OW) were performed within the proposed footprint of Building B3; Borings HA-05 through HA-09 were performed within or near the proposed tennis court; and Borings HA-10 through HA-12 were performed within the fire lane. Following the explorations, laboratory testing was conducted on select soil and rock samples collected.

Prior to this study, GEODesign conducted a subsurface investigation program consisting of 11 test borings and five cone penetration tests (CPTs) within the footprint of the proposed B3 structure. Two borings for Building B2 were also performed previously by GEODesign which were close to the proposed Building B3; one boring was approximately within 25 ft and the other was greater than 25 ft away from the proposed building.

Together with the prior explorations, the newly performed borings by Haley & Aldrich of New York satisfy the building code requirements for subsurface explorations for the proposed structure.

2.1 TEST BORINGS

Figure 2 presents the location of 12 explorations that were monitored by Haley & Aldrich of New York and the 13 borings monitored by GEODesign.

2.1.1 2024 Haley & Aldrich of New York Test Borings

Test borings HA-01(OW) through HA-12 were drilled by Craig Geotechnical Drilling Co., Inc. (Craig), of Mays Landing, New Jersey, between 13 September 2024 and 01 October 2024, under the observation of a Haley & Aldrich of New York representative. Test borings were drilled to depths ranging from approximately 25 ft to 97 ft below ground surface (bgs) utilizing truck-mounted drilling equipment and mud rotary drilling methods. Traditional 2-inch (in.) diameter split-spoon samplers using an Automatic Hammer and an NX or NQ double-tube core barrel with an inside diameter of approximately 2 in. were used.

Standard Penetration Tests (SPTs) were generally performed continuously from ground surface to 12 ft bgs and then at 5-ft intervals until the organic materials were encountered where continuous sampling was resumed. Upon advancing beyond the soft, organic materials, 5-ft intervals were resumed. SPTs were conducted by driving a 2-in. outside diameter (O.D.) split-spoon sampler 24 in. (unless refusal was encountered) using a 140-pound (lb) hammer falling 30 in. in general accordance with ASTM International (ASTM) D1586.

Rock cores were obtained at Borings HA-01(OW) through HA-04(OW) and HA-07(OW). Approximately 10 ft of rock cores in approximately 5-ft lengths were obtained in each boring except Boring HA-07 (OW) where only 5 ft of rock was obtained. Rock cores were obtained using an NX double-tube core barrel with an inside diameter of 2.15 in. in general accordance with ASTM D2113.

Undisturbed sampling was performed at select depths using a Shelby tube. Shelby tube sampling was performed in general accordance with ASTM D1587 by pushing a thin-walled tube sampler (3-in. inside diameter [I.D.]) approximately 24 in. into undisturbed soil.

A representative of Haley & Aldrich of New York marked out the test boring locations in the field and estimated as-drilled locations by measuring from known structures shown on the topographic plan provided by Montrose. Locations of test borings relative to existing site features are shown in Figure 2. Ground surface elevations are reported in feet and are approximated from the project survey/topographical information provided by Montrose. The site elevation datum is NAVD 88.

Logs for test borings and rock cores are provided in Appendix A. Photo logs of rock cores are provided in Appendix B. The soils and rock were visually classified in accordance with the Subsurface Exploration Key (included in Appendix A) which is in general accordance with the Unified Soil Classification System (USCS) as practiced by Haley & Aldrich of New York.

2.1.2 Test Borings by Others

GEODesign conducted 13 test borings at the subject site and select logs from their Building B2 and Building B3 reports are attached in Appendix C.

The test borings monitored by GEODesign were reportedly drilled by Craig to depths ranging from approximately 32 ft to 81 ft below grade between 11 September 2019 and 7 October 2019 utilizing truck-mounted equipment and mud rotary drilling techniques. SPTs were conducted with either a cathead, safety hammer, or auto hammer, and rock cores were extracted with an NX core barrel. Undisturbed sampling was performed at select depths using a Shelby tube.

2.2 CONE PENETROMETER TESTING/SEISMIC CONE PENETROMETER TESTING BY OTHERS

Five CPTs were conducted by Craig and observed by GEODesign between the period of 13 and 14 September 2023. Seismic Cone Penetrometer Tests (sCPTs) were conducted at two of the five CPTs.

The CPTs were reportedly advanced to depths ranging from 16.27 to 44.03 ft bgs and each predrilled to 25 ft bgs. During the CPT investigation, the following data were recorded: depth, uncorrected tip resistance (qc), sleeve friction (fs), dynamic pore pressure (u), and shear wave velocity (Vs).

The CPT and sCPT test data from the Building B3 GEODesign report are presented in Appendix D.

2.3 OBSERVATION WELLS

2.3.1 Haley & Aldrich Observation Wells

Three observation wells were installed at Borings HA-01(OW), HA-04(OW), and HA-07(OW). Observation well installation reports are provided in Appendix A.

The wells were generally constructed with 10 ft of 2-in. diameter slotted PVC pipe, consisting of 1-in. by 0.01-in. slotted screen, above the tip followed by solid PVC riser pipe. The annulus of the well was filled with well sand to a depth of 2.5 ft bgs followed by 2 ft of bentonite hole plug followed by 0.5 ft of concrete to reach the ground surface.

The three wells remain at the site for future water level readings and are protected by steel stick-ups.

2.3.2 Observation Wells by Others

Based on the GEODesign report, an observation well was installed at Boring B3-3 upon completion of the boring. The well was reportedly constructed of 20 ft of 2-in diameter slotted PVC pipe above the tip followed by solid PVC riser pipe with a flush mount cap at the surface. The annulus of the well was filled with filter sand.

2.4 CODE-REQUIRED EXPLORATION FREQUENCY AND SPECIAL INSPECTIONS

The frequency of explorations conducted for the proposed Stevenson Building B3 complies with Section 1803.4 of the NYCBC. Based on the proposed building footprint of approximately 33,850 sq ft, a total of 14 explorations were required for Building B3 based on Section 1803.4.1. This includes a minimum of one boring performed by Haley & Aldrich of New York to use the prior data performed by others in accordance with Section 1803.4.2. A total of at least 16 explorations were performed at Building B3 including four test borings performed by Haley & Aldrich of New York for this study, 11 test borings by others within the footprint, and one test boring by others within 25 ft of the proposed building footprint.

Special Inspections (Subsurface Investigations - Borings) of the exploration program were performed on a continuous basis by Haley & Aldrich of New York, a Class 1 accredited New York City Special Inspection Agency, in general accordance with Section 1705.6 of the NYCBC. The scope of Haley & Aldrich of New York's Special Inspectors during the subsurface exploration program included:

- Confirmation that each test boring was performed in general accordance with the procedures established in Section 1803.5 of the NYCBC, and achieved the depths indicated herein, to their knowledge and belief;
- Confirmation that each sample was recovered at the depths indicated and is reasonably representative of the subsurface conditions at the sample location as described on the logs; and
- Visually identifying, describing, and classifying each soil and rock sample retrieved based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York and in general accordance with Sections 1803.3 and 1803.4.

The Special Inspector for subsurface investigations was Mr. Zhan Gao.

2.5 LABORATORY TESTING

Geotechnical laboratory testing was performed on select soil and rock samples from test borings to determine classification and engineering properties. The selected soil and rock samples were submitted to TerraSense Lab CED, LLC in Totowa, New Jersey, for testing.

Laboratory soil and rock testing included:

- Water Content (ASTM D2216) – 25

- Sieve Analysis (ASTM D6913) – 6
- Percent Passing No. 200 (ASTM D1140) – 4
- Atterberg Limits (ASTM D4318) – 18
- Organic Content Tests (ASTM D2974) – 18
- Consolidation Tests (ASTM D2435) – 8
- Unconsolidated-Undrained (UU) Triaxial (ASTM D2850) – 5
- Specific Gravity (D854) – 3
- Corrosion Suite Tests – 4
- Unconfined Compressive Strength of Rock Cores (ASTM D7012C) – 3

Laboratory test results are presented in Appendix F.

3. Subsurface Conditions

3.1 GENERAL AERIAL GEOLOGY

Based on published geology maps of the area, the site is mapped to generally contain Fill over Estuarine Deposits underlain by Alluvium, Glacial Till, and Bedrock of the Hartland Formation. The available maps indicate that Pugsley Creek traversed through the site and indicate that the former marshes extended to near the western edge of the site and a small portion of the western side of the site may not contain marsh deposits. The Estuarine Deposits contain organic silt and clay and peat with some sand while the Alluvium Deposits are comprised of variable amounts of silt, clay, sand, and gravel. The Hartland Formation is generally comprised of schist and granite.

3.2 SOIL AND BEDROCK

Generalized subsurface conditions encountered in the test borings are described below in order of increasing depth bgs and include the predominant NYCBC Class (in general accordance with NYCBC Sections 1803.3 and 1803.4) associated with each stratum. The stratification lines designating the interface between strata on the logs represent approximate boundaries, which may be gradual. The logs depict subsurface conditions at the specific boring locations at the time designated on the logs. Subsurface conditions at other locations may differ from the conditions occurring at these locations. Further descriptions of each stratum are provided on the logs.

- **Fill (NYC Class 7):** Fill was encountered in all borings to depths ranging from approximately 12 to 22.5 ft bgs. The Fill generally consisted of black, dark brown, gray, and red very loose to very dense silty sands with varying amounts of gravel, gravels with varying amounts of sand and silt, and silts with varying amounts of sand and gravel. This stratum frequently contained fragments and particles of brick, concrete, glass, plaster, wood, and vegetation/roots. The Fill was overlain by 6 in. of asphalt in HA-10 through HA-12. The Fill is underlain by Estuarine Deposits in HA-01(OW) through HA-04(OW), HA-06, and HA-09 through HA-12. The Fill is underlain by Glacial Till in HA-05, HA-07(OW), and HA-08.
- **Estuarine Deposits (NYC Class 6):** At all borings except HA-05, HA-07(OW), and HA-08, the Fill was underlain by Estuarine Deposits consisting of primarily very soft to medium organic silt and clay with occasional pockets of or interlayered with peat extending to depths ranging from approximately 23.5 to 34 ft bgs and ranging from 3.5 to 13 ft in thickness. Based on laboratory testing of select soil samples, the organic content of the organic silt and organic clay material ranged from 3.2 to 8.2 percent while the natural moisture content ranged from 52.4 to 99.1 percent. Peat layers were observed at Borings HA-03, HA-06, and HA-10 and ranged from approximately 3 to 4 ft in thickness when present. The peat samples subjected to laboratory testing had natural moisture contents ranging from 207.6 to 306.2 percent and the organic content ranged from 39.8 to 60.1 percent. Estuarine Deposits were not encountered at HA-05, HA-07(OW), and HA-08.
- **Alluvium Deposits (NYC Class 6, 5b, 3b, 3a):** At borings HA-01(OW), HA-02, HA-04(OW), HA-10, HA-11, and HA-12, the Estuarine Deposits are underlain by Alluvium generally consisting of gray and olive gray, very loose to medium dense poorly-graded sands with variable amount of gravel and silts with variable amounts of sand and gravel. Occasional dense to very dense materials were observed near the bottom of the Alluvium. The Alluvium ranges in thickness generally

from 12 to 37 ft and extends to depths of up to approximately 43 to 70 ft bgs. Alluvium was not encountered in HA-03 and HA-05 through HA-09. The Alluvium was underlain by Glacial Till in HA-04(OW) and Decomposed Bedrock in HA-01(OW), HA-02, and HA-12. Borings HA-10 and HA-11 were terminated in the Alluvium.

- **Glacial Till (NYC Class 6, 3b, 3a, 2a):** Glacial Till was encountered below the Fill in HA-05, HA-07 (OW), and HA-08, below the Estuarine Deposits in HA-03 and HA-09, and below the Alluvium in HA-04(OW). Glacial Till was not encountered in HA-01(OW), HA-02, HA-06, and HA-10 through HA-12. The Till stratum ranged in thickness from approximately 2 to 13 ft and generally consisted of medium-dense to very dense, silty to poorly-graded sand with varying amounts of gravel, silt, clay, and rock fragments. A lens of very loose, layered silt and sand was observed in HA-08. The Glacial Till was underlain by Decomposed Bedrock in HA-03, HA-05, and HA-07(OW) through HA-09. The Glacial Till was underlain by Bedrock in HA-04(OW).
- **Decomposed Bedrock (NYC Class 2a and 1d):** Decomposed Bedrock was encountered below the Estuarine Deposits in HA-06, Alluvium in Borings HA-01(OW), HA-02, and HA-12, and Glacial Till in Borings HA-03, HA-05, and HA-07(OW) through HA-09. The stratum was approximately 5-ft thick where encountered and generally consisted of very dense, gray, olive, and white decomposed bedrock. The material generally presented a distinct rock matrix in its structure. Borings HA-05, HA-06, HA-08, and HA-09 encountered sampler refusal and terminated on top of suspected Bedrock at depths ranging from approximately 25 to 30 ft bgs, or elevations ranging from approximately El. -6 ft to El. -11 ft. Boring HA-12 also encountered sampler refusal on suspected bedrock and was terminated at 62 ft bgs, or approximately El. -47.5 ft. Sampling continued into the Bedrock in Borings HA-01(OW) through HA-03, and HA-07(OW).
- **Bedrock (NYC Class 1c and 1b):** Bedrock was encountered and rock cored obtained in HA-01(OW) through HA-04(OW), and HA-07(OW). Bedrock in this region is mapped as the Hartland Formation. Top of Bedrock levels at the site vary significantly. Bedrock was encountered at approximately 35 ft to 87 ft bgs upon split-spoon refusal, corresponding to about El. -15.5 ft to -70 ft. However, refusal on suspected bedrock was encountered in Borings HA-05, HA-06, HA-08, HA-09, and HA-12 at depths ranging from approximately 25 to 62 ft bgs, corresponding to elevations of approximately El. -6 ft to -47.5 ft. At the locations where rock cores were obtained, rock was cored after advancement with the roller bit to seat the core barrel at the depths indicated on the logs. Bedrock generally consisted of hard, fresh to slightly weathered, gray, fine to coarse-grained schist. Rock core recoveries generally ranged from 95 to 100 percent and Rock Quality Designation (RQD) generally ranged from 55 to 83 percent. RQD is defined as the ratio of the sum of 4-in. long or greater core pieces divided by the 5-ft length of core run.

3.3 GROUNDWATER

Groundwater levels were measured in three observation wells installed in the completed test borings at HA-01(OW), HA-04(OW), and HA-07(OW). Groundwater levels were monitored while Haley & Aldrich of New York was on the site at the time of the borings until levels appeared stabilized and in equilibrium. Groundwater level measurements are provided on the groundwater monitoring reports in Appendix E. Groundwater levels were not recorded in the other test borings at the time of drilling due to the wash-rotary drilling methods utilized.

Groundwater levels measured at the time of the explorations generally ranged from 11.4 ft to 13.8 ft bgs, corresponding to elevations ranging from approximately El. +5.5 ft to El. +5.7 ft. GEODesign also indicated that water levels in the observation well installed at the time of their investigation were

approximately El. +5.5 ft. Wet samples were observed at higher elevations and water could be locally higher and trapped in the Fill.

Area groundwater levels are commonly influenced by numerous factors including recent precipitation, surface runoff, local construction activity, leakage into and out of utilities and other infrastructure, and seasonal variations. As such, groundwater levels should be anticipated to vary both during and following construction.

4. Foundations Design Recommendations

This section, intended primarily for members of the design team responsible for design of the structures and preparation of contract documents, provides geotechnical recommendations for the foundation design of the proposed structures. In general, foundations should be designed and constructed in accordance with the NYCBC. Recommendations contained herein are consistent with the requirements of the 2022 Edition of the NYCBC.

4.1 SOIL PARAMETERS AND DESIGN GROUNDWATER

Based on in-situ and laboratory testing, we have grouped soil engineering parameters of the sub-strata into common values that may be used to represent the stratum. Soil parameter values used in our analysis and recommended for consideration by others for analysis are as follows:

Soil	Moist Unit Weight (pcf)	K _a	K _p	K _o	Internal Friction Angle (deg)	Cohesion (psf)
New Granular Fill	130	0.28	3.54	0.44	34	0
Existing Fill	120	0.33	3.00	0.50	30	0
Estuarine Deposits	90				--	150
Alluvium (Loose)	110				29	--
Alluvium (Dense)	125				34	--
Glacial Till	130				36	--
Decomposed Rock	145				40	--
Notes: pcf = pounds per cubic foot deg = degrees psf = pounds per square foot						

Earth pressure coefficients are not presented for soils below the Fill as excavations to those depths will not be required.

The proposed building is not located within a Flood Zone per Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Number 3604970103F.

We recommend using a design groundwater level of El. +6.5 ft.

4.2 SITE FILLING AND GRADING

It is our understanding that the ground floor slab will be established at approximately El. +20 ft and the recessed basketball court will be established at approximately El. +9 ft. Based on the plans we have been provided and for our analysis purposes, we have assumed that site grades will increase over the current

levels by approximately 2 to 3 ft with the exception of the basketball court which would require cuts of about 8 to 9 ft below existing grades. Ramps, stairs, and landscape features are planned around the perimeter of the building to transition from grades of approximately El. +17 ft to the elevated building ground floor slab of El +20 ft. Where grade raises are planned, including within the building footprint and around the exterior where landscaping and egress are planned, the underlying Estuarine Deposits have the potential to consolidate and may settle over time when a new load is placed on the ground surface. The presence of peat within the Estuarine Deposits adds to both the magnitude and variability of the potential settlement that could occur. In addition, secondary consolidation of the organic deposits may cause long-term future settlement after primary consolidation settlement is completed and could also be variable based on organic content present. Primary consolidation settlements of 0.5 to 2 in. are expected to occur over approximately seven years due to the required fill placement. After primary settlement is complete, an additional 0.2 to 0.5 in. may occur over the next 20 years. Total differential settlements of up to approximately 3 in. may occur over short distances.

Further discussions of the effects of grading and recommendations to address the subsequent settlement of the compressible soils on the foundations are provided below in Section 4.3 and recommendations for the first-floor slab and utilities are provided in Sections 4.4 and 4.10 based on these anticipated settlements, respectively. Further discussion of the effects on grading of the tennis courts and open space areas is provided in Section 4.9 below.

4.3 FOUNDATION TYPE

The Fill, underlying Estuarine Deposits, and very loose to loose Alluvium Deposits, typically present to 40 to 70 ft bgs, are not suitable for foundation support of the proposed foundation loads. The foundations must therefore transmit building loads below these materials to avoid undesirable settlements and foundation instabilities.

It is recommended that the building be supported on deep foundations bearing on top of bedrock, and that the lowest level floor slabs be designed as structural (framed) slabs supported on adjacent column and wall pile caps. The recommended deep foundation type is driven H-Piles based on required depths, required capacities, and common availability of the pile type and potential installers. H-Piles also have the advantage of durability when driving through possible obstructions in the Fill and penetrating the Glacial Till and Decomposed Bedrock, where present, and into the top of Bedrock.

We have performed pile drivability studies to confirm the ability to reasonably achieve capacity without damage to the piles. Economic conditions at the time of construction could dictate which driven pile type and size is best suited and Contractor-proposed alternatives may be further considered.

Other drilled or driven pile types bearing on or in bedrock may be technically feasible and potentially more economically advantageous, depending on specific material availability and costs at the time of construction. These other pile types proposed by Contractors bidding the work would need to be evaluated on a case-by-case basis and discussed with the project team relative to pile capacity and type, final building loads, down drag loads, potential for pile buckling, load testing requirements, schedule, and other considerations as construction plans and specifications are finalized. Consideration could be given to structuring pile specifications to allow for bidding such alternate pile types or capacities to take advantage of current marketplace conditions.

Shallow foundations to support interior and exterior columns are not considered practical due to the presence of thick existing Fill soils and underlying potentially compressible soils.

4.3.1 Pile Load Demands

Based on design correspondence with the Structural Engineers, we anticipate that piles will act mostly in compression with some degree of uplift and lateral demand.

Information regarding uplift and lateral loads was not available at the time of our report, as such, we cannot comment on the need for pile uplift or lateral load testing if higher lateral load capacity is required. Given the size of the building and that a partial basement (i.e., below-grade basketball court) is planned, we would anticipate that lateral loading by code dictated allowable lateral pile loads of less than 2 kips such that lateral load testing of piles would not be required. Where pile caps are at different levels, cellar walls should be designed to withstand the lateral soil pressure from adjacent piles. Increased allowable lateral loads may be possible, however, structural capacity considering combined stress evaluation would limit applied lateral loads and lateral load testing would also be required if higher loads are desired. Drilled or anchored elements may be necessary upon further analysis by the Structural Engineer with the axial capacities presented in the following sections. The allowable compression capacity of the piles should be pro-rated to account for downward movement of Fill, Estuarine Deposits, and Alluvium soils, as the soils settle with time, in the areas where grade raises are planned and below the walls and the first column row within areas where grade raises or cuts are not planned. A discussion on the reduction in pile capacity is provided in our recommendations below.

We offer design recommendations and considerations in the following sections.

4.3.2 Pile Axial Capacity

Based on our discussions with the Structural Engineer, maximum anticipated column loads are 750 kips DL and 300 kips LL with maximum anticipated wall loads of 35 kips/ft DL and 10.5 kips/ft LL. Due to the site filling that will occur, piles that are installed through the Fill and Estuarine soils and that are resisted by underlying soils and rock would experience added downward forces due to the friction applied by the downward moving Fill, Estuarine Deposits, and Alluvium soils as they settle and consolidate as described herein. The applied downdrag force would reduce the available allowable geotechnical axial compressive capacity of piles by 100 kips, assuming a steel wide-flange HP14x89 H-Pile is used. Outside of these areas that will be subjected to a fill, a reduction for downdrag is not required.

We recommend the use of steel wide-flange HP14x89 H-Piles with an allowable geotechnical axial compressive capacity (after accounting for downdrag forces) of 300 kips. The geotechnical capacity assumes that piles will be driven to refusal in Decomposed Bedrock or Bedrock. Piles would need to be driven and tested to meet the ultimate geotechnical capacity plus the anticipated downdrag force, or 700 kips, assuming a safety factor of two is applied.

The allowable tension capacity, after application of a factor of safety of three plus the weight of the pile, would be 30 kips for piles at the first-floor cap levels and 11 kips for piles at the basketball court cap levels. This assumes bottom of pile caps are established 4 ft below slab levels and piles are embedded 38 ft and 27 ft, respectively, to a tip elevation of El. -22 ft. Additional piles of the same or a different type, or other deep foundation elements such as rock or soil anchors may be required if additional uplift capacity is required.

The structural capacity of the piles may be different and should be checked by the Structural Engineer for the combined effect of axial and bending stresses that are limited in accordance with Section 1810.8 and may govern.

4.3.3 Pile Lateral Capacity and Group Reductions

It is assumed that the piles are designed under pinned head conditions. According to Section 1810.3.5, the maximum allowable load of a deep foundation element is 2 kips, unless verified by lateral load testing. Therefore, piles should be designed for an allowable lateral load capacity of 2 kips at ½ inch lateral deflection assuming the pile-to-cap connection does not restrict rotation (i.e., pinned-head condition).

If higher loads are desired and load testing is performed, a higher allowable lateral load may be available. The maximum allowable load by code under fixed head conditions is defined as the load that causes 3/8 in. of movement at the ground surface in the lateral load analysis. However, this maximum allowable load may not be feasible when considering combined stress analysis unless lower compression loads are considered. Therefore, we have not included higher allowable loads in our recommendations.

4.3.4 Pile Spacing

A minimum center-to-center spacing of 3.0 times the pile diameter is recommended. For H-Piles, use 3.0 times the nominal flange width for the minimum center-to-center spacing.

4.3.5 Pile Materials

The steel H-Piles should be designed and manufactured in accordance with ASTM A36, A252, A283, A572, A588, or A913 as appropriate. A minimum steel yield stress of 50 kips per square inch (ksi) for the piles is suggested. This yield strength is typical and will likely not result in an increase in material costs. It is recommended that the Structural Engineer confirm that the combined stress in the pile does not exceed the allowable stresses of Table 1810.8 of the NYCBC.

Based on the anticipated depth to bearing strata, splicing of the piles may be required in areas where rock was deeper and would be longer than the pile section length delivered. Mechanical dry fit splices are acceptable where such splices are 15 ft or deeper below the bottom of the pile cap. Full penetration weld splices equal to or greater than the ultimate compression, tension, and bending capacities of the pile may be used where splices closer than 15 ft below bottom of pile cap elevation are required, except not within 5 ft below bottom of pile cap elevation

The Contractor's pile installation submittals will need to include information on the length of the lead pile section demonstrating that the splice will be located at or below the approved depth below bottom of pile cap upon completion of pile driving and final cutoff.

Welding done on the pile should be in accordance with Welding Code AWS D1.1.

For H-Piles, a pile tip such as Associate Pile & Fittings Hard-Bite products (or acceptable equal) should be used that will engage the rock and reduce damage to the flanges in difficult driving conditions.

4.3.6 Corrosion

Laboratory testing of select soil samples for corrosion indicator properties including pH, soil resistivity, sulfate, and chloride testing was performed. Based on the results of the laboratory tests, corrosion appears to be a low possibility, and therefore, the pile capacity analyses were performed assuming a corrosion loss of 1/16 in.

Results of the laboratory corrosion testing are presented in Appendix F.

4.3.7 Frost Protection

Pile caps and grade beams should be embedded a minimum of 4 ft below adjacent ground surfaces that will be exposed to freezing temperatures in accordance with Section 1809.3.1.

4.3.8 Embedment of Pile Tops

Structural Engineer should review and determine actual project embedment requirements. Tops of piles should be embedded a minimum of 3 in. into pile caps, and caps should extend to a minimum of 4 in. beyond the edge of the pile, in accordance with Section 1810.2.4, for pinned head conditions.

4.3.9 Indicator Pile Program

An indicator pile program is recommended. The purpose of an indicator pile program is to obtain actual pile installation data on select pile types and pile hammers, and to aid in determining and optimizing steel purchase quantity and lengths. An indicator pile program would consist of mobilizing the proposed piling hammer and installing several piles at select locations throughout the site. Piles would be dynamically tested during the initial drive until the desired capacity is achieved.

Indicator piles should be driven and monitored with dynamic pile load test equipment (Pile Driving Analyzer [PDA]) to evaluate the suitability of the pile and driving equipment to reach bearing strata without damaging the pile and to assess pile lengths required across the site. Indicator piles may be driven at production locations if the program is properly planned.

In order to achieve the required capacity, piles would need to be driven until the pile tip is either within the Decomposed Bedrock or on top of Bedrock. Piles should be driven with a hammer delivering a minimum rated energy that is compatible with the design pile configuration and capacity, and that will not generate excessive driving stresses in the pile. For preliminary planning purposes, we have estimated that an impact piling hammer capable of transferring approximately 45 kip-feet (k-ft) of energy into the pile while driving at a rate of approximately 10 blows per inch (bpi) would be capable of achieving the desired capacity without damage to the piles. The piling Contractor would be responsible for independently assessing the required equipment based on their own means and methods. The Contractor should propose the final driving criteria for the proposed hammer system, based on the results of computer wave equation analyses conducted and stamped by the Contractor's professional engineer.

4.3.10 Load Testing

Axial compression testing will be required in accordance with the NYCBC. The NYCBC requires static compression load testing be performed for each type of driven pile with capacities exceeding 40 tons in compression, an FS of less than 3 in uplift, and 1 ton in lateral.

In accordance with Section 1810.4 and for planning, three compressive load tests are required as the footprint is greater than 30,000 sq ft but less than 50,000 sq ft in area assuming only a 300-kip allowable capacity pile is utilized. According to the code, one-half of the required load tests could be replaced with dynamic load tests at a rate of two dynamic load tests per static load test replaced. Therefore, two static compression tests and two dynamic load tests could be performed to meet the code requirements. As a factor of safety of at least 3.0 was applied to the ultimate uplift capacity to determine allowable tension loads and lateral loads of greater than 1 ton are not recommended, static tension tests and lateral tests are not required.

Dynamic load tests should be performed in accordance with NYCBC and ASTM D4945 requirements. When tested dynamically, at least 5 percent of the production piles of each pile type should be tested, with at least 20 percent of those dynamic tests occurring in the first piles driven, and distributed at representative locations throughout the site.

Dynamic load tests should be performed to prove a factor of safety of 2.0 (with the downdrag forces added in) and 3.0 to confirm the allowable compressive and uplift capacities, respectively, based on post-processed Case Pile Wave Analysis Program (CAPWAP) data. An ultimate compressive capacity of 800 kips would be required during dynamic load tests for both the 300-kip and 400-kip piles. If piles are driven above the proposed subgrade level (i.e., if basketball court piles are installed from above), the resistance of the Fill soils to be excavated must be accounted for.

4.3.11 Pile Specifications

Specifications should be prepared for the pile materials, minimum installation criteria, test piles, and load testing. The Contractor should submit for approval their proposed driving procedures and methods for test piles and static pile load testing in accordance with the criteria in the specifications.

4.4 LOWEST FLOOR SLABS

The lowest level slabs (first floor and basketball court) are recommended to be designed as structural slabs supported on pile caps and pile-supported grade beams. Where possible, structural slabs should be keyed into the foundation walls and cast with integral water stops to prevent possible seepage at cold joints. The structural slab should also be waterproofed as per the recommendations presented herein.

4.5 WATERPROOFING, SUBSURFACE DRAINAGE, VAPOR RETARDERS, AND INSULATION

The design ground water level is El. +6.5 ft. Finished first-floor levels are generally El. +20 ft with the exception of the basketball court at El. +9 ft. The proposed foundation plans do not indicate the presence of any mechanical vaults or elevator pits below the slab levels of the basketball courts and appear to be contained within the basketball court and the surrounding first-floor level at a higher

elevation. Given that the basketball court will be at the lowest level, we recommend that a sump pit be included in the base slab to allow for a low point from which to pump in case of an accidental flooding event (fire suppression release, pipe burst, etc.).

Waterproofing should extend to a minimum of 12 in. above the highest observed groundwater level, or highest flood level, whichever is higher. Therefore, for practical purposes, the design hydrostatic pressure level would be 1 ft above the design groundwater level previously stated and slabs and walls below this level should be designed to withstand this fluid pressure. Given the proximity of the observed groundwater levels and assuming that groundwater at and near the site is not contaminated, we recommend that the bottom of the basketball court slab and walls be waterproofed with sheet membrane-type waterproofing systems (e.g., Preprufe 160N for walls constructed using blindside forms, Bituthene 3000 for walls constructed using two-sided forms, and Preprufe 300 for slabs) in order to maintain a dry, usable space.

We recommend that a moisture vapor retarder (e.g., minimum 10-mil virgin high-density polyethylene [HDPE] membrane, articulated HDPE membrane, liquid applied membrane with top/bottom geotextile, or concrete additive) be provided below the ground level floor where no cellar space exists or where void space exists, especially if building humidity control is desired, if materials will be stored on floors, or if vapor-tight floor coverings may be used. Without a vapor retarder or other similar preventive measure, ambient sub-slab moisture will penetrate through the concrete floor and contribute to building humidity, potential condensation on the concrete floor surface, and deterioration of vapor-tight flooring. Detailed recommendations for vapor retarder design and installation are described in American Concrete Institute (ACI) 302.2R-06 "Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials." Penetrations through membranes should be sealed in accordance with manufacturer recommendations. The slab concrete design and construction procedures should consider the impacts of the presence of a vapor retarder/barrier. If an environmental evaluation indicates that a potential vapor intrusion issue exists, then this vapor retarder will require upgrading to a vapor barrier as part of a sub-slab vapor intrusion mitigation system. Additionally, modifications and/or upgrades to the slab base course layer may be necessary to facilitate sub-slab venting or for compatibility with the vapor retarder/barrier.

The foundation walls should be backfilled with a 3-ft minimum width of free-draining fill (such as Compacted Granular Fill). If the minimum backfill width cannot be met due to the planned property-line construction limits, the drainage detail may more practically consist of a continuous geocomposite drainage board (such as Amerdrain 200) backfilled with compacted Common Fill (containing less than 20 percent fines unless otherwise approved by the Owner's Geotechnical Engineer) if blind-side forming is not elected, or placed immediately on the support-of excavation prior to casting foundation wall concrete if blind-side forming is used. The water collected at the base of the drainage unit or base of the drainage board should be collected and discharged as for any other site runoff.

Foundation walls and floor slabs should be insulated in accordance with the NYCBC.

4.6 SEISMIC DESIGN

The geotechnical test borings drilled in the proposed footprint of Building B3 indicated the presence of soils with SPT N_{60} values plotting below the NYCBC liquefaction screening line for Structural Occupancy/ Risk Category II/III structures (NYCBC Figure 1816.1), thus requiring a liquefaction evaluation. The subsequent liquefaction evaluation using the Code-mandated Maximum Considered Earthquake Peak Ground Acceleration adjusted for Site Class (PGA_m) in Table 1816.2.1 indicated the soils under the building area are not considered liquefaction susceptible and, therefore, seismically-induced settlement during the design earthquake is not anticipated to be significant (less than $\frac{1}{2}$ in.).

The following mapped and adjusted maximum seismic acceleration parameters were selected in accordance with Section 1613.3:

- Site Class = D
- Mapped Short periods, $S_s = 0.296g$
- Mapped Long periods, $S_1 = 0.061g$
- $F_a = 1.57$
- $F_v = 2.40$
- Adjusted Maximum Short periods, $S_{MS} = 0.465g$
- Adjusted Maximum Long periods, $S_{M1} = 0.146g$

Therefore, the following seismic design recommendations are provided in accordance with Sections 1613.3.4 and 1613.3.5:

- $S_{DS} = 0.310g$
- $S_{D1} = 0.098g$
- Seismic Design Category = B (based on the Structural Occupancy Category/ Risk Category for this building being II, to be confirmed by the project Structural Engineer)

4.7 LATERAL EARTH PRESSURES

Foundation walls serving as retaining walls should be designed to support earth, surcharge (temporary and permanent), and seismic lateral loading as applicable in accordance with the following (where H is the height of soil in feet against the wall above the lowest floor level):

- Static Earth: Equivalent fluid unit weight equal to 60 pcf above the design flood elevation; and 95 pcf below the design flood elevation.
- Hydrostatic: Equivalent fluid unit weight equal to 62.4 pcf.
- Seismic: Inverted triangular pressure applied over the height of the wall with a magnitude of 11.2H psf at the top of the wall where H is the wall height in feet.
- Surcharge: Uniform pressure applied from the elevation of the surcharge to the top of the slab with a magnitude of 0.5q psf, where q is the vertical surcharge pressure in psf. For unrestrained walls, use 0.3q psf.

These pressures assume level ground surface within a lateral distance H of the backside of walls, that walls are braced at the top and bottom, and that walls are backfilled with free-draining fill.

For seismic loading conditions, walls should be designed to resist static plus seismic earth pressures. Surcharge loading does not need to be considered for seismic design unless the surcharge will be applied over an extended time.

Foundation walls designed as retaining walls should be designed for a factor of safety of 1.5 against sliding and overturning under static loading conditions and 1.2 under seismic loading conditions. Passive soil pressure should not be included as a resisting force.

4.8 RESISTANCE TO LATERAL LOADS

Lateral loads may be resisted using the lateral resistance provided by pile foundations. Based on the composition of soils anticipated to be present below the first-floor slab, we recommend not relying on more than half the passive pressure. If additional lateral resistance offers substantial benefit to the project, we can evaluate applicable resistance provided pile cap and grade beam elevations and information on sub-slab utilities are available for review.

The resistance to lateral loads provided by pile foundations should be calculated in accordance with the recommendations provided in Section 4.2.

4.9 EXTERIOR GRADING

Surface runoff should be directed away from the building by sloping grades downward and away from the building and providing a low permeability surface finish within 10 ft of exterior building walls. Low permeability surface finishes may include bituminous pavements, concrete sidewalks, or a 6-in. minimum thickness of low permeability backfill such as topsoil. Due to the presence of underlying Estuarine Deposits, the proposed changes in grade, and the site history of observed ongoing settlement, sloping grades should account for future settlement. We also offer the additional following discussions for consideration.

4.9.1 Tennis Courts and Open Space Areas

The proposed tennis courts and open space areas are to be established near existing grades on the western portion of the site and no grade changes are expected, however, it is our understanding that the tennis court design and site landscaping are not finalized and may still be modified. The discussion and recommendations presented below should be revisited if the final design changes from our understanding.

As currently planned, the tennis courts would likely span a portion of the site where no Estuarine Deposits were observed on the west side and a relatively thin amount (on the order of approximately 3 to 5 ft thick) of soft, potentially compressible soils on the east side. Although no grade changes are planned, additional differential settlement may occur due to previously placed fill or due to the replacement of existing Fill with heavier tennis court subbase materials. Therefore, some total settlement and differential settlement in these areas would be expected. Conservatively, we estimate future settlements of up to 1 in. and 0.5 in. may occur in the open space and tennis court areas, respectively. Differential settlements may be up to half the future settlement.

We recommend surcharging the areas with 4 ft of Fill for a duration of three months to reduce the potential for future settlement. It is anticipated that cut material from the building basement excavations can be used to perform the surcharging. Based on the volume of material available, multiple phases of surcharging may be required during the building construction period.

A less effective alternate method to mitigate settlement would be through the use of geogrid reinforcement in the subbase. This method would reduce the potential for localized differential settlement, but would not prevent the overall predicted settlement of the areas. We recommend using Tensar BX geogrid or equivalent in 1 ft of crushed stone in accordance with the manufacturer's recommendations.

4.9.2 Building Egress Areas

As discussed earlier, raising site grades will cause variable and significant settlement of the soil under the first-floor slab and surrounding improvements that also include building entrances, ramps, stairs, buried utilities, and other landscaping features around the building. Increases in grade subsequently add a new load to the site soils and can consolidate the compressible soils within the Estuarine Deposits and may cause elastic settlement to the loose Alluvial Deposits below the Estuarine Deposits. Without any improvements, total settlements on the order of 0.5 to 3.5 in. are expected due to the fill required to reach proposed first-floor levels and up to approximately 3 in. of differential settlement over short distances.

If these total and differential settlements are not desirable or the landscaping plans cannot be designed to accommodate the anticipated movement of the exterior egress and landscaping features, possible means of remediation would include:

- Remove some existing soils and replace with lightweight fills (load balance);
- Perform a pre-loading/surcharging program during construction to pre-settle the ground before constructing the ramps/stairs; or,
- Provide structural support of the ramps using driven piles as recommended above.

Load balancing of the soil can be performed around the perimeter of the building to reduce the settlement of the site soils due to raising grades in these areas. In order to load balance, we recommend replacing the fill underlying the raised stairs and ramps, and anywhere grades will be raised around the perimeter of the building, to 20 ft beyond the edge of the building, or the maximum width of the egress/landscaping, with lightweight fill in an amount that offsets the additional weight of the ramps, stairs, landscaping features, and weight of fill added. To fully make this efficient, lightweight fill should be used as fill to reach proposed subgrade levels of these areas as well which will reduce the depth to offset the added loads. Therefore, we estimate the ramps and stairs will add approximately 3 ft of lightweight fill and concrete, or approximately 175 to 250 psf, above the current surface level/stresses, assuming lightweight fill is used to reach grade. In order to offset this new applied load using lightweight fill, approximately 2.5 to 4.5 ft of existing fill would need to be replaced with 35 to 65 pcf lightweight fill, respectively. We note that the cost of lightweight fill increases as the weight decreases.

Pre-loading could be an alternative to load balancing. If pre-loading is desired, we recommend surcharging the perimeter of the building with additional fill above the finished grades for a duration of time to induce the consolidation and immediate settlement to reduce long-term settlements. This will

require maintaining a surcharge pile next to the excavation while foundation work is being performed which may be an inconvenience to the Contractor and may be impractical for construction purposes. This can be further evaluated if desired.

Lastly, another alternative to load balancing would be to extend the pile-supported area of the structure outside of the perimeter of the building. This would provide the firmest base for the new ramps and stairs.

4.10 UTILITIES

Utilities beneath slabs should be hung from the structurally supported slab with corrosion-resistant hangers as it is anticipated that the soils below the slab would settle due to the proposed site grading. The hangers should be designed to support the weight of the utility, its contents, and the weight of soil within the zone defined by imaginary lines rising at a 1 horizontal to 2 vertical (1H:2V) slope drawn upward and outward from the spring line of the pipe (both sides) to the underside of the slab. A unit weight of 130 pcf should be assumed for the overlying soil.

Some differential settlement could occur between sub-slab utilities hung from structural slabs and the adjacent soil-supported site utilities as they enter the building. As such, sub-slab utility connections to site utilities should be designed to accommodate differential settlement. Utilities should be designed to accommodate total and differential settlements under such conditions as described in Section 4.2 above. In particular, utilities that penetrate through foundation walls should pass through oversized holes or box-outs. Provisions should be made so that utility connections to buildings can accommodate potential differential settlement between the “rigid” structure and the soil-supported utility such as using flexible connections where necessary.

Immediately adjacent to the building and within the surrounding landscaping and building egress areas, consideration should be given to pile-supporting settlement-sensitive utilities such as gravity-fed wastewater pipes in case long-term secondary settlement of the ground occurs. Utilities in this area could be designed for the lower settlements (total and differential) as described in Section 4.4 if those recommendations in Section 4.4 are considered and implemented at the site to reduce the magnitude of settlement.

Away from the building, beyond the surrounding entrance ramps and stairs, new below-grade utilities may be soil-supported in the existing Fill or in Common Fill using conventional installation procedures, following the removal of exposed unsuitable bearing materials, as applicable, as long as new fill is not added to the existing grade. Consideration should be given to pile supporting or utilizing lightweight fill for settlement-sensitive utilities such as gravity-fed wastewater pipes in case long-term secondary settlement of the ground occurs. Foundations for small- to moderate-size light pole bases, guide rails, fences, signs, transformers, and similar ancillary structures can be designed and constructed using conventional methods but may require future maintenance. Large or heavy facilities may require piles or other measures to enable soil bearing and settlement control.

5. Construction Considerations

5.1 GENERAL

The primary purpose of this section is to provide comments related to earthwork, excavation, foundation construction, and other geotechnical engineering aspects of the proposed construction. It will aid those responsible for the preparation of contract drawings and specifications and those involved with construction observation. Prospective Contractors for this project should evaluate potential construction issues on the basis of their knowledge and experience with similar sites and subsurface conditions, taking into account their own proposed construction methods and procedures. In addition to the construction considerations and recommendations made herein, construction should conform to the requirements of the Occupational Safety and Health Administration (OSHA) and other applicable regulatory agencies.

5.2 EARTHWORK

The existing site grades are approximately 3 ft lower than the ground floor slab finished floor levels of El. +20 ft and approximately 8 ft above the finished floor of the basketball court at El. +9 ft. Therefore, fills on the order of 3 ft are expected to reach the first-floor levels, and cuts of about 9 ft are required to reach the basketball court subgrade levels. The proposed tennis courts are to be constructed near existing grades.

Support of existing utilities (existing to remain in service or proposed) and nearby facilities should be reviewed by the earthwork Contractor based on its specific excavation plan and by the General Contractor/Construction Manager relative to its construction staging and traffic control plan.

5.2.1 Mass Excavation

The proposed pile caps and below-grade spaces will require excavation through Fill to construct foundation elements, elevators, and sump pits. We anticipate that conventional earth-moving equipment (excavators, bulldozers, loaders, etc.) can be used for mass earthwork operations at the site.

Former substructure elements, historic utilities, rubble, construction debris, and other materials may be encountered. Hoe-ramming, hot-work, or other techniques may be needed to remove below-grade obstructions. Where removal of obstructions disturbed the proposed foundation or slab subgrades, removal and recompaction of the subgrade should be performed.

Where space permits, open cut slopes inclined no steeper than 1.5H:1V are considered feasible but should be confirmed relative to existing site conditions and exposed subsurface conditions at the time of excavation. Some sloughing and raveling should be anticipated on temporary earth slopes constructed at this inclination. Excavation and sloping should be conducted in accordance with OSHA and other applicable regulations. When excavating below and adjacent to existing footings of neighboring structures, excavate slopes beginning no deeper than 24 in. above the bottom of footings.

5.2.2 Preparation and Protection of Bearing Surfaces

The following procedure should be utilized to prepare any intended on-grade bearing surfaces. However, the below preparation sequence will not prevent the settlement and differential settlement discussed previously from occurring. If a structural slab supported by pile caps is selected, these procedures would not be applicable. The recommendations provided herein also apply to lightly loaded elements that are in-sensitive to settlement (sidewalks, light poles, landscaping stairs, etc.). Bearing surfaces should be prepared in accordance with the following recommendations:

- During excavation and foundation construction operations, precautions should be taken to prevent disturbance to the bearing surfaces, including by construction activities and the presence of water.
- The exposed subgrade must be examined in the field by the Geotechnical Engineer to observe its character, integrity, and condition. It may be necessary to over-excavate and replace weak, disturbed, or otherwise unacceptable soils. Surface water should not be allowed to collect on exposed soil-bearing surfaces.
- Over-excavation of disturbed or unsuitable soils below design slab-bearing grade should be backfilled with Compacted Granular Fill.
- Soil-bearing surfaces must be protected against freezing before and after foundation construction. If construction is performed during freezing weather, footings should be backfilled to a sufficient depth (up to 4 ft) as soon as possible after they are constructed. Alternately, insulating blankets, heating, or other means may be used for protection against freezing.
- A crushed stone layer should be placed over exposed subgrades to provide protection until foundation concrete is placed. A 6-ounce per square yard (oz/sq yd) non-woven geotextile should fully encapsulate the crushed stone layer.
- Dewatering should be performed in a manner that avoids pumping of fines and retains the integrity of natural or prepared bearing surfaces. The Contractor should prevent the flow of surface water onto bearing surfaces at all times.
- Smooth-edged buckets or hand excavation should be used as necessary to prevent the disturbance of bearing soils. Use of non-smooth-edged buckets to excavate soils at final subgrade will disturb subgrades and should not be allowed. Areas of soft, unstable, or disturbed soils will need to be over-excavated to firm and stable soils and replaced with Compacted Granular Fill.
- If a boulder or other obstruction becomes partially exposed at subgrade level or at footing bearing level, remove the obstruction and fill the void with Compacted Granular Fill.

5.2.3 Utilities

Existing Fill soils will be encountered at utility subgrade elevations. Utility trench subgrades should be proof-compacted with at least four coverages of hand-guided vibratory compaction equipment delivering a minimum 5,000 ft-lb dynamic force. Soft or weaving material observed during proof-compaction should be removed and replaced with Granular Fill or approved Common Fill. Utilities may be soil-supported with bedding materials as recommended by pipe manufacturers or regulatory agencies having jurisdiction over such installations and such that the net replacement is an unload. Lightweight aggregates may be required to accomplish that. Crushed Stone or other approved coarse aggregates should be separated from surrounding soils with Filter Fabric. If encountered, obstructions

(e.g., former building foundations, debris, cobbles, boulders) should be removed to at least 2 ft below utility inverts to limit “hard” spots and potential misalignment or cracking of utilities.

5.2.4 Filling and Backfilling

Unless otherwise proposed by the earthwork Contractor and accepted by the Geotechnical Engineer, Granular Fill should be used for filling and backfilling. Suitable Common Fill could be used in lieu of Granular Fill during times of favorable weather provided the material is approved by the Geotechnical Engineer and is placed and compacted in the same manner as Granular Fill.

Recommended compaction requirements are as follows:

Location	Minimum Compaction Requirements
Around Pile Caps	95 percent
Below Pile Supported Slabs and Pile Caps	92 percent or as necessary for a stable subgrade
Parking, roadways, and sidewalks	92 percent up to 5 ft below finished grade 95 percent in the upper 5 ft below finished grade
Landscaped areas	90 percent nominal compaction or as coordinated with the Landscape Architect

Minimum compaction requirements refer to percentages of the maximum dry density determined in accordance with ASTM D1557. Moisture conditioning (i.e., drying, watering, mixing, etc.) may be necessary to achieve proper compaction.

Compacted soil fills should be placed in lift thicknesses not exceeding 12 in. in loose measure. Compaction equipment in open areas should consist of heavy vibratory drum rollers imparting a dynamic force of at least 25,000 lbs. In confined areas, hand-guided equipment such as a large vibratory plate compactor imparting a dynamic force of at least 5,000 lbs should be used and the loose lift thickness should not exceed 6 in. A minimum of four systematic passes of the compaction equipment should be used to compact each lift. Cobbles or boulders having a size exceeding 2/3 of the loose lift thickness should be removed prior to compaction.

Placement of fill should not be conducted when air temperatures are low enough (approximately 30 degrees Fahrenheit or below) to cause freezing of the moisture in the fill during or before placement. Fill materials should not be placed on water, snow, ice, or frozen soil. Frozen soil or soil containing frozen materials should not be used as compacted fill.

5.2.5 Backfill Materials

5.2.5.1 Compacted Granular Fill

Compacted Granular Fill should consist of uncontaminated natural bank-run sand and gravel, free of organic material, snow, ice, debris, or other unsuitable materials, and should be well-graded within the following limits:

U.S. Standard Sieve Size	Percent Finer by Weight
3 in. ⁽¹⁾	100
No. 4	30-80
No. 40	10-50
No. 200 ⁽²⁾	0-8
Note: (1) Use a maximum 3-in. size for fill placed within 12 in. of slabs and footings, and within 3 ft of foundation walls. (2) Use a maximum of 5 percent passing the No. 200 sieve for Compacted Granular Fill used as free-draining fill adjacent to basement walls and any drainage application.	

5.2.5.2 Common Fill

Common Fill should consist of uncontaminated mineral sandy or gravelly soil, predominantly free from organic matter, plastic, metal, wood, ice, snow, debris, or other deleterious material, and should have the characteristic that it can be readily placed and compacted. Common Fill imported to the site should have a maximum of 80 percent passing the No. 40 sieve and a maximum of 30 percent finer than the No. 200 sieve. The maximum particle size should be the smaller of 2/3 the lift thickness or 6 in. Silty Common Fill soils may require moisture control during placement and compaction.

5.2.5.3 Crushed Stone

Crushed Stone should consist of No. 2 Crushed Stone (1-in. size) in accordance with New York State Department of Transportation (NYSDOT) Standard Specifications, latest edition, S704. Crushed Stone used for foundation perimeter drains shall be washed at the source site prior to import.

5.2.5.4 Geotextile

A filtration-type geotextile is recommended between crushed stone and surrounding and underlying soils. The material should consist of 6 oz/sq yd, needle-punched, non-woven filter fabric such as Mirafi 160N or equivalent.

5.2.6 Reuse of Excavated Materials

Discussions regarding options for on-site reuse of excavated materials should occur once construction logistics, phasing of work, environmental considerations, stockpiling options, and other considerations are understood. Reuse of on-site materials should be observed and documented in the field by a representative of the Owner's Geotechnical Engineer.

Excavated materials will predominantly consist of existing Fill containing variable amounts of concrete, brick, wood, glass, coal/slag/cinder fragments/particles, and organic matter. From a geotechnical perspective, the Fill should not be reused as Common Fill or Compacted Granular Fill in its current condition due to the presence of debris and deleterious materials, making its reuse generally cost-prohibitive. However, the final determination of suitability for reuse will be made when the materials are exposed in bulk during excavation and following completion of environmental evaluations (as necessary). Pending review of the Owner's Geotechnical Engineer and Environmental Engineer, it is possible to reuse these soils beneath the structural slabs or as pipe backfill subject to weather and

moisture conditions. Given the sometimes-elevated fines content, the Contractor should note that the Fill can be difficult to compact when wet, may require careful moisture control to achieve satisfactory compaction, and may need to be dried to achieve compaction, which can result in delays, particularly during relatively cold or wet weather. Rainfall or melting snow can readily saturate stockpiled silty soils. Providing drainage away from and/or covering stockpiles can help limit this potential problem. Silty soils will require considerable drying time if left in an unprotected stockpile for an extended period of time. Prior to reuse, oversized particles (i.e., cobbles and boulders) and deleterious materials should be removed, which may require mechanical screening for efficiency.

The Fill could be temporarily reused as surcharge materials as presented in other sections of this report prior to disposal in accordance with the Environmental Engineer's reuse and disposal recommendations.

5.2.7 Earthwork During Freezing Weather

Precautions should be taken if work occurs while temperatures are below freezing. Frozen soil or soil containing snow or ice should not be used as compacted fill. Placement of compacted fills should not be conducted when air temperatures are low enough (approximately 30 degrees Fahrenheit, or below) to cause freezing of the moisture in the fill during or before placement. Similarly, lean concrete, if used, placed during freezing temperatures should be protected using insulating blankets, tenting, heating, or other means until the concrete has achieved the design compressive strength.

Backfill materials should not be placed on water, snow, ice, or frozen soil. Backfill should not be allowed to freeze prior to compaction. Silty and clayey soils are susceptible to disturbance by freezing, especially in the presence of water and traffic.

Subgrades must be protected against freezing before and during construction using insulating blankets, ground heaters, and/or tenting and heating. Structures should be backfilled to a sufficient depth as soon as possible after they are constructed for protection of the subgrades against freezing.

5.2.8 Excavated Soil and Material Management

Excavation to construct the proposed building will generate excess soils, materials, and debris requiring off-site disposal by the Contractor. Off-site disposal of soils will require chemical testing in accordance with applicable State and Local Regulations and disposal facility acceptance criteria. Additionally, a significant quantity of solid waste debris (e.g., demolition debris, rubble fill, remnant foundations) may be present below grade, and if so, would likely have to be segregated from excavated soils prior to off-site removal. Testing and defining soil, concrete, and debris disposal criteria are beyond the scope of Haley & Aldrich of New York. However, we would be pleased to assist with this aspect of the project, if desired.

5.3 DRIVEN PILES

It should be assumed that driven pile installations will take place from the proposed first-floor subgrade levels. It is unknown if piles for the basketball court piles will be installed from the elevated first-floor subgrade levels or basketball court subgrade levels. If the basketball court piles are driven from higher elevations, the additional fill soils must be accounted for during load testing and when developing driving criteria. In addition, special care must be given to not hit or disturb the installed piles while excavating to subgrade levels with excavation equipment. This would require excavation with smaller

equipment or hand tools in between and immediately adjacent to piles. Obstructions in the fill and glacial soils may impede pile installation and should be taken into consideration by bidding Contractors.

In the area where the basketball court is planned, significant pile cut-offs will be required if installed at higher elevations, and Contractor means and methods will need to be such that pile location tolerances at cut-off elevations are achieved.

It is the Contractor's responsibility to coordinate splice locations and types in accordance with the recommendations above.

As-installed locations and batters will need to be surveyed and projected to the cut-off elevation to assess conformance pile location tolerance. Re-surveying of piles at cut-off elevations may be necessary if so required by the Owner's Structural Engineer.

Prior to production pile driving, the Contractor shall complete an indicator pile program and load testing program as previously discussed. The Contractor's indicator pile program should also include PDA testing as previously discussed.

Pile load testing shall be conducted in accordance with the recommendations herein and the requirements of the NYCBC. The recommended allowable capacity in compression exceeds the Basic Maximum Allowable Pile Load in NYCBC Table 1810.4.1.3 such that the extended duration creep hold will be required during load testing.

Driven piles are subject to damage if obstructions are encountered or the piles are over-driven. Where an obstruction is encountered at a pile location during driving, the obstruction may be overcome by spudding, pre-drilling, and/or excavation depending on the depth, location, and type of obstruction. Pre-drill holes should have a diameter equal to the diagonal dimension for H-Piles. The annular space of pre-drill holes should be backfilled with flowable fill placed from the bottom of the drill hole via tremie methods. If the obstruction cannot be overcome, then it will be necessary to relocate the pile(s), add piles and redesign the pile cap accordingly, or switch to drilled caisson piles, which the Contractor will need to coordinate with the Owner's Structural Engineer.

5.4 TEMPORARY SUPPORT-OF-EXCAVATION

Considering the subsurface conditions identified in the test borings, we anticipate excavations for the site and internal deeper excavations can generally be made with slopes and pre-engineered trench boxes. Slopes should not under-cut sidewalks, roadways, or existing utilities, and should consider pedestrian, vehicular, and construction surcharges. Therefore, it may not be practical to provide an open-cut sloped excavation to reach the basketball court subgrade levels adjacent to the fire lane.

Where excavations are required within close proximity to sidewalks, drilled soldier piles with wood lagging should be considered. Steel sheet piling may also be considered but risk the potential of getting hung up on obstructions and other existing subsurface elements or debris.

The Contractor should install and monitor survey points (spaced 25 ft or closer) on the top of temporary excavation support walls to document the vertical and lateral movement of the wall. Readings should be obtained following support-of-excavation installation and prior to the start of excavation (to establish

baseline readings), and weekly thereafter (production readings). More frequent monitoring may be necessary depending on the performance of the wall.

The temporary excavation support system should be designed to support the combination of earth, water, and applicable surcharge loads, and should consider the various construction sequences and conditions (e.g., one-sided versus two-sided forming of foundation walls, waterproofing penetrations of the new foundation wall). The temporary excavation support system should be designed and stamped by a New York-registered Professional Engineer and reviewed by the Owner's Geotechnical Engineer for conformance with applicable construction contract documents. We can provide these support-of-excavation design services, if so elected by the Owner.

5.5 TEMPORARY CONSTRUCTION DEWATERING

Final excavation, subgrade preparation, filling, foundation element construction, and utility construction should be conducted "in the dry."

Most excavations are anticipated to be above the groundwater level with the exception of pile caps and grade beams for the basketball court which may be 0.5 ft below observed groundwater levels.

In the excavations above the water table, temporary construction dewatering activities are anticipated to be minor, and largely related to control of precipitation that falls on excavations, surface water runoff into excavations, and management of any trapped water. We anticipate that dewatering in these areas can be accomplished by open pumping from sumps, temporary ditches, and trenches within and around excavations if water is encountered or accumulates locally in excavations.

In the basketball court grade beam and pile cap excavations that are expected to be just below observed groundwater levels, we anticipate that dewatering in these areas can be accomplished by open pumping from sumps, temporary ditches, and trenches within and around excavations.

If deeper excavations below the water seepage levels are performed or if additional dewatering efforts are required to maintain a dry work environment, a more elaborate dewatering system including wells and well points could be utilized.

The interlayering and variability of the site subsoils, as well as the presence of any existing improvements, trench excavation support requirements, or potential impacts on off-site conditions, should be considered in the Contractor's selection of the dewatering system(s). The Contractor should be responsible for obtaining any needed dewatering or discharge permits. The water should be pumped to an acceptable discharge point and consistent with any soil and erosion requirements. The construction documents should require the Contractor to provide all means and equipment necessary to maintain dry excavations when needed. Dewatering systems should be designed and operated to prevent pumping of fines, disturbance to subgrades, and undermining of previous construction.

If groundwater seepage is encountered in foundation or other excavations, it may be desired to install a layer of clean stone at the base of the excavations to facilitate dewatering and reduce disturbance of the exposed subgrade materials, as determined in conjunction with the Owner's Geotechnical Engineer at the time of construction.

Temporary construction dewatering activities should also address precipitation that falls on excavations and surface water runoff into excavations. Dewatering effluent should be discharged into temporary on-site recharge systems (if possible) or routed to site storm drains or sewers in accordance with applicable permit and regulation requirements. Surface runoff should be directed away from excavations and adjacent properties.

5.6 SURVEYS AND GEOTECHNICAL INSTRUMENTATIONS

We recommend that pre-construction condition surveys be conducted on structures of concern and settlement-sensitive utilities located within 100 ft of proposed pile locations, or as otherwise mandated by local codes or ordinances. Pre-construction conditions surveys may consist of an exterior and interior video and photographic survey. Permission from third-party owners will be required.

During driven pile and sheet pile installation (if performed), vibration and noise will be noticeable at and inside neighboring buildings and for some distance away. Perceptible vibrations may be noticed on the order of 500 ft away, however, they are expected to be below those magnitudes necessary to cause structural damage to existing buildings. Vibration monitoring during vibration-inducing activities should be conducted at and adjacent to structures of concern.

Driven pile and sheet pile installation should be conducted in a manner that maintains vibrations measured on the ground surface adjacent to structures of concern (if any) below the industry standards for vibrations as a function of frequency as set forth in the United States Bureau of Mines Report of Investigation 8507, where possible. Driven pile and sheet pile installation operations should begin at the furthest practical location from structures of concern so that vibrations can be monitored, and construction procedures modified if vibrations exceed predetermined limits.

Geotechnical instrumentation including structure and utility settlement monitoring points should be installed to monitor the vertical movement of existing structures/facilities adjacent to the site. Monitoring points should also be installed on the temporary excavation support system to document the performance of the system.

5.7 CONSTRUCTION OBSERVATION AND ADDITIONAL SERVICES

The recommendations contained in this report are based on known and reasonably predictable behavior of properly engineered and constructed foundations and other facilities.

In accordance with the NYCBC, Special Inspections for building foundations on this project are required to be provided by a Class I accredited Special Inspection Agency. It is recommended that technical or engineering personnel from Haley & Aldrich of New York provide these geotechnical Special Inspections, other geotechnical monitoring, and geotechnical engineering services during foundation construction considering our familiarity with the subsurface conditions, design concepts, and specifications. Haley & Aldrich of New York would observe compliance with the design concepts, specifications, our recommendations, and Special Inspection requirements, and assist in developing design modifications in the event that subsurface conditions encountered during construction differed from those anticipated prior to construction.

We recommend that an engineer or technician, qualified by training and experience, perform field observations (Special Inspections) of the geotechnical aspects of construction summarized herein, including:

- installation and load testing of deep foundations;
- excavation and removal of unsuitable bearing materials;
- installation of temporary excavation support systems;
- preparation of subgrades;
- confirmation that backfill materials conform to project plans and specifications;
- on-site reuse of excavated site materials;
- placement and compaction of structural fills (including field compaction control testing); and
- vibration and noise monitoring (as required).

Based on the above list, Class 1 Special Inspections are specifically required by code for the following activities described in this report:

Earthwork or Foundation Construction Activity	NYCBC-Required Special Inspection Category (Reference)
Indicator Pile Installation and Pile Load Testing	Subgrade Inspection (1705.6); Deep Foundation Elements (1705.7, 1810, 1811)
Production Pile Installation (Driven)	Subgrade Inspection (1705.6); Deep Foundation Elements (1705.7, 1810, 1811)
Temporary Support-of-Excavation Installation	Excavations – Sheet piling, Shoring, and Bracing (1705.25.3, 3304.4.1)
Preparation of Foundation and Slab Subgrades, including Removal of Unsuitable Materials	Subgrade Inspection (1705.6); Subsurface Conditions – Fill Placement & In-Place Density (1705.6)
On-Site Reuse of Excavated Materials	Subsurface Conditions – Fill Placement & In-Place Density (1705.6)
Placement and Compaction of Structural Fills	Subsurface Conditions – Fill Placement & In-Place Density (1705.6)

Haley & Aldrich of New York would also be pleased to provide additional engineering services, if needed, including the design of support-of-excavations, development of instrumentation and monitoring programs to be executed by the Contractor, and conducting special inspections of driven deep foundations that are required on a continuous basis per code.

FIGURES



0211067_000_LOCUS_HALEYALDRICHPOSTOLOWSKI

SITE COORDINATES: 40°49'14"N, 73°51'39"W



MAP SOURCE: USGS

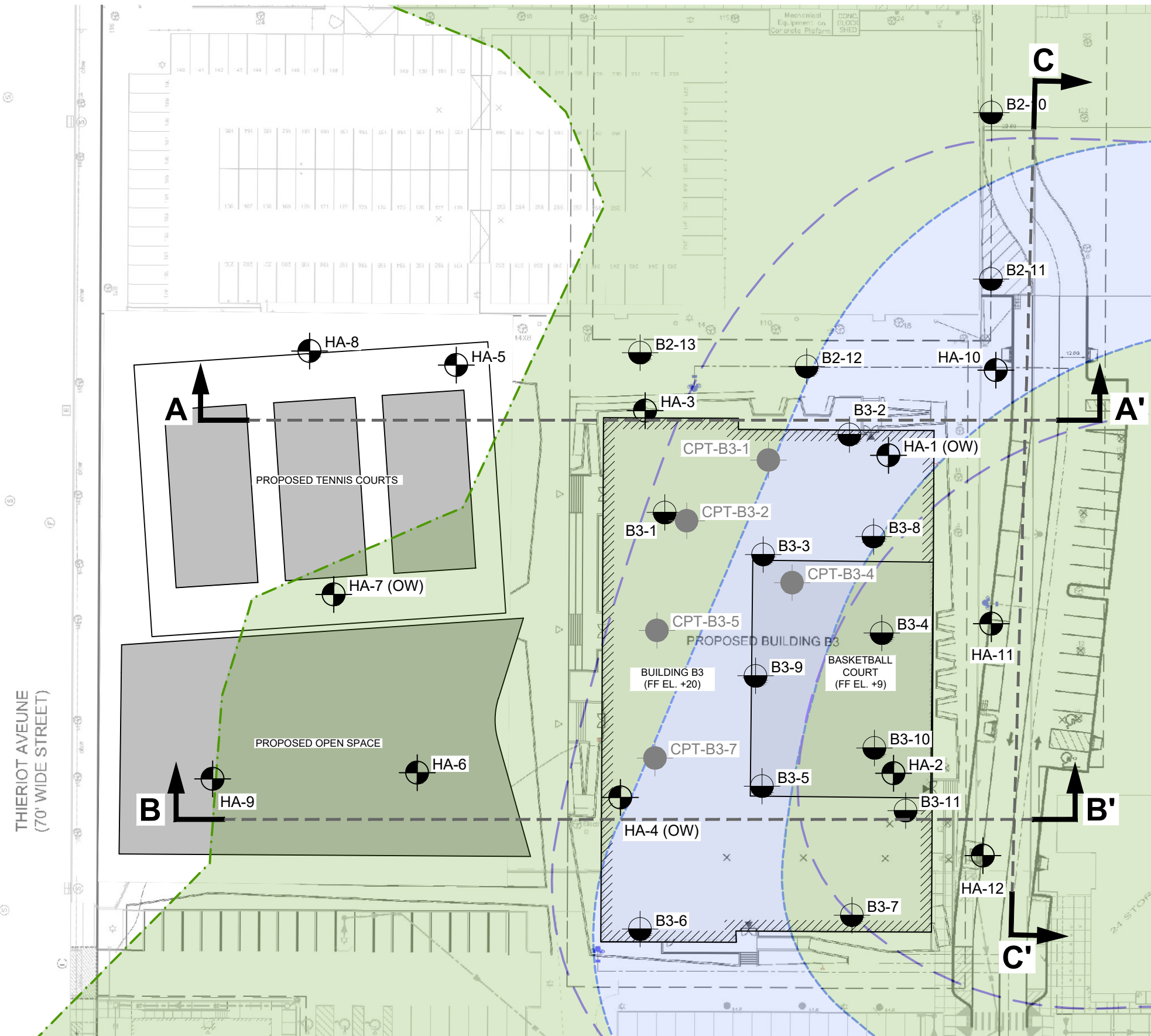
**HALEY
ALDRICH**

STEVENSON COMMONS - BUILDING B3
STEVENSON B3, LLC
BRONX, NEW YORK

PROJECT LOCUS

APPROXIMATE SCALE: 1 INCH = 2,000 FEET
JANUARY 2025

FIGURE 1

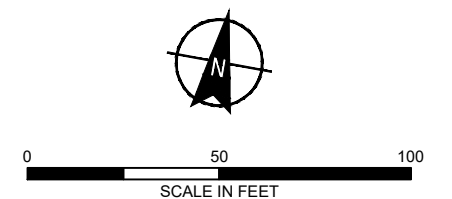


- LEGEND**
- HA-1 (OW) DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BETWEEN 13 SEPTEMBER AND 1 OCTOBER 2024 BY CRAIG GEOTECHNICAL DRILLING, CO., INC. OF MAYS LANDING, NEW JERSEY.
- B3-8 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BETWEEN 11 SEPTEMBER AND 4 OCTOBER 2019 BY CRAIG GEOTECHNICAL DRILLING, CO., INC. OF MAYS LANDING, NEW JERSEY UNDER OBSERVATION BY GEODESIGN, INC. P.C.
- CPT-B3-1 DESIGNATION AND APPROXIMATE LOCATION OF CPT COMPLETED BETWEEN 13 AND 14 SEPTEMBER 2019 BY CRAIG GEOTECHNICAL DRILLING, CO., INC. OF MAYS LANDING, NEW JERSEY UNDER OBSERVATION BY GEODESIGN, INC. P.C.
- (OW) INDICATES AN OBSERVATION WELL WAS INSTALLED AT THE BORING
- HISTORIC RIVER LIMITS 1919 SANBORN MAP (APPRX.)
- HISTORIC RIVER LIMITS BASKERVILLE MAPS 1992 (APPRX.)
- HISTORIC WETLANDS LIMITS BASKERVILLE MAPS 1992 (APPRX.)

A A' DESIGNATION AND DIRECTION OF GEOLOGIC SUBSURFACE PROFILE

NOTES

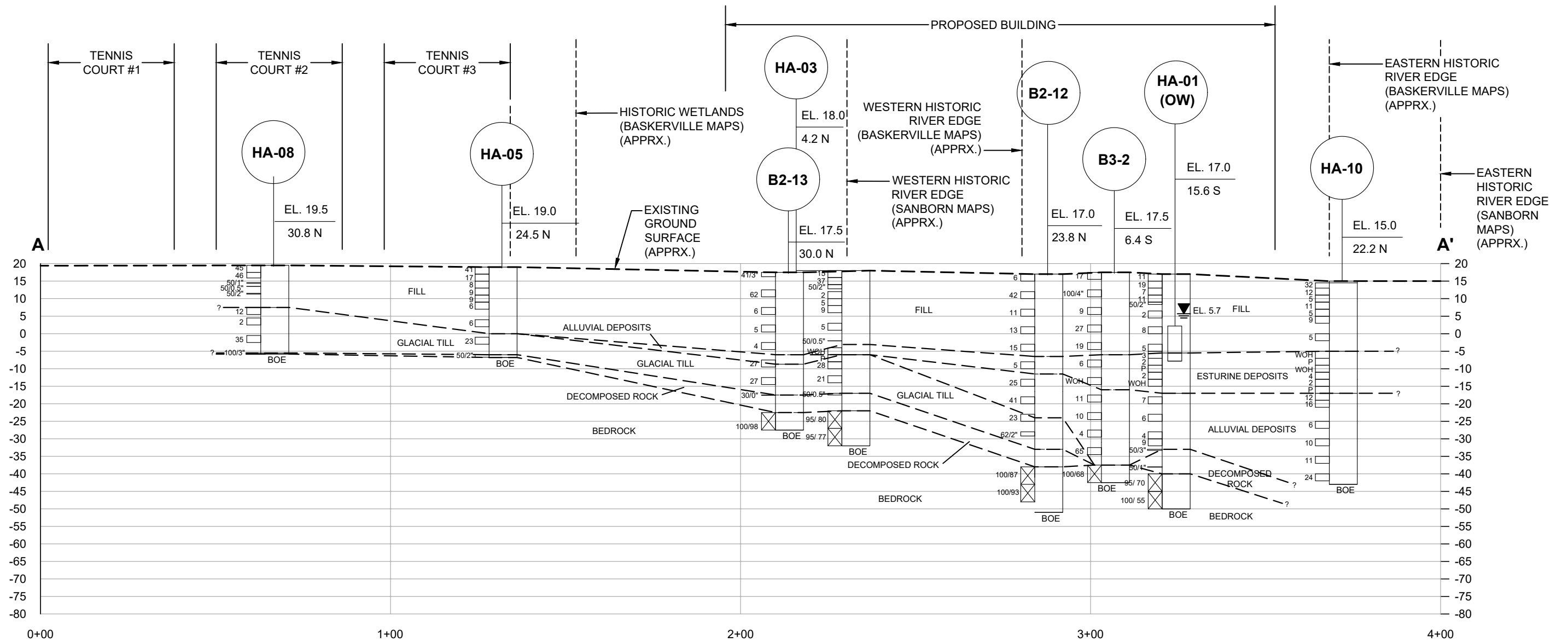
1. PROPOSED DEVELOPMENT LAYOUT IS FROM AN ELECTRONIC CAD IMAGE ENTITLED "STEVENSON COMMONS, BUILDING B3" DRAWING FD-102.00 FROM THE 100% DD SUBMISSION WITH A FILE DATE OF 23 SEPTEMBER 2024 BY THE DATTNER ARCHITECTS D.P.C.



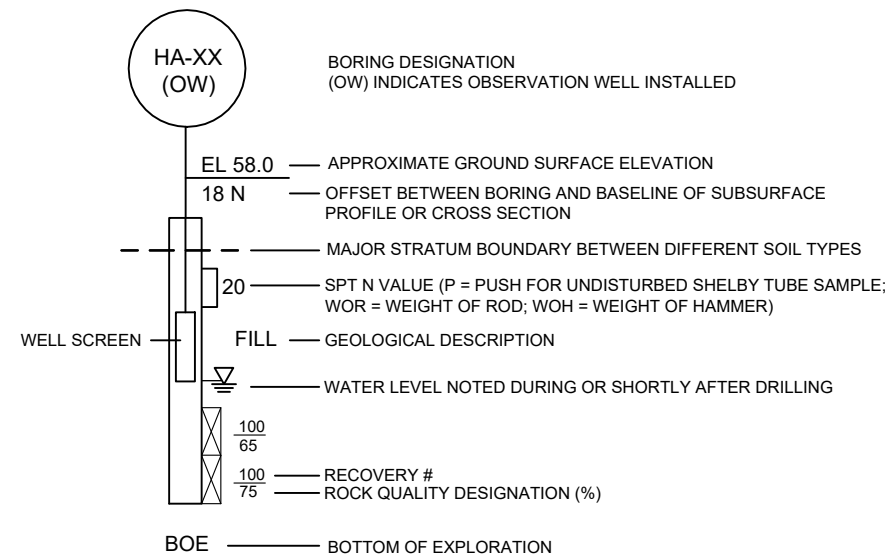
HALEY ALDRICH STEVENSON COMMONS - BUILDING B3
STEVENSON B3, LLC
BRONX, NY

BORING LOCATION PLAN

SCALE: AS SHOWN
JANUARY 2025

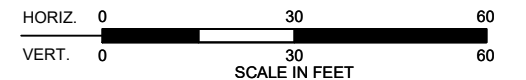


BORING LEGEND



NOTES:

- REFER TO FIGURE 2 FOR LOCATION AND ORIENTATION OF THE SUBSURFACE PROFILES.
- EXISTING GROUND SURFACE IS APPROXIMATE.
- HISTORIC WETLANDS AND RIVER LIMITS FROM BEDROCK AND ENGINEERING GEOLOGIC MAPS OF BRONX COUNTY AND PARTS OF NEW YORK AND QUEENS COUNTIES, NEW YORK BY CHARLES A. BASKERVILLE, 1992 AND 1919 SANBORN MAP #81.
- LINES REPRESENTING INTERFACES BETWEEN OR CHANGES WITHIN STRATA ON THE PROFILE ARE BASED UPON INTERPOLATION BETWEEN BORINGS SHOWN ON THE PROFILE AND OTHER AVAILABLE SUBSURFACE INFORMATION. THE INTERFACE LINES ARE INTENDED TO SHOW THE GENERAL SEQUENCE OF STRATA AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
- WATER LEVELS IN OBSERVATION WELLS WERE OBSERVED ON THE DATE INDICATED. WATER LEVELS IN TEST BORINGS MAY HAVE BEEN INFLUENCED BY DRILLING PROCEDURES. CONSEQUENTLY, WATER LEVELS IN COMPLETED BORINGS ARE NOT SHOWN. FLUCTUATIONS IN GROUNDWATER LEVELS CAN OCCUR DUE TO VARIATIONS IN SEASON, TEMPERATURE, PRECIPITATION, ADJACENT CONSTRUCTION ACTIVITY, LEAKAGE INTO/FROM UNDERGROUND UTILITIES, CONSTRUCTION DEWATERING ACTIVITIES, AND OTHER FACTORS.



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STEVENSON B3, LLC
BRONX, NY

SUBSURFACE GEOLOGIC PROFILE A-A'

SCALE: AS SHOWN
JANUARY 2025

FIGURE 3

APPENDIX A
Test Boring Logs and Observation Well Installation
Reports

H&A-TEST BORING-NYC CLASS 0211067-NYC CLASS GLB HA-TB-CORE-WELL-07-1.GDT C:\USERS\ADENSON\HARRISON\DRIVE - HALEY\ALDRICH.COM\ GINT PROJECTS\0211067 STEVENSON COMMONS B3 - BRONX NY\GINT\0211067-TBCORE-NYC CLASS DATABASE.GPJ 15 Jan 25

HALEYALDRICH TEST BORING REPORT														Boring No. HA-01 (OW)													
Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC														File No. 0211067-000													
Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP														Sheet No. 1 of 4													
Contractor CRAIG GEOTECHNICAL DRILLING CO., INC														Start 16 September 2024													
														Finish 17 September 2024													
				Casing	Sampler	Barrel	Drilling Equipment and Procedures							Driller Mike Gorski													
Type				HW	S	NX	Rig Make & Model: CME 75 Truck							H&A Rep. Z. Gao													
Inside Diameter (in.)				4.0	1 3/8	--	Bit Type: Roller Bit							Elevation 17.0 (est.)													
Hammer Weight (lb)				140	140	-	Drill Mud: Bentonite							Datum NAVD88													
Hammer Fall (in.)				30	30	-	Casing: HW Driven 55'							Location See Plan													
							Hoist/Hammer: Winch Automatic Hammer							N 238,304													
							PID Make & Model:							E 1,022,886													
Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION										Gravel		Sand			Field Test					
							(Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)										% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength	
0	3	S1	0.0	7		SM/GM	Medium dense dark brown, gray, and red silty SAND and GRAVEL (SM/GM), no structure, no odor, dry, some brick and concrete fragments, trace vegetation roots										15	25		10	30	20					
	5	17	2.0																								
	6																										
	9	S2	2.0	7		GM	Medium dense dark brown, gray, and red silty GRAVEL with sand (GM), no structure, no odor, dry, some brick and concrete fragments										25	25	5	10	20	15					
	11	14	4.0																								
	8																										
	7	7	S3	4.0	7		SM	Loose dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, dry, some brick and weathered rock fragments, trace concrete fragments -FILL-										10	15	5	40	15	15				
	3	10	6.0																								
	4																										
	5	6	S4	6.0	7		SM	Medium dense dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, dry, some brick and weathered rock fragments										15	15	5	30	10	15				
5	11	8.0																									
6																											
5	16	S5	8.0	7		SM	Very dense dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, some brick and weathered rock fragments Note: Hard drilling from 8.5 to 10.5 ft, installed 10 ft casing.										15	25	5	25	10	20					
50/2"	8	8.7																									
10	1	S6	10.5	7			Black, petroleum-like odor, wood pieces and concrete fragments, trace sand Note: No recovery, advanced a 3-in. spoon for above description.																				
	1	0	12.5																								
	1																										
	2																										
15	4	S7	15.0	7		GM	Loose black silty GRAVEL with sand (GM), no structure, slight petroleum-like odor, wet, some wood pieces and glass fragments, trace brick fragments Note: Installed 15 ft casing.										20	25		5	20	30					
	3	13	17.0																								
	5																										
	7																										
20																											
Water Level Data						Sample ID		Well Diagram		Summary																	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample	 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal	Overburden (ft) 57																			
			Bottom of Casing	Bottom of Hole	Water			Rock Cored (ft) 10																			
9/20/24	10:40				11.3					Samples S18, C2																	
9/22/24	8:30				11.3					Boring No. HA-01 (OW)																	
9/24/24	12:31				11.4																						
Field Tests:														Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High													
														Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High													
*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.																											
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.																											



TEST BORING REPORT

Boring No. HA-01 (OW)

File No. 0211067-000
Sheet No. 2 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	6 3 2 2	S8 0	20.0 22.0	7	-5.5 22.5		No recovery, black wood pieces in the driving shoe Note: Installed 20 ft casing. -FILL-										
	3 1 2 1	S9 11	22.0 24.0	6		OH	Very soft black and olive gray ORGANIC CLAY with gravel (OH), layered, organic odor, wet, trace sand, vegetation fibers, and shells, top 3 in. of sample are wood pieces and concrete fragments	10	15			5	70				
	3 1 1 2	S10 12	24.0 26.0	6		OL	Very soft olive gray ORGANIC CLAY (OL), no structure, organic odor, wet, little gravel, trace vegetation fibers and wood pieces (wood pieces could be fill material being pushed down) Note: A tube was pushed initially, waited 30 minutes, no recovery, drove a 2-in. spoon instead		10				90				
25		T1 24	26.0 28.0	6		OH	Gray ORGANIC SILT (OH) Note: Shelby tube sample taken from 26 to 28 ft.										
	WOH 1 1 1	S11 24	28.0 30.0	6		OL	Very soft olive gray ORGANIC CLAY (OL), no structure, organic odor, wet, trace vegetation fibers and shells						100				
30	WOH WOH WOH WOH	S12 15	30.0 32.0	6	-17.0 34.0	OL	Similar to above -ESTUARINE DEPOSITS-						100				
							Note: Observed change in drilling rate at 34 ft; suspected bottom of organics.										
35	4 3 4 4	S13 14	35.0 37.0	6		SC	Loose olive gray clayey SAND (SC), no structure, no odor, wet -ALLUVIAL DEPOSITS-				25	30	45				
40	3 3 3 2	S14 13	40.0 42.0	6		SP	Loose gray poorly-graded SAND (SP), no structure, no odor, wet			30	50	15	5				
45	1 2 2 3	S15 21	45.0 47.0	6		ML	Very loose gray SILT with sand (ML), varved, no odor, wet				5	15	80				
	1 3 6 11	S16 24	47.0 49.0	6		ML	Loose gray SILT with sand (ML), layered, no odor, wet, trace gravel, bottom 6 in. are silty sand with gravel, top 18 in. are silt	5		15	20	60					

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-01 (OW)



TEST BORING REPORT

Boring No. HA-01 (OW)

File No. 0211067-000

Sheet No. 3 of 4

[illegible]

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

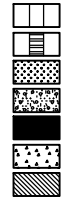
Boring No.	HA-01 (OW)
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[illegible]

Well No. HA-01 (OW)
Boring No. HA-01 (OW)

Project	STEVENSON COMMONS - BUILDING B3
Location	1850 LAFAYETTE AVE, BRONX, NYC
Client	STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
Contractor	CRAIG GEOTECHNICAL DRILLING CO., INC
Driller	Mike Gorski

Well Diagram



Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

File No. 0211067-000
Date Installed 17 Sep 2024
H&A Rep. Z. Gao
Location N 238,304
E 1,022,886

Ground El. 17.0 (est.)
Datum NAVD88

Initial Water Level (depth bgs) ft

[illegible]

COMMENTS:



TEST BORING REPORT

Boring No. HA-02

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
 Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
 Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
 Sheet No. 1 of 4
 Start 24 September 2024
 Finish 27 September 2024
 Driller Mike Gorski
 H&A Rep. Z. Gao

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	NX	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 65'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

Elevation 17.0 (est.)
 Datum NAVD88

Location See Plan
 N 238,165
 E 1,022,914

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	7 5 8 15	S1 14	0.0 2.0	7		SM	Medium dense dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, dry, some brick and weathered rock fragments, trace vegetation/roots	15	20	5	30	15	15				
	18 12 13 16	S2 16	2.0 4.0	7		SM	Medium dense dark brown, gray, red silty SAND with gravel (SM), no structure, no odor, dry, some brick and weathered rock fragments	15	20	5	30	15	15				
	8 6 7 8	S3 10	4.0 6.0	7		SM	Medium dense dark brown and gray silty SAND with gravel (SM), no structure, no odor, dry, some weathered rock fragments, trace brick fragments	5	25	10	30	15	15				
5	5 5 7 7	S4 8	6.0 8.0	7		SM	Similar to above	20	20	5	25	15	15				
	5 6 6 5	S5 6	8.0 10.0	7		GM	Medium dense dark brown, gray, and red silty GRAVEL (GM), no structure, no odor, wet, numerous brick and weathered rock fragments Note: Installed casing to 8 ft.	30	20	5	20	10	15				
10	4 1 2 3	S6 4	10.0 12.0	7		SM	Very loose dark brown, gray and black silty SAND with gravel (SM), no structure, no odor, wet, some plaster and weathered rock fragments	20	20	5	25	15	15				
15	3 2 6 11	S7 10	15.0 17.0	7		SM	Loose dark brown and black silty SAND (SM) with wood pieces, no structure, organic odor, wet, some plaster and brick fragments	35	25	5	10	10	15				
20					20.0												

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample			Riser Pipe Screen Filter Sand Cuttings Grout Concrete Bentonite Seal	Overburden (ft)	87
			Bottom of Casing	Bottom of Hole	Water					Rock Cored (ft)	10
										Samples	S25, C2
										Boring No. HA-02	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-02

File No. 0211067-000
Sheet No. 2 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	3 2 1 1	S8 0	20.0 22.0	6		OL	Very soft gray organic silty CLAY (OL), no structure, organic odor, wet, trace vegetation fibers Note: No recovery, advanced a 3-in. spoon for above description. Note: Installed casing at 20 ft.						100				
	WOR WOR 1	S9 14	22.0 24.0	6		OH	Very soft gray ORGANIC SOIL (OH), no structure, organic odor, wet, trace vegetation fibers Note: Pushed a tube first, no recovery						100				
		T1 11	24.0 26.0	6		OH	Note: Shelby tube sample taken from 24 to 26 ft.										
25							-ESTUARINE DEPOSITS-										
	2 1 1 1	S10 4	26.0 28.0	6		OH	Very soft gray ORGANIC SOIL (OH), no structure, organic odor, wet, trace vegetation fibers						100				
	WOH WOH WOH WOH	S11 22	28.0 30.0	6		OH	Similar to above						100				
30	WOH WOH WOH WOH	S12 24	30.0 32.0	6		OH	Similar to S10 Note: Installed 30 ft casing.						100				
	WOH 3 3 5	S13 10	32.0 34.0	6	-16.0 33.0	OL/SM	Loose gray ORGANIC SOIL (OL) and silty SAND (SM), layered, organic odor, wet, bottom half of sample is silty sand			15	40	45					
	9 10 12 11	S14 24	34.0 36.0	3b		SP	Medium dense gray poorly-graded SAND (SP), no structure, no odor, wet			35	60	5					
							-ALLUVIAL DEPOSITS-										
40	2 4 5 4	S15 22	40.0 42.0	6		SM	Loose gray silty SAND (SM), no structure, no odor, wet			10	60	30					
45	2 3 1 2	S16 22	45.0 47.0	6		ML	Loose gray SILT with sand (ML), no structure, no odor, wet				25	75					
		T2 12	47.0 49.0	6			Note: Shelby tube sample taken from 47 to 49 ft.										
	2	S17	49.0	6		ML	Loose gray SILT (ML), no structure, no odor, wet				10	90					

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-02



TEST BORING REPORT

Boring No. HA-02

File No. 0211067-000
Sheet No. 3 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	1 4 6	24	51.0	6		ML	Similar to above										
	WOH 1 4 11	S18 24	51.0 53.0														
55	4 15 11 10	S19 6	55.0 57.0	3b		SP-SM	Medium dense gray poorly-graded SAND with silt and gravel (SP-SM), no structure, no odor, wet	15	15	10	30	20	10				
60	32 15 25 90	S20 10	60.0 62.0	3a		SP	Dense gray and red poorly-graded SAND with gravel (SP), no structure, no odor, wet Note: Installed 57 ft casing.	15	20	10	40	10	5				
65	44 38 42 31	S21 14	65.0 67.0	3a		SP	Very dense gray and olive gray poorly-graded SAND with gravel (SP), no structure, no odor, wet Note: Installed 65 ft casing.	10	20	10	40	15	5				
70	26 46 88 50/3"	S22 18	70.0 72.0	1d	-53.0 70.0		Very dense gray and white decomposed bedrock, relic rock structure, no odor, wet -DECOMPOSED BEDROCK-	10	15	10	35	15	15				
75	15 30 66 50/2"	S23 20	75.0 77.0	1d	-57.0 74.0		Very dense gray and white decomposed bedrock, relic rock structure, no odor, wet		15	10	25	35	15				

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-02

Boring No. HA-02

Sheet No. 4 of 4

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-02

H-A_CORE+WELL07-1-NYC CLASS_0211067-NYC CLASS GLB HA-TB+CORE+WELL-07-1.GDT C:\USERS\ADENSON\HARRISON\DRIVE - HALEY\ALDRICH\COML_GINT PROJECTS\0211067 STEVENSON COMMONS B3 - BRONX NY\GINT\0211067-TBCORE-NYC CLASS\DATABASE.GPJ 15 Jan 25



CORE BORING REPORT

Boring No. HA-02
File No. 0211067-000
Sheet No. 4 of 4

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weath- ering	NYC Class	Elev./ Depth (ft)	Visual Description and Remarks
				in.	%				
90	5	C1	87.0	60	100	Fresh	1b	-70.0 87.0	SEE TEST BORING REPORT FOR OVERBURDEN DETAILS Hard, fresh, gray, fine to coarse grained SCHIST. Foliation extremely thin to very thin. Primary joint set low angle, very close to moderate, rough, planar to undulating, discolored, open to tight. -HARTLAND FORMATION-
	3		92.0	44	73				
	3								
	3								
	3								
	3								
95	2.5	C2	92.0	60	100	Fresh	1b		Hard, fresh, gray, fine to corase grained SCHIST. Foliation extremely thin to very thin. Primary joint set moderate dipping to low angle, very close to close, rough, planar to undulating, discolored, open to tight
	2.5		97.0	45	75				
	2.5								
	2.5								
	2.5								
	2.5								
100								-80.0 97.0	BOTTOM OF EXPLORATION 97.0 FT Note: Upon completion of drilling borehole was backfilled with soil cuttings and hole plug.
105									
110									
115									

TEST BORING REPORT

Boring No. HA-03

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
 Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
 Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
 Sheet No. 1 of 3
 Start 13 September 2024
 Finish 16 September 2024
 Driller Mike Gorski

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 33'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

H&A Rep. Z. Gao
 Elevation 18.0 (est.)
 Datum NAVD88

Location See Plan
 N 238,304
 E 1,022,776

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	7 6 9 5	S1 17	0.0 2.0	7		SM	Medium dense dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, moist, some brick and concrete fragments, trace vegetation/roots	10	15	10	35	30					
	5 24 13 5	S2 16	2.0 4.0	7		SM	Dense dark brown and gray silty SAND with gravel (SM), no structure, no odor, dry, some concrete fragments, trace brick fragments	10	15	5	20	30	20				
	4 7	S3 8	4.0 5.2	7		SM/GM	-FILL- Very dense dark brown and red silty SAND and silty GRAVEL (SM/GM), no structure, no odor, dry, some brick fragments	20	25		30	10	15				
5	50/2"																
	2 1 1 2	S4 10	6.0 8.0	7		SM/GM	Very loose dark brown, gray, and red silty SAND and silty GRAVEL (SM/GM), no structure, no odor, moist, some brick and concrete fragments, trace ceramic fragments	20	25	5	10	25	15				
	3 3 2 3	S5 0.5	8.0 10.0	7			No recovery										
10	3 5 4 4	S6 10	10.0 12.0	7		SM	Loose dark brown, red, and white silty SAND with gravel (SM), no structure, no odor, moist, some brick fragments and plaster, trace plastic	5	10		10	30	45				
							Note: Installed 15 ft casing.										
15	3 2 3 3	S7 14	15.0 17.0	7		SM	Loose black silty SAND with gravel (SM), no structure, slight petroleum-like odor, wet	10	15		10	20	45				
20																	

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample	Overburden (ft)	Rock Cored (ft)
			Bottom of Casing	Bottom of Hole	Water						
										Samples	S12, C2
										Boring No. HA-03	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-03

File No. 0211067-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test					
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength	
20	50/0.5	S8 0	20.0 20.0	7	-3.0 21.0 -6.0 24.0		No recovery											
	WOH WOH WOH 2	S9 24	22.0 24.0	6		PT	Very soft black PEAT (PT), layered, organic odor, wet, trace sand, bottom 6 in. is organic silt with vegetation fibers -ESTUARINE DEPOSITS- Note: Installed 24 ft casing.					5	95					
		T1 18	24.0 26.0			OL												
						CL- ML	Gray silty CLAY with sand (CL-ML) Note: Shelby tube from 24 to 26 ft. Sand in bottom of tube.											
25				3b		SM	Medium dense brown silty SAND with gravel (SM), no structure, no odor, wet -GLACIAL TILL-	5	10	5	40	25	15					
	14 16 12 16	S10 12	26.0 28.0															
30				3b		SM	Note: No recovery. Advanced a 3-in. spoon to obtain soil sample. Medium dense brown silty SAND with gravel (SM), no structure, no odor, wet Note: Installed 33 ft casing.	15	15	5	30	15	20					
	11 11 10 8	S11 0	30.0 32.0															
35	50/0.5	S12 0	35.0 35.5	1d	-17.0 35.0		No recovery Note: Drilled to 40 ft, started coring. Based on the drilling rate from 35 to 40 ft and coring results, possible top of bedrock at 35 ft. -DECOMPOSED BEDROCK-											
40							SEE CORE BORING REPORT FOR ROCK DETAILS											
45																		

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-03

CORE BORING REPORT

Boring No. HA-03

File No. 0211067-000

Sheet No. 3 of 3

[illegible]

Boring No. HA-04 (OW)

Project	STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
Client	STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
Contractor	CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
Sheet No. 1 of 3
Start 23 September 2024
Finish 24 September 2024
Driller Mike Gorski

Elevation	17.5 (est.)
Datum	NAVD88

Location	See Plan
N 238,133	
E 1,022,797	

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 42'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

[illegible]

Water Level Data						Sample ID	Well Diagram	Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:		Water	O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		Riser Pipe	Overburden (ft) 43 Rock Cored (ft) 10 Samples S14, C2
			Bottom of Casing	Bottom of Hole				Screen	
9/25/27	2:00				12			Filter Sand	
9/27/24	2:10				12			Cuttings	
9/30/24	2:05				12			Grout	
							Concrete	Boring No. HA-04 (OW)	
							Bentonite Seal		

Field Tests:	Dilatancy: R - Rapid S - Slow N - None	Plasticity: N - Nonplastic L - Low M - Medium H - High
	Toughness: L - Low M - Medium H - High	Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-04 (OW)

File No. 0211067-000

Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	5 5 5 5	S8 3	20.0 22.0	7	-6.5 24.0		Loose dark brown, black, and red wood pieces and brick fragments with silty sand, no structure, no odor, wet Note: Installed 20 ft casing.	35	25	5	5	15	15				
	10 6 10 8	S9 9	22.0 24.0	7			Medium dense dark brown and black wood pieces with silty sand, no structure, no odor, wet, some plaster and weathered rock fragments Note: Installed 22 ft casing.	35	30	5	5	10	15				
	WOH 1	S10 1	24.0 25.0	6			OH	Very soft olive gray silty ORGANIC CLAY (OH), no structure, organic odor, wet, trace vegetation fibers and shells Note: Installed 24 ft casing Note: Piston sample taken from 25 to 27 ft.						100			
25		T1 8	25.0 27.0	6		OL	-ESTUARINE DEPOSITS- Very soft olive gray silty ORGANIC CLAY (OL), no structure, organic odor, wet, trace vegetation fibers and shell Note: No recovery, advanced a 3-in. spoon for above description.							100			
	1 1 2 2	S11 0	27.0 29.0				CL	Gray CLAY with sand (CL) Note: Shelby tube sample taken from 29 to 31 ft. Bottom of tube appears sandy.									
30		T2 2	29.0 31.0	6	-11.5 29.0	3b	SP-SM	Medium dense brown and gray poorly-graded SAND with silt (SP-SM), layered, no odor, wet, bottom 4 in. are brown and more sandy -ALLUVIAL DEPOSITS-		5	5	60	20	10			
	9 9 12 17	S12 11	31.0 33.0	SP	Medium dense brown poorly-graded SAND (SP), no structure, no odor, wet			10	10	65	10	5					
35	6 11 16 12	S13 15	35.0 37.0	3b		2a	GP-GM	Dense gray poorly-graded GRAVEL with silt (GP-GM), relic rock structure, wet -GLACIAL TILL-	22	27	8	16	19	8			
					Note: Installed 42 ft casing, drilled to 43 ft and started coring.												
40	14 19 20 50/5"	S14 13	40.0 41.9		-24.5 42.0		SEE CORE BORING REPORT FOR ROCK DETAILS										
45																	

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-04 (OW)

CORE BORING REPORT

Boring No. HA-04 (OW)

File No. 0211067-000

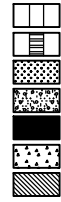
Sheet No. 3 of 3

[illegible]

Well No. HA-04 (OW)
Boring No. HA-04 (OW)

Project	STEVENSON COMMONS - BUILDING B3
Location	1850 LAFAYETTE AVE, BRONX, NYC
Client	STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
Contractor	CRAIG GEOTECHNICAL DRILLING CO., INC
Driller	Mike Gorski

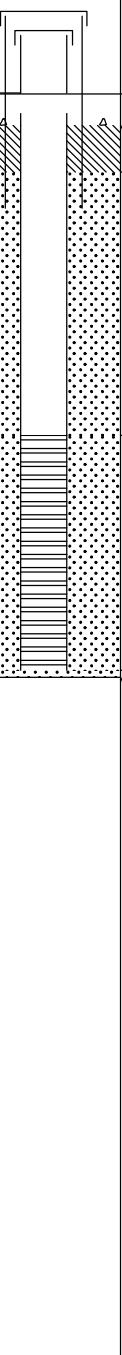
Well Diagram



Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

File No.	0211067-000
Date Installed	24 Sep 2024
H&A Rep.	Z. Gao
Location	N 238,133 E 1,022,797
Ground El.	17.5 (est.)
Datum	NAVD88

Initial Water Level (depth bgs) ft

SOIL/ROCK		GRAPHIC	WELL DETAILS	DEPTH (ft.)	ELEVATION (ft.)	WELL CONSTRUCTION DETAILS		
CONDITIONS	DEPTH (ft.)							
				0.0	17.5	Type of protective cover		
				0.5	17.0	Height of Guard Pipe above ground surface	3.2 ft	
				2.5	15.0	Height of top of riser above ground surface	2.3	
						Type of protective casing	Guard Pipe	
						Length	4.5 ft	
						Inside diameter	4.0 in.	
						Depth of bottom of Guard Pipe	1.3 ft	
				13.7	3.8	Type of riser pipe	Schedule 40 PVC	
						Inside diameter of riser pipe	2.0 in.	
						Depth of bottom of riser pipe	13.7 ft	
				23.7	-6.2	Type of Seals	Top of Seal (ft)	Thickness (ft)
				24.0	-6.5	Concrete	0.0 ft	0.5 ft
						Bentonite	0.5 ft	2.0 ft
							-	-
						Diameter of borehole	4.0 in.	
						Type of screen	Machine slotted Sch 40 PVC	
						Screen gauge or size of openings	0.010 in.	
						Diameter of screen	2.0 in.	
						Depth to top of well screen	13.7 ft	
						Depth to bottom of well screen	23.7 ft	
						Bottom of silt trap	-	
						Depth of bottom of borehole	53.0 ft	

COMMENTS:

Boring No. HA-05

Project	STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
Client	STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
Contractor	CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
Sheet No. 1 of 2
Start 18 September 2024
Finish 18 September 2024
Driller Mike Gorski

H&A Rep. Z. Gao

Elevation	19.0
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Datum	NAVD88
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Location	See Plan
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N 238,308

	E 1,022,690			
--	-------------	--	--	--

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 23.5'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

[illegible]

Water Level Data						Sample ID	Well Diagram	Summary
Date	Time	Elapsed Time (hr.)	Depth (ft) to:		Water	O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample	 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal	Overburden (ft) 25.7 Rock Cored (ft) 0 Samples S9
			Bottom of Casing	Bottom of Hole				Boring No. HA-05

Field Tests:	Dilatancy: R - Rapid S - Slow N - None	Plasticity: N - Nonplastic L - Low M - Medium H - High
	Toughness: L - Low M - Medium H - High	Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-05

File No. 0211067-000
Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	11 15 8 8	S8 16	20.0 22.0	3b		SP-SM	Medium dense brown poorly-graded SAND with silt (SP-SM), no structure, no odor, wet Note: Installed 20 ft casing. -GLACIAL TILL- Note: Installed 23.5 ft casing.	10	15	5	25	35	10				
25	77 50/2"	S9 8	25.0 25.7	1d	-6.0 25.0 -6.7 25.7		Very dense gray decomposed rock, relic bedrock structure, no odor, wet -DECOMPOSED BEDROCK- BOTTOM OF EXPLORATION 25.7 FT Note: Upon completion of drilling, borehole was backfilled with soil cutting and hole plug.										

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-05

Boring No. HA-06

Project	STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
Client	STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
Contractor	CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
Sheet No. 1 of 2
Start 23 September 2024
Finish 23 September 2024
Driller Mike Gorski
H&A Rep. Z. Gao

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 22'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

Elevation	18.5
Datum	NAVD88

Location	See Plan
N 238,127	
E 1.022.706	

[illegible]

Water Level Data						Sample ID	Well Diagram	Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:		Water	O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample	 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal	Overburden (ft)	26.5
			Bottom of Casing	Bottom of Hole				Rock Cored (ft)	0
								Samples	S11
								Boring No.	HA-06

Field Tests:	Dilatancy: R - Rapid S - Slow N - None	Plasticity: N - Nonplastic L - Low M - Medium H - High
	Toughness: L - Low M - Medium H - High	Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-06

File No. 0211067-000
Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	10 2 3 3	S8 17	20.0 22.0	6		PT	Medium stiff black PEAT (PT), no structure, organic odor, wet, trace vegetation fibres Note: Installed 22 ft casing -ESTUARINE DEPOSITS-						100				
	2 3 5 100/2"	S9 17	22.0 24.0	6		CL-ML	Medium stiff olive gray silty CLAY (CL-ML), no structure, organic odor, wet, trace vegetation fibers Note: First pushed a tube, waited 30 minutes, no recovery, pushed a second tube and waited 30 minutes, no recovery, then drove a spoon. -ORGANIC DEPOSITS-				20	80					
	100/1"	S10 10	24.0 26.0	1d	-5.5 24.0		Note: No recovery; weathered rock fragments in tip of spoon -DECOMPOSED BEDROCK-										
25	30/0.5"	S11 11	26.0 26.1	1d	-7.6 26.1		Note: No recovery; weathered rock fragments in tip of spoon BOTTOM OF EXPLORATION 26.1 FT Note: Upon completion of drilling, borehole was backfilled with soil cutting and hole plug.										

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-06

TEST BORING REPORT

Boring No. HA-07 (OW)

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
Sheet No. 1 of 3
Start 19 September 2024
Finish 19 September 2024
Driller Mike Gorski

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	NX	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 28.5
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

H&A Rep. Z. Gao
Elevation 19.5 (est.)
Datum NAVD88

Location See Plan
N 238,198
E 1,022,655

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	3 7 22 27	S1 11	0.0 2.0	7		SM	Medium dense dark brown and gray silty SAND with gravel (SM), no structure, no odor, dry, some weathered rock fragments, trace vegetation roots, brick, and concrete fragments	10	15	5	15	35	20				
	27 28 22 30	S2 15	2.0 4.0	7		SM	Dense dark brown, gray, and red silty SAND with gravel (SM), layered, no odor, dry, some brick and weathered rock fragments -FILL-	15	20	5	10	30	20				
	22 17 31 9	S3 8	4.0 6.0	7		GM	Dense dark brown and gray silty GRAVEL with sand (GM), no structure, no odor, dry, some weathered rock fragments	30	25	5	10	15	15				
5	5 9 11 10	S4 0	6.0 8.0	7			No recovery; gravel in tip of spoon, mps 1.5 in.										
	7 8 8 7	S5 14	8.0 10.0	7		SM	Medium dense dark brown, gray, and white silty SAND with gravel (SM), no structure, no odor, dry, some plaster and weathered rock fragments	10	15	5	40	15	15				
10	5 6 5 3	S6 10	10.0 12.0	7		SM	Similar to S5										
15	4 5 4 6	S7 7	15.0 17.0	7			Loose black, wood pieces, no structure, slight organic odor, wet Note: Driller attempted to install 15 ft casing, casing rotated severely out of plumb. Offset boring 3 ft to the east, no success. Offset boring 5 ft to the north, drilled through top 15 ft, installed 15 ft casing and continued sampling.										
20					20.6												

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample				Overburden (ft)	35.1
			Bottom of Casing	Bottom of Hole	Water						
9/20/24	7:35				13.8					Rock Cored (ft)	4.9
9/23/24	8:27				13.8					Samples	S11, C1
9/24/24	12:34				13.8					Boring No. HA-07 (OW)	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-07 (OW)

File No. 0211067-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	4 6 8 10	S8 9	20.0 22.0	3b		SM	Medium dense brown silty SAND with gravel (SM), no structure, no odor, wet Note: Installed 20 ft casing -GLACIAL TILL-	10	20	5	15	20	30				
25	36 28 29 28	S9 11	25.0 27.0	3a		SM	Very dense brown and gray silty SAND (SM), relic bedrock structure, no odor, wet Note: Installed 23.5 ft casing.	6	10	23	38	23					
30	100/5"	S10 5	30.0 30.4	1d	-10.5 30.0		Very dense brown silty SAND with gravel (SM), relic bedrock structure, no odor, wet Note: Installed 28.5 ft casing. -DECOMPOSED BEDROCK-	10	15	5	35	20	15				
					-14.0 33.5		Note: Top of bedrock possibly at 33.5 ft based on drilling rate.										
35	50/0.5"	S11 0	35.0 35.1	1d	-15.5 35.0		No recovery; weathered rock fragment in tip of spoon -DECOMPOSED BEDROCK- Note: Started coring from 35 ft. SEE CORE BORING REPORT FOR ROCK DETAILS										
40																	

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-07 (OW)

CORE BORING REPORT

Boring No. HA-07 (OW)

File No. 0211067-000

Sheet No. 3 of 3

[illegible]

Ground El. 19.5 (est.)
Datum NAVD88

TEST BORING REPORT

Boring No. HA-08

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
 Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
 Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
 Sheet No. 1 of 2
 Start 18 September 2024
 Finish 20 September 2024
 Driller Mike Gorski
 H&A Rep. Z. Gao

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 5'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

Elevation 19.5
 Datum NAVD88

Location See Plan
 N 238,303
 E 1,022,625

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel					Sand					Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength				
0	4	S1	0.0	7		SM	Dense dark brown and gray silty SAND with gravel (SM), no structure, no odor, dry, some concrete fragments, trace vegetation/roots	10	15	5	10	40	20								
	7	10	2.0																		
	38																				
	34																				
	27	S2	2.0	7		ML	Dense dark brown, gray, and black gravelly SILT with sand (ML), layered, no odor, dry, some weathered rock fragments, trace brick fragments and wood pieces Note: Hard drilling 3.5 to 5 ft	15	20		10	15	40								
	9	17	3.6																		
	37																				
	50/1"																				
							-FILL-														
							No recovery, gravel in tip of spoon Note: Installed 5 ft casing.														
5	50/1"	S3	5.0	7																	
		0	5.1																		
	50/0.5"	S4	6.0	7			No recovery														
		0	6.0				Note: Hard drilling 6 ft to 8 ft.														
	50/2"	S5	8.0	7			No recovery, gravel in tip of spoon														
		0	8.2																		
							Note: Offset boring 4 ft to the south, drilled through top 12 ft intermittent hard drilling, installed 10 ft casing and continued sampling.														
10																					
	1	S6	12.0	3b	7.5	SM	Medium dense brown and gray silty SAND with gravel (SM), no structure, no odor, wet, some weathered rock fragments -INTERLAYERED SAND AND SILT DEPOSITS- Note: Installed 13 ft casing	15	20	5	30	10	20								
	2	6	14.0																		
	10																				
	22																				
15	1	S7	15.0	6		ML	Very loose brown and gray SILT (ML), layered, no odor, wet, bottom 6 in. are brown and more sandy -GLACIAL TILL-	10	15	5	10	5	55								
	1	17	17.0																		
	1																				
	2																				
20																					

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample	Overburden (ft)	Rock Cored (ft)
			Bottom of Casing	Bottom of Hole	Water						
										S9	
										Boring No. HA-08	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-08

File No. 0211067-000

Sheet No. 2 of 2

[illegible]

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No.	HA-08
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Boring No. HA-09

Project	STEVENS COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
Client	STEVENS B3 LLC C/O CAMBER PROPERTY GROUP
Contractor	CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
Sheet No. 1 of 2
Start 20 September 2024
Finish 20 September 2024
Driller Mike Gorski

H&A Rep. Z. Gao

Elevation	19.0
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Datum	NAVD88
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Location	See Plan
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N 238,108
E 1.000.617

E 1,022,617	
Gravel	Sand

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 20'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

[illegible]

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)
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0	3 6 4 4	S1 10	0.0 2.0	7		SM	Loose dark brown silty SAND with gravel (SM), no structure, no odor, dry, trace vegetation roots
	18 15 12 16	S2 18	2.0 4.0	7		GM	Medium dense dark brown, gray and red silty GRAVEL with sand (GM), layered, no odor, dry, some brick, concrete, and weathered rock fragments
5	17 23 67 21	S3 20	4.0 6.0	7		GM	Very dense dark brown, gray, red, and black silty GRAVEL with sand (GM), layered, no odor, dry, some slag, brick, and concrete fragments, trace wood pieces -FILL-
	17 9 11 10	S4 10	6.0 8.0	7		SM	Medium dense dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, dry, some brick and weathered rock fragments
	8 11 10 12	S5 18	8.0 10.0	7		SM	Medium dense dark brown, gray, red, and white silty SAND with gravel (SM), no structure, no odor, dry, some plaster, brick, concrete, weathered rock fragments, and wood pieces. Note: Hard time installing casing, moved boring 3 ft to the west.
10	7 7 8 7	S6 11	10.0 12.0	7		SM	Drilled to 10 ft using water, continued sampling. Medium dense dark brown, red, black, and white silty SAND with gravel (SM), layered, no odor, wet, some plaster, brick, and ceramic fragments
15	25 28 8 17	S7 6	15.0 17.0	7		SM	Medium dense dark brown, gray, red, and white silty SAND with gravel (SM), no structure, no odor, wet, some plaster, brick, and weathered rock fragments Note: Installed 15 ft casing.
20					20.0		

Water Level Data						Sample ID	Well Diagram	Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:		Water	O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample	 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal	Overburden (ft)	30.1
			Bottom of Casing	Bottom of Hole				Rock Cored (ft)	0
								Samples	S11
							Boring No.	HA-09	

Field Tests:	Dilatancy: R - Rapid S - Slow N - None	Plasticity: N - Nonplastic L - Low M - Medium H - High
	Toughness: L - Low M - Medium H - High	Dry Strength: N - None L - Low M - Medium H - High V - Very High
*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.		
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.		



TEST BORING REPORT

Boring No. HA-09

File No. 0211067-000
Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	2 1 1 2	S8 0	20.0 22.0	6		OL	Very loose olive gray sandy ORGANIC SILT (OL), no structure, organic odor, wet, trace vegetation fibers Note: No recovery, advanced a 3-in. spoon for above description. -ESTUARINE DEPOSITS-				10	20	70				
	1 3 4 6	S9 12	22.0 24.0	6		OL	Loose olive gray and brown ORGANIC SILT with sand (OL), layered, organic odor, wet, trace vegetation fibers, bottom 3 in. are silty sand				10	20	70				
	9 25 23 20	S10 18	24.0 26.0	3a	-4.5 23.5	SM	Dense brown silty SAND with gravel (SM), no structure, no odor, wet -GLACIAL TILL-	5	10	5	50	15	15				
25																	
30	50/1"	S11 0	30.0 30.1	1d	-11.0 30.0 -11.1 30.1		No recovery; gravel in tip of spoon -DECOMPOSED BEDROCK- BOTTOM OF EXPLORATION 30.1 FT Note: Upon completion of drilling, borehole was backfilled with soil cuttings and hole plug.										

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-09

TEST BORING REPORT

Boring No. HA-10

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
 Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
 Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
 Sheet No. 1 of 3
 Start 1 October 2024
 Finish 1 October 2024
 Driller Mike Gorski
 H&A Rep. Z. Gao

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 20'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

Elevation 15.0
 Datum NAVD88
 Location See Plan
 N 238,350
 E 1,022,927

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0							-ASPHALT-										
10	10	S1	0.0	7	14.5	GM	Dense dark brown, gray, and red silty GRAVEL with sand (GM), no structure, no odor, dry, numerous brick and weathered rock fragments, some asphalt fragments	30	25	5	10	15	15				
20	12																
12	7	S2	2.0	7		GP-GM	Medium dense brown, gray and red poorly-graded GRAVEL with silt and sand (GP), no structure, no odor, dry, numerous brick and concrete fragments	40	30	5	5	10	10				
5	5		4.0				-FILL-										
4	2	S3	4.0	7		GP-GM	Loose dark brown, gray, and red poorly-graded GRAVEL with silt and sand (GP), no structure, no odor, dry, numerous brick and concrete fragments	40	30	5	5	10	10				
3	3		6.0														
8	8	S4	6.0	7		SM	Medium dense dark brown, gray, and red SAND with gravel (SM), no structure, no odor, dry, some brick and weathered rock fragments	20	20	5	10	25	20				
3	3		8.0														
3	2	S5	8.0	7		SM	Loose dark brown, black and white silty SAND with gravel (SM), no structure, slight petroleum-like odor, some plaster, trace glass fragments		15	5	20	30	30				
2	3		10.0														
6	6																
10	21	S6	10.0	7		SM	Loose dark brown and gray silty SAND with gravel (SM), no structure, no odor, wet, some weathered rock and glass fragments	20	20	5	15	25	15				
5	5		12.0														
4	4																
4																	
15	5	S7	15.0	7		SM	Loose black silty SAND (SM) with wood fragments, no structure, slight petroleum-like odor, wet Note: Installed 15 ft casing.	30	20	5	10	20	15				
3	3		17.0														
2	2																
2																	
20					26.0												

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample				Overburden (ft)	58
			Bottom of Casing	Bottom of Hole	Water					Rock Cored (ft)	0
										Samples	S17
										Boring No. HA-10	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-10

File No. 0211067-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	WOH WOH WOH	S8 24	20.0 22.0	6	-17.0 32.0	OL	Very soft gray ORGANIC SILT (OL), no structure, organic odor, wet, trace vegetation fibers Note: Installed 20 ft casing.							100			
		T1 24	22.0 24.0	6		OL	Note: Shelby tube sample taken from 22 to 24 ft. -ESTUARINE DEPOSITS-										
	WOH WOH WOH WOH	S9 24	24.0 26.0	6		OH	Very soft gray ORGANIC SILT (OH), no structure, organic odor, wet, trace vegetation fibers							100			
25	WOH 2 2 2	S10 24	26.0 28.0	6		OL	Soft gray silty ORGANIC CLAY (OL), no structure, organic odor, wet, trace vegetation fibers					5	95				
	WOH WOH 2 2	S11 24	28.0 30.0	6		PT	Very soft black PEAT (PT), layered, organic odor, wet, some vegetation fibers, top 3 in. of the sample is organic silt							100			
30		T2 24	30.0 32.0	6		PT/OL	Note: Shelby tube sample taken from 30 to 32 ft.										
	6 8 4 5	S12 16	32.0 34.0	3b		SM	Medium dense gray silty SAND (SM), no structure, slight organic odor, wet, trace vegetation fibers					5	75	20			
	3 7 9 11	S13 18	34.0 36.0	5b		ML	Medium dense gray SILT with sand (ML), no structure, no odor, wet -ALLUVIAL DEPOSITS-						25	75			
40	4 1 3 2	S14 14	40.0 42.0	6		CL-ML	Loose gray silty CLAY (CL-ML), no structure, no odor, wet					5	54	61			
45	5 4 6 6	S15 8	45.0 47.0	3b	SM	Loose gray silty SAND (SM), no structure, no odor, wet		10	3	4	12	34	37				

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-10



TEST BORING REPORT

Boring No. HA-10

File No. 0211067-000

Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Field Test					
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50				5b		ML	Medium dense gray SILT (ML), layered, no odor, wet, bottom 6 in. of the sample is more sandy -ALLUVIAL DEPOSITS-		15	5	9	9	62				
	3 3 8 11	S16 15	50.0 52.0														
55	12 12 12 12	S17 0	55.0 57.0	3b	-43.0 58.0	SP	No recovery; gravel in tip of spoon, mps 1.5 in. Note: Rig chatter drilling to 58 ft, attempted to take a sample at 58 ft, hole collapsed, exploration terminated at 58 ft.										
							BOTTOM OF EXPLORATION 58.0 FT Note: Upon completion of drilling, borehole was backfilled with soil cuttings and hole plug. Patched with asphalt.										

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-10

TEST BORING REPORT

Boring No. HA-11

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
 Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
 Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
 Sheet No. 1 of 3
 Start 30 September 2024
 Finish 1 October 2024
 Driller Mike Gorski
 H&A Rep. Z. Gao

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 20'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

Elevation 14.5 (est.)
 Datum NAVD88

Location See Plan
 N 238,238
 E 1,022,945

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel					Sand					Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength				
0							-ASPHALT-														
14	14	S1	0.0	7	14.0	GM	Dense dark brown, gray, and red silty GRAVEL with sand (GM), no structure, no odor, moist, numerous brick and concrete fragments, some asphalt fragments	30	25	5	10	15	15								
22	22	S2	2.0	7	0.5	GM	Medium dense brown, gray, and red silty GRAVEL with sand (GM), no structure, no odor, moist, numerous brick and concrete fragments	25	20	5	15	20	15								
21	21		4.0				-FILL-														
16	9	S3	2.0	7		SM	Very loose dark brown, gray, red, and white silty SAND with gravel (SM), no structure, no odor, moist, some plaster and brick fragments, wood pieces	20	20	5	15	25	15								
12	8		6.0				No recovery														
8																					
3	2	S4	4.0	7		SM	Medium dense dark brown and gray silty SAND with gravel (SM), no structure, no odor, wet, some weathered rock fragments, trace glass fragments	25	15	5	15	25	15								
2			8.0																		
2			10.0																		
1			12.0																		
7	7	S5	10.0	7		SM	Loose dark brown and gray silty SAND with gravel (SM), no structure, no odor, wet, some weathered rock and glass fragments	15	20	5	20	25	15								
4																					
4																					
3																					
10	7	S6	10.0	7																	
4			12.0																		
4																					
3																					
15	23	S7	15.0	7			Medium dense dark brown and black, brick, no structure, no odor, wet, concrete, and weathered rock fragments, wood pieces	40	35	5	5	10	5								
15	15		17.0				Note: No recovery, advanced a 3-in. spoon for above description.														
8							Installed 15 ft casing.														
6																					
20					26.6																

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample				Overburden (ft)	61.9
			Bottom of Casing	Bottom of Hole	Water					Rock Cored (ft)	0
										Samples	S21
										Boring No. HA-11	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-11

File No. 0211067-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	WOH 1 WOH 1	S8 17	20.0 22.0	6	-15.5 30.0	OL	Very soft gray ORGANIC SILT (OL), no structure, no odor, wet, trace vegetation fibers						100				
		T1 24	22.0 24.0	6		OH	Shelby tube sample taken from 22 to 24 ft -ESTUARINE DEPOSITS-						100				
	WOH WOH WOH WOH	S9 24	24.0 26.0	6		OL	Very soft gray ORGANIC SILT (OL), no structure, organic odor, wet, trace vegetation fibers						100				
25	WOH WOH 2 1	S10 24	26.0 28.0	6		OL	Very soft gray ORGANIC SILT (OL), no structure, organic odor, wet, trace vegetation fibers						100				
	WOH WOH 1 1	S11 24	28.0 30.0	6		OL/PT	Very soft gray ORGANIC SOILS (OL/PT), layered, organic odor, wet, trace vegetation fibers, 2-in. peat in bottom 6 in. of sample			1	2	9	88				
30	1 3 6 7	S12 24	30.0 32.0	6		ML	Loose gray SILT (ML), no structure, slight organic odor, trace sand, top half of sample trace vegetation fibers						5	95			
	2 4 3 3	S13 22	32.0 34.0	6		CL	Loose gray lean CLAY (CL), no structure, no odor, wet, little sand						10	95			
	4 2 3 2	S14 24	34.0 36.0	6		CL	Similar to S13 -ALLUVIAL DEPOSITS-							100			
35		T2 24	36.0 38.0	6		ML	Shelby tube sample taken from 36 to 38 ft							100			
	WOH WOH WOH 1	S15 24	38.0 40.0	6		ML	Very loose gray SILT (ML), no structure, no odor, wet					10	20	70			
40	WOH WOH 1 3	S16 24	40.0 42.0	6	ML	Very loose gray sandy SILT (ML), layered, no odor, wet, bottom half of the sample is sandy silt, top half of the sample is silt					10	20	70				
	5 4 5 4	S17 24	42.0 44.0	6	ML	Loose gray SILT with sand (ML), no structure, no odor, wet						20	80				
45	2 3 4 2	S18	45.0 47.0	6	ML	Loose gray SILT (ML), no structure, no odor, wet, little sand						10	90				

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-11



TEST BORING REPORT

Boring No. HA-11

File No. 0211067-000
Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	WOH WOH WOH 1	S19 24	50.0 52.0	6		ML	Very loose gray SILT (ML), no structure, no odor, wet, trace sand					5	95				
55	3 4 3 10	S20 11	55.0 57.0	6		SP-SM	Loose gray poorly-graded SAND with silt and gravel (SP-SM), no structure, no odor, wet	15	10	45	20	10					
60	18 17 24 50/5"	S21 11	60.0 61.9	3a	-47.4 61.9	SP	Dense gray poorly-graded SAND with gravel (SP), no structure, no odor, wet Note: Rig chatter drilling to 60 ft.	15	10	60	10	5					
							BOTTOM OF EXPLORATION 61.9 FT Note: Upon completion of drilling, borehole was backfilled with soil cuttings and hole plug. Patched with asphalt.										

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-11

TEST BORING REPORT

Boring No. HA-12

Project STEVENSON COMMONS - BUILDING B3 1850 LAFAYETTE AVE, BRONX, NYC
 Client STEVENSON B3 LLC C/O CAMBER PROPERTY GROUP
 Contractor CRAIG GEOTECHNICAL DRILLING CO., INC

File No. 0211067-000
 Sheet No. 1 of 3
 Start 27 September 2024
 Finish 30 September 2024
 Driller Mike Gorski
 H&A Rep. Z. Gao

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: CME 75 Truck
Inside Diameter (in.)	4.0	1 3/8	--	Bit Type: Roller Bit
Hammer Weight (lb)	140	140	-	Drill Mud: Bentonite
Hammer Fall (in.)	30	30	-	Casing: HW Driven 20'
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model:

Elevation 14.5 (est.)
 Datum NAVD88

Location See Plan
 N 238,136
 E 1,022,960

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel					Sand					Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength				
0							-ASPHALT-														
5	5 3 1	S1 14	0.0 2.0	7	14.0 0.5	SM	Loose dark brown, gray, and red silty SAND with gravel (SM), no structure, no odor, moist, some brick and asphalt fragments	15	20	10	25	15	15								
	WOH 1 1	S2 7	2.0 4.0	7		SM	Very loose brown and red silty SAND with gravel (SM), no structure, no odor, moist, some brick fragments -FILL-	20	10	5	20	30	15								
	4 4 3 3	S3 11	4.0 6.0	7		SM	Loose dark brown, gray, black, red, and white silty SAND with gravel (SM), no structure, no odor, moist, some weathered rock, brick and plaster fragments	20	20	5	15	25	15								
	3 2 7 58	S4 6	6.0 8.0	7		SM	Loose dark brown and gray silty SAND with gravel (SM), no structure, no odor, moist, some weathered rock fragments	20	20	5	15	25	15								
	45 5 6 19	S5 7	8.0 10.0	7		GM	Medium dense dark brown, white, and black silty GRAVEL with sand (GM), no structure, no odor, moist, numerous wood pieces and weathered rock fragments	30	20	5	20	10	15								
10	12 8 5 4	S6 7	10.0 12.0	7		GM	Medium dense dark brown, gray, and black silty GRAVEL with sand (GM), no structure, no odor, wet, numerous wood pieces, weathered rock fragments, trace brick fragments	30	20	5	20	10	15								
15	2 2 5 5	S7 9	15.0 17.0	7			Loose dark brown and black, no structure, slight organic odor, wet, plastic and wood pieces with silty sand Note: Installed 15 ft casing.	35	25	5	5	10	20								
20					26.6																

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal		Overburden (ft) 62 Rock Cored (ft) 0 Samples S22	Boring No. HA-12
			Bottom of Casing	Bottom of Hole	Water						

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.



TEST BORING REPORT

Boring No. HA-12

 File No. 0211067-000
 Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			% Fines	Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine		Dilatancy	Toughness	Plasticity	Strength
20	1 1 WOH 1	S8 18	20.0 22.0	6	-16.5 31.0	OL	Very soft gray silty ORGANIC CLAY (OL), no structure, organic odor, wet, trace vegetation fibers						100				
		T1 24	22.0 24.0	6		OL	Shelby tube sample taken from 22 to 24 ft -ESTUARINE DEPOSITS-						100				
	WOH WOH WOH WOH	S9 24	24.0 26.0	6		OL	Very soft gray silty ORGANIC CLAY (OL), no structure, organic odor, wet, trace vegetation fibers						100				
25	1 1 2 2	S10 22	26.0 28.0	6		OL/PT	Very soft gray silty ORGANIC SOILS (OL/PT), layered organic clay and silt, organic odor, wet, trace vegetation fibers and shells, bottom 9 in. is peat						100				
	WOH WOH WOH WOH	S11 9	28.0 30.0	6		OL	Very soft gray silty ORGANIC CLAY (OL), no structure, organic odor, wet, trace vegetation fibers						100				
30	2 2 9 8	S12 20	30.0 32.0	3b		OL/SM	Medium dense gray ORGANIC SILT and silty SAND (OL/SM), layered, organic odor, wet, trace vegetation fibers, bottom 1 ft is silty sand				10	50	40				
35	3 4 1 WOH	S13 20	35.0 37.0	6		ML	Very loose gray silty sand and SILT (ML), layered, no odor, wet, top half of the sample is silty sand, bottom half is silt						40	60			
	WOH WOH WOH WOH	S14 22	37.0 39.0	6		ML	Very loose gray SILT with sand (ML), no structure, no odor, wet -ALLUVIAL DEPOSITS-						15	85			
		T2 24	39.0 41.0														
40	1 2 4 5	S15 17	41.0 43.0	6	ML	Loose gray SILT (ML), no structure, no odor, wet, trace sand						5	95				
	2 4 3 4	S16 24	43.0 45.0	6	ML	Loose gray SILT (ML), no structure, no odor, wet						11	89				
45	1 2 2 3	S17 21	45.0 47.0	6	ML	Very loose gray SILT with sand (ML), no structure, no odor, wet						25	75				
	4 2 4 4	S18 23	47.0 49.0	6	ML	Loose gray SILT (ML), no structure, no odor, wet						10	90				

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-12



TEST BORING REPORT

Boring No. HA-12

File No. 0211067-000
Sheet No. 3 of 3

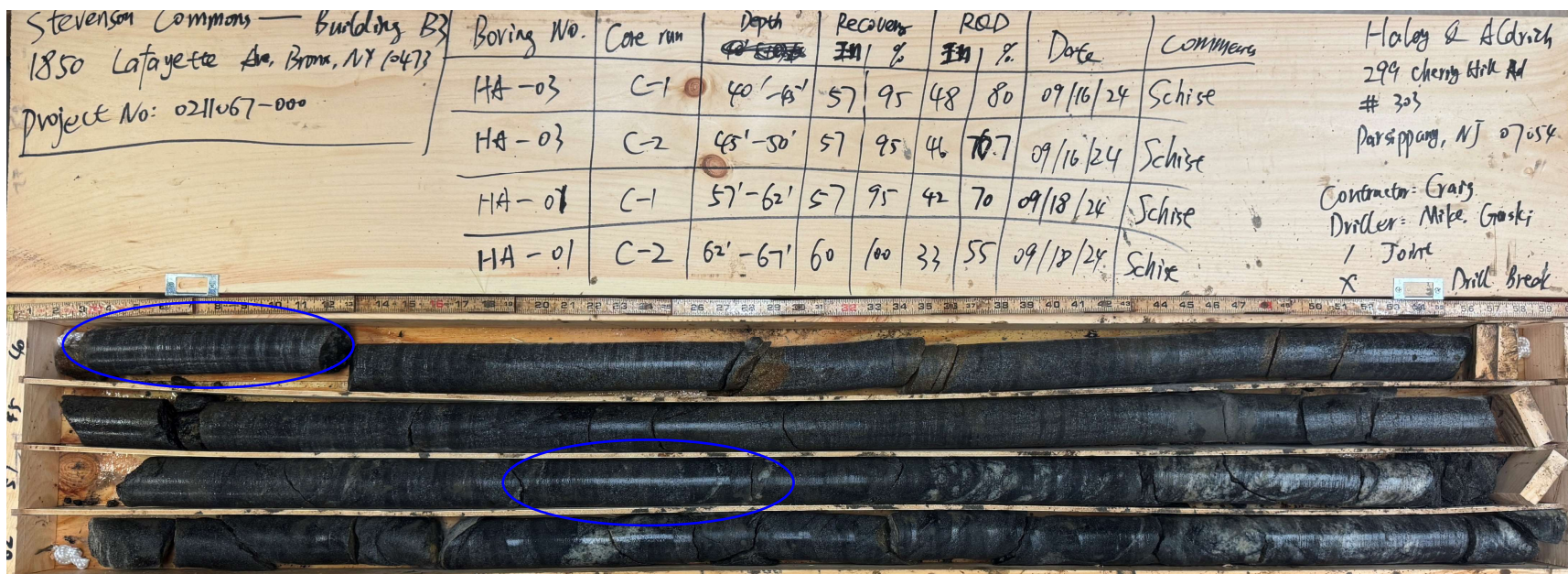
Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	NYC Class	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	WOH WOH WOH WOH	S19 24	50.0 52.0	6		ML	Very loose gray SILT (ML), no structure, no odor, wet					5	95				
	7 3 6 7	S20 24	52.0 54.0	6		ML/SM	Loose gray SILT and silty SAND (ML/SM), layered, no odor, wet, top half of the sample is silt, bottom half is silty sand		12	7	22	34	25				
55	5 3 5 8	S21 4	55.0 57.0	6		SP	Loose gray poorly-graded SAND with gravel (SP), no structure, no odor, wet	15	15	10	30	25	5				
60	28 33 64 50/12"	S22 18	60.0 62.0	1d	-45.5 60.0		Very dense gray and white decomposed rock, relic rock structure, no odor, wet		20	15	40	20	5				
					-47.5 62.0		-DECOMPOSED BEDROCK-										
							BOTTOM OF EXPLORATION 62.0 FT Note: Upon completion of drilling, borehole was backfilled with soil cutting and hole plug.										

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich of New York.

Boring No. HA-12

APPENDIX B

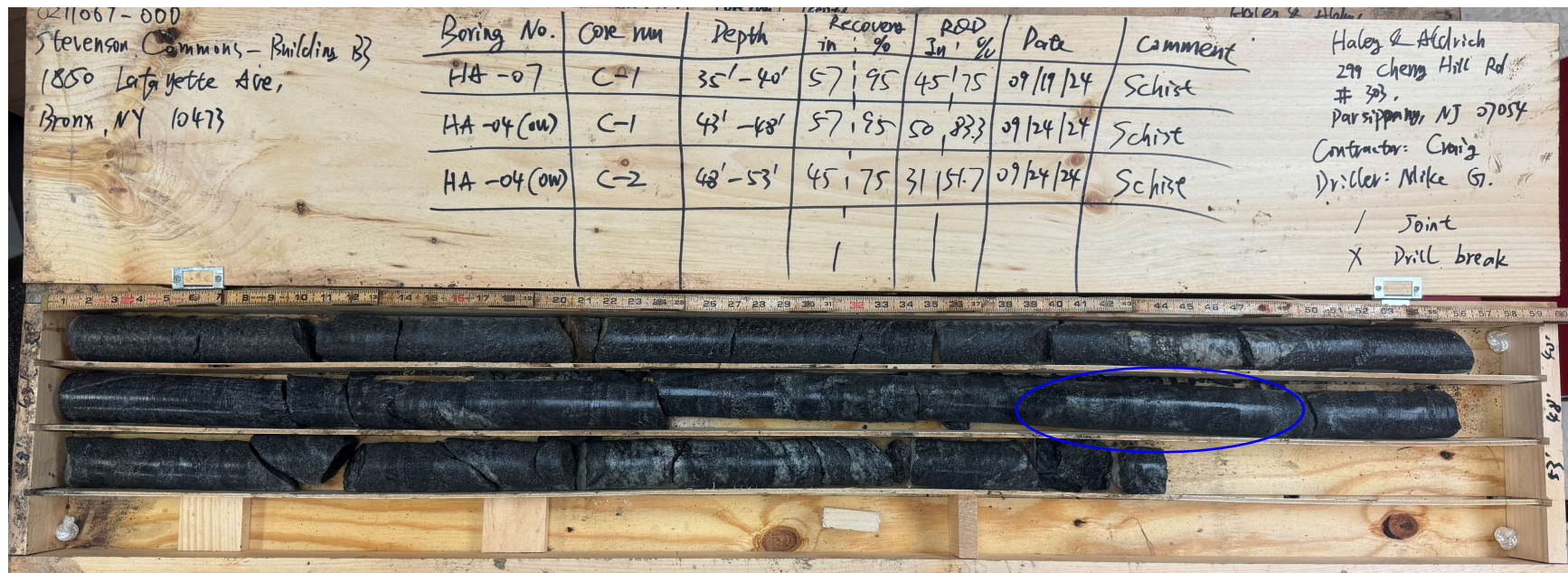
Rock Core Photo Logs



Boring	Run	Depth (ft)	REC (in.)	REC (%)	RQD (in.)	RQD (%)
HA-03	C-1	40-45	57	95	48	80
HA-03	C-2	45-50	57	95	46	77
HA-01	C-1	57-62	57	95	42	70
HA-01	C-2	62-67	60	100	33	55



Boring	Run	Depth (ft)	REC (in.)	REC (%)	RQD (in.)	RQD (%)
HA-02	C-1	87-92	60	100	44	73
HA-02	C-2	92-97	60	100	45	75



Boring	Run	Depth (ft)	REC (in.)	REC (%)	RQD (in.)	RQD (%)
HA-07	C-1	35-40	57	95	45	75
HA-04(OW)	C-1	43-48	57	95	50	83
HA-04(OW)	C-2	48-53	45	75	31	52

APPENDIX C

Select Boring Logs by Others



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BORING LOG

PROJECT NAME

Stevenson Commons
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Bronx, NY 10473

Boring No.: **B2-10**

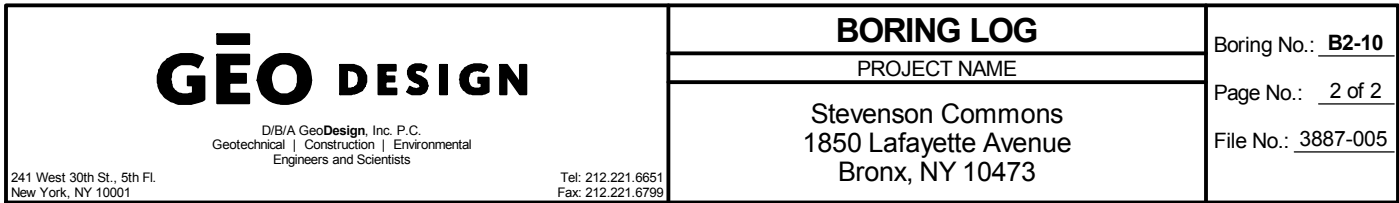
Page No.: 1 of 2

File No.: 3887-005

Boring Company: Craig Geotechnical Drilling		Date Started: 10/7/2019		Barrel	Casing	Sampler	GROUNDWATER OBSERVATIONS						
Foreman: Keith Parent		Date Completed: 10/7/2019		Type: NX	FJ	SS	DATE	DEPTH (ft)	ELEV. (ft)	NOTES			
GeoDesign Rep.: Jonathan Perez		Surface El. (ft): 15		I.D.: 2.2 in.	4.0 in.	1.38 in.							
Rig Type: CME 75 Truck		Total Depth (ft): 50		Hammer Wt.: 140 lbs	140 lbs								
Coordinates:		Rock Depth (ft): 45		Hammer Fall: 30 in.	30 in.								
				Hammer Type: Safety - Cathead									
SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
GENERAL		SOIL		ROCK		LAB							
Depth (ft)	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min/ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines		
0												Asphalt Fill	
	SS	1	8	8 8 7 5								(FILL) brown fine SAND and GRAVEL, little brick [7]	
5	SS	2	3	8 5 3 3								(FILL) brown GRAVEL, little sand [7]	
10	SS	3	6	4 3 3 2						37.1	43.9	(FILL) black fine SAND and CLAY, some gravel, pieces of wood, petroleum odor [7]	
15	SS	4	3	5 23 8 6								(FILL) black GRAVEL, pieces of wood [7]	
18.5												Soft Silt	
20	SS	5	24	1 1 1 1								(OH) gray SILT, some clay, pieces of wood, organic/petroleum odor [6]	Penetrometer reading: 0.25 tons/ft^2. 3" split spoon taken.
25													

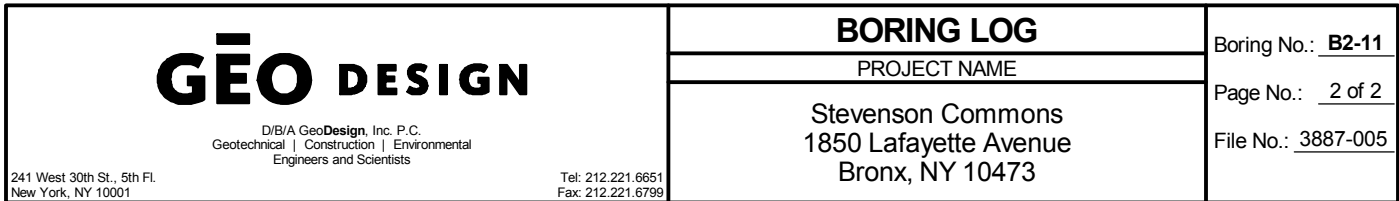
NOTES:

- Stratification lines represent approximate boundary between material types, transitions may be gradual.
- Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
- Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube;
V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
- (SP) = Unified Soil Classification System symbol; [3a] = NYC Building Code Classification

[illegible]

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BORING LOG

PROJECT NAME

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Boring No.: **B2-12**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>		Date Started: <u>10/4/2019</u>		<u>Barrel</u>		<u>Casing</u>		<u>Sampler</u>		GROUNDWATER OBSERVATIONS							
Foreman: <u>Eric Delmeier</u>		Date Completed: <u>10/4/2019</u>		Type: <u>NX</u>		<u>FJ</u>		<u>SS</u>		DATE		DEPTH (ft)		ELEV. (ft)		NOTES	
GeoDesign Rep.: <u>Jonathan Perez</u>		Surface El. (ft): <u>17</u>		I.D.: <u>2.2 in.</u>		<u>4.0 in.</u>		<u>1.38 in.</u>		↓							
Rig Type: <u>CME 75 Truck</u>		Total Depth (ft): <u>68</u>		Hammer Wt.: <u>140 lbs</u>		<u>140 lbs</u>		<u>140 lbs</u>		↓							
Coordinates: _____		Rock Depth (ft): <u>58</u>		Hammer Fall: <u>30 in.</u>		<u>30 in.</u>		<u>30 in.</u>		↓							
				Hammer Type: <u>Safety - Cathead</u>						↓							

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL		SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)				
0												Fill	(FILL) brown fine SAND, little gravel, plant roots [7]	Auto-hammer used for 1st sample.
	SS	1	8	3 3 3 7										
5													(FILL) gray GRAVEL, little sand, little brick [7]	
	SS	2	4	30 30 12 12										
10													(FILL) BRICK, trace sand [7]	
	SS	3	5	11 6 5 12										
15													(FILL) black SILT, pieces of wood, petroleum odor [7]	
	SS	4	6	8 6 7 3										
20													(FILL) black coarse-fine SAND, little silt, petroleum odor [7]	
	SS	5	7	5 6 9 12										
25												23.5 -6.5 Soft Silt & Clay		

NOTES:

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PROJECT NAME

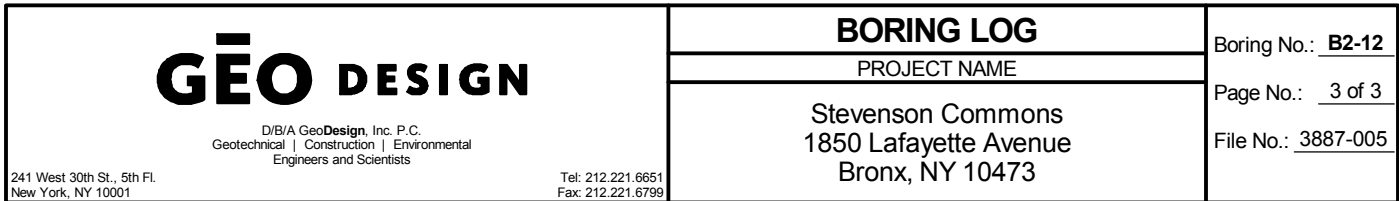
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Boring No.: **B2-12**

Page No.: 2 of 3

File No.: 3887-005

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File No.: 3887-005

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Boring No.: **B2-13**

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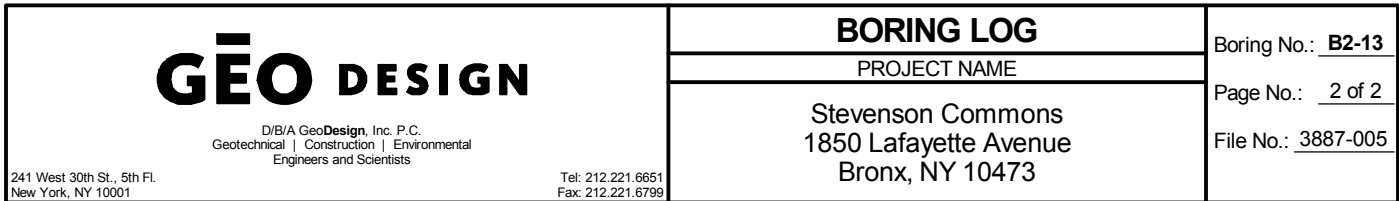
File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>			Date Started: <u>10/4/2019</u>			<u>Barrel</u> <u>Casing</u> <u>Sampler</u>			GROUNDWATER OBSERVATIONS			
Foreman: <u>Joe Schuster</u>			Date Completed: <u>10/7/2019</u>			Type: <u>NX</u>	<u>FJ</u>	<u>SS</u>	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
GeoDesign Rep.: <u>Jonathan Perez</u>			Surface El. (ft): <u>17.5</u>			I.D.: <u>2.2 in.</u>	<u>4.0 in.</u>	<u>1.38 in.</u>				
Rig Type: <u>CME 75 Truck</u>			Total Depth (ft): <u>45</u>			Hammer Wt.: <u>140 lbs</u>	<u>140 lbs</u>					
Coordinates: _____			Rock Depth (ft): <u>40</u>			Hammer Fall: <u>30 in.</u>	<u>30 in.</u>					
						Hammer Type: <u>Automatic - Hydraulic</u>						

Depth (ft)	SAMPLE INFORMATION											STRATA Depth & Elevation (ft)	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL			SOIL	ROCK			LAB							
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines				
0	SS	1	10	5 7 41/3"								Fill		(FILL) brown fine SAND, little gravel, trace brick [7]	Auto-hammer used throughout.
														(FILL) gray GRAVEL and SAND, trace brick [7]	
5	SS	2	10	46 44 18 11										(FILL) gray/light brown GRAVEL and SAND [7]	
10	SS	3	7	5 3 3 4										(FILL) dark gray GRAVEL, some c-f sand, little silt, petroleum odor [7]	
15	SS	4	10	3 3 2 4					32.1	13.2				(FILL) pieces of WOOD [7]	
20	SS	5	1	3 2 2 4											
												23.5 -6.0 Stiff Silt			
25															

NOTES:

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BORING LOG

PROJECT NAME

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Boring No.: **B3-1**

Page No.: 1 of 2

File No.: 3887-005

Boring Company: Craig Geotechnical Drilling Date Started: 9/11/2019
Foreman: Eric Delmeier Date Completed: 9/11/2019
GeoDesign Rep.: Jonathan Perez Surface El. (ft): 18
Rig Type: CME 75 Truck Total Depth (ft): 55
Coordinates: _____ Rock Depth (ft): 45

Barrel	Casing	Sampler	GROUNDWATER OBSERVATIONS			
Type: NX	FJ	SS	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
I.D.: 2.2 in.	4.0 in.	1.38 in.				
Hammer Wt.: 140 lbs	140 lbs					
Hammer Fall: 30 in.	30 in.					
Hammer Type: Safety - Cathead						

Depth (ft)	SAMPLE INFORMATION											STRATA Depth & Elevation (ft)	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB									
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines					
0	SS	1	4	10 30/0"									Fill		(FILL) brown fine SAND, some plant roots [7]	
5	SS	2	3	6 33 17 12												
10	SS	3	4	37 12 15 5												
15	SS	4	8	16 7 4 5												
20	SS	5	6	6 3 5 22						44.3	7.8					
23.5																Cuttings wash color change from gray to black to gray (22'- 25').
25																

NOTES:

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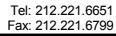
Boring No.: **B3-1**

Page No.: 2 of 2

File No.: 3887-005

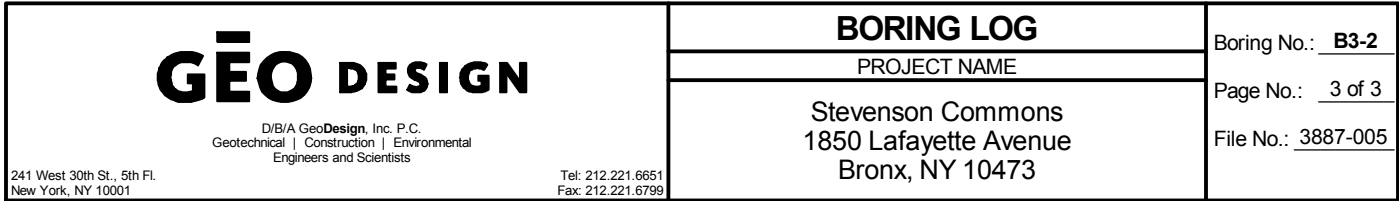
SAMPLE INFORMATION											STRATA		SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
Depth (ft)	GENERAL			SOIL	ROCK		LAB				Depth & Elevation (ft)				
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)		Percent Fines			
25	SS	6	12	30 42 6 5				226	91	142.6		25.0 -10.5	(MH) dark gray SILT, pieces of wood, organic and petroleum odor [5a]		
30	SS	7	14	2 4 9 10									(ML) gray SILT [5b]		
35	SS	8	6	42 24 40 35/2"								33.5 -15.5	(SP) gray medium to fine SAND and GRAVEL [3a]		
40	SS	9	2	30/2"								38.5 -20.5	(GP) gray GRAVEL, little weathered rock [2a]		
45					2							45.0 -27.0	(BEDROCK) dark gray SCHIST, fine grained, no weathering [1b]		
	C	1	58		2.5										
					3	97	50								
					3										
					3										
50					2								(BEDROCK) dark gray SCHIST, fine grained, no weathering [1b]		
	C	2	58		2.5										
					2.5	97	72								
					3										
					2.5										
55												55.0 -37.0			

Bottom of Exploration at 55.0 ft



File No.: 3887-005

SAMPLE INFORMATION											STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
GENERAL			SOIL	ROCK		LAB									
Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines					
25	SS	6	12	1 4 2 2							Soft Silt & Clay (Continued)		(MH) black SILT, pieces of wood, petroleum odor [6]	Organic Content = 5.6	
28.5											-11.0				(CH) gray CLAY, slight organic odor, trace shells [6]
30	SS	7	24	WOH WOH WOH WOH			112	43	85.3		33.5		-16.0		Stiff Silt
35	SS	8	16	7 4 7 7											(ML) gray SILT [5b]
40	SS	9	9	4 6 4 4							38.5	-21.0			(SP) gray fine SAND, trace silt [3b]
43.5											43.5	-26.0			(ML) gray SILT [6]
45	SS	10	18	1 2 2 3							48.5	-31.0			(SP) brown/gray medium-fine SAND and GRAVEL [3a]
50	SS	11	14	15 24 41 34											
55											55.0	-37.5			

File No.: 3887-005[illegible]

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BORING LOG

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Boring No.: **B3-3**

Page No.: 1 of 3

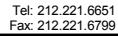
File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>	Date Started: <u>10/2/2019</u>	Barrel: <u>NX</u>	Casing: <u>FJ</u>	Sampler: <u>SS</u>	GROUNDWATER OBSERVATIONS			
Foreman: <u>Eric Delmeier</u>	Date Completed: <u>10/2/2019</u>	Type: <u>NX</u>	<u>FJ</u>	<u>SS</u>	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
GeoDesign Rep.: <u>Jonathan Perez</u>	Surface El. (ft): <u>17.5</u>	I.D.: <u>2.2 in.</u>	<u>4.0 in.</u>	<u>1.38 in.</u>				
Rig Type: <u>CME 75 Truck</u>	Total Depth (ft): <u>60</u>	Hammer Wt.: <u>140 lbs</u>	<u>140 lbs</u>		10/4/19	11.9	5.6	
Coordinates: _____	Rock Depth (ft): <u>60</u>	Hammer Fall: <u>30 in.</u>	<u>30 in.</u>		10/11/19	11.7	5.8	
		Hammer Type: <u>Safety - Cathead</u>						

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	WELL LOG	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB									
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines					
0	SS	1	8	4 4 7 18								Fill		(FILL) Brown fine SAND, trace gravel, trace brick [7]		Sample SS-1 sampled with auto hammer
5	SS	2	3	30 27 22 9									(FILL) White-light brown GRAVEL, little sand [7]			
10	SS	3	4	25 5 3 4									(FILL) Brown c-f SAND and GRAVEL, pieces of glass, pieces of wood [7]			
15	SS	4	8	6 4 16 11									(FILL) Black GRAVEL, little sand, pieces of glass, pieces of wood, petroleum odor [7]		No recovery with 2" SS. Sampled with 3" SS	
20	SS	5	3	11 6 9 5									(FILL) Black-gray GRAVEL, trace brick, trace sand [7]		No recovery with 2" SS. Sampled with 3" SS	
23.5												Soft Silt				
25																

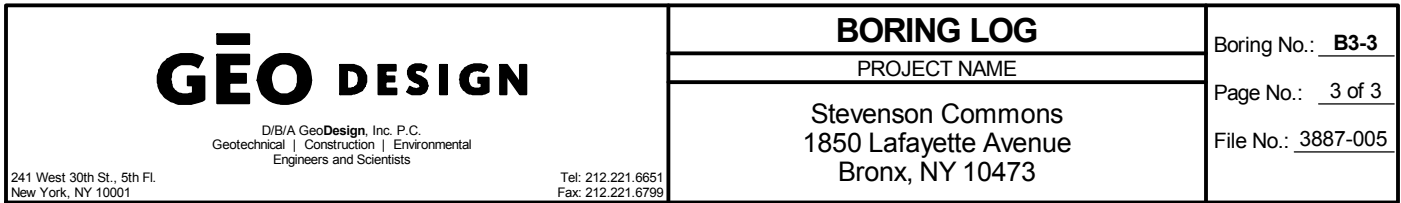
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Boring No.: **B3-3**
Page No.: 3 of 3
File No.: 3887-005

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Boring No.: **B3-4**

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File No.: 3887-005

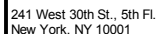
Boring Company: Craig Geotechnical Drilling Date Started: 9/30/2019
Foreman: Eric Delmeier Date Completed: 10/1/2019
GeoDesign Rep.: Jonathan Perez Surface El. (ft): 17
Rig Type: CME 75 Truck Total Depth (ft): 80
Coordinates: _____ Rock Depth (ft): 75

Barrel	Casing	Sampler	GROUNDWATER OBSERVATIONS			
Type: NX	FJ	SS	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
I.D.: 2.2 in.	4.0 in.	1.38 in.				
Hammer Wt.: 140 lbs	140 lbs					
Hammer Fall: 30 in.	30 in.					
Hammer Type: Safety - Cathead						

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines				
0				4								Fill		(FILL) brown fine SAND, little gravel, trace brick [7]	
	SS	1	16	4 4 6 9											
5				14										(FILL) brown fine SAND, little gravel, trace brick [7]	
	SS	2	5	8 8 5											
10				4										(FILL) brown GRAVEL, little sand, trace brick [7]	
	SS	3	5	2 5 2											
15				7										(FILL) gray GRAVEL, little sand, trace brick, pieces of wood, petroleum odor [7]	
	SS	4	5	3 4 14											
20				9										No Recovery	
	SS	5	0	4 4 5											
	</														

NOTES:

- Stratification lines represent approximate boundary between material types, transitions may be gradual.
- Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
- Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube;
V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
- (SP) = Unified Soil Classification System symbol; [3a] = NYC Building Code Classification



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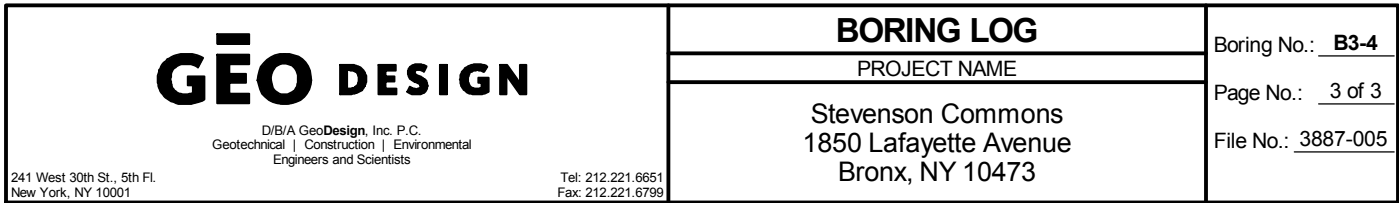
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Boring No.: **B3-4**

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BORING LOG

PROJECT NAME

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Boring No.: **B3-4**
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File No.: **3887-005**

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Boring No.: **B3-5**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>		Date Started: <u>9/27/2019</u>		<table border="1"> <tr> <th>Barrel</th> <th>Casing</th> <th>Sampler</th> </tr> <tr> <td>Type: <u>NX</u></td> <td><u>FJ</u></td> <td><u>SS</u></td> </tr> <tr> <td>I.D.: <u>2.2 in.</u></td> <td><u>4.0 in.</u></td> <td><u>1.38 in.</u></td> </tr> <tr> <td>Hammer Wt.: <u>140 lbs</u></td> <td><u>140 lbs</u></td> <td></td> </tr> <tr> <td>Hammer Fall: <u>30 in.</u></td> <td><u>30 in.</u></td> <td></td> </tr> <tr> <td>Hammer Type: <u>Safety - Cathead</u></td> <td></td> <td></td> </tr> </table>			Barrel	Casing	Sampler	Type: <u>NX</u>	<u>FJ</u>	<u>SS</u>	I.D.: <u>2.2 in.</u>	<u>4.0 in.</u>	<u>1.38 in.</u>	Hammer Wt.: <u>140 lbs</u>	<u>140 lbs</u>		Hammer Fall: <u>30 in.</u>	<u>30 in.</u>		Hammer Type: <u>Safety - Cathead</u>			GROUNDWATER OBSERVATIONS			
Barrel	Casing	Sampler																										
Type: <u>NX</u>	<u>FJ</u>	<u>SS</u>																										
I.D.: <u>2.2 in.</u>	<u>4.0 in.</u>	<u>1.38 in.</u>																										
Hammer Wt.: <u>140 lbs</u>	<u>140 lbs</u>																											
Hammer Fall: <u>30 in.</u>	<u>30 in.</u>																											
Hammer Type: <u>Safety - Cathead</u>																												
Foreman: <u>Eric Delmeier</u>		Date Completed: <u>9/27/2019</u>		DATE	DEPTH (ft)	ELEV. (ft)	NOTES																					
GeoDesign Rep.: <u>Jonathan Perez</u>		Surface El. (ft): <u>17.5</u>																										
Rig Type: <u>CME 75 Truck</u>		Total Depth (ft): <u>70</u>																										
Coordinates: _____		Rock Depth (ft): <u>60</u>																										

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL		SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)				
0				3								Fill	(FILL) brown fine SAND, some gravel, trace brick, organic material [7]	Auto hammer for SS-1
	SS	1	14	6										
				16										
				16										
5				40										
	SS	2	16	40								(FILL) gray GRAVEL, some sand, trace brick [7]		
				36										
				22										
10				13										
	SS	3	10	5										
				7								(FILL) gray GRAVEL, little sand, trace brick [7]	30 blows for 0" penetration with safety hammer, then switched to auto hammer	
				6										
15				27										
	SS	4	6	15										
				12										
				16								(FILL) gray GRAVEL, some brick, trace sand, petroleum odor [7]		
20				5										
	SS	5	2	1										
				2										
				2										
				2								(FILL) gray GRAVEL, piece of wood [7]		
				1										
				2										
				2										
				2										
				2								(MH) gray SILT, piece of wood [6]		
	SS	6	3	1										
				1										
				1										
				WOH										
25														

NOTES:

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V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
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BORING LOG

PROJECT NAME

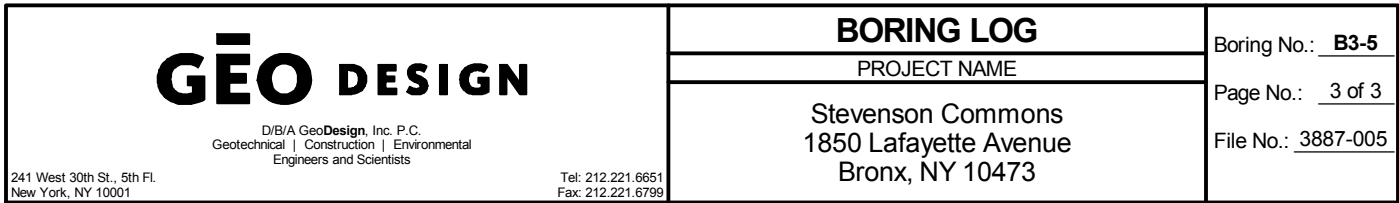
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Boring No.: **B3-5**

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Depth (ft)	SAMPLE INFORMATION											STRATA Depth & Elevation (ft)	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL			SOIL	ROCK			LAB							
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines				
25	SS	7	14	2 1 3 2								Soft Silt (Continued)		(MH) gray SILT [6]	
30	SS	8	3	WOH 1 2 3										(MH) gray SILT [6]	
	PS	1	14	P U S H										(MH) gray SILT, little gravel	
35	SS	9	16	40 30 28 35						23.3	18.3	Sand 34.0 -16.5		Top 2": (MH) gray SILT [5a] Bottom 14": (SM) gray fine SAND, little silt [3a]	
												38.5 -21.0 Stiff Silt			Penetrometer reading: 1.0 tons/ft^2
40	SS	10	14	6 6 9 12											
45	SS	11	20	WOH 2 3 3										(ML) gray SILT [5b]	
														(ML) gray SILT, trace shells [6]	
50	SS	12	8	6 3 4 11										(ML) gray SILT, little coarse to fine sand [6]	
55												Sand 53.5 -36.0			



BORING LOG
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Boring No.: **B3-5**
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BORING LOG

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Boring No.: **B3-6**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: Craig Geotechnical Drilling Date Started: 9/18/2019
Foreman: Eric Delmeier Date Completed: 9/18/2019
GeoDesign Rep.: Jonathan Perez Surface El. (ft): 16.5
Rig Type: CME 75 Truck Total Depth (ft): 60
Coordinates: _____ Rock Depth (ft): _____

Barrel	Casing	Sampler	GROUNDWATER OBSERVATIONS			
Type: NX	FJ	SS	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
I.D.: 2.2 in.	4.0 in.	1.38 in.				
Hammer Wt.: 140 lbs	140 lbs					
Hammer Fall: 30 in.	30 in.					
Hammer Type: Safety - Cathead						

SAMPLE INFORMATION											STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
Depth (ft)	GENERAL			SOIL	ROCK		LAB							
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)				
0	SS	1	10	22 13 37 14								Asphalt Fill	(FILL) gray SAND and GRAVEL, some brick, little asphalt [7]	
5	SS	2	3	23 2 3 4									(FILL) gray GRAVEL, some sand, some brick, trace asphalt [7]	
10	SS	3	8	26 9 5 30									(FILL) gray GRAVEL, some sand [7]	
15	SS	4	3	28 9 6 5									(FILL) black GRAVEL, little sand, piece of wood, petroleum odor [7]	
20	SS	5	0	4 2 3 4									No Recovery, piece of wood	Spoon bouncing on obstruction with safety hammer. Switched to auto-hammer, broke through obstruction, giving lower blow counts.
25														

NOTES:

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V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
- (SP) = Unified Soil Classification System symbol; [3a] = NYC Building Code Classification

BORING LOG

PROJECT NAME

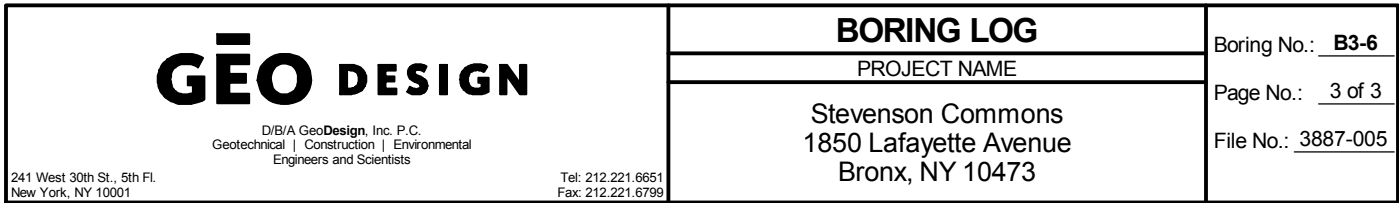
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Boring No.: **B3-6**

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Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)					Percent Fines
25	SS	6	0	9 4 3 7								Fill (Continued)	No Recovery, wood fibers and gravel in outwash		
												28.5	-12.0		
30	SS	7	16	8 8 27 27										Top 6": (MH) gray SILT, trace fine sand [5b] Bottom 10": (SM) brown fine SAND, trace silt [3a]	
35	SS	8	12	20 7 7 10										(ML) gray SILT, trace fine sand [5b]	Switched to auto-hammer due to high soil resistance.
40	SS	9	24	12 7 10 13				41	23	39.8				(CL) gray CLAY, trace fine sand [4b]	Switched to auto-hammer due to high soil resistance. Penetrometer reading: 0.25 tons/ft^2
45	SS	10	14	19 21 32 48										(SP) brown fine SAND, little gravel, trace silt [3a]	Switched to auto-hammer as safety hammer could not penetrate.
50	SS	11	12	22 21 22 17										(SP) gray fine SAND and GRAVEL, trace silt [3a]	Switched to auto-hammer after 2".



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File No.: 3887-005

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BORING LOG

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Boring No.: **B3-7**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: Craig Geotechnical Drilling Date Started: 9/19/2019
Foreman: Eric Delmeier Date Completed: 9/19/2019
GeoDesign Rep.: Jonathan Perez Surface El. (ft): 16.5
Rig Type: CME 75 Truck Total Depth (ft): 65
Coordinates: _____ Rock Depth (ft): 60

Barrel	Casing	Sampler	GROUNDWATER OBSERVATIONS			
Type: NX	FJ	SS	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
I.D.: 2.2 in.	4.0 in.	1.38 in.				
Hammer Wt.: 140 lbs	140 lbs					
Hammer Fall: 30 in.	30 in.					
Hammer Type: Safety - Cathead						

SAMPLE INFORMATION											STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
Depth (ft)	GENERAL			SOIL	ROCK		LAB							
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)				
0	SS	1	5	11 8 20 17								Asphalt Fill	(FILL) brown coarse to fine SAND, some gravel, some asphalt, trace brick [7]	
5	SS	2	5	3 2 3 21									(FILL) gray GRAVEL and SAND, trace brick [7]	
10	SS	3	5	23 13 23 16									(FILL) dark gray SAND and GRAVEL, petroleum odor [7]	
15	SS	4	4	22 18 10 7									(FILL) dark gray GRAVEL, trace sand, petroleum odor [7]	
20	SS	5	0	9 3 4 7									No Recovery	
23.5												Soft Silt		
25														

NOTES:

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- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
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PROJECT NAME

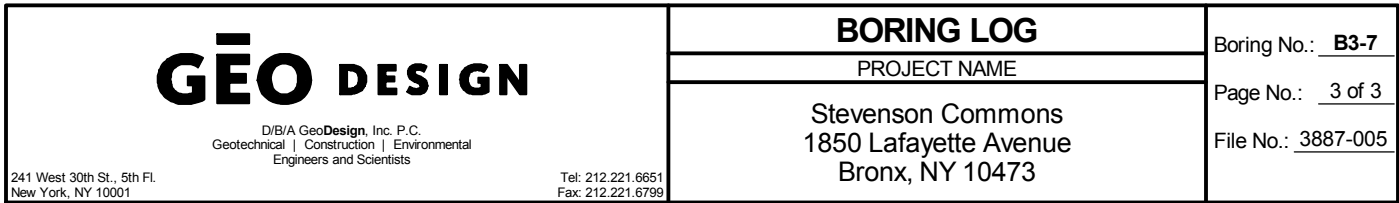
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Page No.: 2 of 3

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Boring No.: **B3-7**
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Boring No.: **B3-8**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: Craig Geotechnical Drilling Date Started: 10/1/2019
Foreman: Eric Delmeier Date Completed: 10/2/2019
GeoDesign Rep.: Jonathan Perez Surface El. (ft): 17.5
Rig Type: CME 75 Truck Total Depth (ft): 60
Coordinates: _____ Rock Depth (ft): 60

Barrel	Casing	Sampler	GROUNDWATER OBSERVATIONS			
Type: NX	FJ	SS	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
I.D.: 2.2 in.	4.0 in.	1.38 in.				
Hammer Wt.: 140 lbs	140 lbs					
Hammer Fall: 30 in.	30 in.					
Hammer Type: Safety - Cathead						

Depth (ft)	SAMPLE INFORMATION											STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL			SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines				
0				5								Fill		(FILL) Brown fine SAND, some gravel [7]	Sample SS-1 sampled with auto hammer
	SS	1	14	10 16 10											
5				14										(FILL) Gray-brown GRAVEL, trace brick, trace sand [7]	
	SS	2	8	7 7 8											
10				13										(FILL) Gray GRAVEL, trace brick, trace sand [7]	
	SS	3	6	14 13 7											
15				10										(FILL) White GRAVEL, trace sand, pieces of wood [7]	
	SS	4	4	5 11 18											
	SS	5	3	65/3"										(FILL) Pieces of wood [7]	
20				WOH										(MH) Gray SILT, little clay, pieces of wood, organic odor [6]	PP = 0.5 tsf
	SS	6	24	WOH WOH 2											
25															

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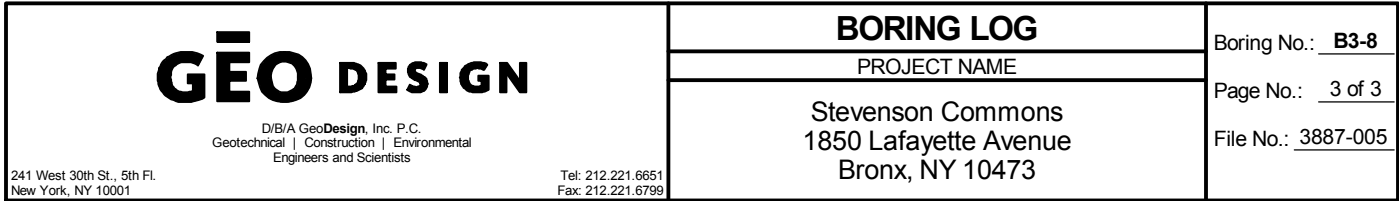
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Boring No.: **B3-8**

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File No.: 3887-005

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL			SOIL	ROCK		LAB							
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines			
25	SS	7	18	WOH WOH 4 4								Soft Silt (Continued)	(MH) Gray SILT, trace clay, small pieces of wood, organic odor [6]	
30	SS	8	4	2 2 3 6									(MH) Gray SILT, small pieces of wood, organic odor [6]	
35	SS	9	12	3 6 5 6								33.5 Stiff Silt	(ML) Gray SILT, trace fine sand, trace shells [5b]	PP = 2 tsf
40	SS	10	18	5 4 4 3									(ML) Gray SILT [6]	PP = 0.75 tsf
45	SS	11	8	3 5 7 4									(ML) Gray SILT and fine SAND [5b]	
50	SS	12	16	2 7 14 18									(ML) Gray SILT, some fine sand [5b]	PP = 0.25 tsf
55												53.5 Gravel		



Boring No.: **B3-8**
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BORING LOG

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Bronx, NY 10473

Boring No.: **B3-9**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>		Date Started: <u>9/30/2019</u>		<u>Barrel</u> <u>Casing</u> <u>Sampler</u>		GROUNDWATER OBSERVATIONS			
Foreman: <u>Eric Delmeier</u>		Date Completed: <u>9/30/2019</u>		Type: <u>NX</u> <u>FJ</u> <u>SS</u>					
GeoDesign Rep.: <u>Jonathan Perez</u>		Surface El. (ft): <u>18</u>		I.D.: <u>2.2 in.</u> <u>4.0 in.</u> <u>1.38 in.</u>	DATE	DEPTH (ft)	ELEV. (ft)	NOTES	
Rig Type: <u>CME 75 Truck</u>		Total Depth (ft): <u>60</u>		Hammer Wt.: <u>140 lbs</u> <u>140 lbs</u>	▼				
Coordinates: _____		Rock Depth (ft): <u>55</u>		Hammer Fall: <u>30 in.</u> <u>30 in.</u>	▼				
				Hammer Type: <u>Safety - Cathead</u>	▼				

Depth (ft)	SAMPLE INFORMATION										STRATA Depth & Elevation (ft)	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL		SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)				
0				4								Fill	(FILL) brown fine SAND, little gravel, trace brick [7]	Sample SS-1 sampled with auto hammer
	SS	1	16	11										
				12										
				13										
5				11									(FILL) black-dark brown fine SAND, trace gravel and brick, petroleum odor [7]	
	SS	2	12	17										
				12										
				9										
10				2									(FILL) gray GRAVEL, little sand, trace brick [7]	
	SS	3	6	3										
				3										
				4										
15				10								- 30 48	(FILL) black GRAVEL, little fine sand and wood pieces, petroleum odor [7]	Organic Content = 11.7
	SS	4	4	5										
				12										
				6										
20				14									(MH) black-dark gray SILT, wood pieces, slight organic odor, petroleum odor [6]	
	SS	5	12	3										
				2										
				3										
25														

NOTES:

- Stratification lines represent approximate boundary between material types, transitions may be gradual.
- Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
- Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube;
V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
- (SP) = Unified Soil Classification System symbol; [3a] = NYC Building Code Classification

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Geotechnical | Construction | Environmental
Engineers and Scientists

241 West 30th St., 5th Fl.
New York, NY 10001

Tel: 212.221.6651
Fax: 212.221.6799

BORING LOG

PROJECT NAME

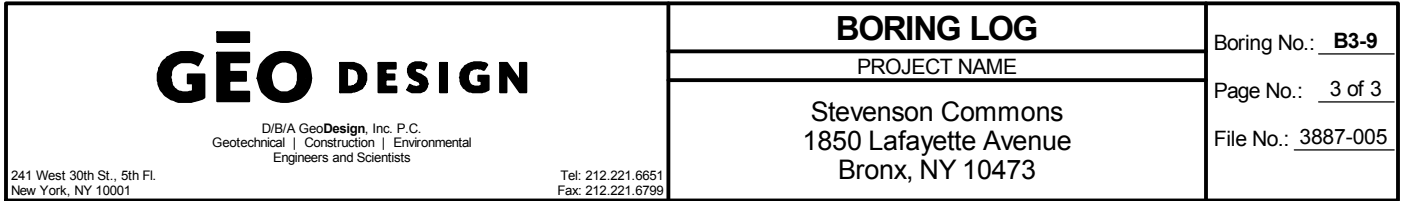
Stevenson Commons
1850 Lafayette Avenue
Bronx, NY 10473

Boring No.: **B3-9**

Page No.: 2 of 3

File No.: 3887-005

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL			SOIL	ROCK			LAB						
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)				
25	SS	6	8	WOH 1 2 2								Soft Silt (Continued)	(MH) gray SILT, trace sand [6]	
30	SS	7	18	WOH WOH WOH WOH									(MH) dark brown-gray SILT, small wood pieces, organic odor [6]	Penetrometer reading: 0.5 tons/ft^2
35	SS	8	9	15 11 11 9								33.5 -15.5 Sand	(SM) gray fine SAND, little silt [3b]	
40	SS	9	12	3 2 7 5								38.5 -20.5 Stiff Silt	(ML) gray SILT [6]	Penetrometer reading: 0.1 tons/ft^2
45	SS	10	24	WOH WOH WOH WOH									(ML) gray SILT [6]	Penetrometer reading: 0.05 tons/ft^2
50	SS	11	8	15 14 16 25								48.5 -30.5 Sand & Gravel	(SP) gray fine SAND and GRAVEL, trace silt [3b]	
55												55.0 -37.0		



Boring No.: B3-9

Page No.: 3 of 3

File No.: 3887-005

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1850 Lafayette Avenue
Bronx, NY 10473

Boring No.: **B3-10**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>	Date Started: <u>9/26/2019</u>	Barrel: <u>NX</u>	Casing: <u>FJ</u>	Sampler: <u>SS</u>	GROUNDWATER OBSERVATIONS			
Foreman: <u>Eric Delmeier</u>	Date Completed: <u>9/26/2019</u>	Type: <u>NX</u>	<u>FJ</u>	<u>SS</u>	DATE	DEPTH (ft)	ELEV. (ft)	NOTES
GeoDesign Rep.: <u>Jonathan Perez</u>	Surface El. (ft): <u>17.5</u>	I.D.: <u>2.2 in.</u>	<u>4.0 in.</u>	<u>1.38 in.</u>				
Rig Type: <u>CME 75 Truck</u>	Total Depth (ft): <u>81</u>	Hammer Wt.: <u>140 lbs</u>	<u>140 lbs</u>		▼			
Coordinates: _____	Rock Depth (ft): _____	Hammer Fall: <u>30 in.</u>	<u>30 in.</u>		▼			
		Hammer Type: <u>Safety - Cathead</u>			▼			

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines				
0				3								Fill		(FILL) brown fine SAND, some silt, little gravel, trace brick [7]	Auto hammer used for SS-1
	SS	1	8	7 8 14											
5				12										(FILL) gray GRAVEL, some brick [7]	Auto hammer used for SS-2
	SS	2	4	14 13 13											
10															
	SS	3	7	23 7 9 5										(FILL) dark gray GRAVEL, little sand, trace brick, petroleum odor [7]	
15															
	SS	4	5	6 11 18 11										(FILL) dark gray/black GRAVEL, pieces of wood, petroleum odor [7]	
	SS	5	0	2 2 2 4										No Recovery	
20				4											
	SS	6	24	1 2 3										(MH) gray SILT, pieces of wood, organic odor [6]	
25															

NOTES:

- Stratification lines represent approximate boundary between material types, transitions may be gradual.
- Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
- Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube;
V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
- (SP) = Unified Soil Classification System symbol; [3a] = NYC Building Code Classification

BORING LOG

PROJECT NAME

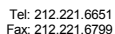
Stevenson Commons
1850 Lafayette Avenue
Bronx, NY 10473

Boring No.: **B3-10**

Page No.: 2 of 3

File No.: 3887-005

[illegible]



PROJECT NAME

Boring No.: **B3-10**

Page No.: 3 of 3

File No.: 3887-005

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)					Percent Fines
55	SS	13	6	9 16 12 7								Sand & Gravel (Continued)	(ML) gray SILT and fine SAND, little gravel [5b]		
60	SS	14	12	19 24 70 40									(ML) gray SILT and medium to fine SAND, little gravel [5a]	Used auto hammer	
65	SS	15	2	12 13 17 22									(SM) gray medium to fine SAND and SILT, some gravel [3b]	Used auto hammer	
70	SS	16	16	30 48 60/5"									(SP) white/ gray/ black, fine SAND [3a]	Used auto hammer SS-16 sample appears to be weathered rock	
75	SS	17	23	33 29 50 75/5"									(SP) white and black fine SAND [3a]	Used auto hammer SS-17 sample appears to be weathered rock	
80	SS	18	6	70 45/0"									78.5 -61.0 Soft Rock	(SOFT ROCK) black and white SOFT ROCK [1d]	Used auto hammer
														Bottom of Exploration at 81.0 ft	
85															

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1850 Lafayette Avenue
Bronx, NY 10473

Boring No.: **B3-11**

Page No.: 1 of 3

File No.: 3887-005

Boring Company: <u>Craig Geotechnical Drilling</u>		Date Started: <u>9/25/2019</u>		<u>Barrel</u>		<u>Casing</u>		<u>Sampler</u>		GROUNDWATER OBSERVATIONS							
Foreman: <u>Eric Delmeier</u>		Date Completed: <u>9/26/2019</u>		Type: <u>NX</u>		<u>FJ</u>		<u>SS</u>		DATE		DEPTH (ft)		ELEV. (ft)		NOTES	
GeoDesign Rep.: <u>Jonathan Perez</u>		Surface El. (ft): <u>17</u>		I.D.: <u>2.2 in.</u>		<u>4.0 in.</u>		<u>1.38 in.</u>									
Rig Type: <u>CME 75 Truck</u>		Total Depth (ft): <u>57</u>		Hammer Wt.: <u>140 lbs</u>		<u>140 lbs</u>		<u>140 lbs</u>		▼							
Coordinates: _____		Rock Depth (ft): _____		Hammer Fall: <u>30 in.</u>		<u>30 in.</u>		<u>30 in.</u>		▼							
				Hammer Type: <u>Safety - Cathead</u>						▼							

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS	
	GENERAL			SOIL	ROCK		LAB								
	Type	Number	Recovery (inches)		Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	ROD (%)	Liquid Limit	Plastic Limit					Moisture Content (%)
0												Fill	(FILL) brown fine SAND, little brick, trace gravel [7]		
	SS	1	14	7 8 11 9											
5													(FILL) gray c-f SAND, some gravel, trace brick [7]		
	SS	2	8	5 3 7 11											
10													(FILL) brown c-f SAND, some gravel, trace brick [7]		
	SS	3	3	10 3 6 4											
15													(FILL) gray fine SAND and GRAVEL, little brick [7]	Petroleum odor in sample	
	SS	4	6	7 16 8 3											
20													(MH) gray organic SILT, trace clay, trace wood fragments, organic odor [6]		
	SS	5	16	3 1 2 2											
25															

NOTES:

- Stratification lines represent approximate boundary between material types, transitions may be gradual.
- Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
- Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube;
V = Vane; WOR/H = Weight of Rod/Hammer
- Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
- (SP) = Unified Soil Classification System symbol; [3a] = NYC Building Code Classification

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BORING LOG

PROJECT NAME

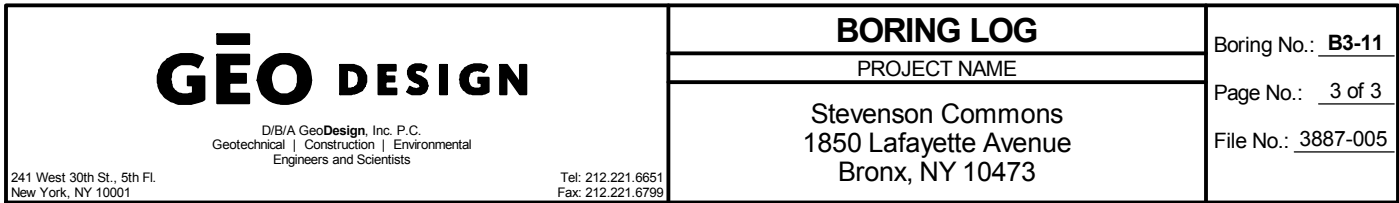
Stevenson Commons
1850 Lafayette Avenue
Bronx, NY 10473

Boring No.: **B3-11**

Page No.: 2 of 3

File No.: 3887-005

Depth (ft)	SAMPLE INFORMATION										STRATA	SYMBOL	SAMPLE DESCRIPTION	REMARKS/ OTHER TESTS
	GENERAL			SOIL	ROCK		LAB							
	Type	Number	Recovery (inches)	Pen. Resist (blows/6 in.)	Coring Time (min./ft)	Recovery (%)	RQD (%)	Liquid Limit	Plastic Limit	Moisture Content (%)	Percent Fines			
25	SS	6	24	WOH WOH WOH WOH								Soft Silt (Continued)	(MH) gray organic SILT, trace clay, trace wood fragments [6]	Penetrometer reading: 0.5 tons/ft^2
30	SS	7	20	WOH WOH WOH WOH									(MH) gray SILT, trace clay, slight organic odor [6]	Penetrometer reading: 0.5 tons/ft^2
35	SS	8	12	2 4 10 7								33.5 -16.5 Stiff Silt	(ML) gray SILT [5b]	Penetrometer reading: 0.5 tons/ft^2
40	SS	9	15	6 6 5 6									(ML) gray SILT [5b]	Penetrometer reading: 0.5 tons/ft^2
45	SS	10	18	3 2 3 4									(ML) gray SILT [6]	Penetrometer reading: 0.25 tons/ft^2
50	SS	11	24	WOH WOH WOH WOH									(ML) gray SILT [6]	Penetrometer reading: 0.07 tons/ft^2
55												53.5 -36.5 Sand & Gravel		



Boring No.: **B3-11**
Page No.: **3 of 3**
File No.: **3887-005**

[illegible]

APPENDIX D

CPT Data by Others



9/18/19 Job#195214

Client: GeoDesign

Location: Stevenson Commons, Bronx NY

Date	CPT Sounding	Depth	Seismic Tests	Pre-Drill
9/12/19 - 9/13/19	B3-1	33.6		25ft
9/12/19 - 9/13/19	B3-2	27.03	8	25ft
9/12/19 - 9/13/19	B3-3	16.27		25ft
9/12/19 - 9/13/19	B3-4	44.03		25ft
9/12/19 - 9/13/19	B3-5	36.88		25ft
9/12/19 - 9/13/19	B3-7	25.2	8	25ft

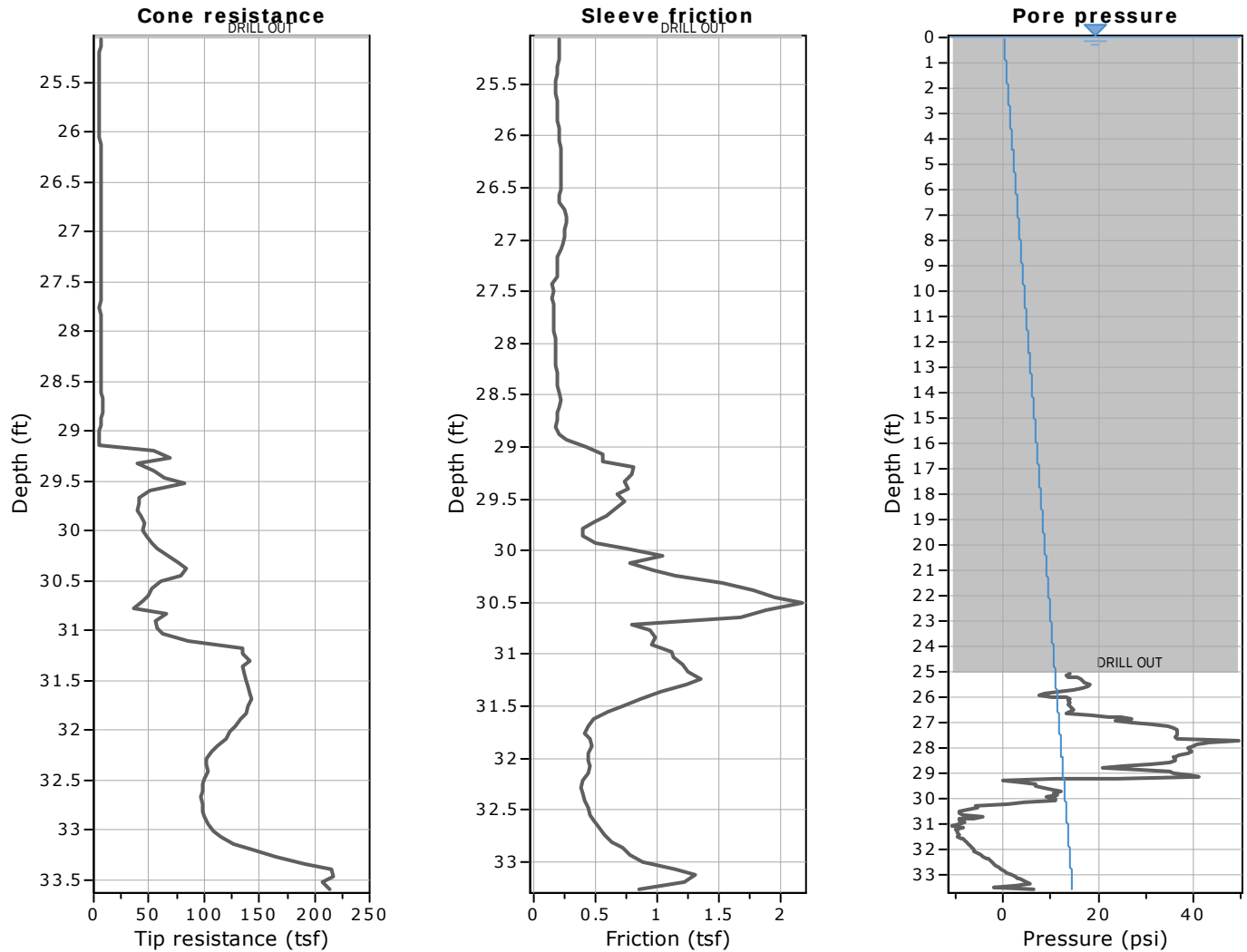


Project: GeoDesign

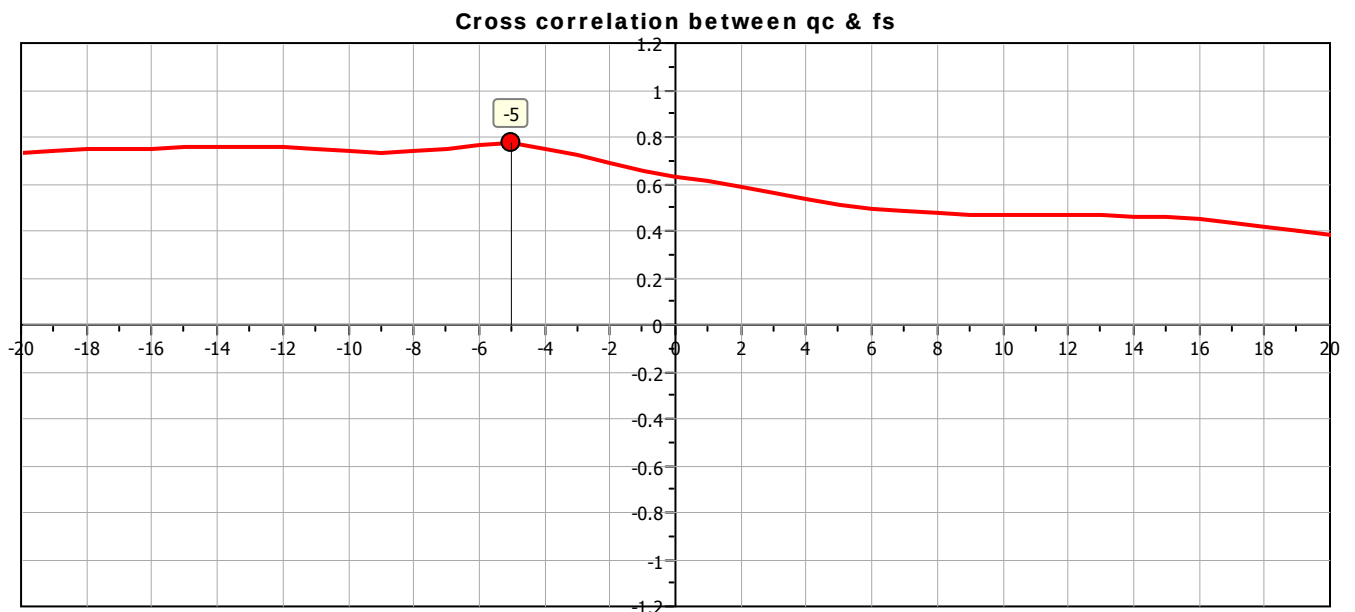
Location: Stevenson Commons, Bronx NY

B3-1

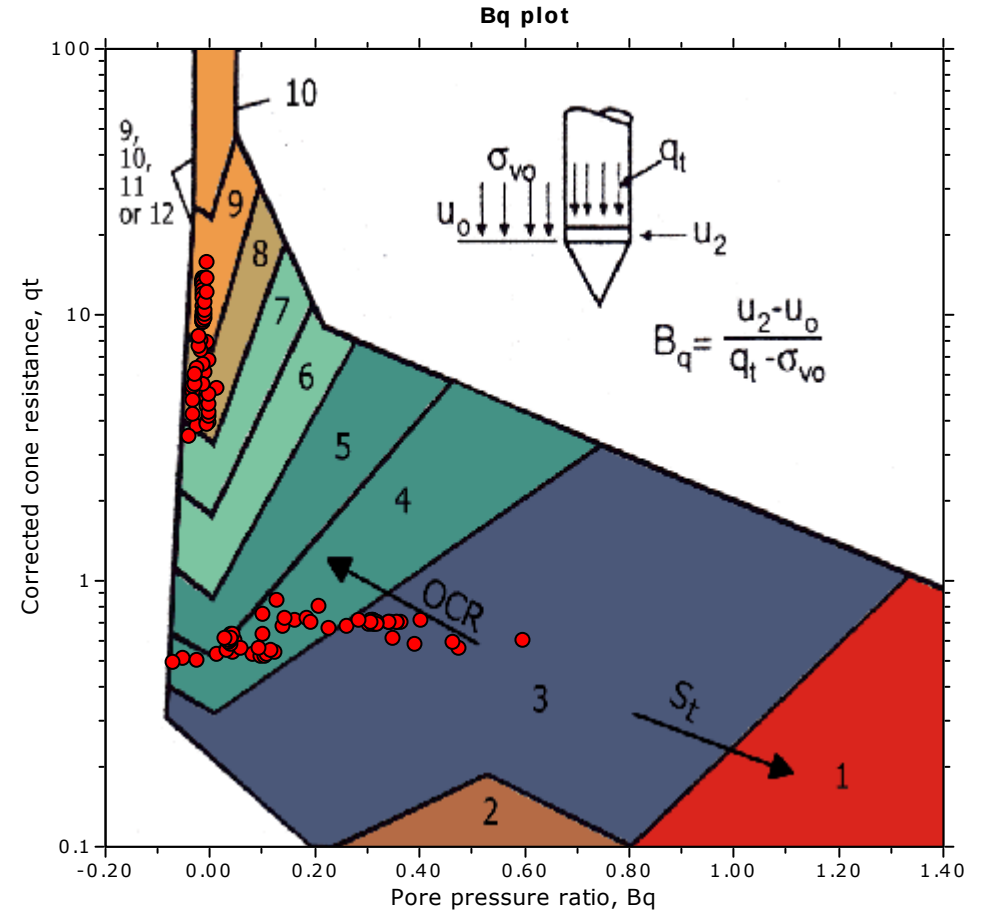
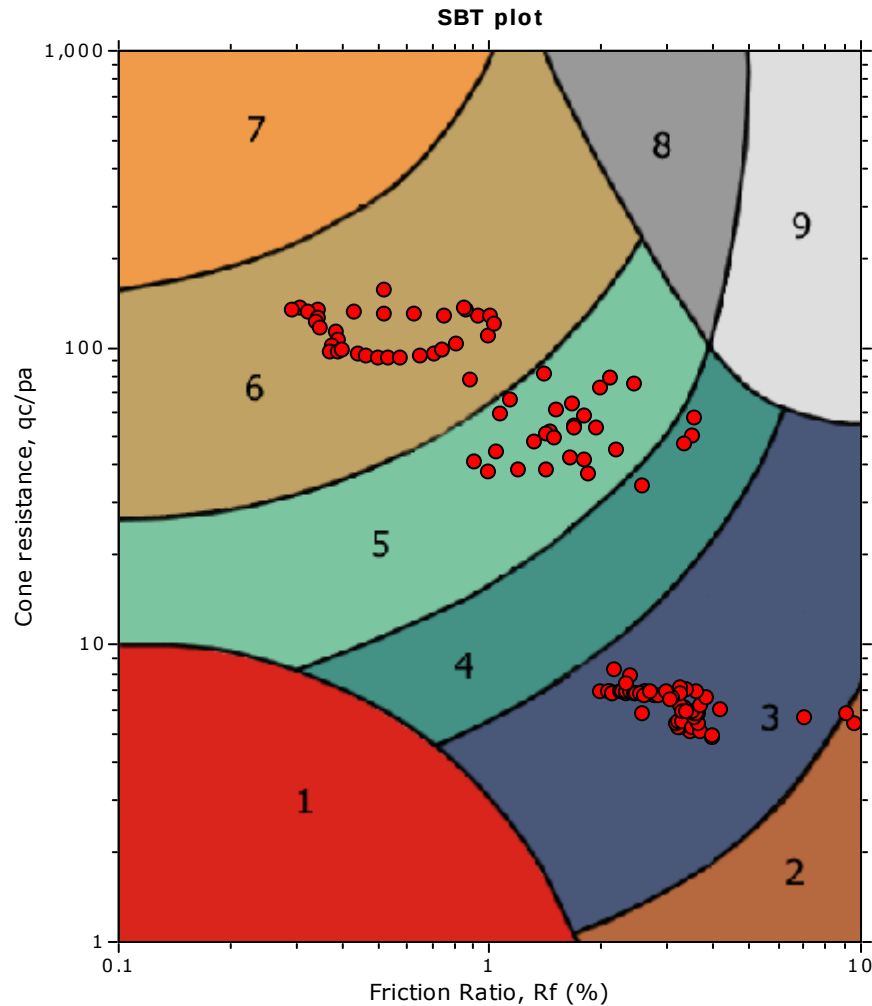
Total depth: 33.60 ft



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).



SBT - Bq plots



SBT legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |

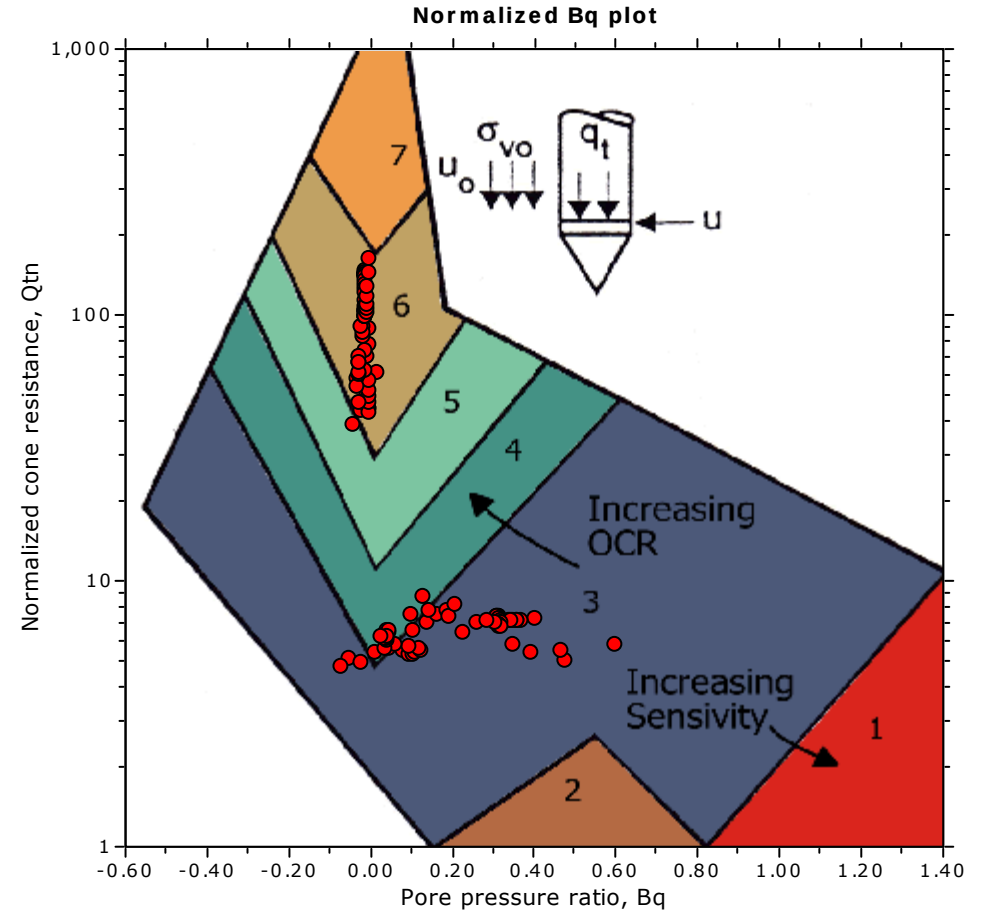
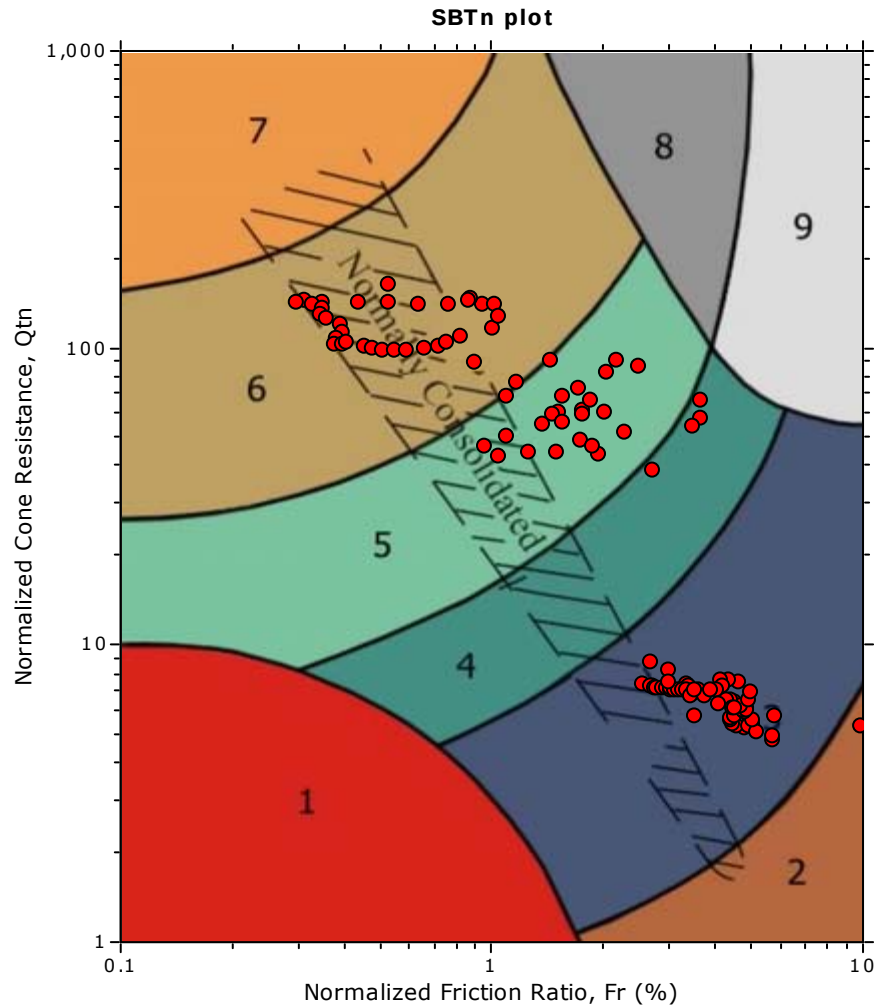
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-1

Total depth: 33.60 ft

SBT - Bq plots (normalized)



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



Craig Geotechnical Drilling
5435 Harding Hwy
Mays Landing, NJ

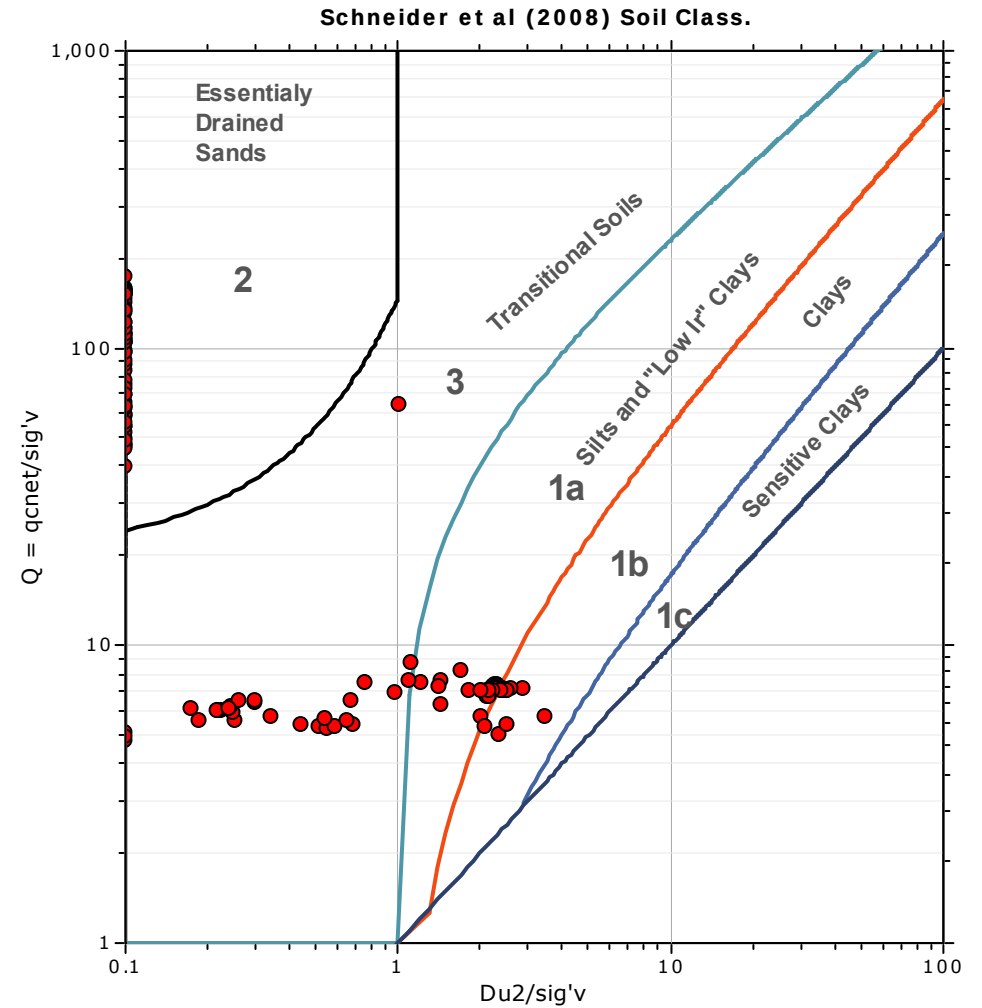
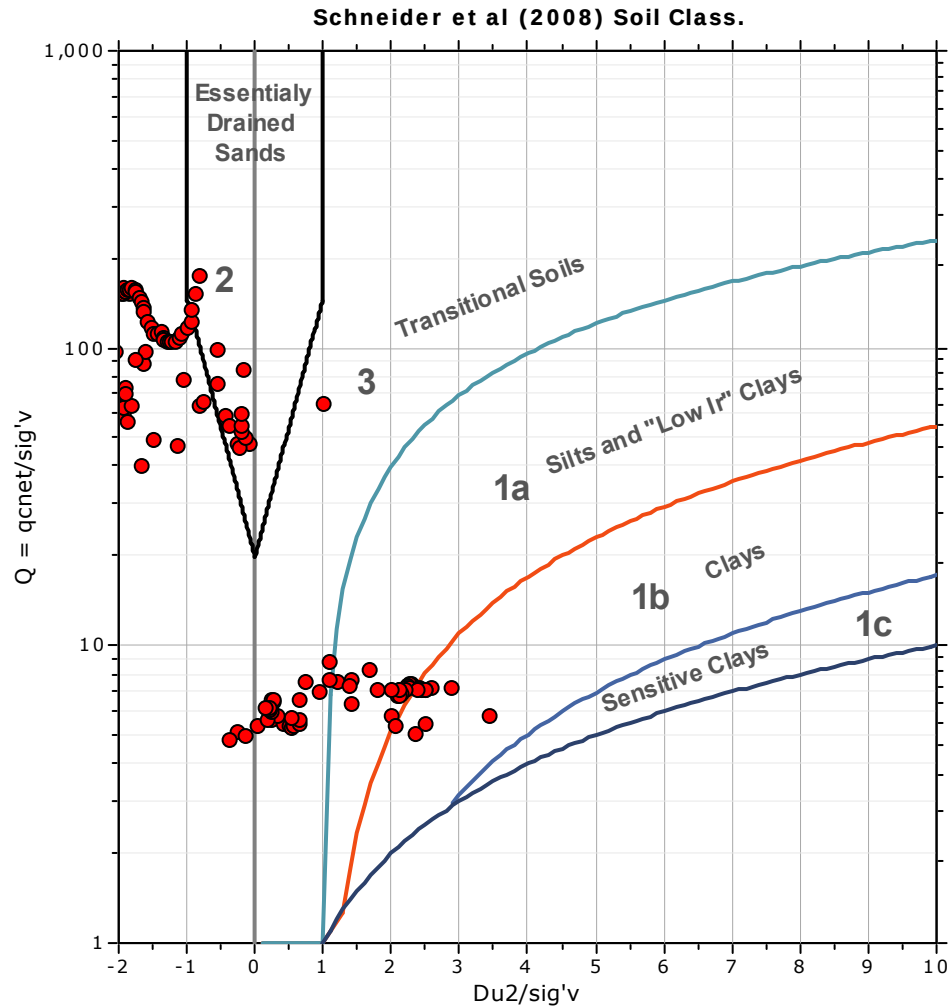
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-1

Total depth: 33.60 ft

Bq plots (Schneider)



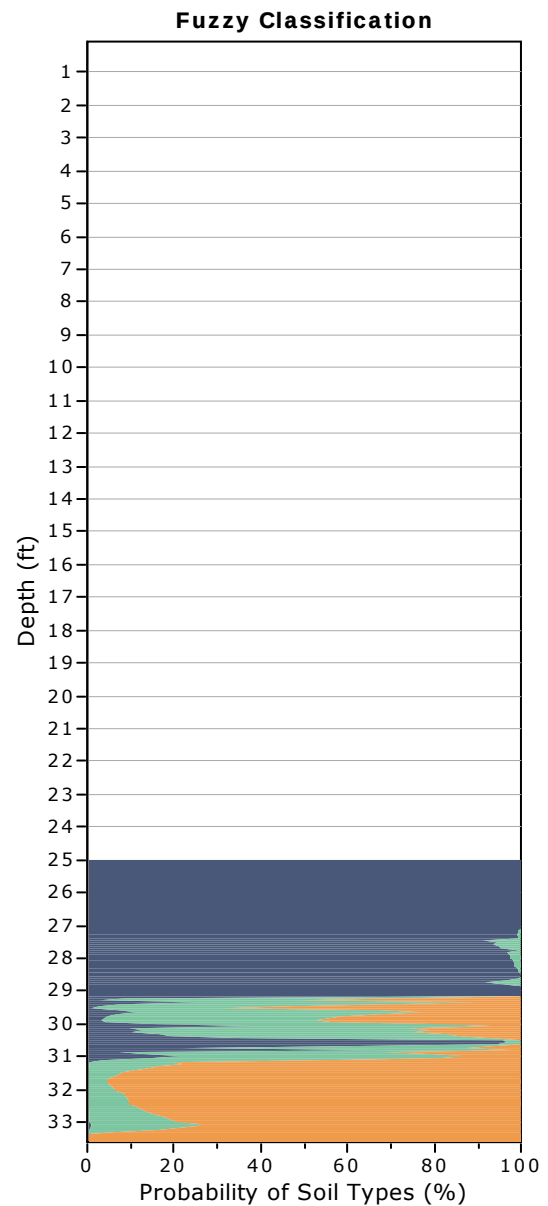
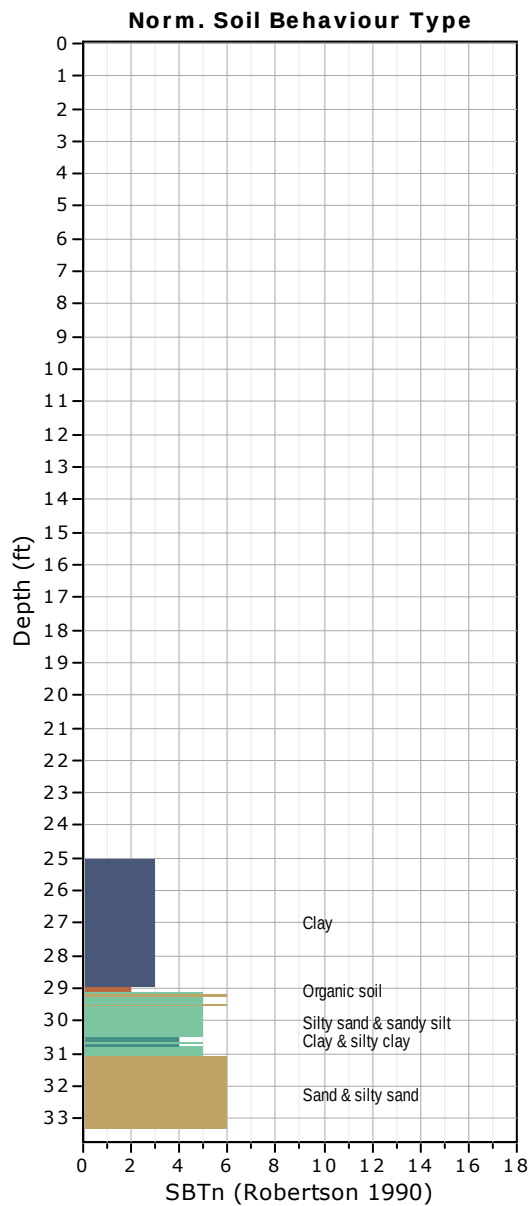


Project: **GeoDesign**

Location: **Stevenson Commons, Bronx NY**

CPT: B3-1

Total depth: 33.60 ft

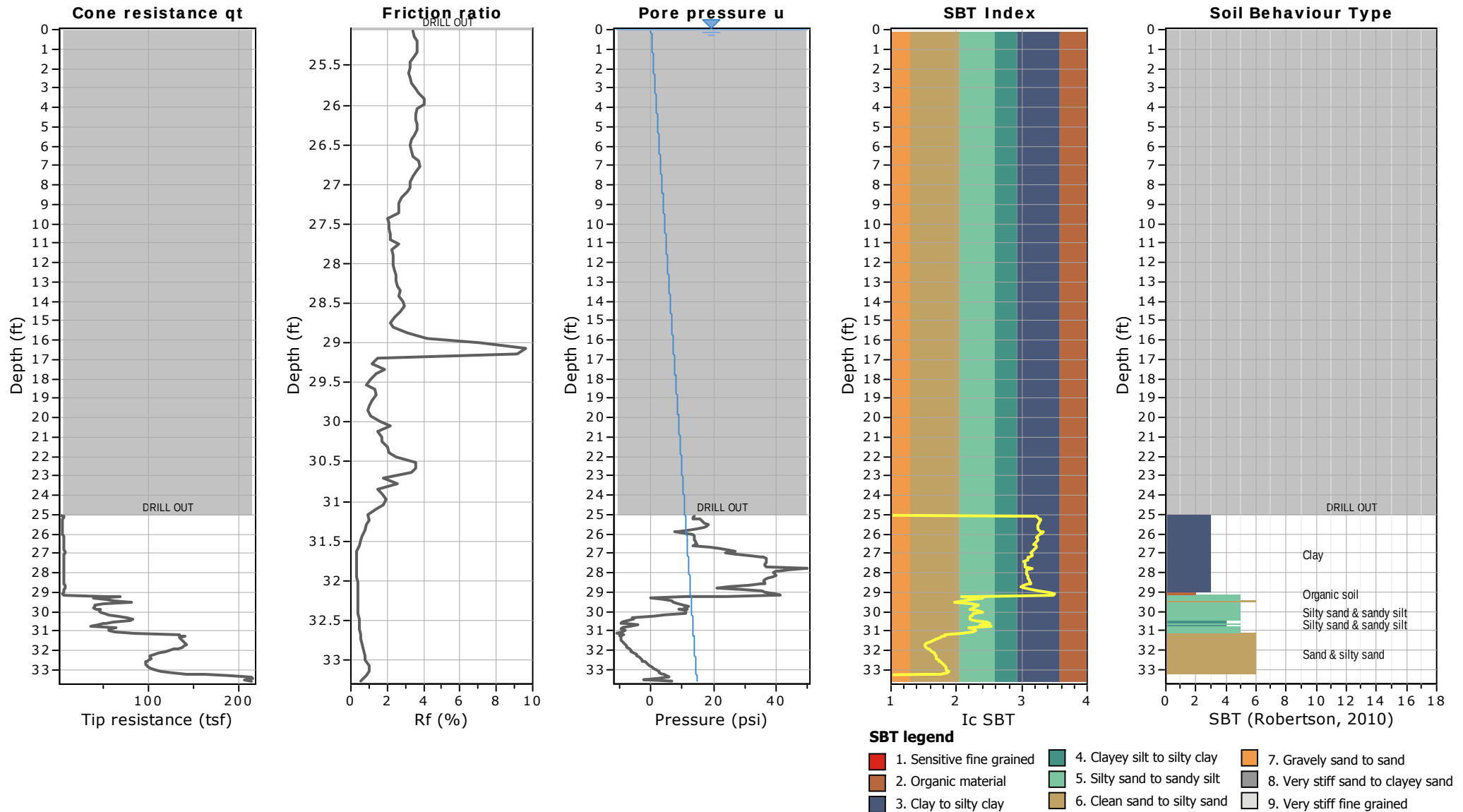


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft



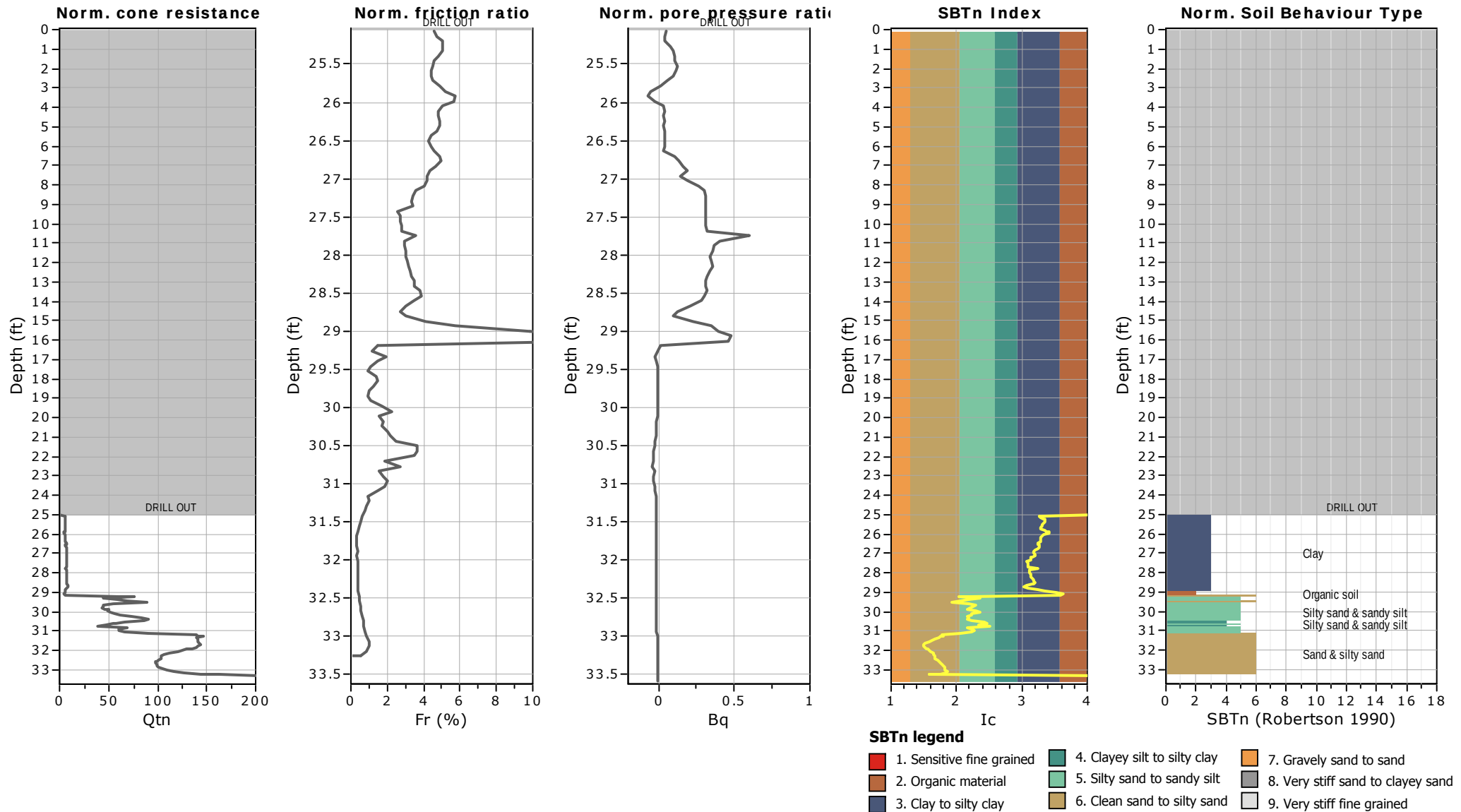


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-1

Total depth: 33.60 ft





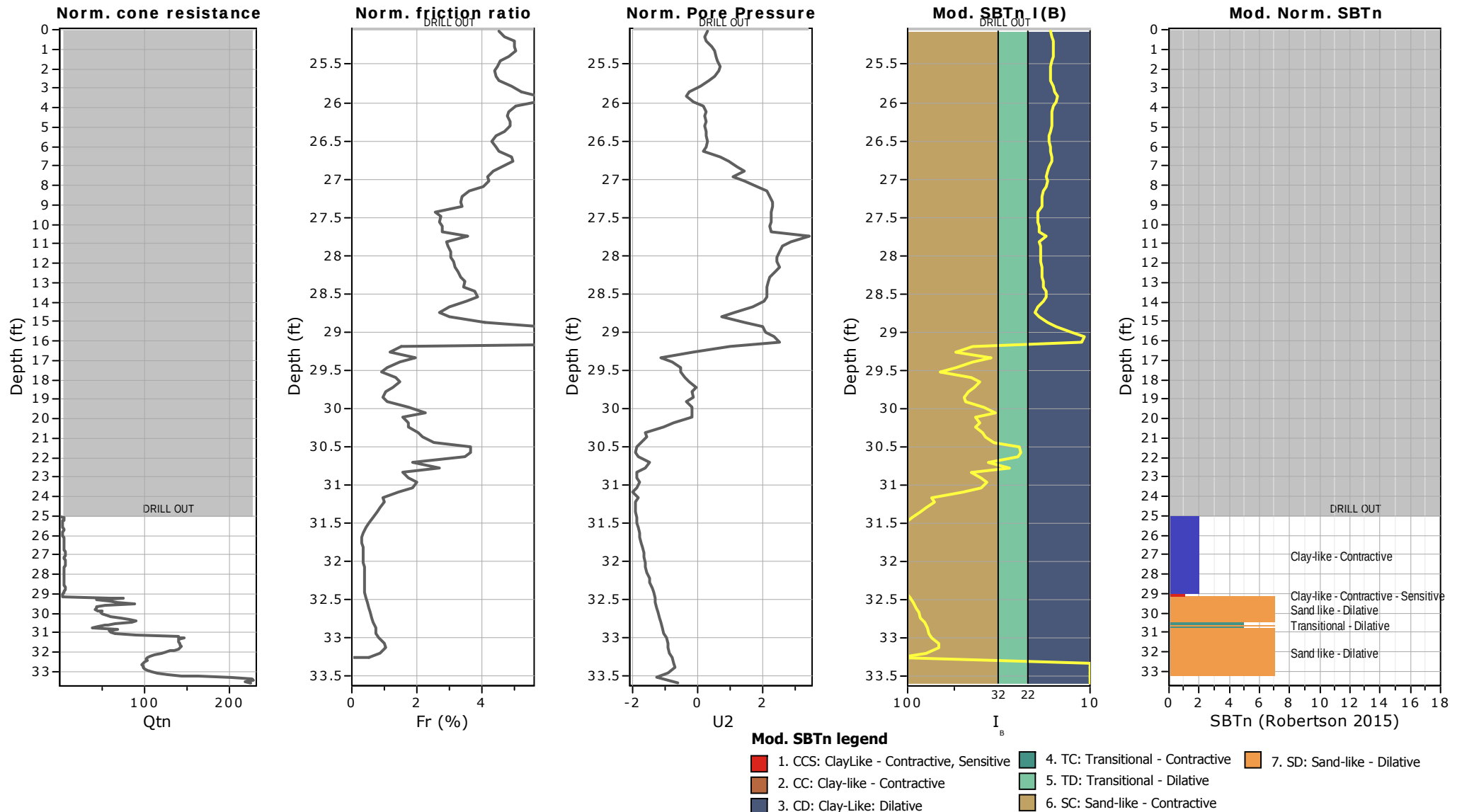
Craig Geotechnical Drilling
5435 Harding Hwy
Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft



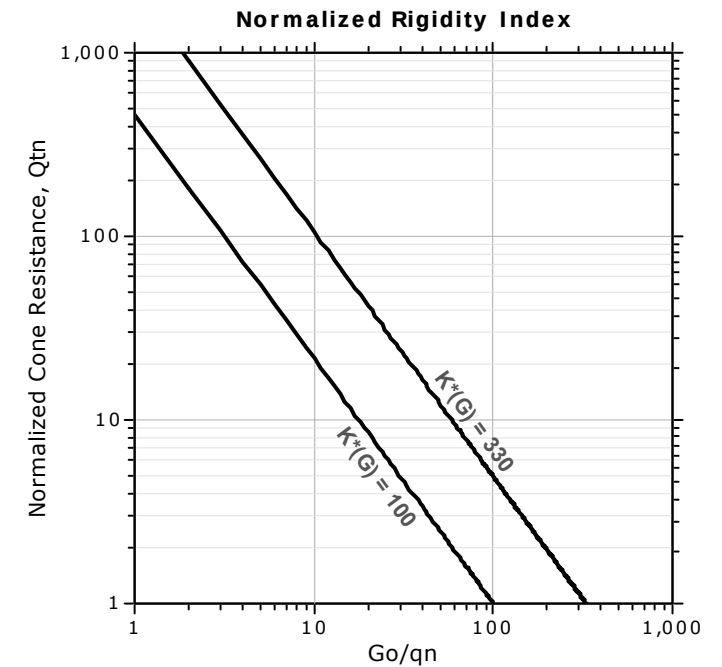
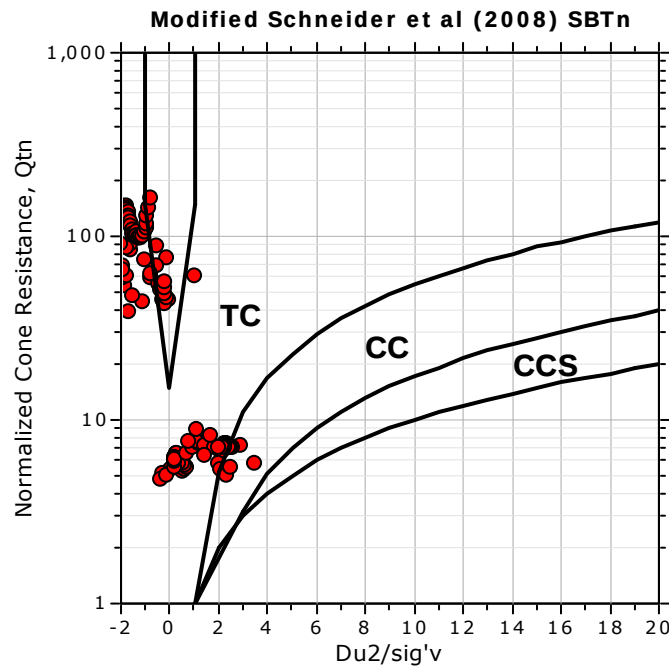
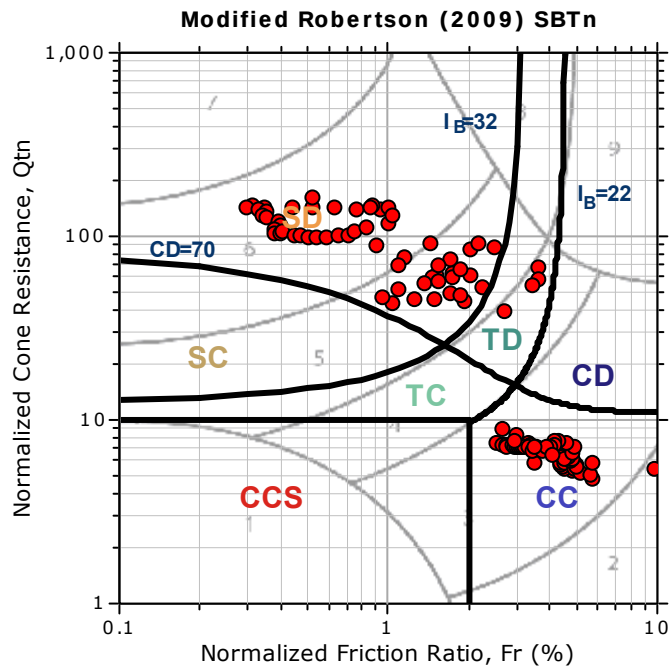
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative



Craig Geotechnical Drilling

5435 Harding Hwy

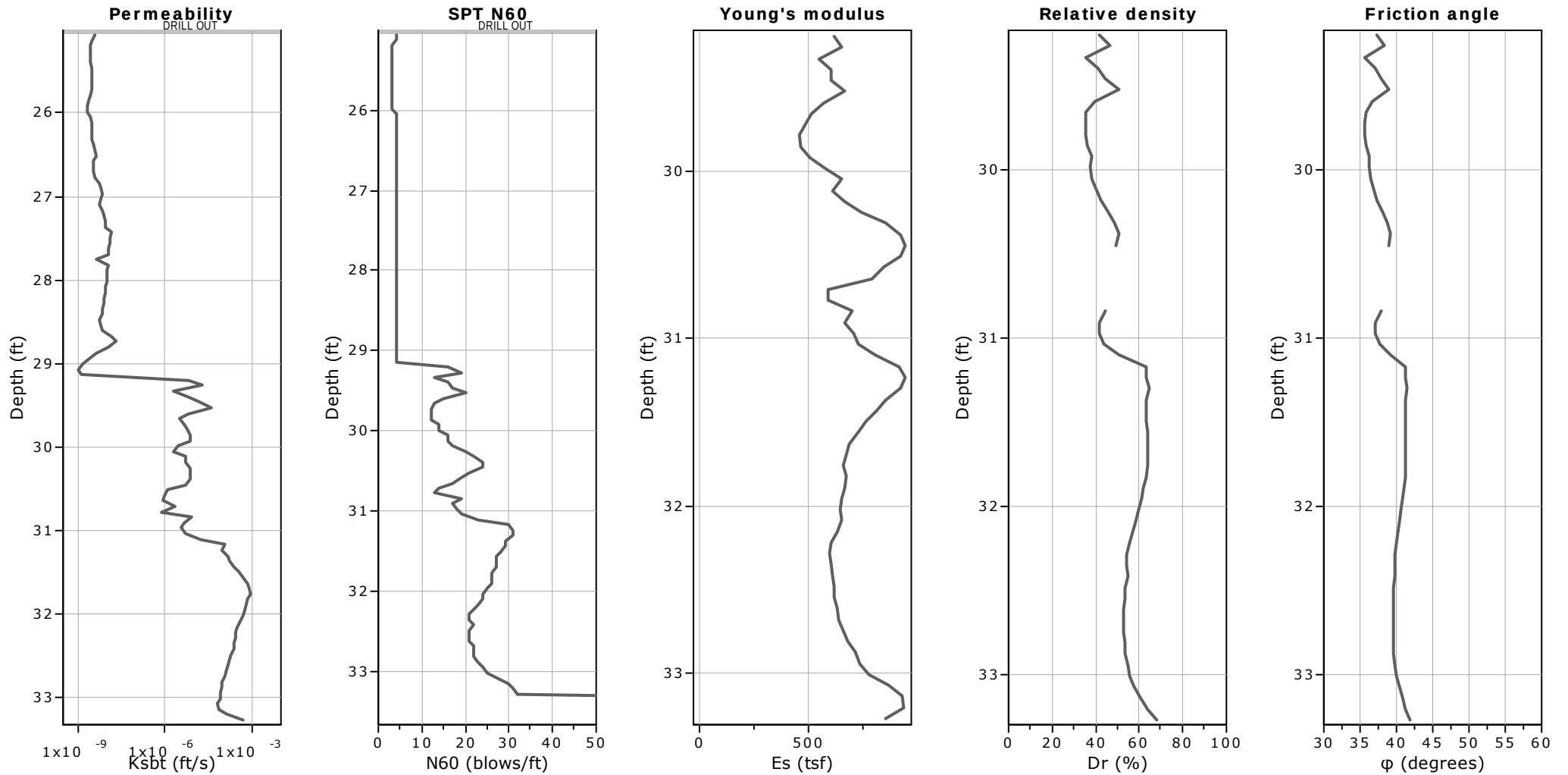
GEOTECHNICAL DRILLING CO., INC. Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft



Calculation parameters

Permeability: Based on SBT_n

SPT N₆₀: Based on I_c and q_t

Young's modulus: Based on variable alpha using I_c (Robertson, 2009)

Relative density constant, C_{Dr}: 350.0

Phi: Based on Kulhawy & Mayne (1990)

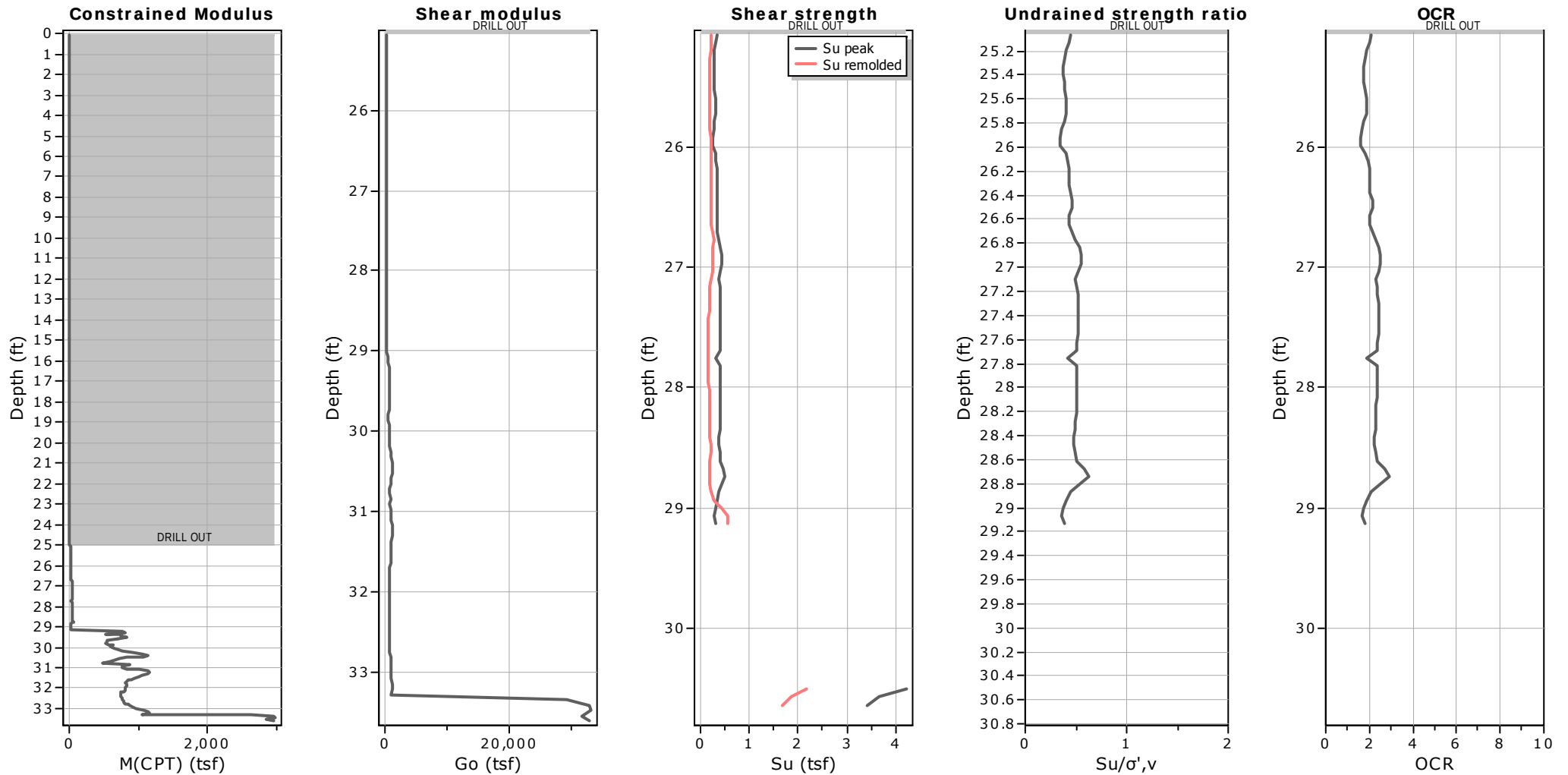
● User defined estimation data

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft



Calculation parameters

Constrained modulus: Based on variable α using I_c and Q_m (Robertson, 2009)

Go: Based on variable α using I_c (Robertson, 2009)

Undrained shear strength cone factor for clays, N_{kt} : 14

OCR factor for clays, N_{kt} : 0.33

—●— User defined estimation data

—●— Flat Dilatometer Test data



Craig Geotechnical Drilling

5435 Harding Hwy

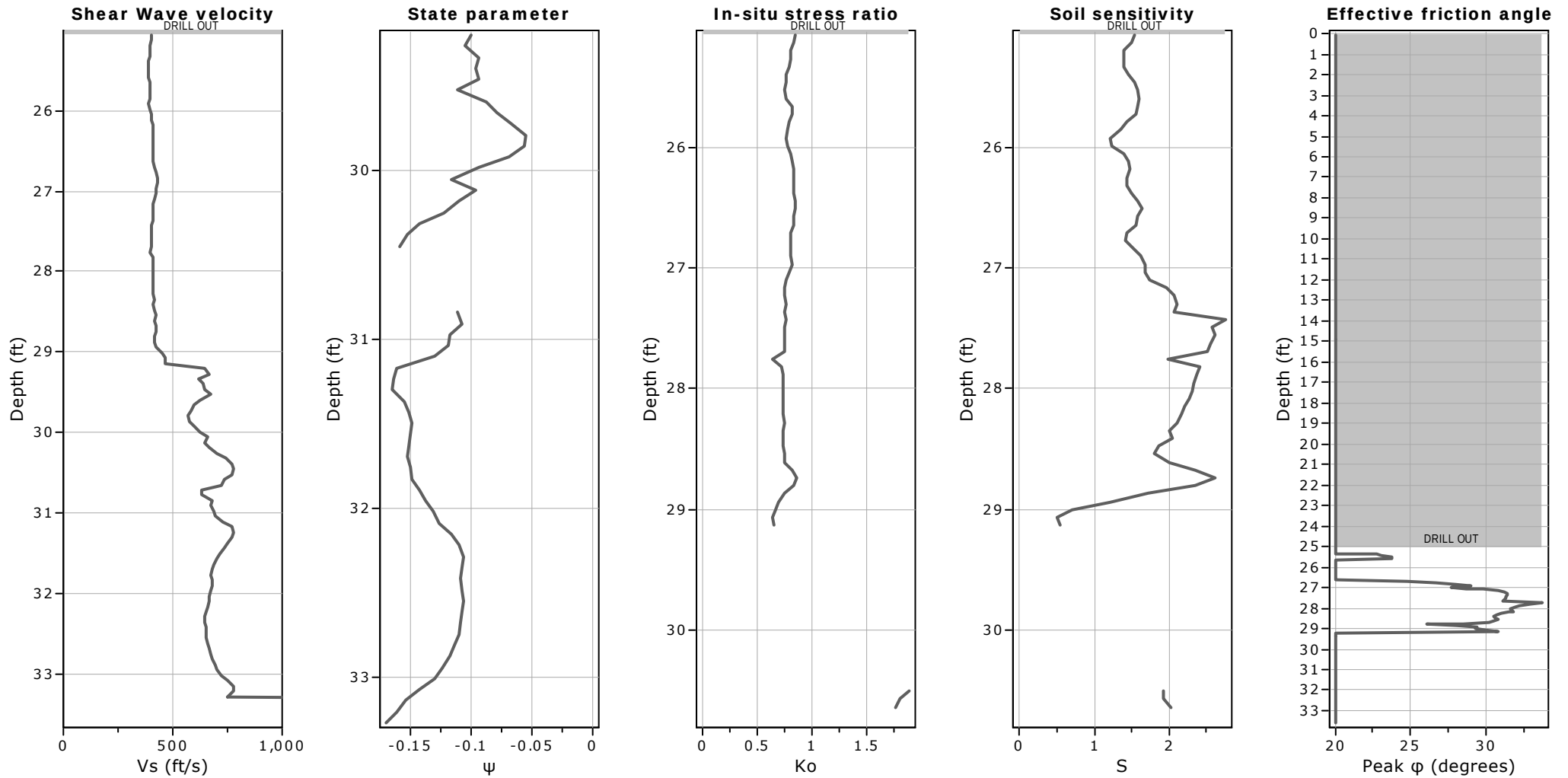
GEOTECHNICAL DRILLING CO., INC. Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft



Calculation parameters

Soil Sensitivity factor, N_s : 7.00

—●— User defined estimation data

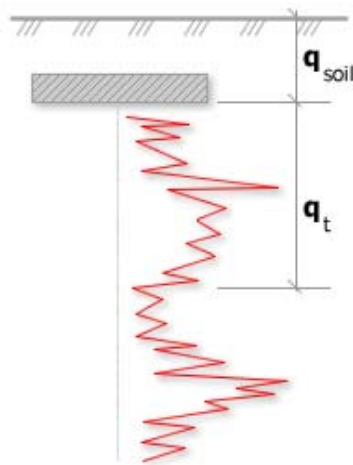


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-1

Total depth: 33.60 ft



Bearing Capacity calculation is performed based on the formula:

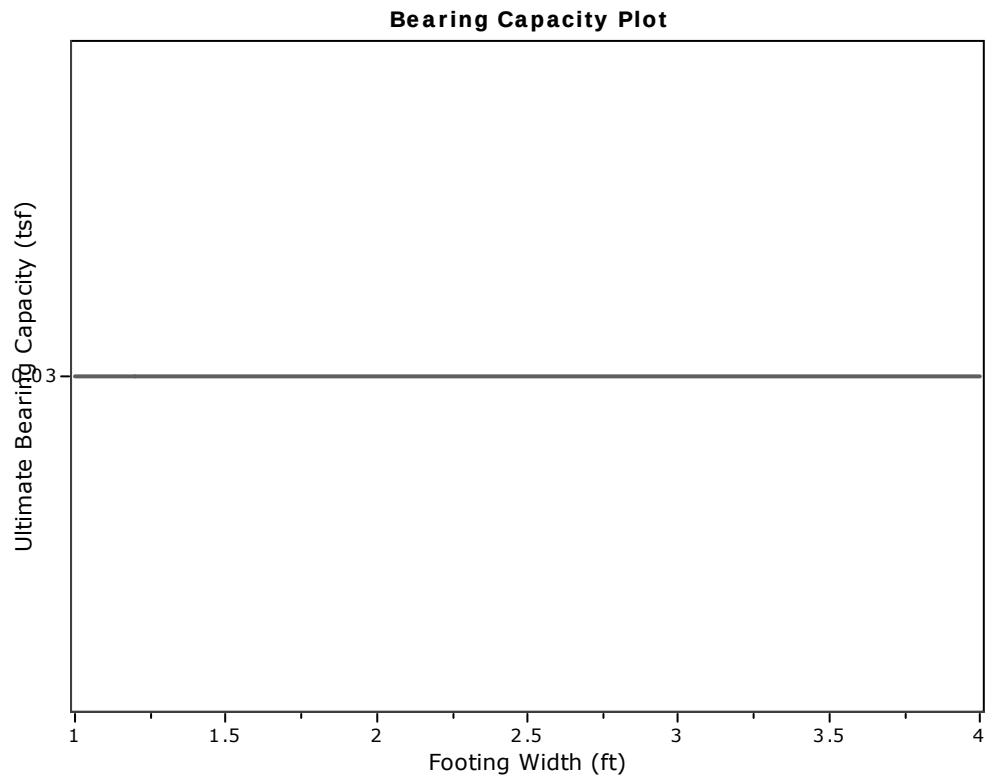
$$Q_{ult} = R_k \times q_t + q_{soil}$$

where:

R_k : Bearing capacity factor

q_t : Average corrected cone resistance over calculation depth

q_{soil} : Pressure applied by soil above footing



:: Tabular results ::

No	B (ft)	Start Depth (ft)	End Depth (ft)	Ave. q_t (tsf)	R_k	Soil Press. (tsf)	Ult. bearing cap. (tsf)
1	1.00	0.50	2.00	0.00	0.20	0.03	0.03
2	1.20	0.50	2.30	0.00	0.20	0.03	0.03
3	1.40	0.50	2.60	0.00	0.20	0.03	0.03
4	1.60	0.50	2.90	0.00	0.20	0.03	0.03
5	1.80	0.50	3.20	0.00	0.20	0.03	0.03
6	2.00	0.50	3.50	0.00	0.20	0.03	0.03
7	2.20	0.50	3.80	0.00	0.20	0.03	0.03
8	2.40	0.50	4.10	0.00	0.20	0.03	0.03
9	2.60	0.50	4.40	0.00	0.20	0.03	0.03
10	2.80	0.50	4.70	0.00	0.20	0.03	0.03
11	3.00	0.50	5.00	0.00	0.20	0.03	0.03
12	3.20	0.50	5.30	0.00	0.20	0.03	0.03
13	3.40	0.50	5.60	0.00	0.20	0.03	0.03
14	3.60	0.50	5.90	0.00	0.20	0.03	0.03
15	3.80	0.50	6.20	0.00	0.20	0.03	0.03
16	4.00	0.50	6.50	0.00	0.20	0.03	0.03

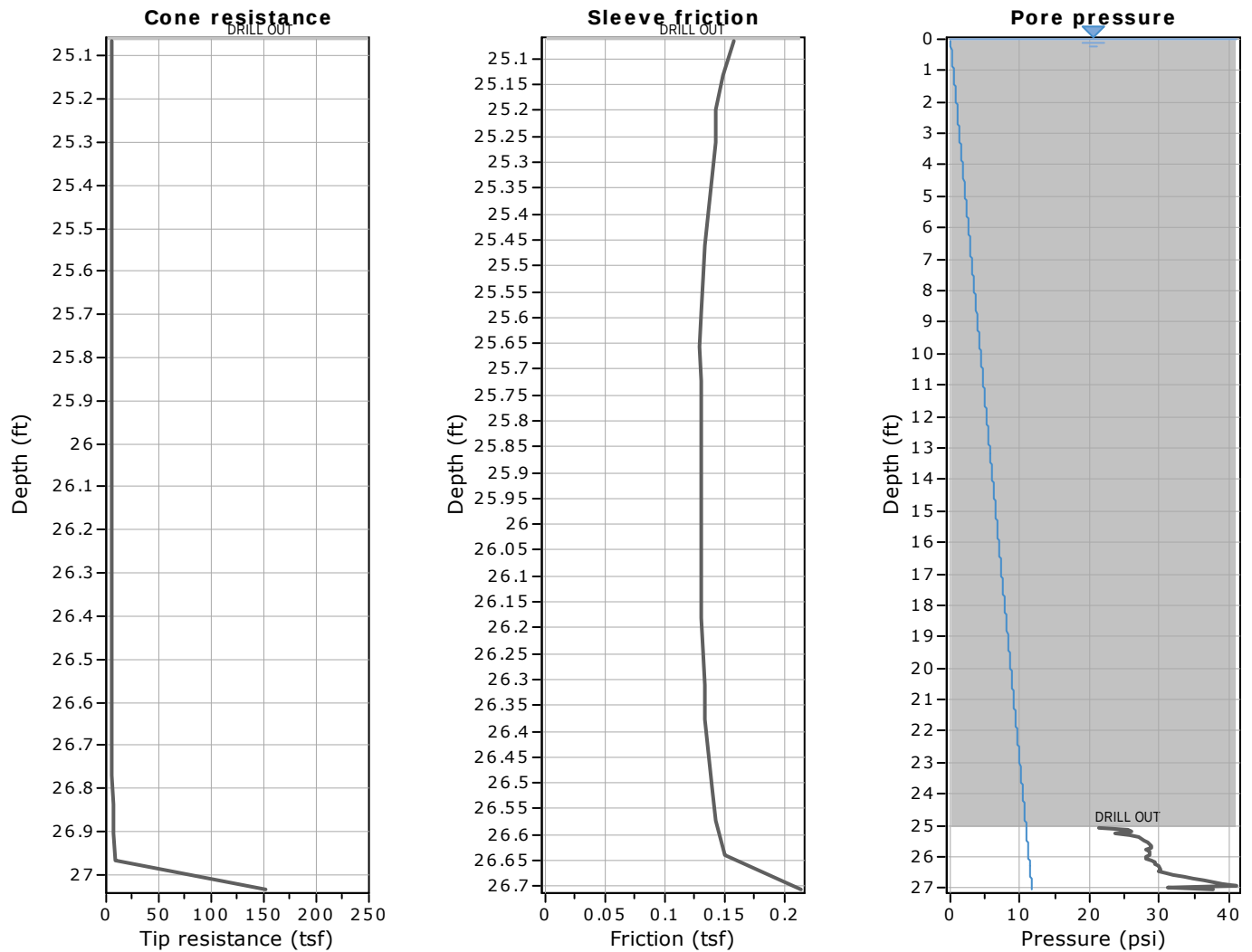


Project: GeoDesign

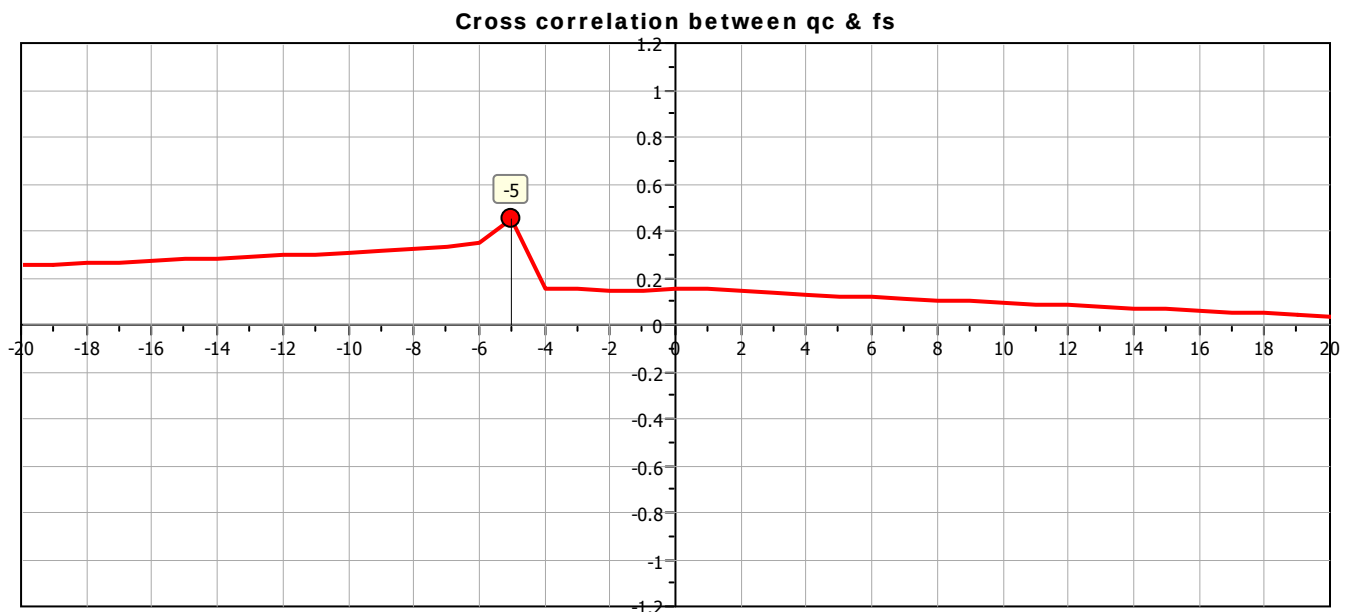
Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





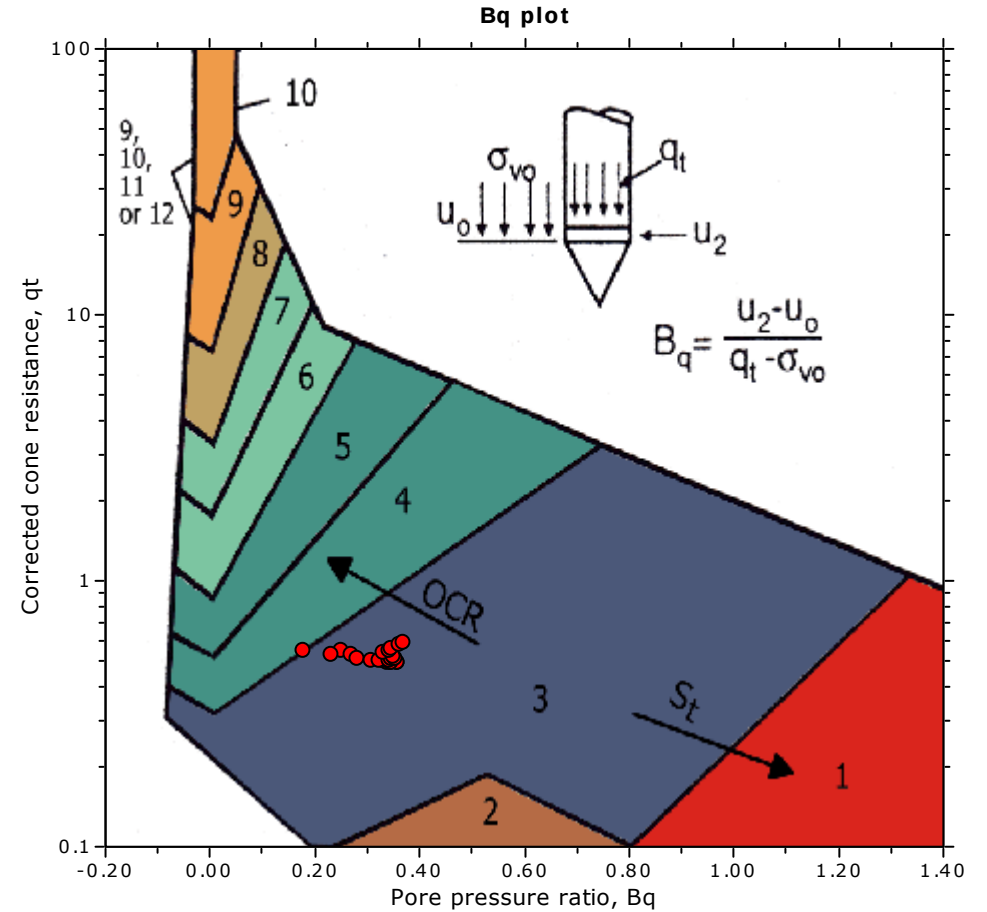
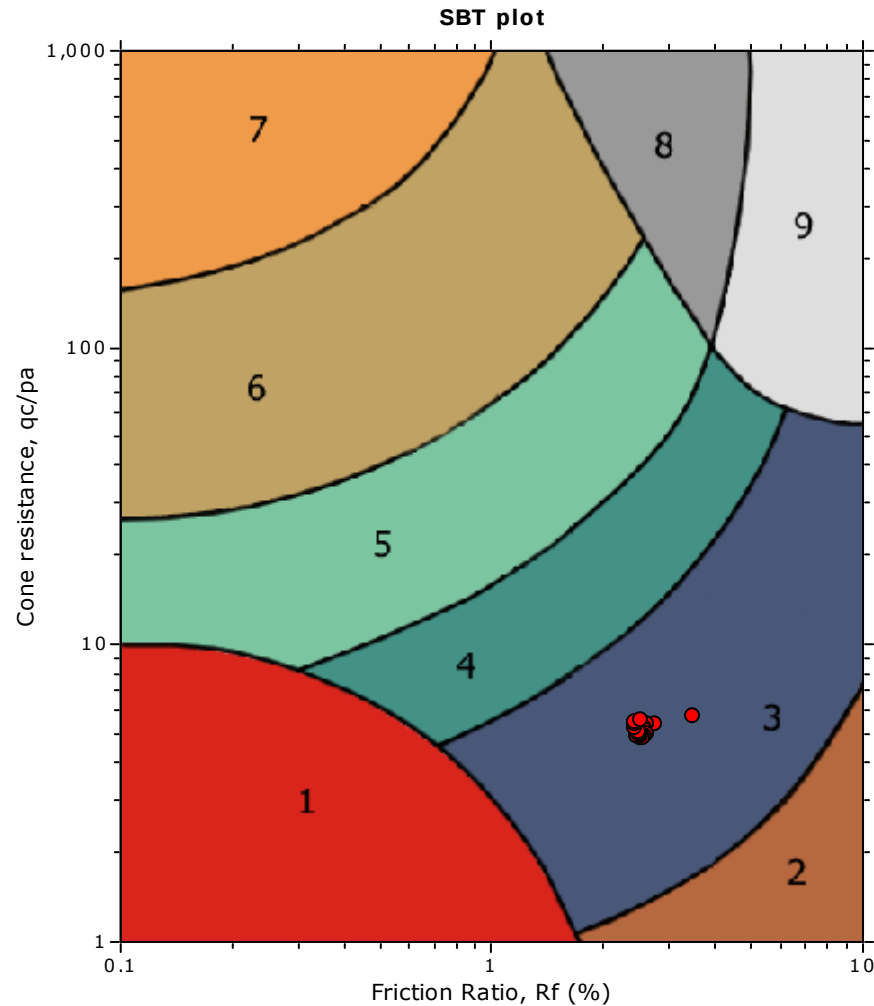
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft

SBT - Bq plots



SBT legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



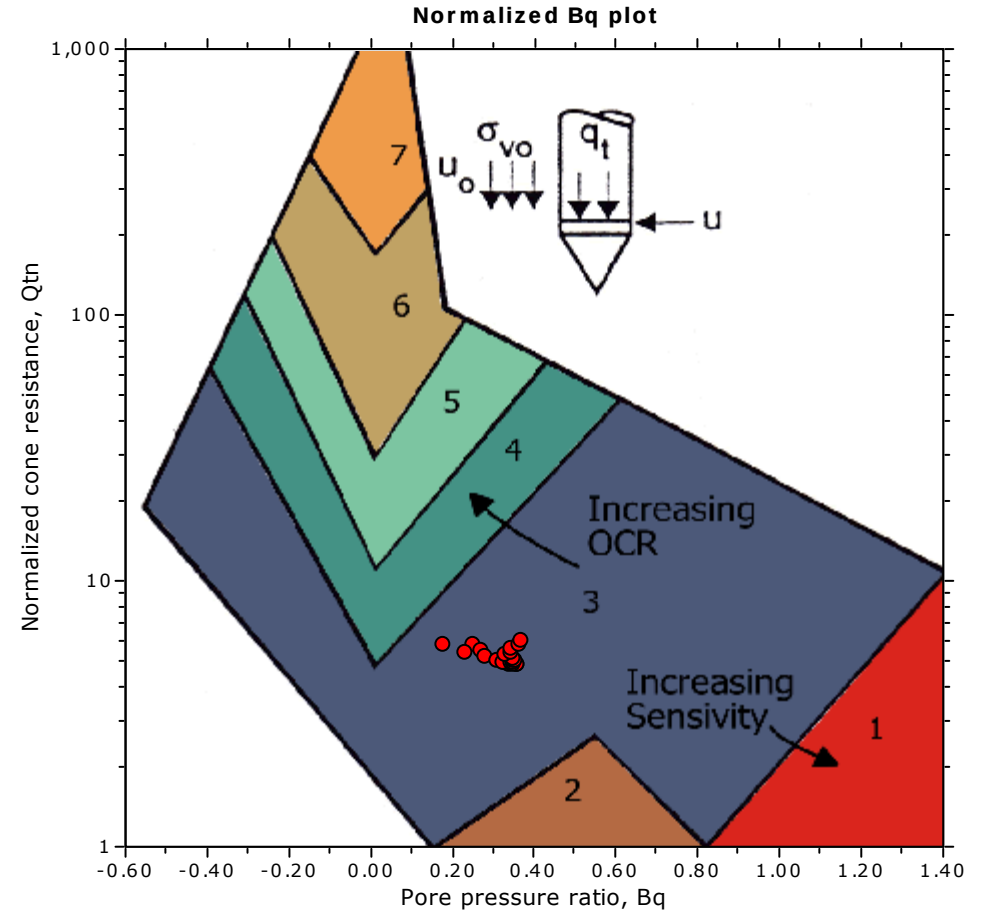
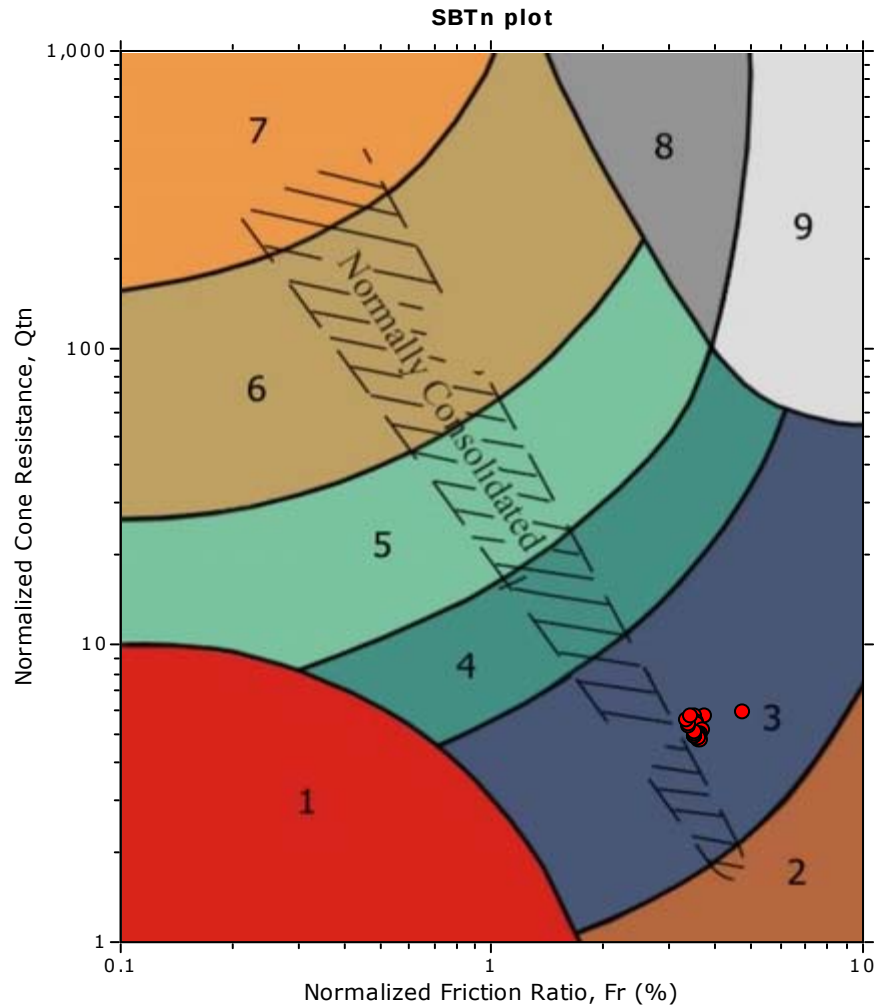
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-2

Total depth: 27.03 ft

SBT - Bq plots (normalized)



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



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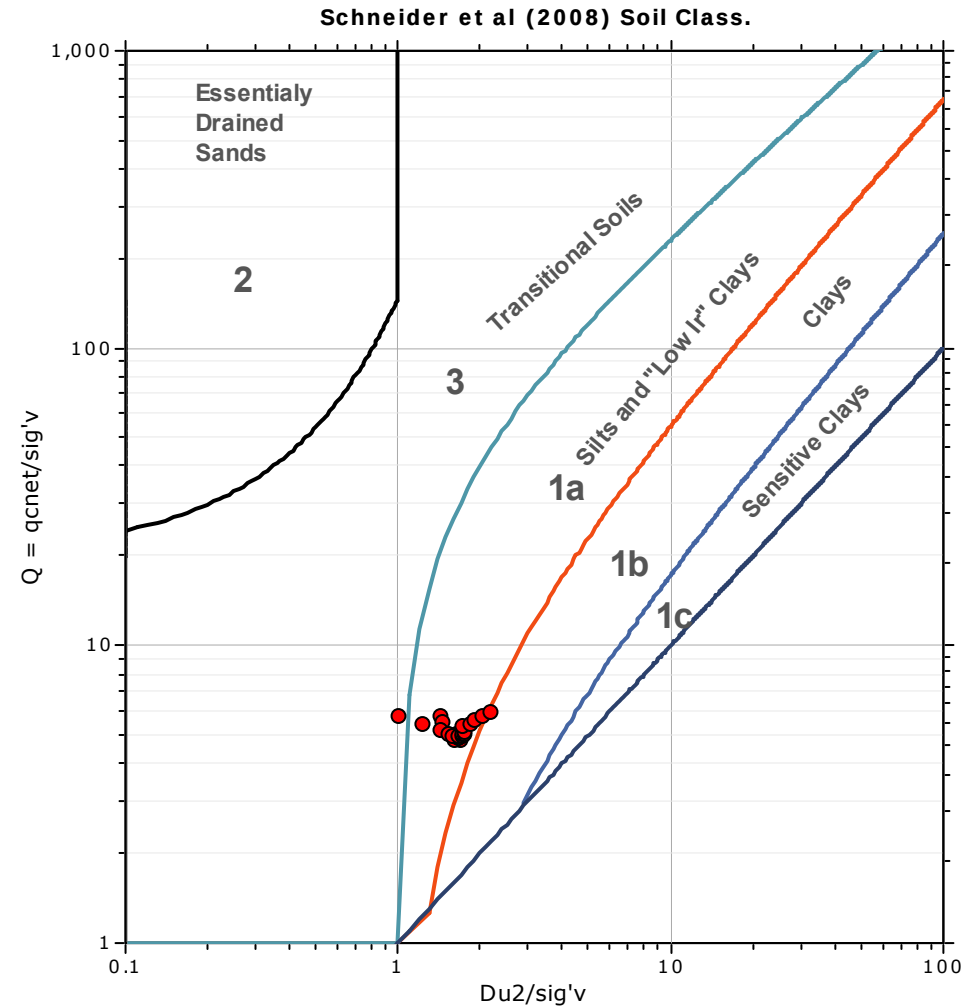
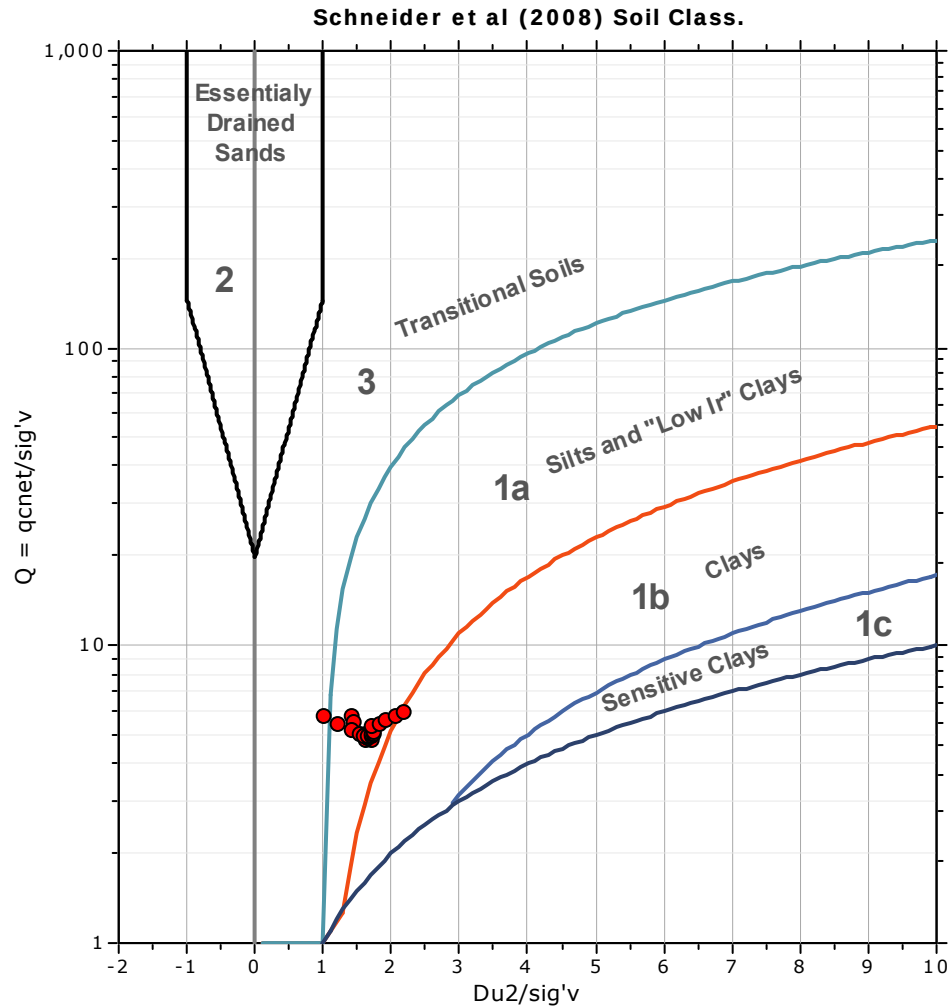
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-2

Total depth: 27.03 ft

Bq plots (Schneider)



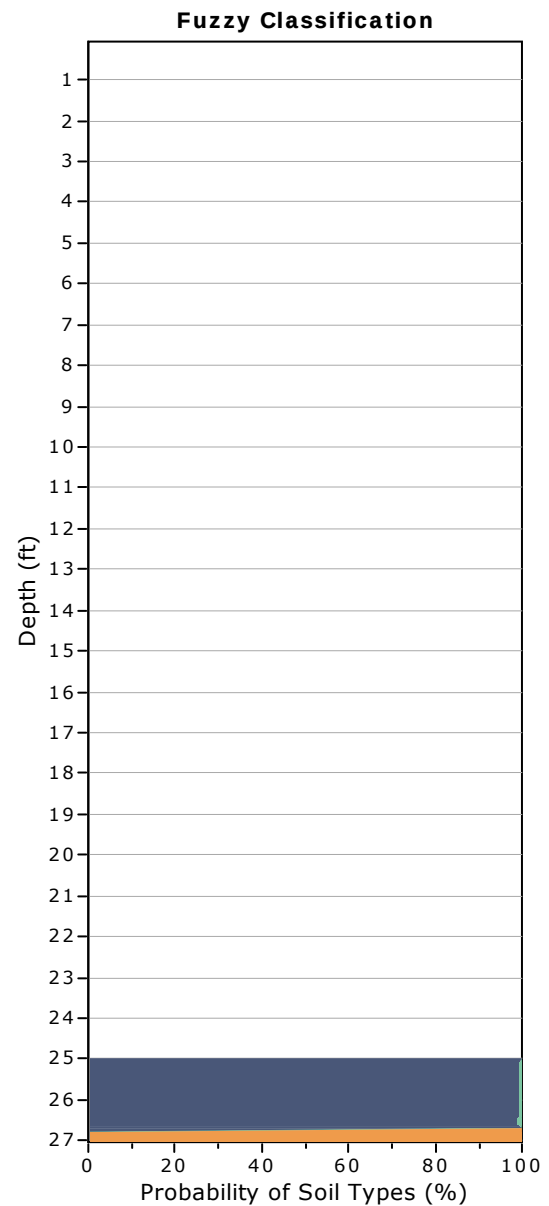
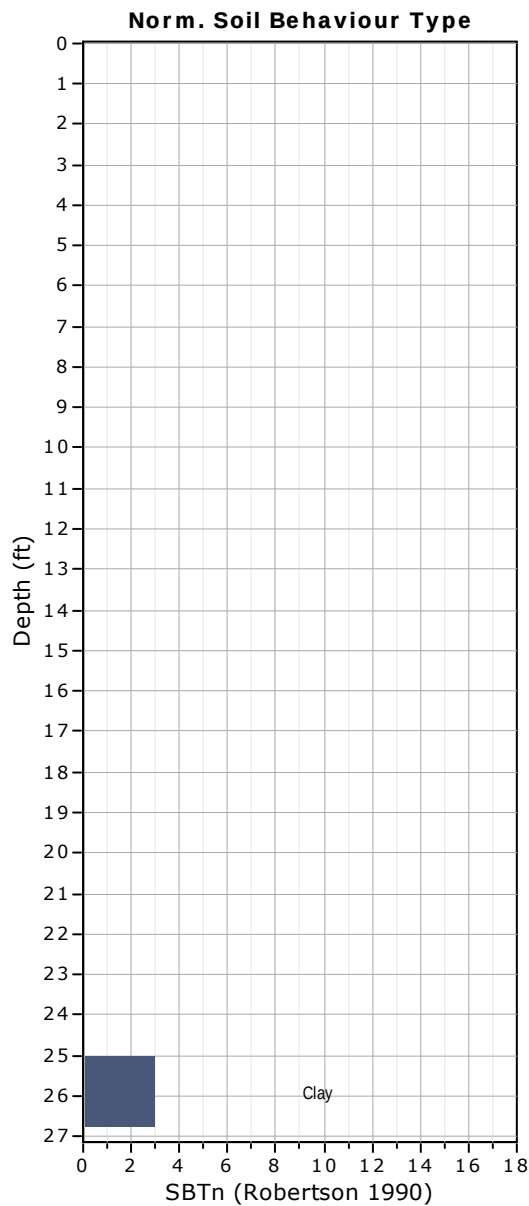


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-2

Total depth: 27.03 ft



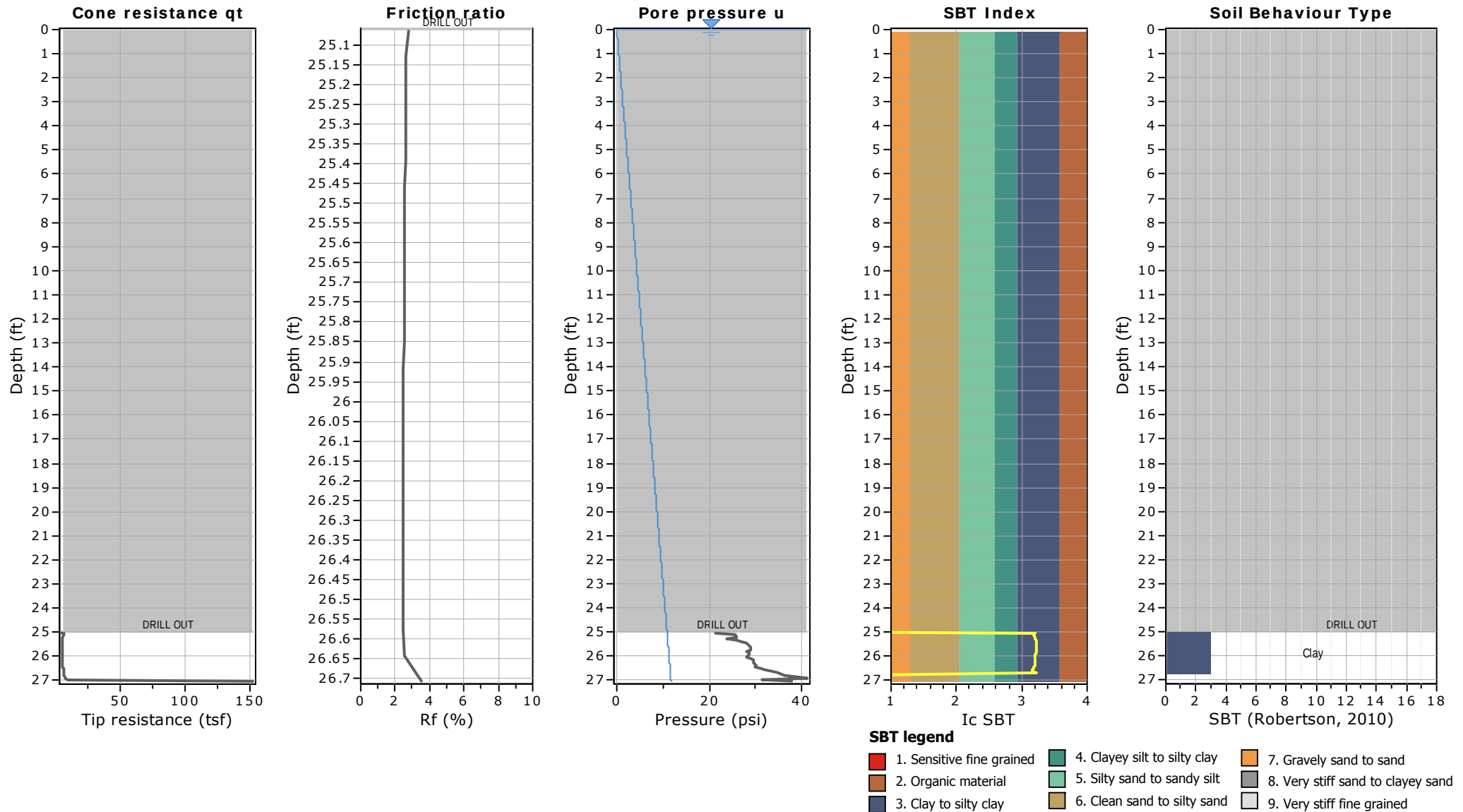


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft

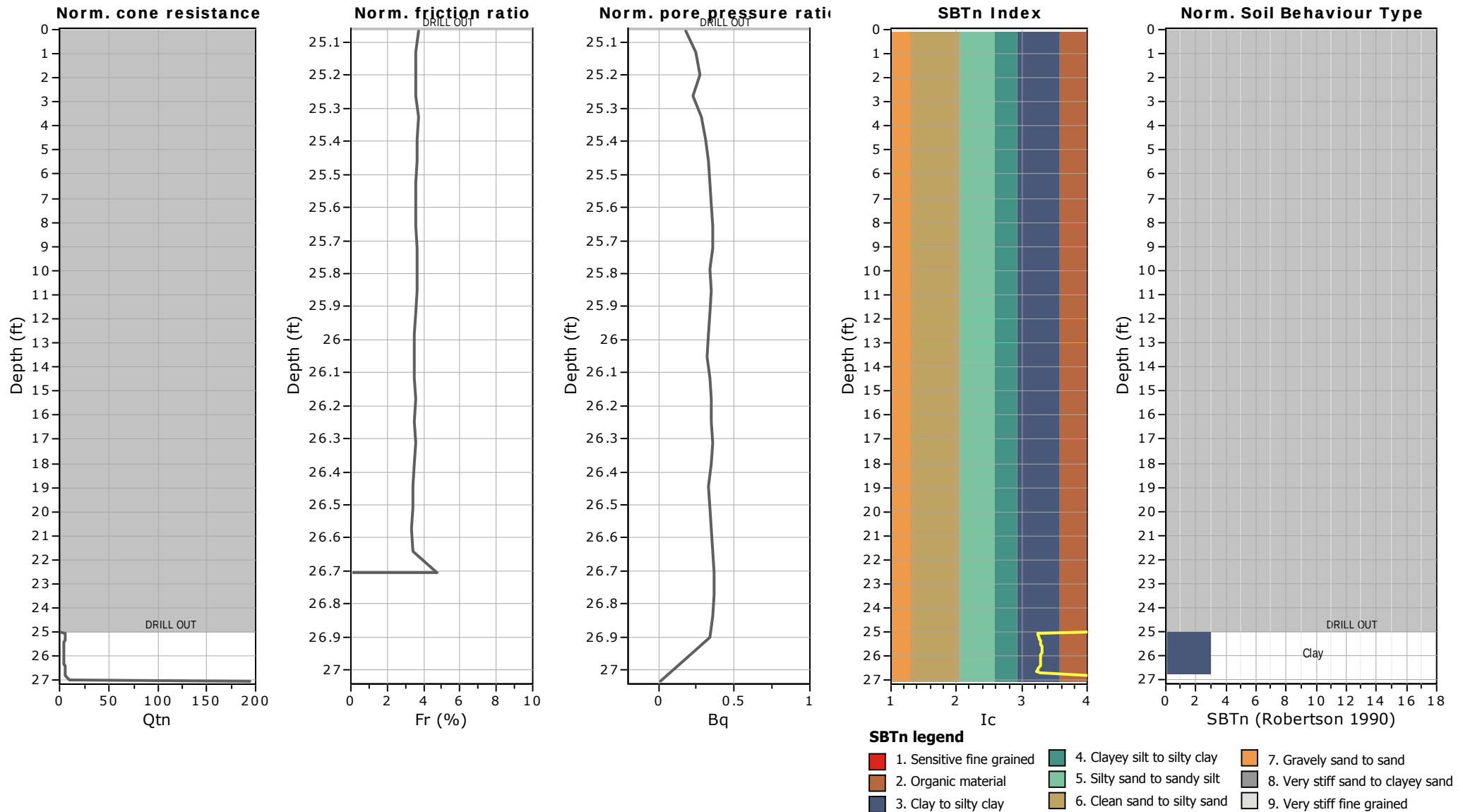


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-2

Total depth: 27.03 ft





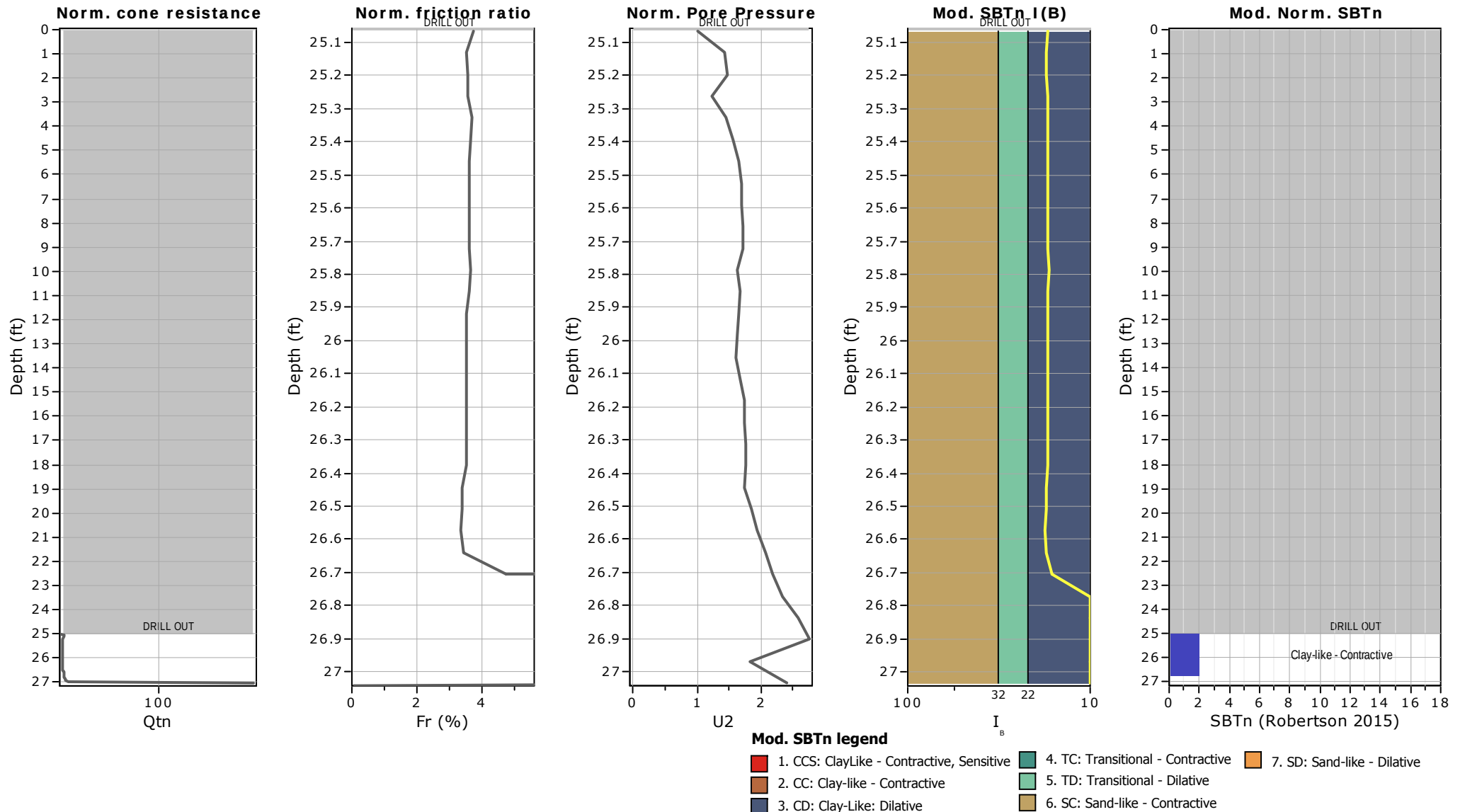
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Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft



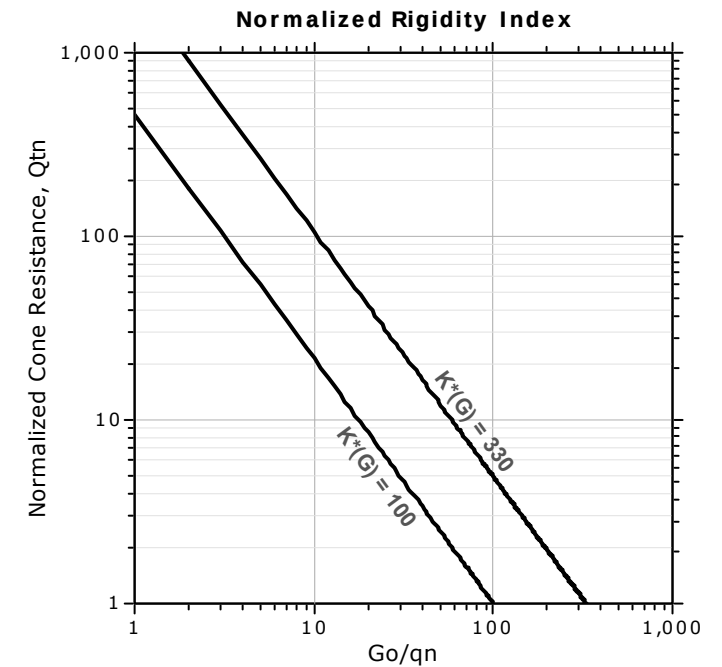
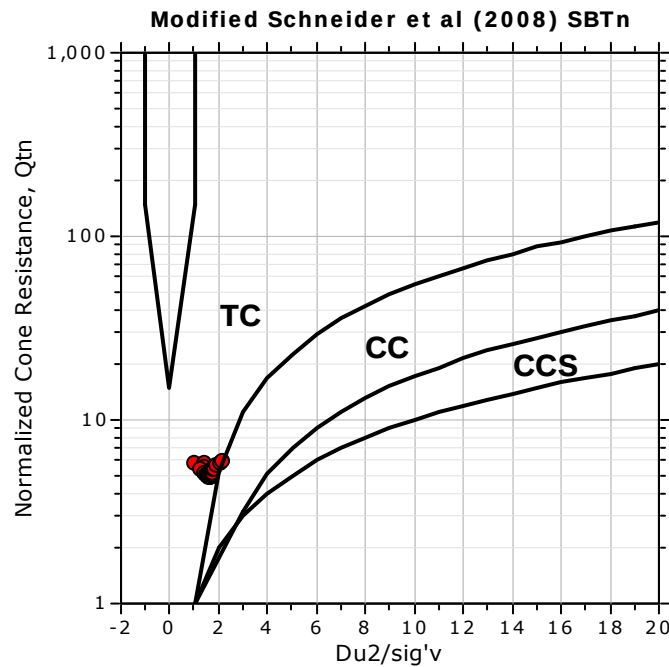
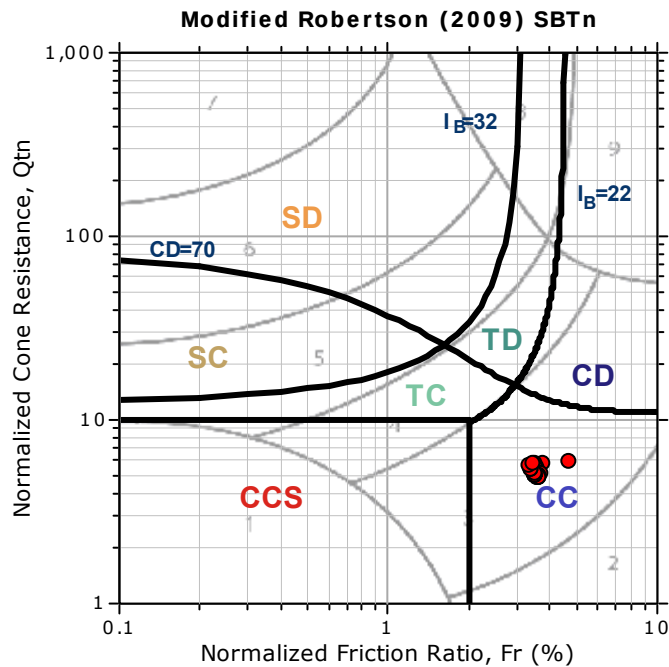
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

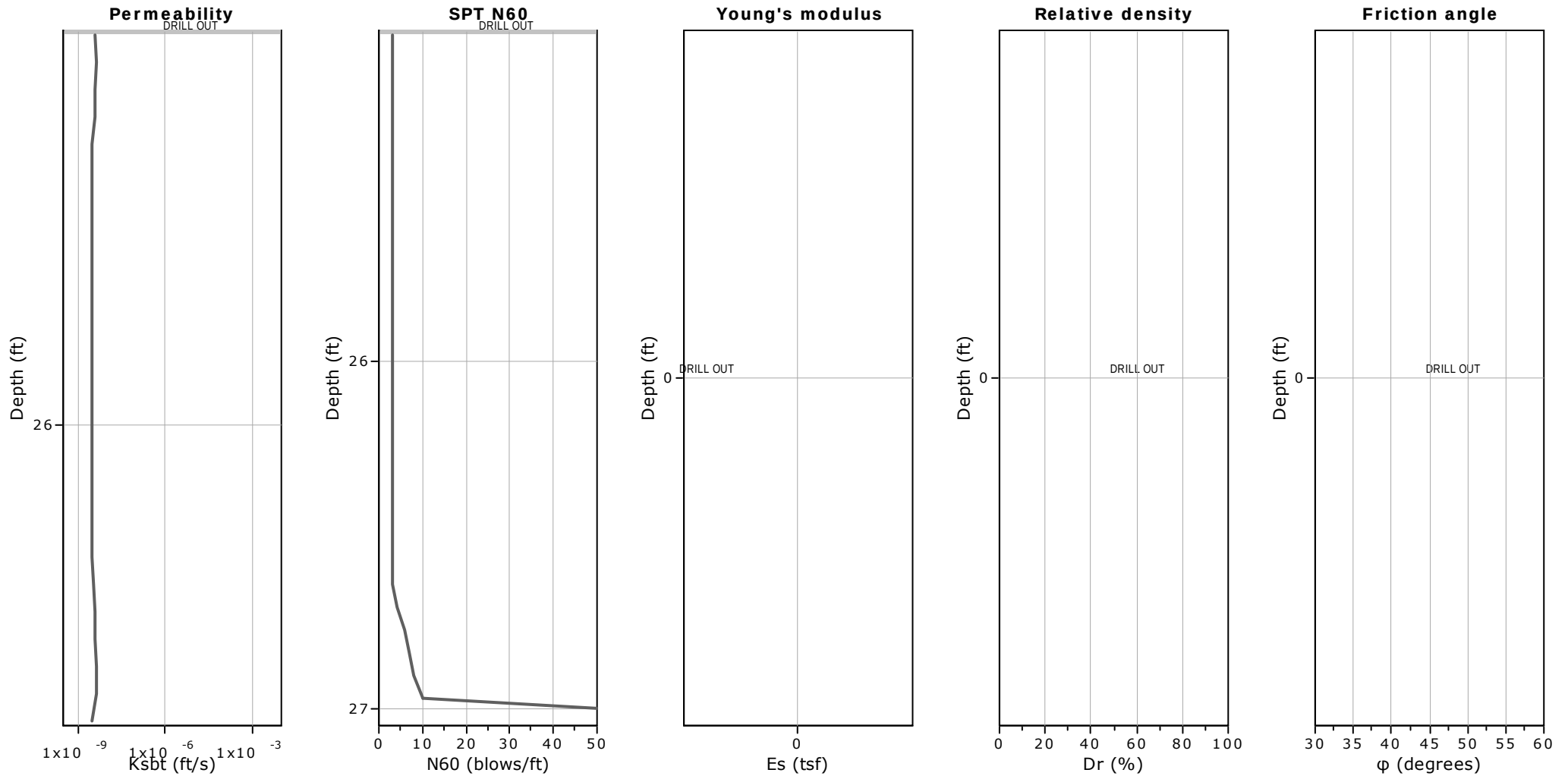


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft



Calculation parameters

Permeability: Based on SBT_n

SPT N_{60} : Based on I_c and q_t

Young's modulus: Based on variable alpha using I_c (Robertson, 2009)

Relative density constant, C_{Dr} : 350.0

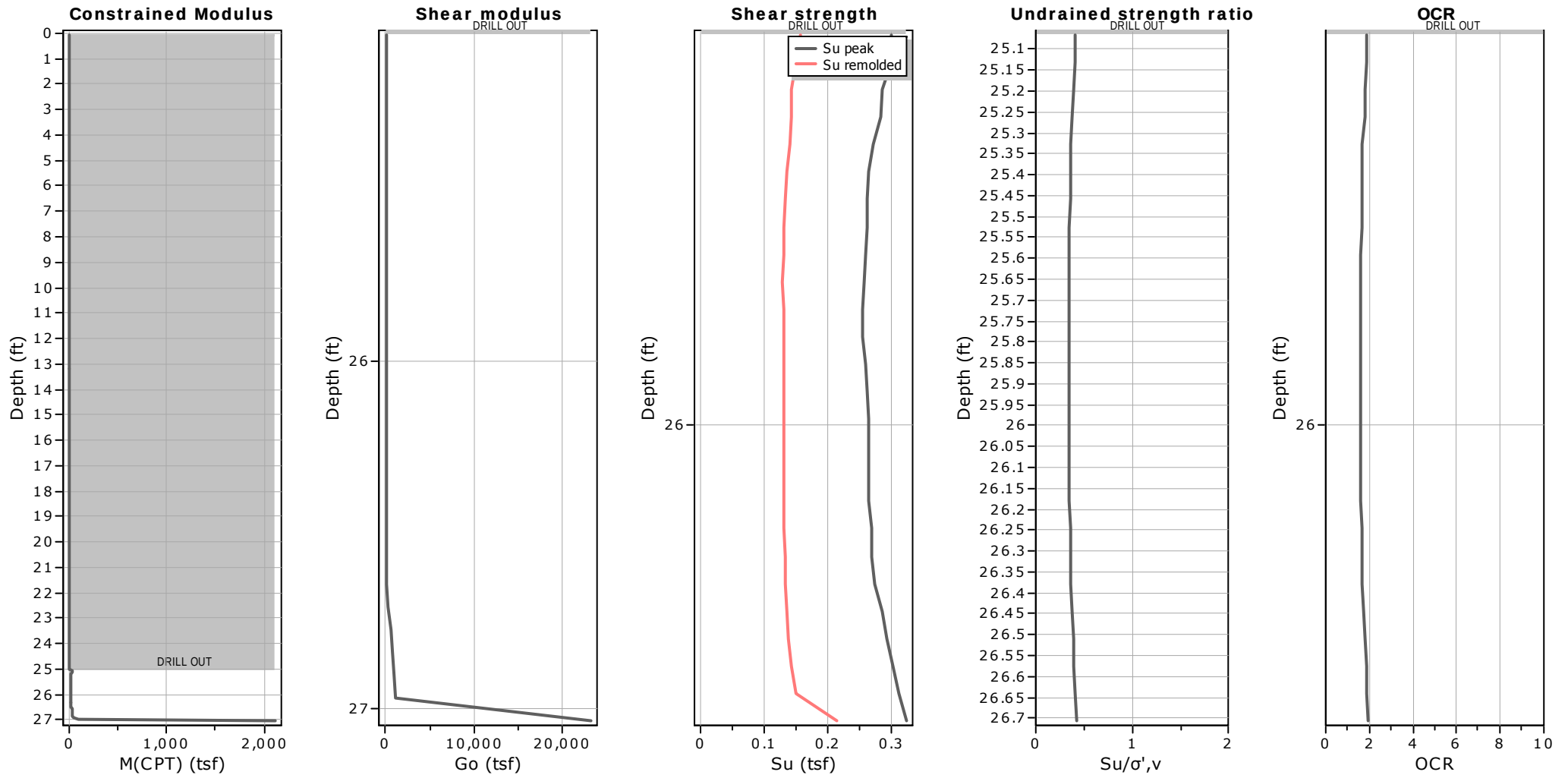
Phi: Based on Kulhawy & Mayne (1990)

—●— User defined estimation data

Project: GeoDesign
Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft



Calculation parameters

Constrained modulus: Based on variable α using I_c and Q_m (Robertson, 2009)

Go: Based on variable α using I_c (Robertson, 2009)

Undrained shear strength cone factor for clays, N_{kt} : 14

OCR factor for clays, N_{kt} : 0.33

—●— User defined estimation data

—●— Flat Dilatometer Test data

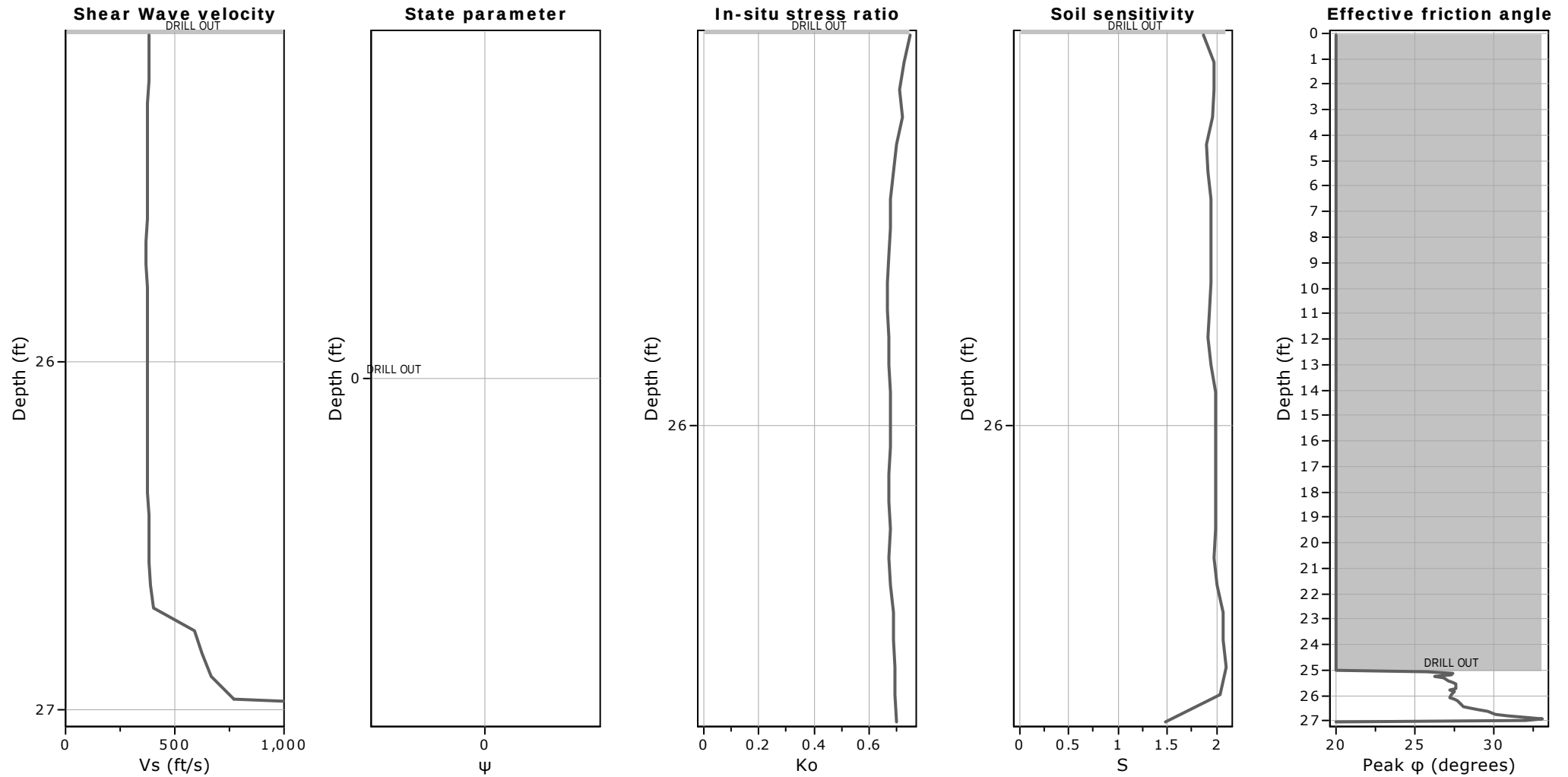


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft



Calculation parameters

Soil Sensitivity factor, N_s : 7.00

—●— User defined estimation data

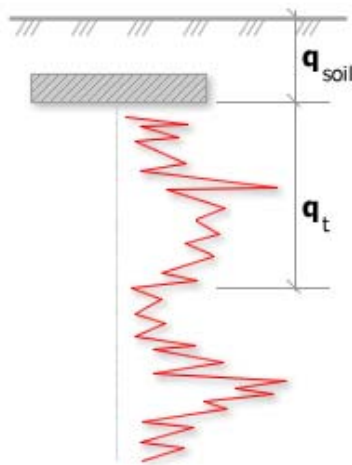


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-2

Total depth: 27.03 ft



Bearing Capacity calculation is performed based on the formula:

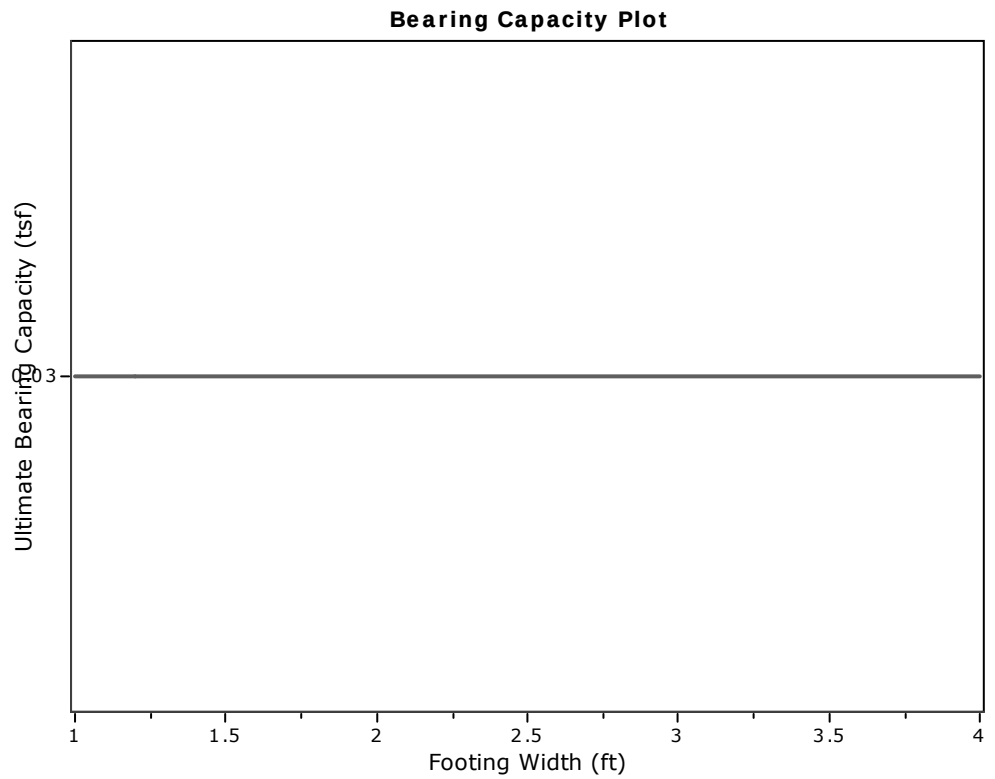
$$Q_{ult} = R_k \times q_t + q_{soil}$$

where:

R_k : Bearing capacity factor

q_t : Average corrected cone resistance over calculation depth

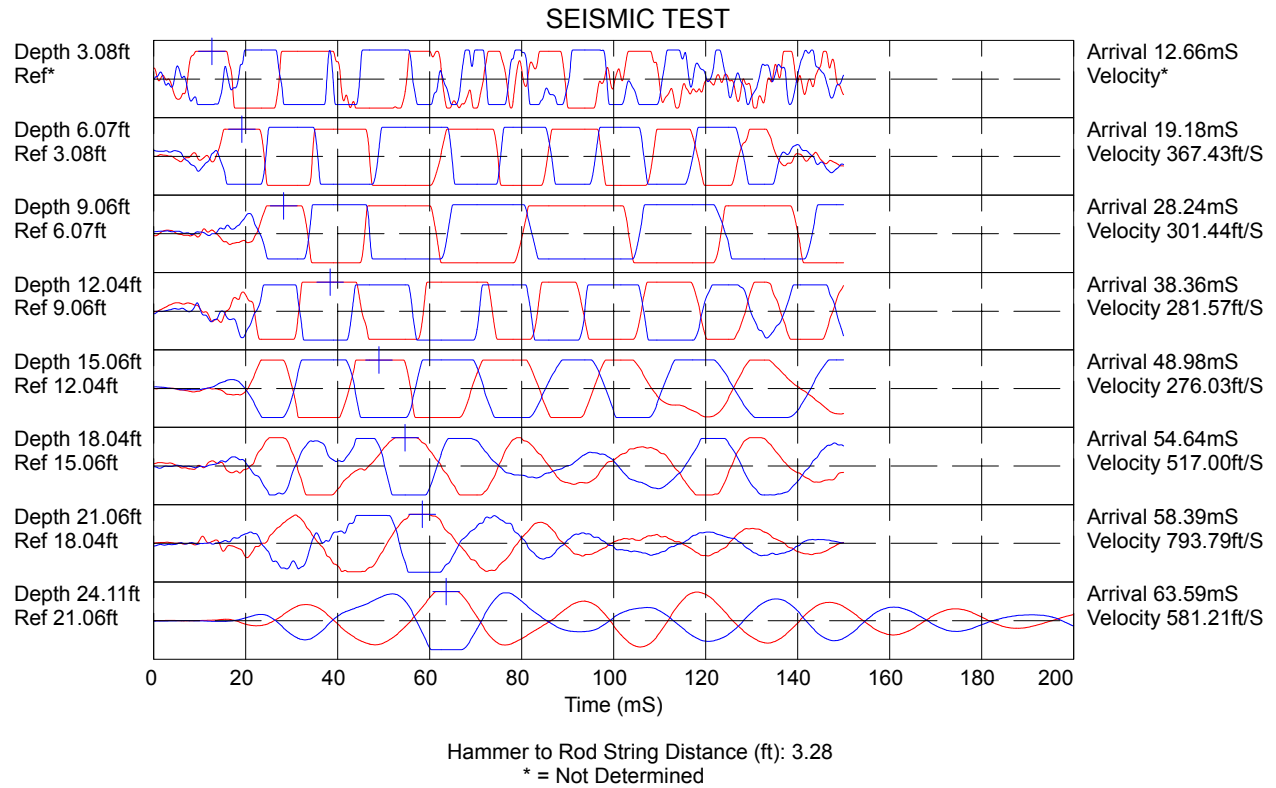
q_{soil} : Pressure applied by soil above footing



:: Tabular results ::

No	B (ft)	Start Depth (ft)	End Depth (ft)	Ave. q_t (tsf)	R_k	Soil Press. (tsf)	Ult. bearing cap. (tsf)
1	1.00	0.50	2.00	0.00	0.20	0.03	0.03
2	1.20	0.50	2.30	0.00	0.20	0.03	0.03
3	1.40	0.50	2.60	0.00	0.20	0.03	0.03
4	1.60	0.50	2.90	0.00	0.20	0.03	0.03
5	1.80	0.50	3.20	0.00	0.20	0.03	0.03
6	2.00	0.50	3.50	0.00	0.20	0.03	0.03
7	2.20	0.50	3.80	0.00	0.20	0.03	0.03
8	2.40	0.50	4.10	0.00	0.20	0.03	0.03
9	2.60	0.50	4.40	0.00	0.20	0.03	0.03
10	2.80	0.50	4.70	0.00	0.20	0.03	0.03
11	3.00	0.50	5.00	0.00	0.20	0.03	0.03
12	3.20	0.50	5.30	0.00	0.20	0.03	0.03
13	3.40	0.50	5.60	0.00	0.20	0.03	0.03
14	3.60	0.50	5.90	0.00	0.20	0.03	0.03
15	3.80	0.50	6.20	0.00	0.20	0.03	0.03
16	4.00	0.50	6.50	0.00	0.20	0.03	0.03

B3-2 SEISMIC TEST RESULTS

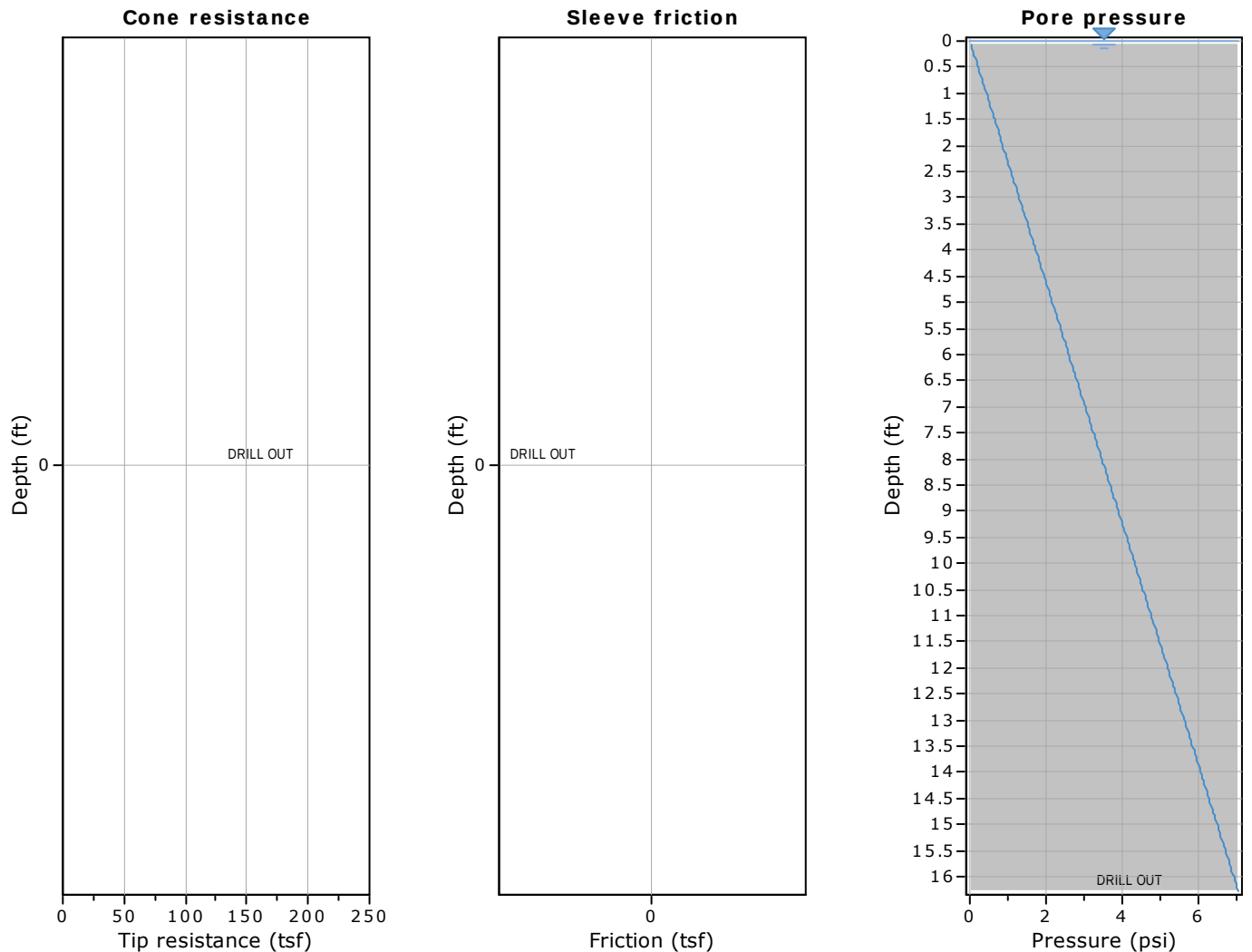


COMMENT:



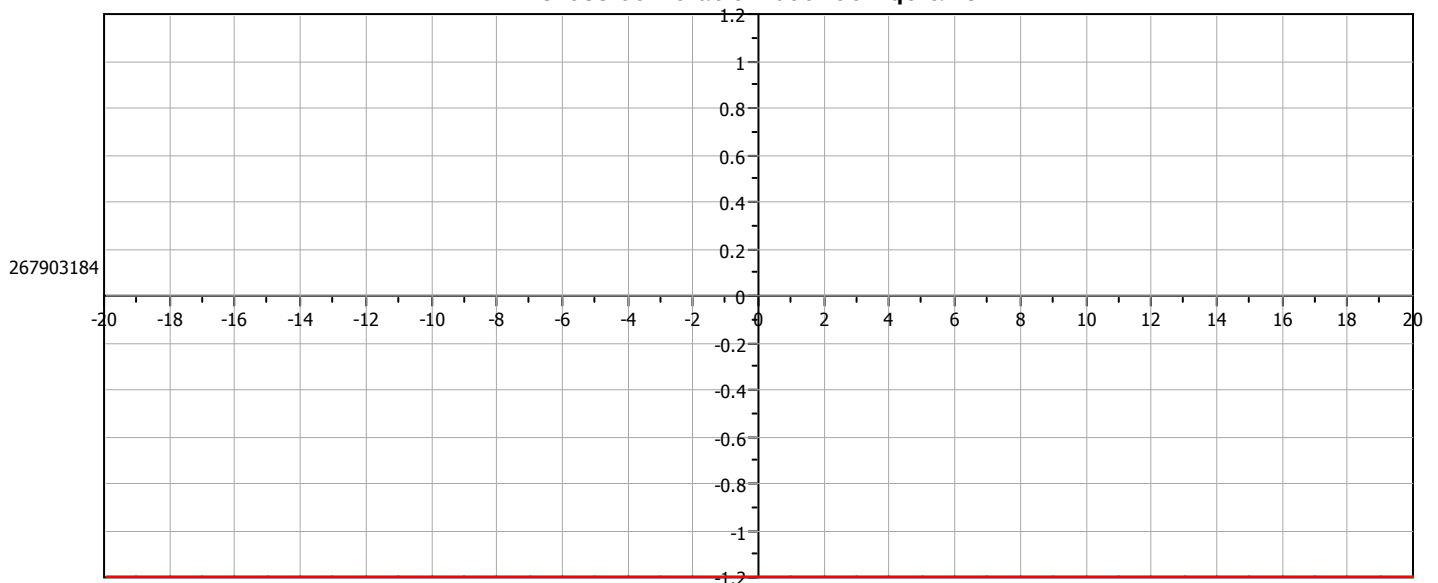
Project: GeoDesign
Location: Stevenson Commons, Bronx NY

B3-3
Total depth: 16.27 ft

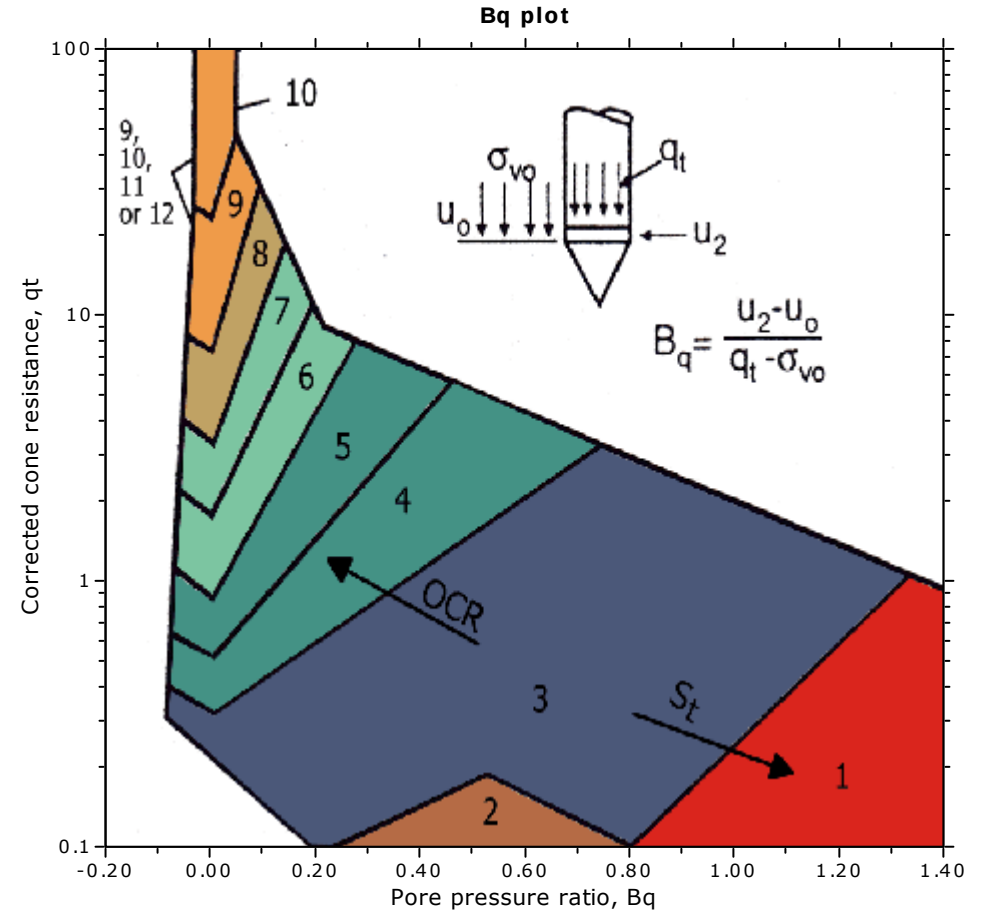
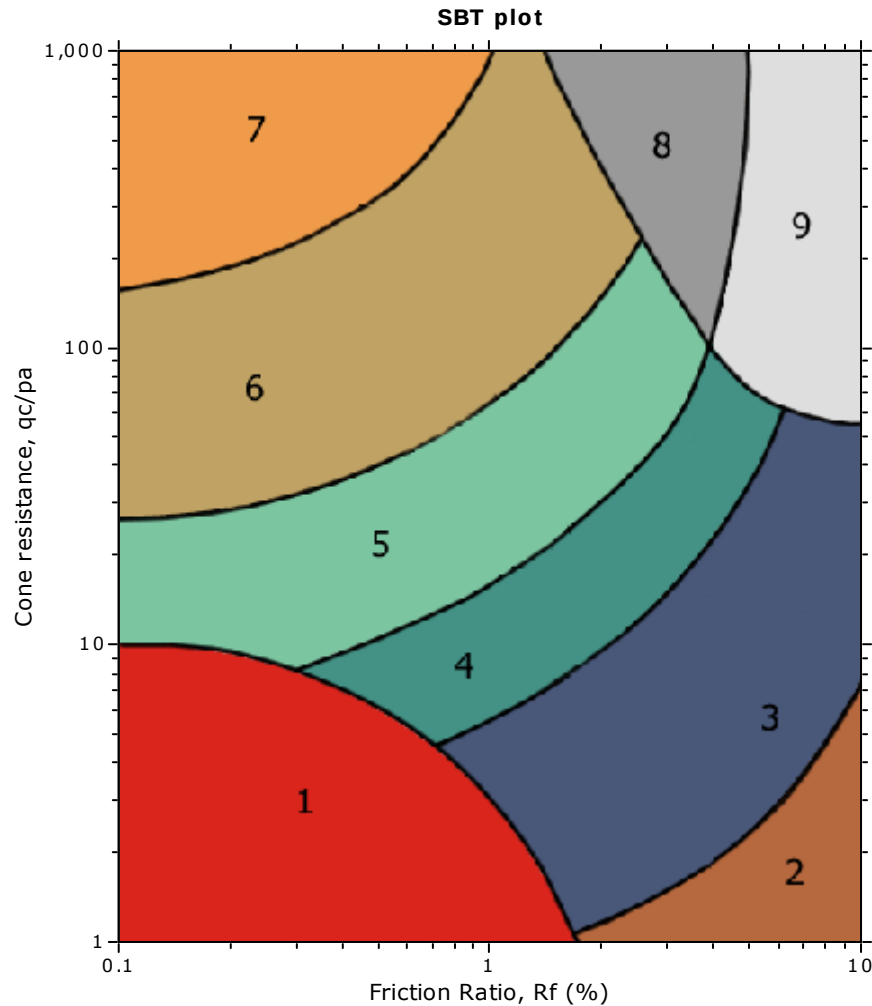


The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).

Cross correlation between qc & fs



SBT - Bq plots



SBT legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



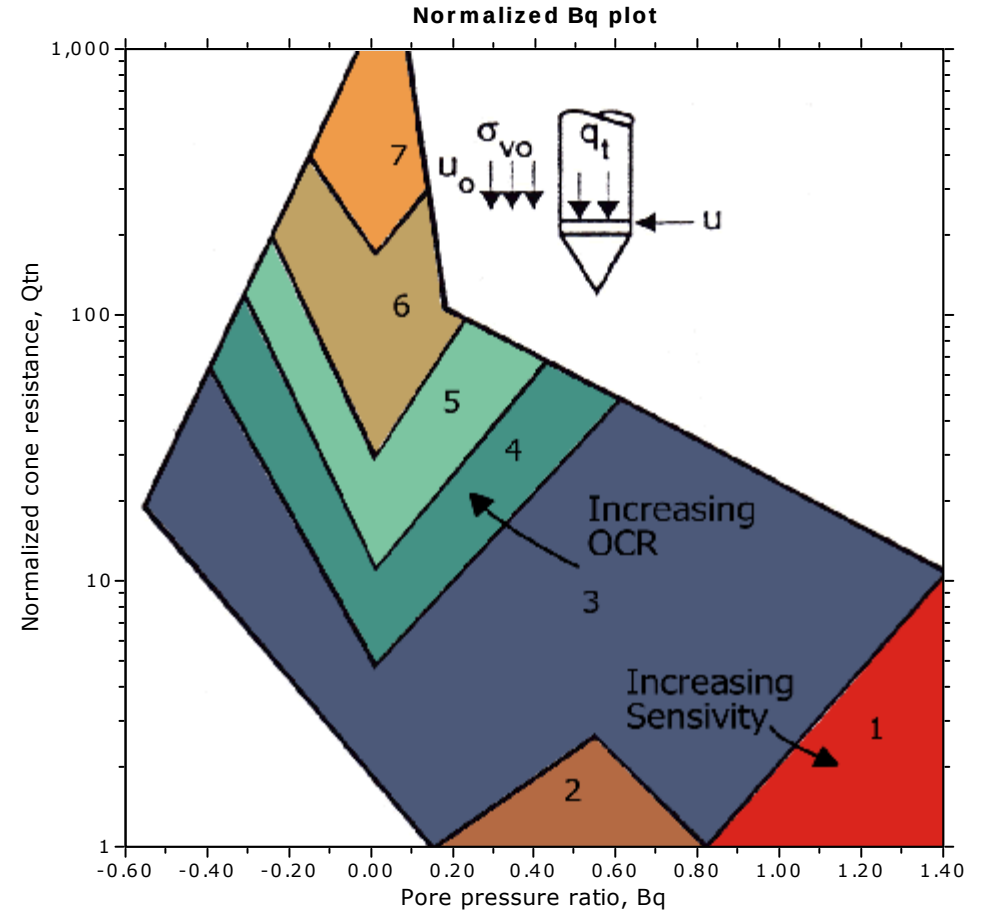
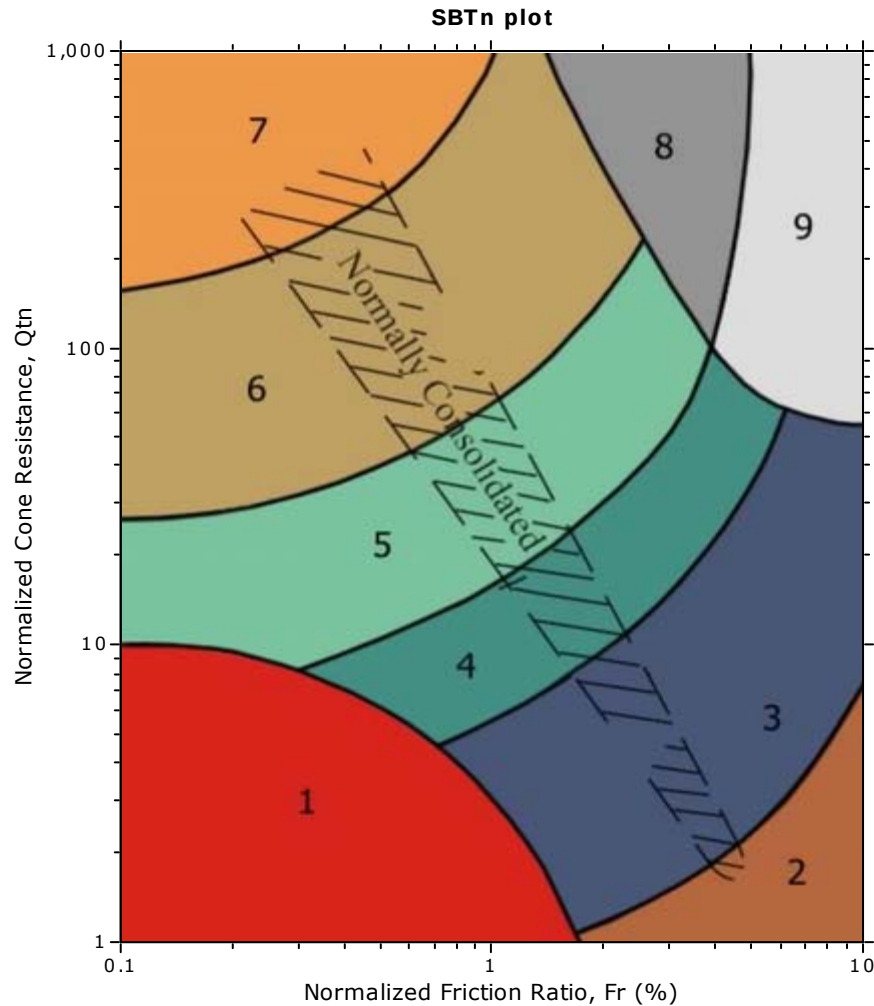
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-3

Total depth: 16.27 ft

SBT - Bq plots (normalized)



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



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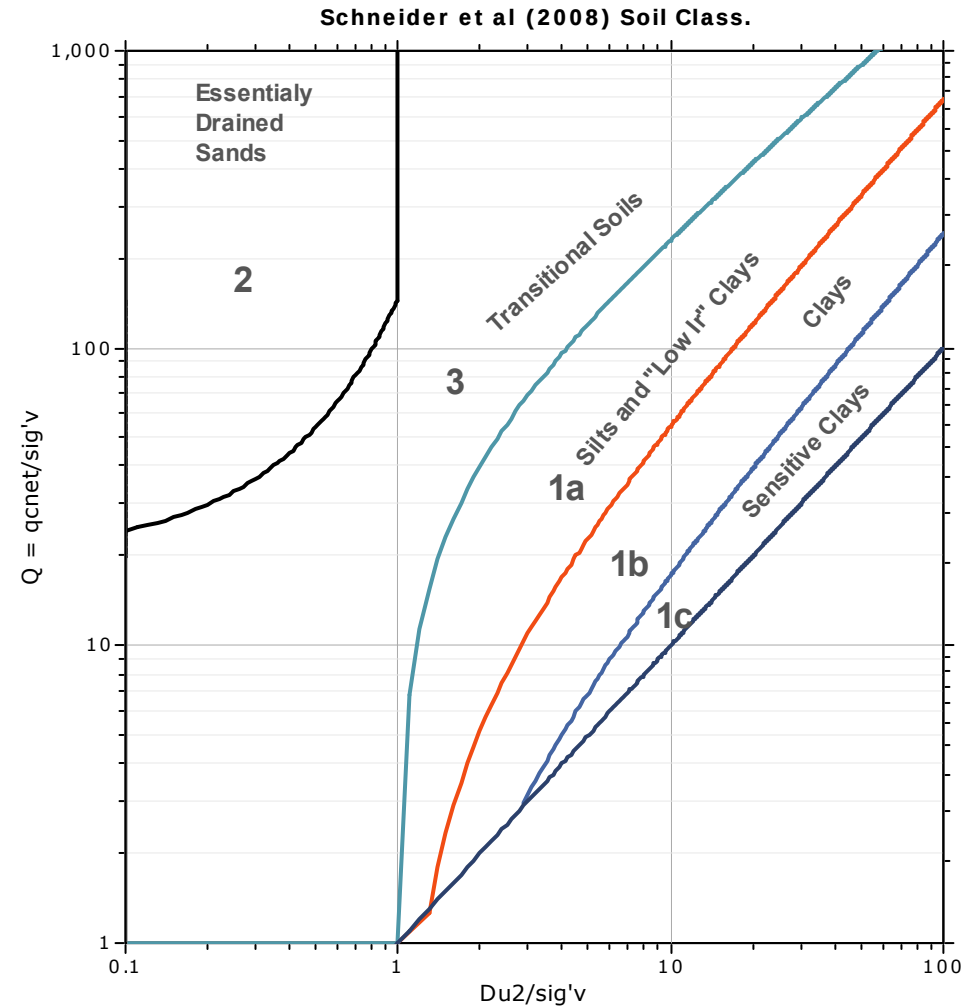
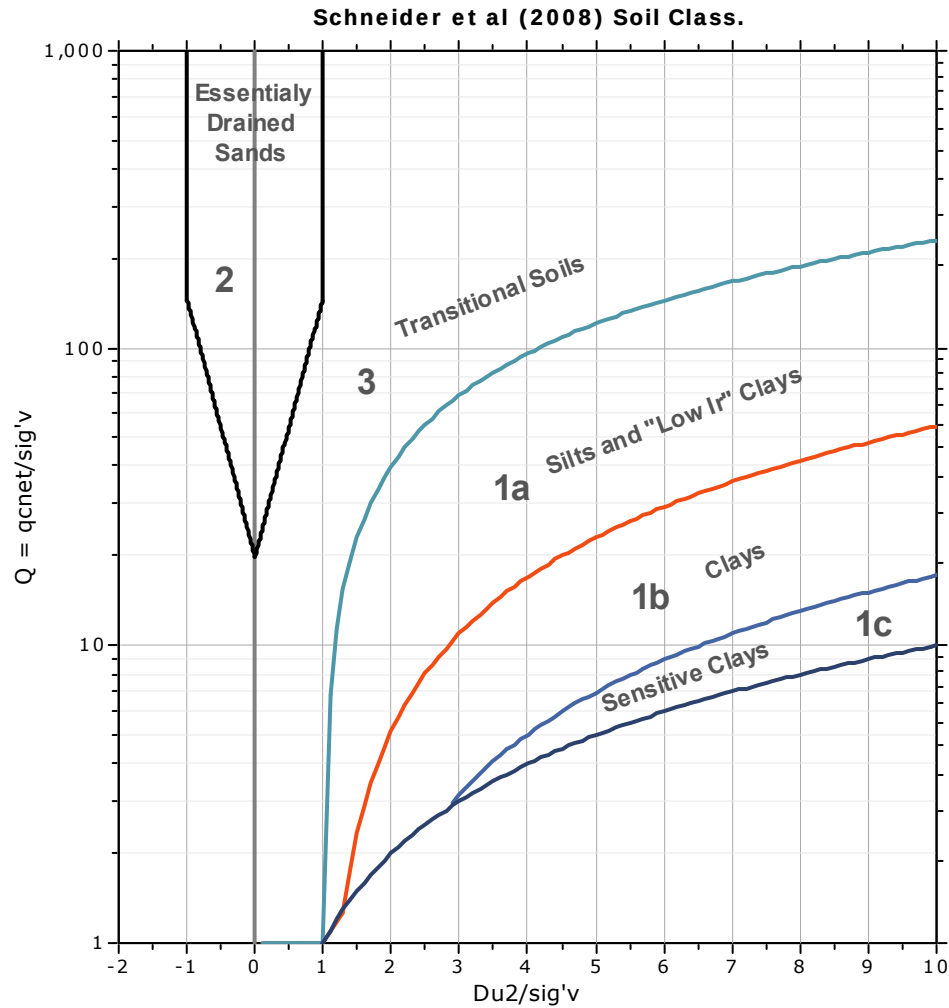
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-3

Total depth: 16.27 ft

Bq plots (Schneider)



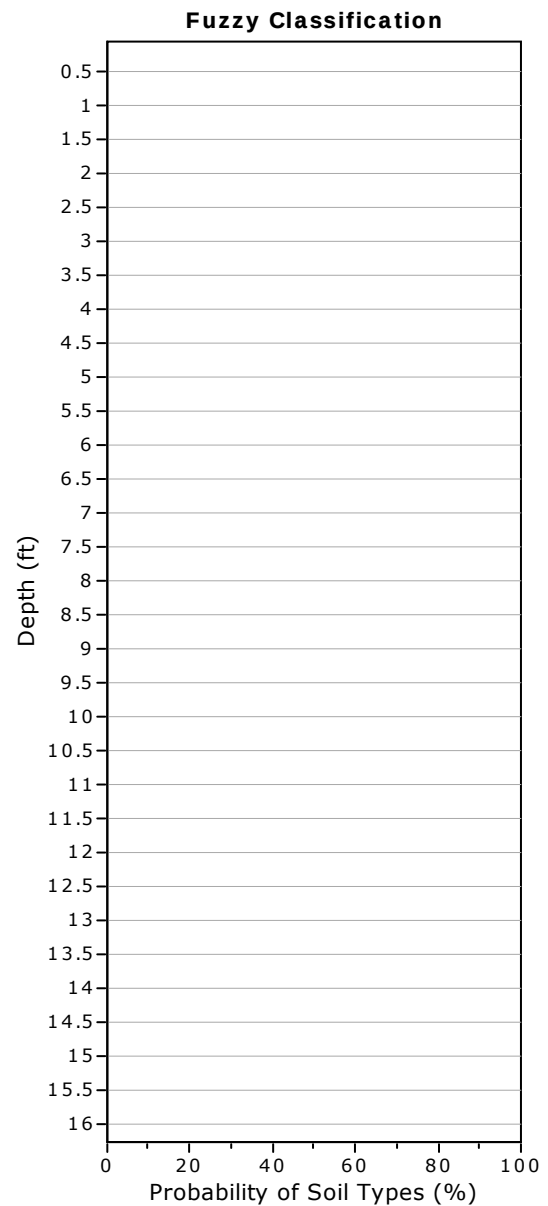
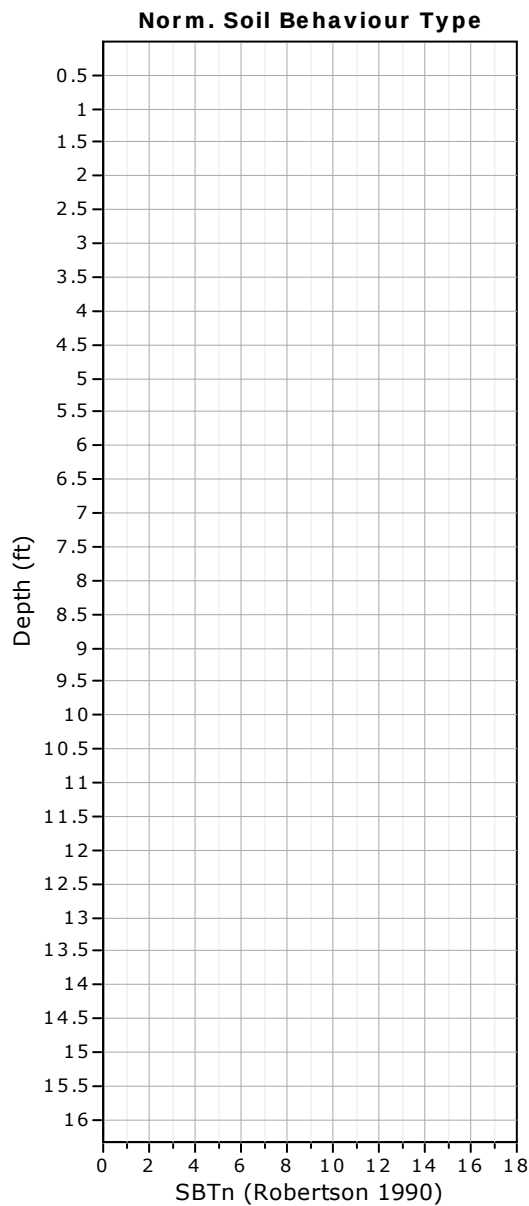


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-3

Total depth: 16.27 ft



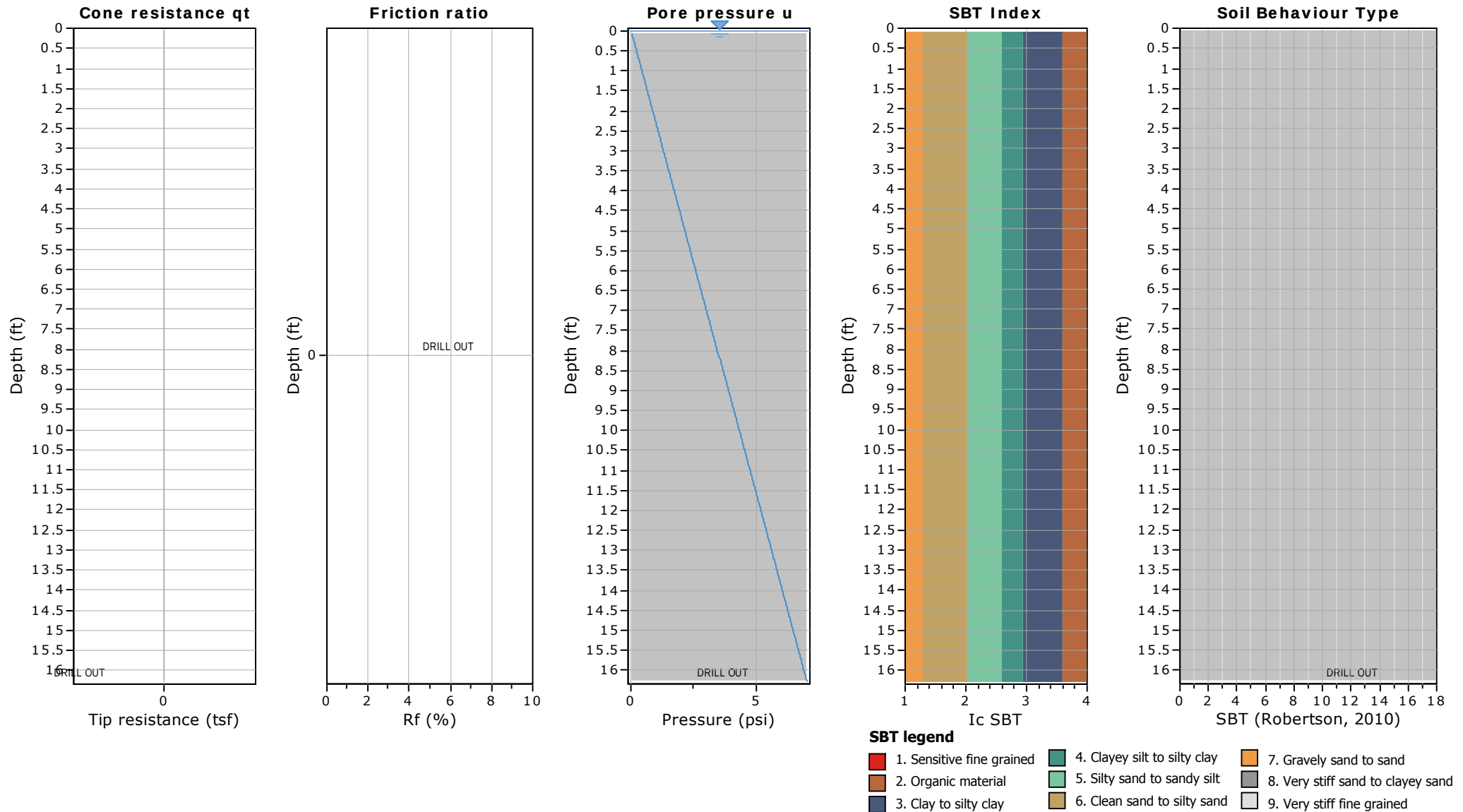


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft

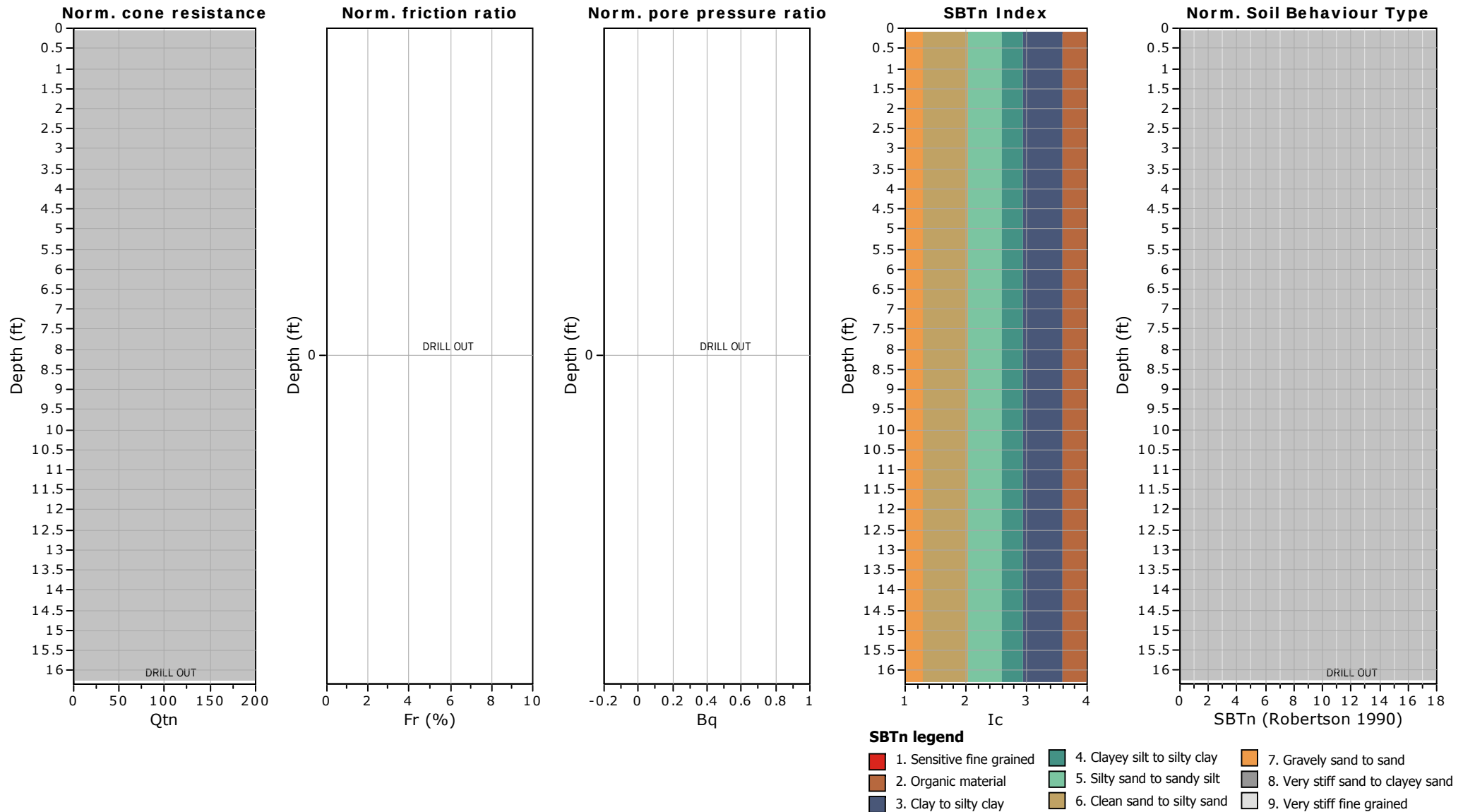


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-3

Total depth: 16.27 ft



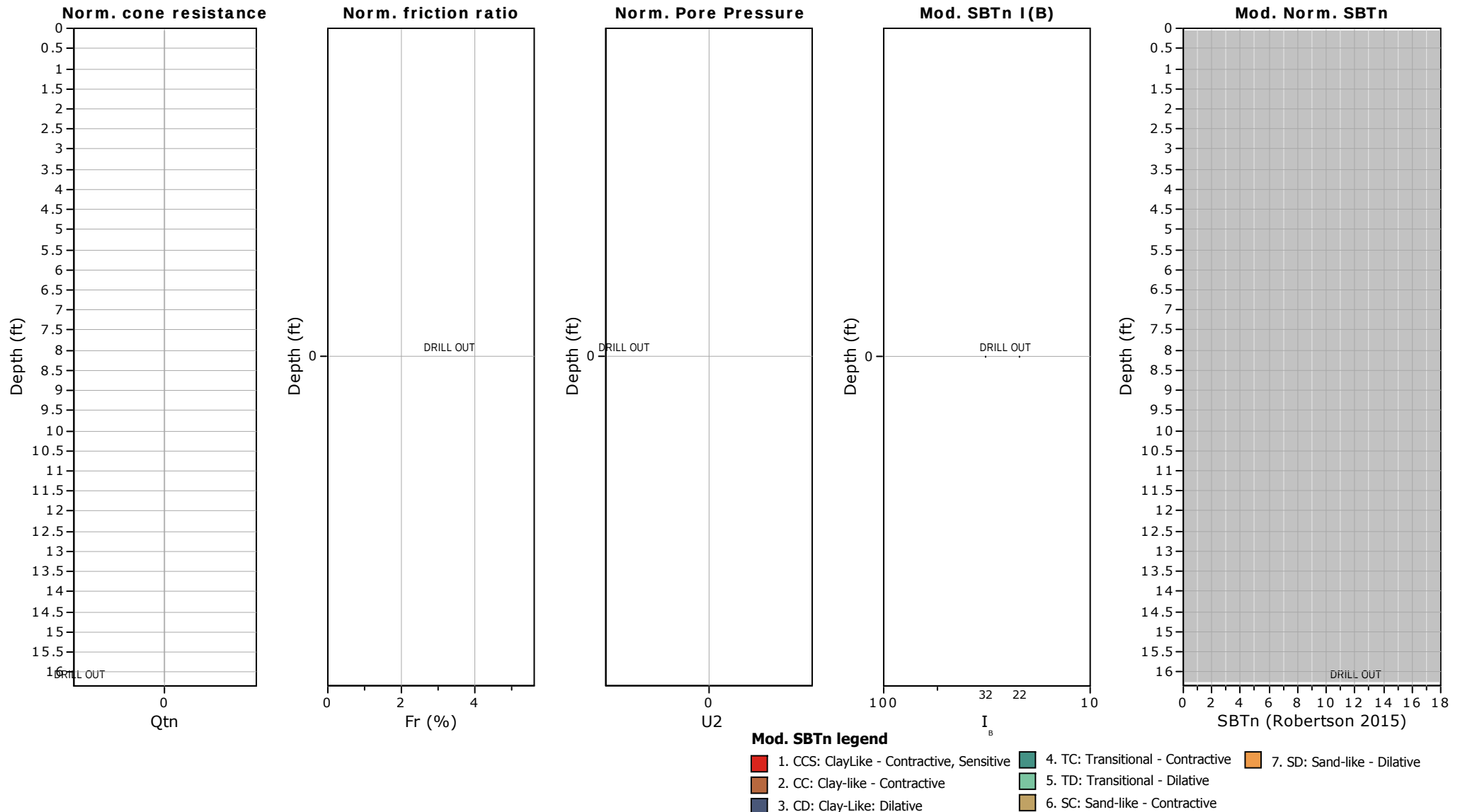


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft





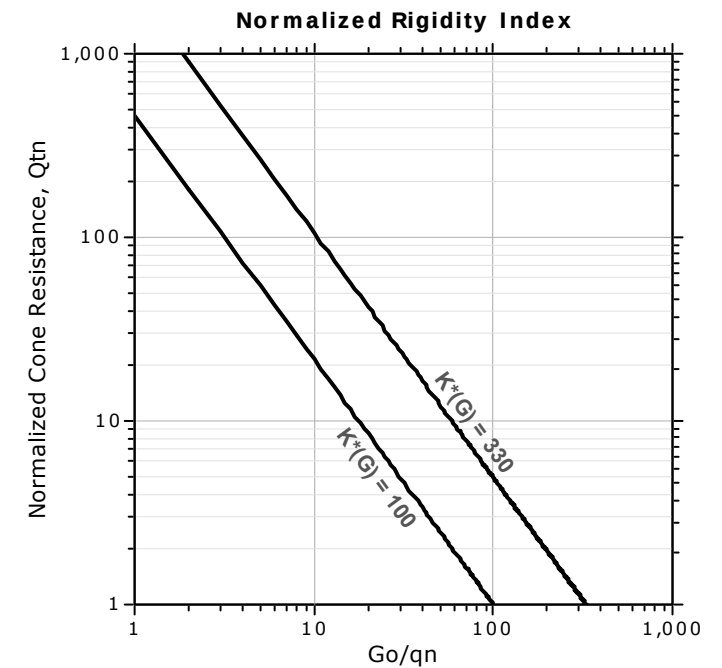
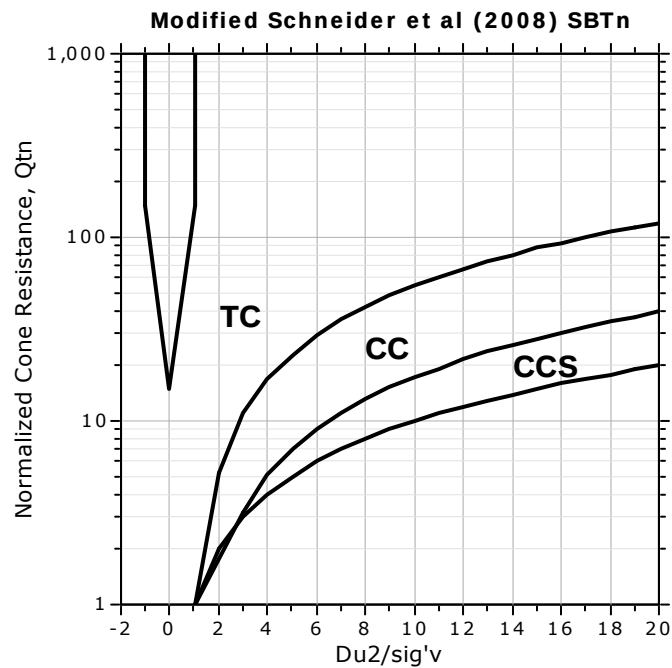
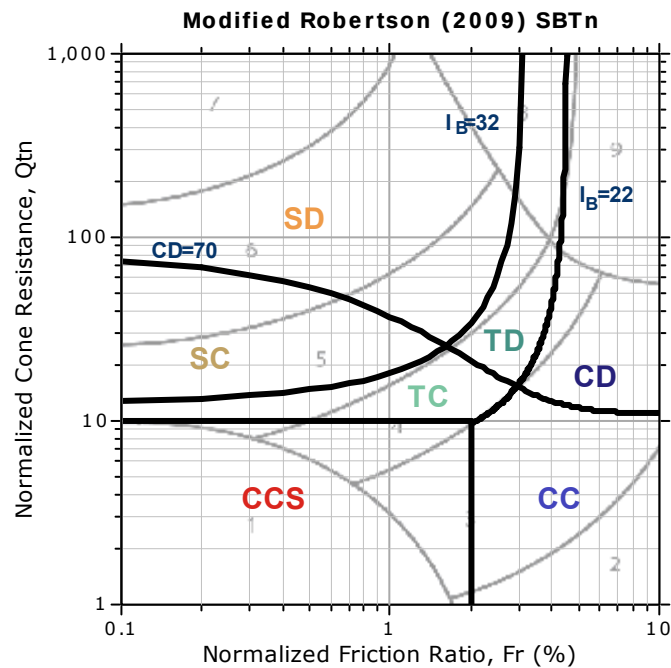
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

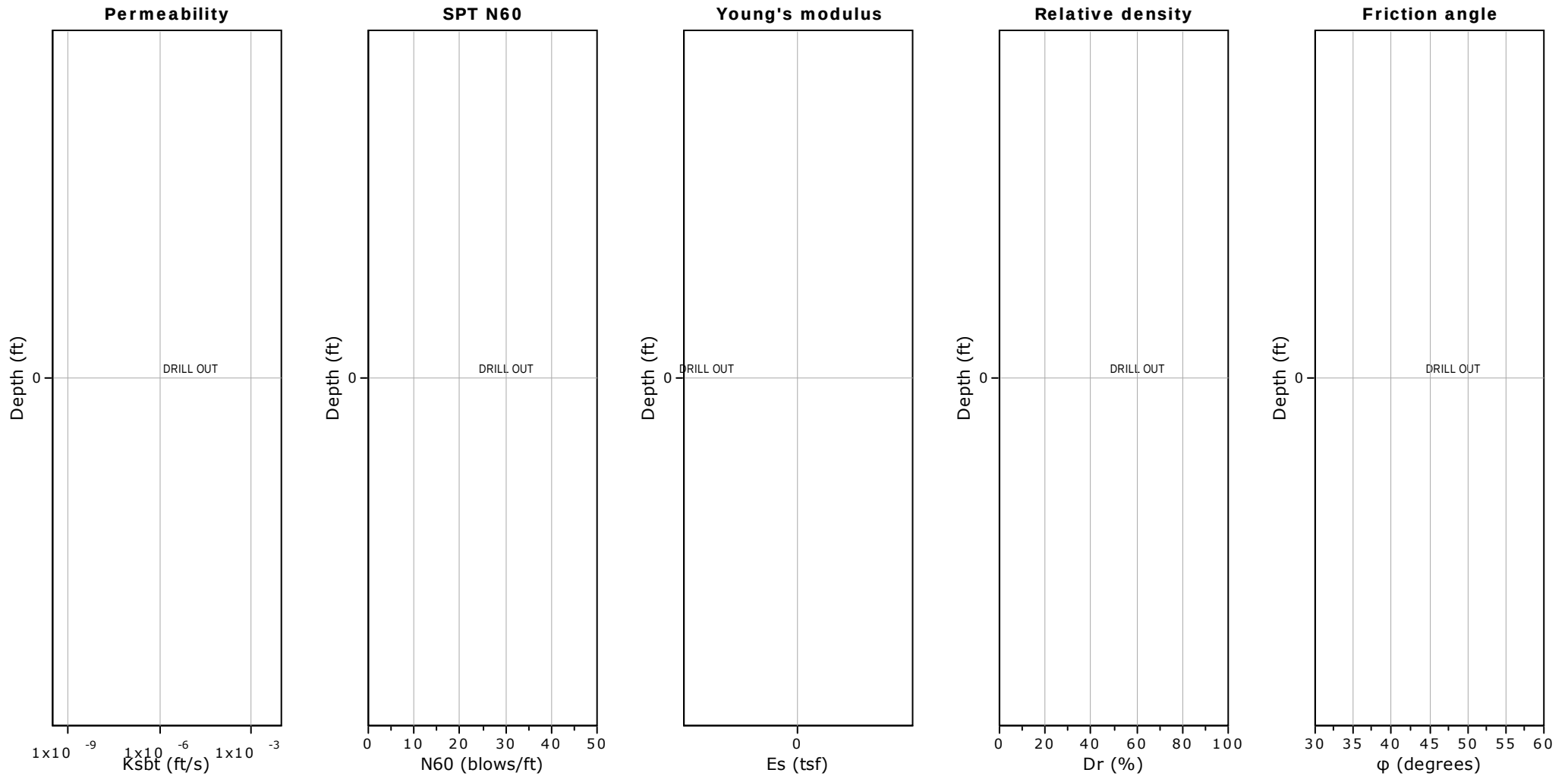


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft



Calculation parameters

Permeability: Based on SBT_n

SPT N₆₀: Based on I_c and q_t

Young's modulus: Based on variable alpha using I_c (Robertson, 2009)

Relative density constant, C_{Dr}: 350.0

Phi: Based on Kulhawy & Mayne (1990)

—●— User defined estimation data

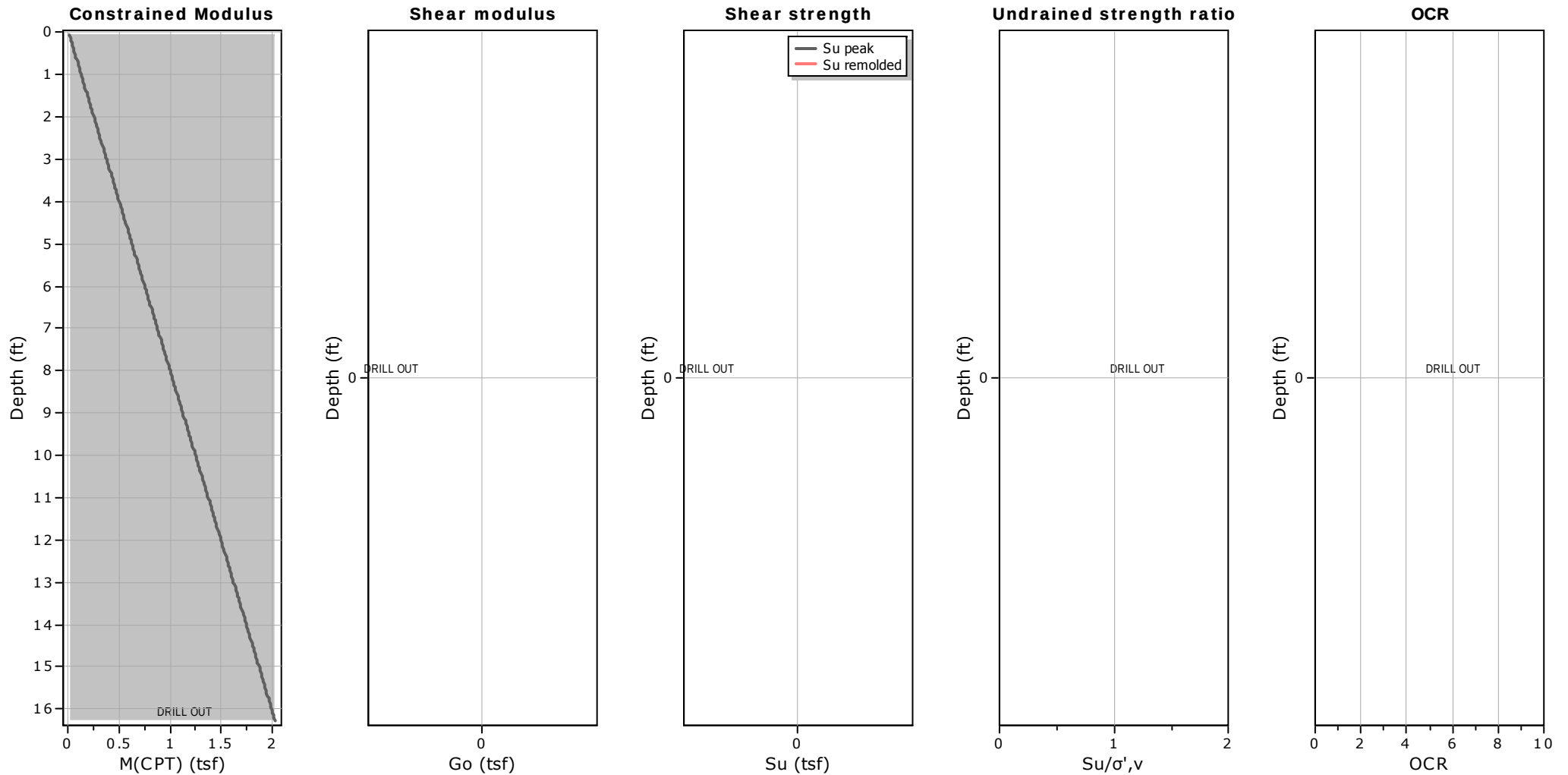


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft



Calculation parameters

Constrained modulus: Based on variable α using I_c and Q_{tn} (Robertson, 2009)

G_o : Based on variable α using I_c (Robertson, 2009)

Undrained shear strength cone factor for clays, N_{kt} : 14

OCR factor for clays, N_{kt} : 0.33

—●— User defined estimation data

—●— Flat Dilatometer Test data

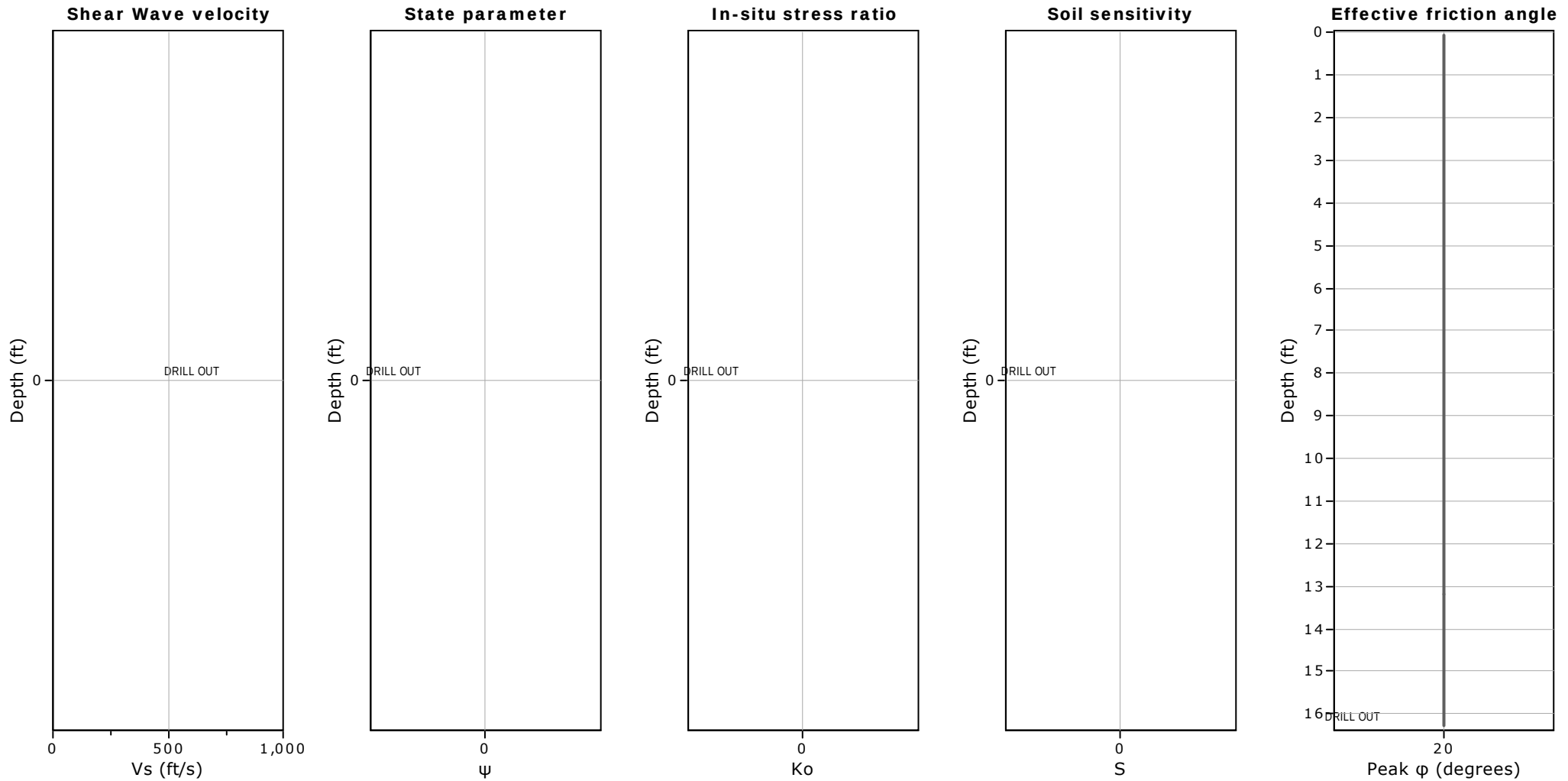


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft



Calculation parameters

Soil Sensitivity factor, N_s : 7.00

—●— User defined estimation data

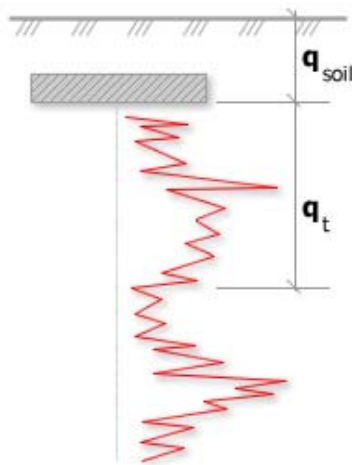


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-3

Total depth: 16.27 ft



Bearing Capacity calculation is performed based on the formula:

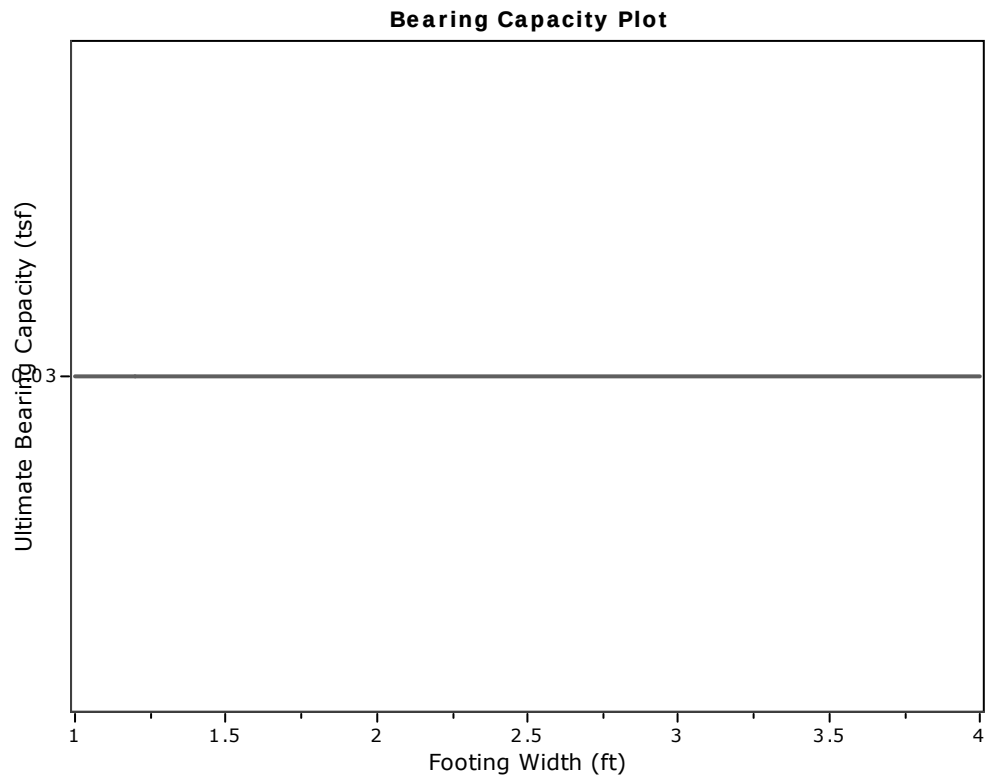
$$Q_{ult} = R_k \times q_t + q_{soil}$$

where:

R_k : Bearing capacity factor

q_t : Average corrected cone resistance over calculation depth

q_{soil} : Pressure applied by soil above footing



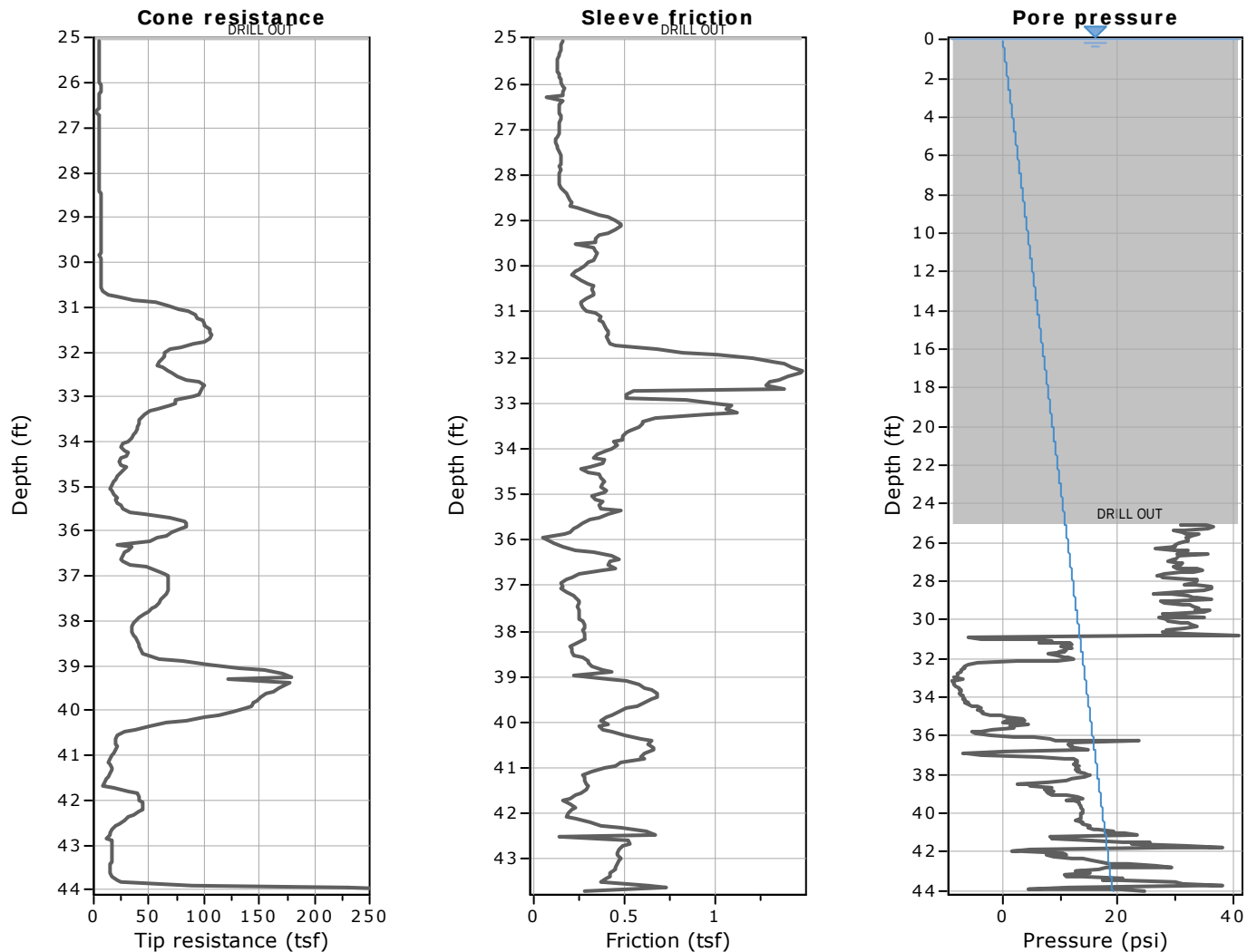
:: Tabular results ::

No	B (ft)	Start Depth (ft)	End Depth (ft)	Ave. q_t (tsf)	R_k	Soil Press. (tsf)	Ult. bearing cap. (tsf)
1	1.00	0.50	2.00	0.00	0.20	0.03	0.03
2	1.20	0.50	2.30	0.00	0.20	0.03	0.03
3	1.40	0.50	2.60	0.00	0.20	0.03	0.03
4	1.60	0.50	2.90	0.00	0.20	0.03	0.03
5	1.80	0.50	3.20	0.00	0.20	0.03	0.03
6	2.00	0.50	3.50	0.00	0.20	0.03	0.03
7	2.20	0.50	3.80	0.00	0.20	0.03	0.03
8	2.40	0.50	4.10	0.00	0.20	0.03	0.03
9	2.60	0.50	4.40	0.00	0.20	0.03	0.03
10	2.80	0.50	4.70	0.00	0.20	0.03	0.03
11	3.00	0.50	5.00	0.00	0.20	0.03	0.03
12	3.20	0.50	5.30	0.00	0.20	0.03	0.03
13	3.40	0.50	5.60	0.00	0.20	0.03	0.03
14	3.60	0.50	5.90	0.00	0.20	0.03	0.03
15	3.80	0.50	6.20	0.00	0.20	0.03	0.03
16	4.00	0.50	6.50	0.00	0.20	0.03	0.03

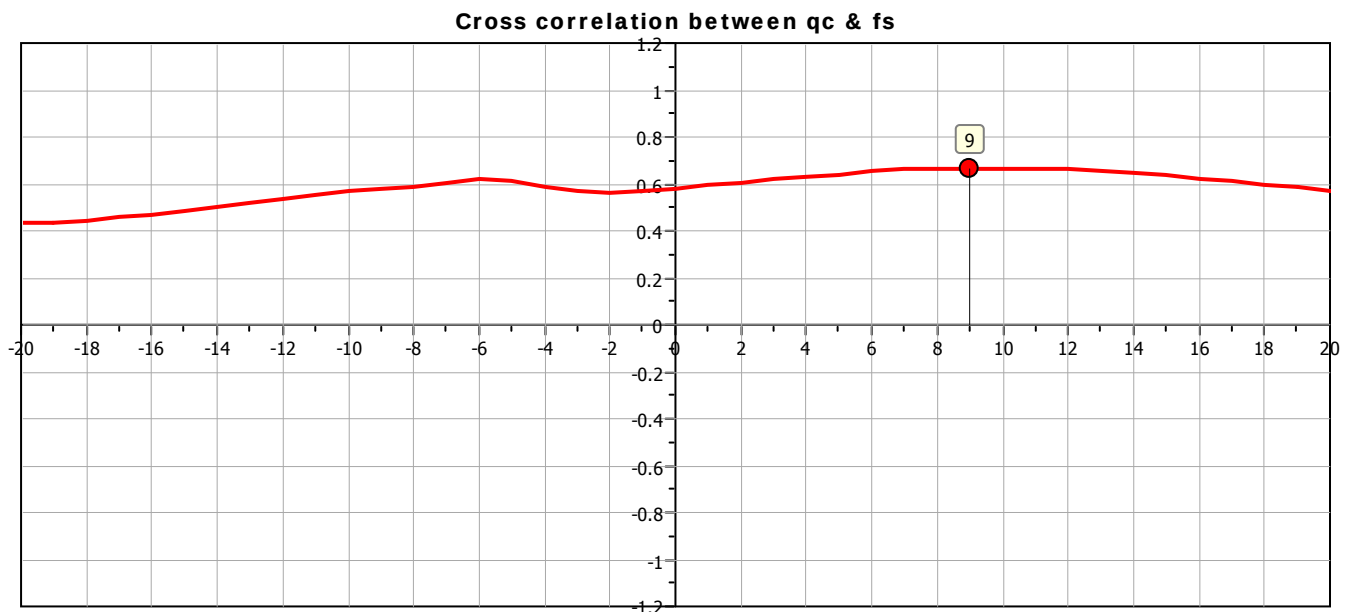


Project: GeoDesign
Location: Stevenson Commons, Bronx NY

B3-4
Total depth: 44.03 ft



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





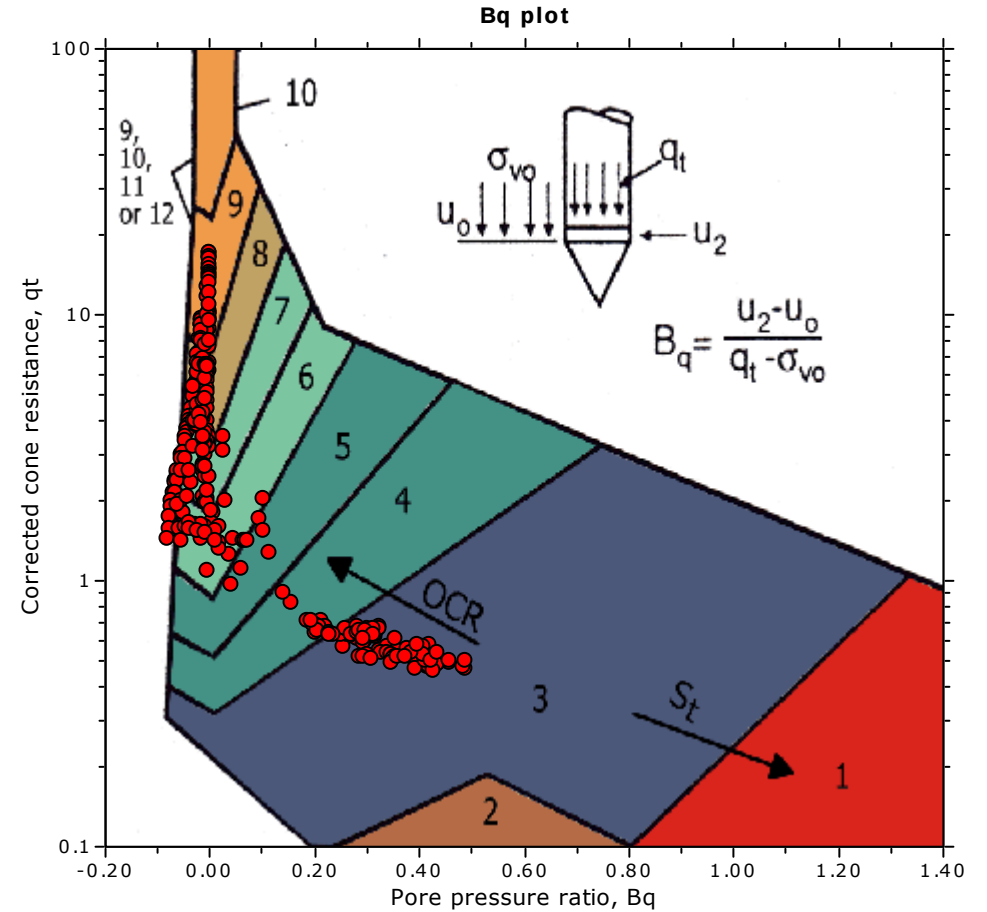
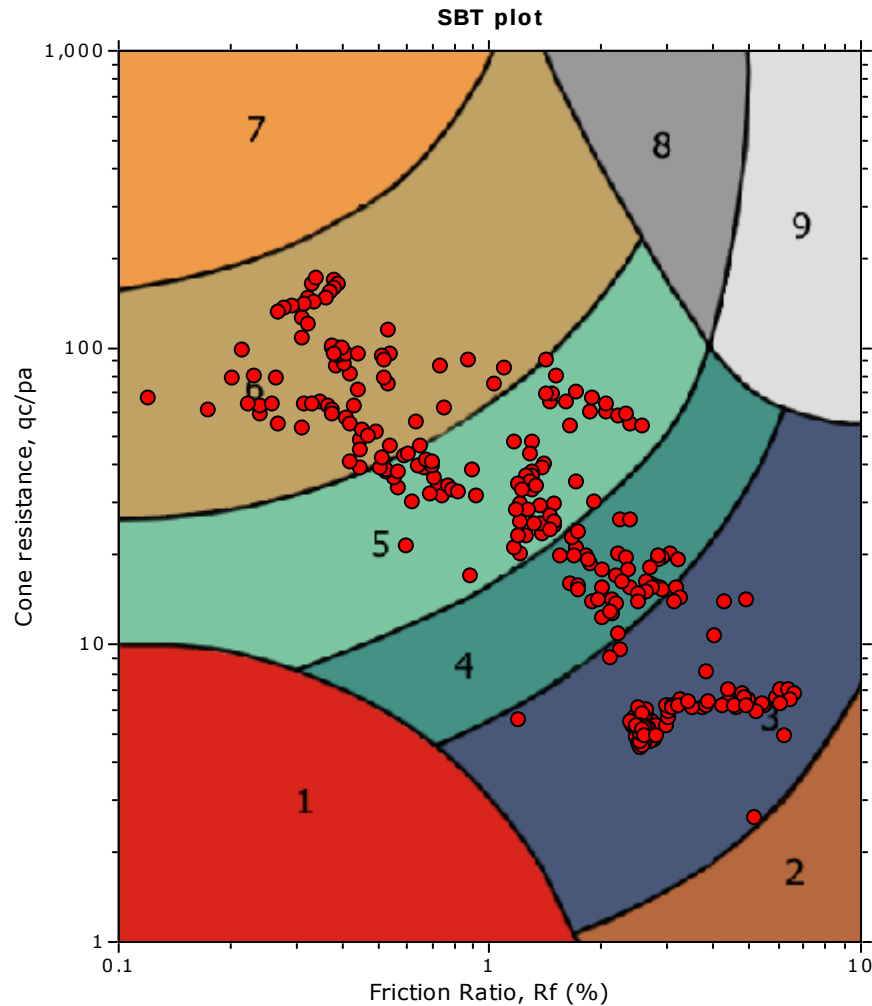
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft

SBT - Bq plots



SBT legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



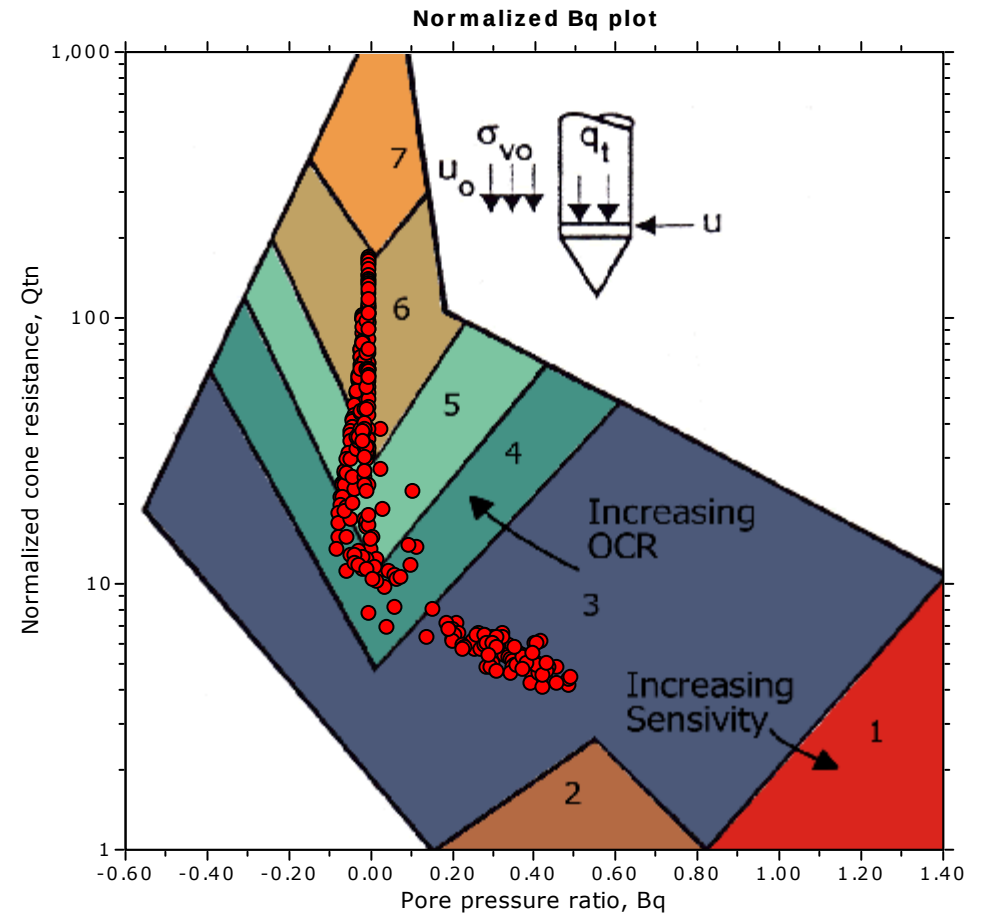
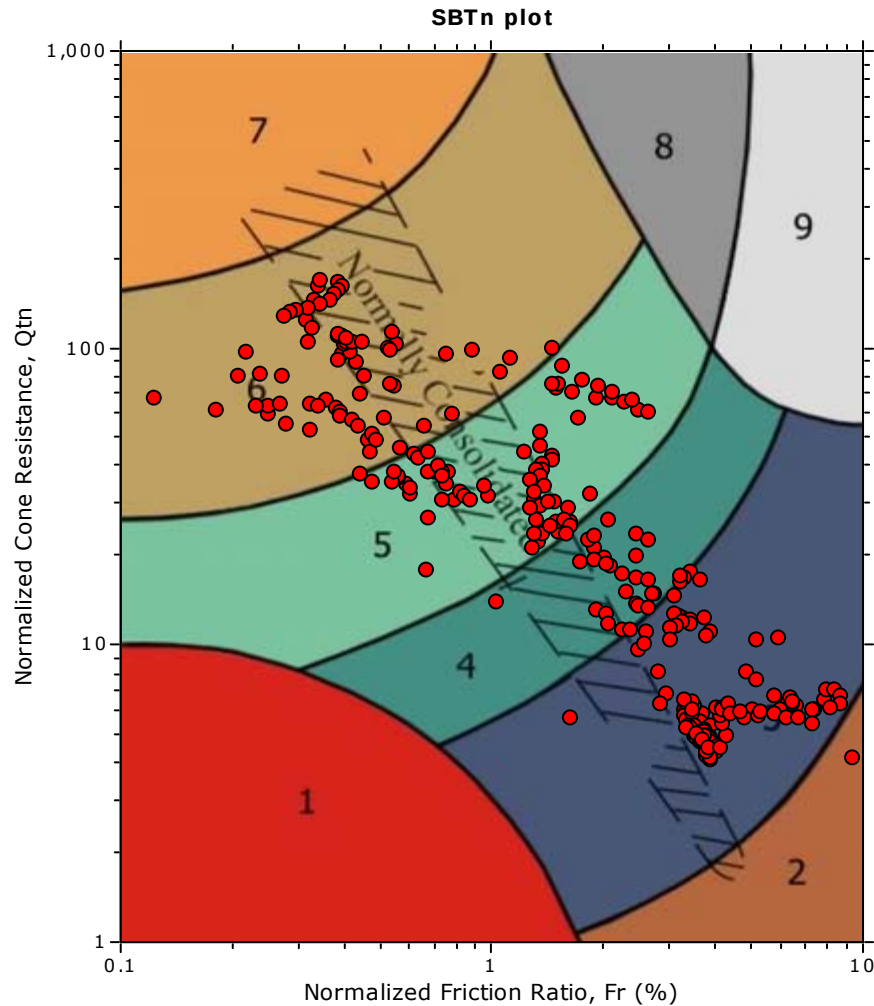
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-4

Total depth: 44.03 ft

SBT - Bq plots (normalized)



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



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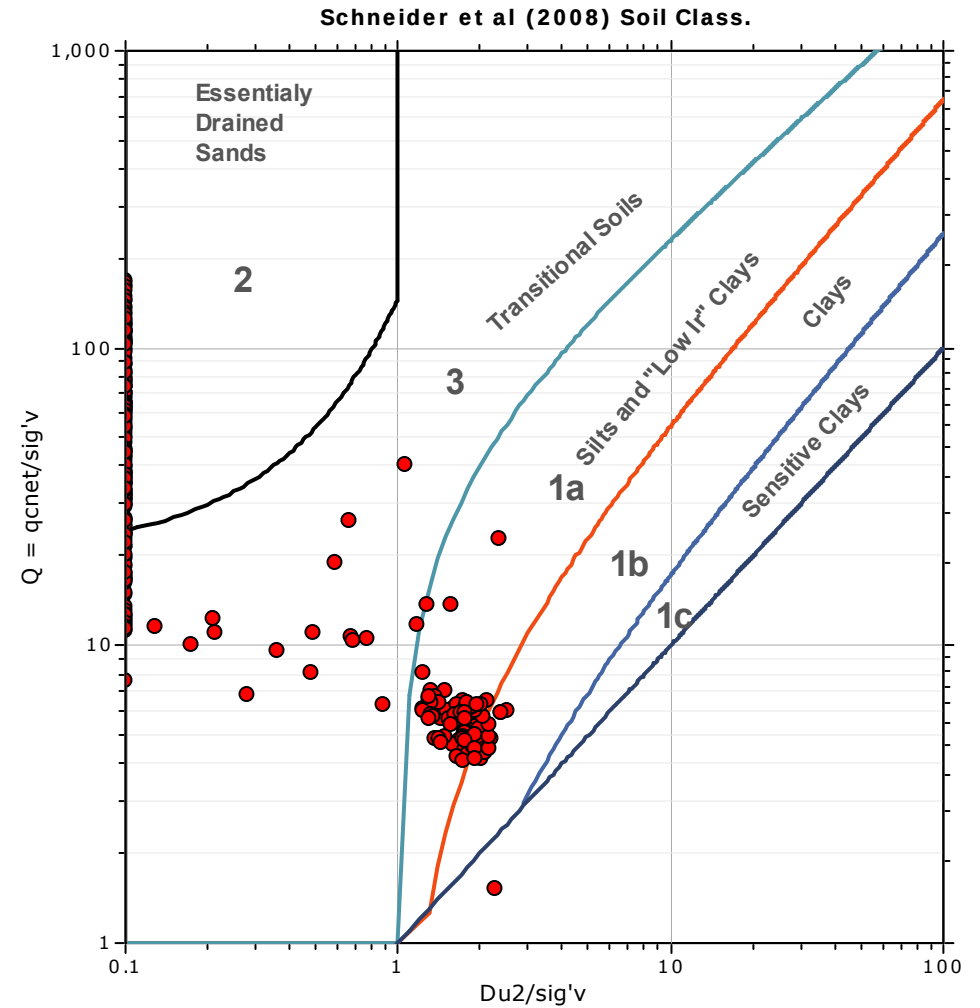
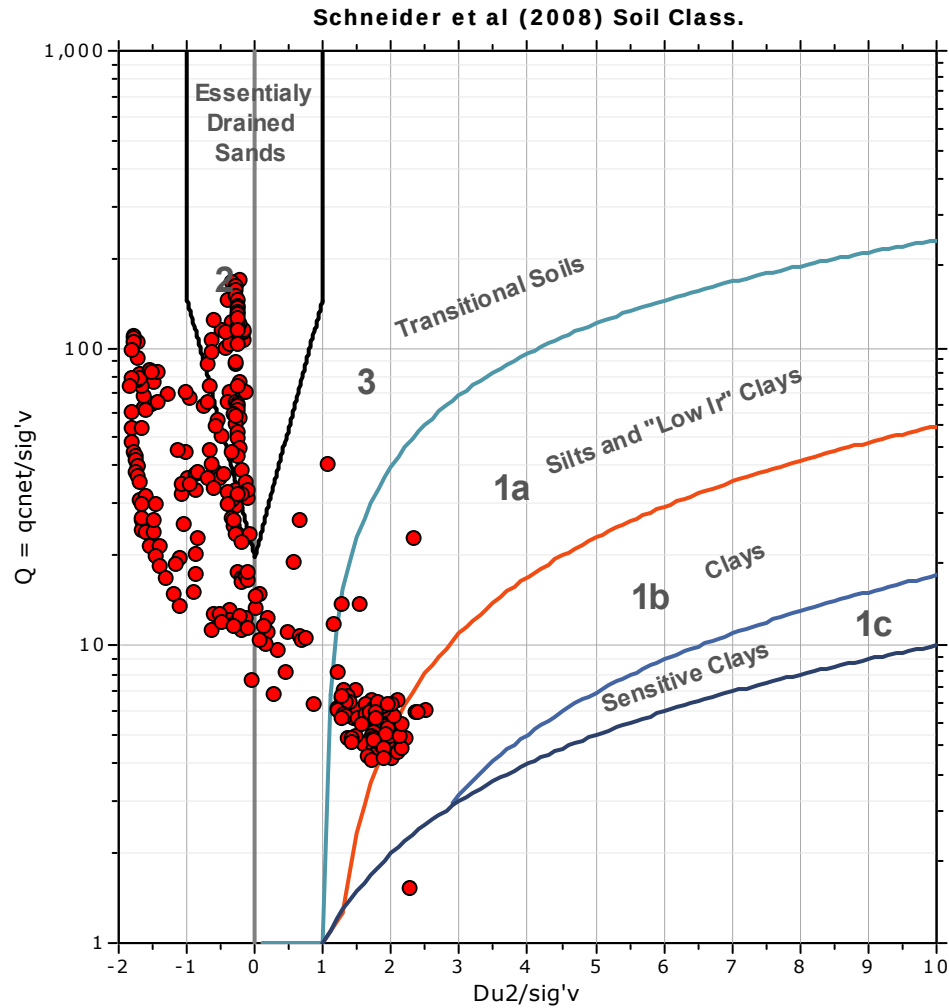
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-4

Total depth: 44.03 ft

Bq plots (Schneider)



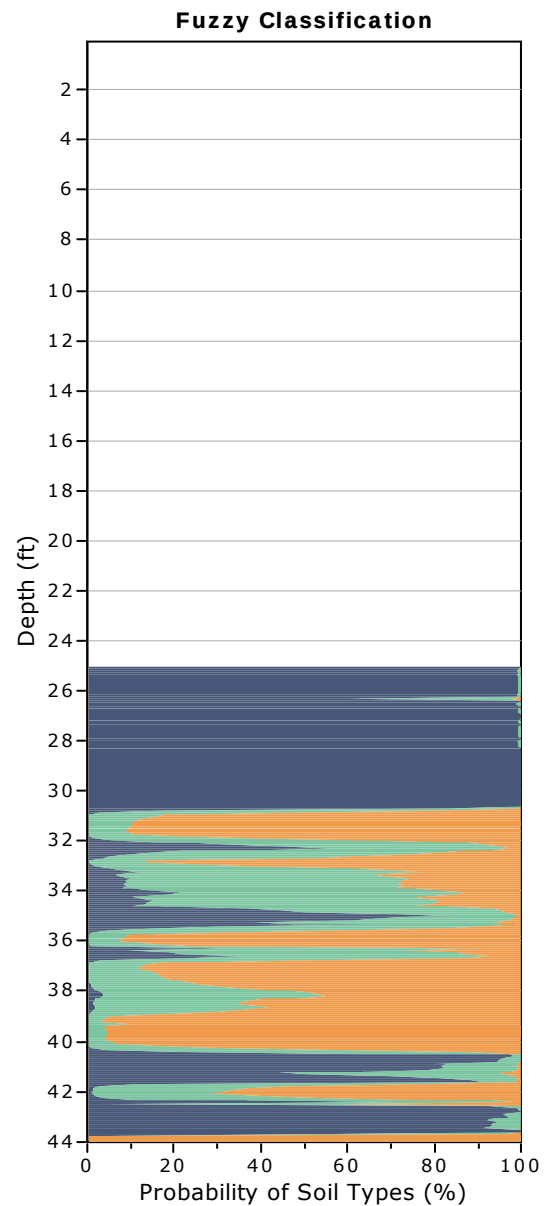
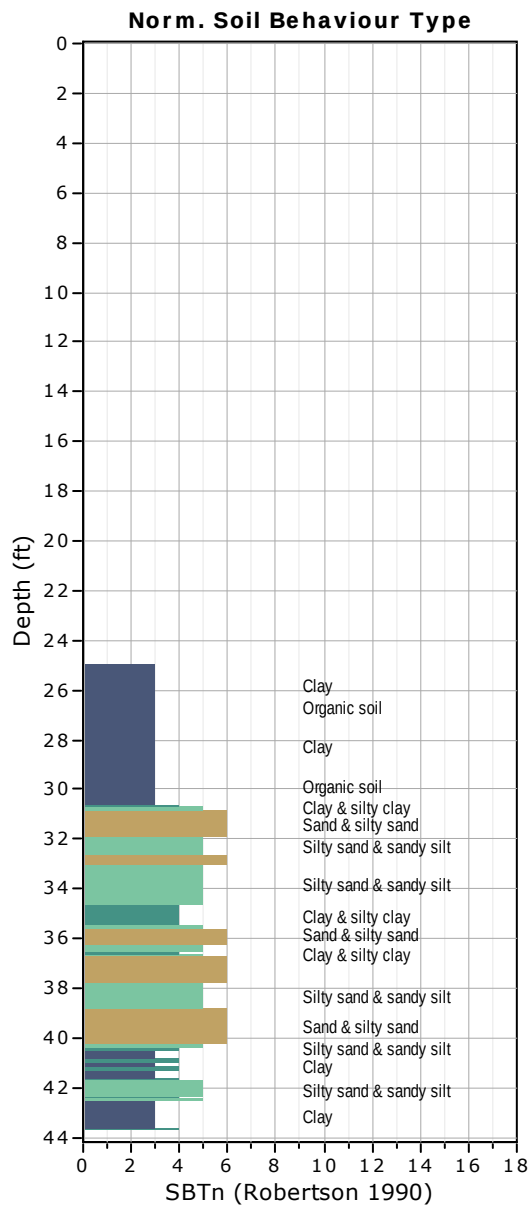


Project: **GeoDesign**

Location: **Stevenson Commons, Bronx NY**

CPT: B3-4

Total depth: 44.03 ft





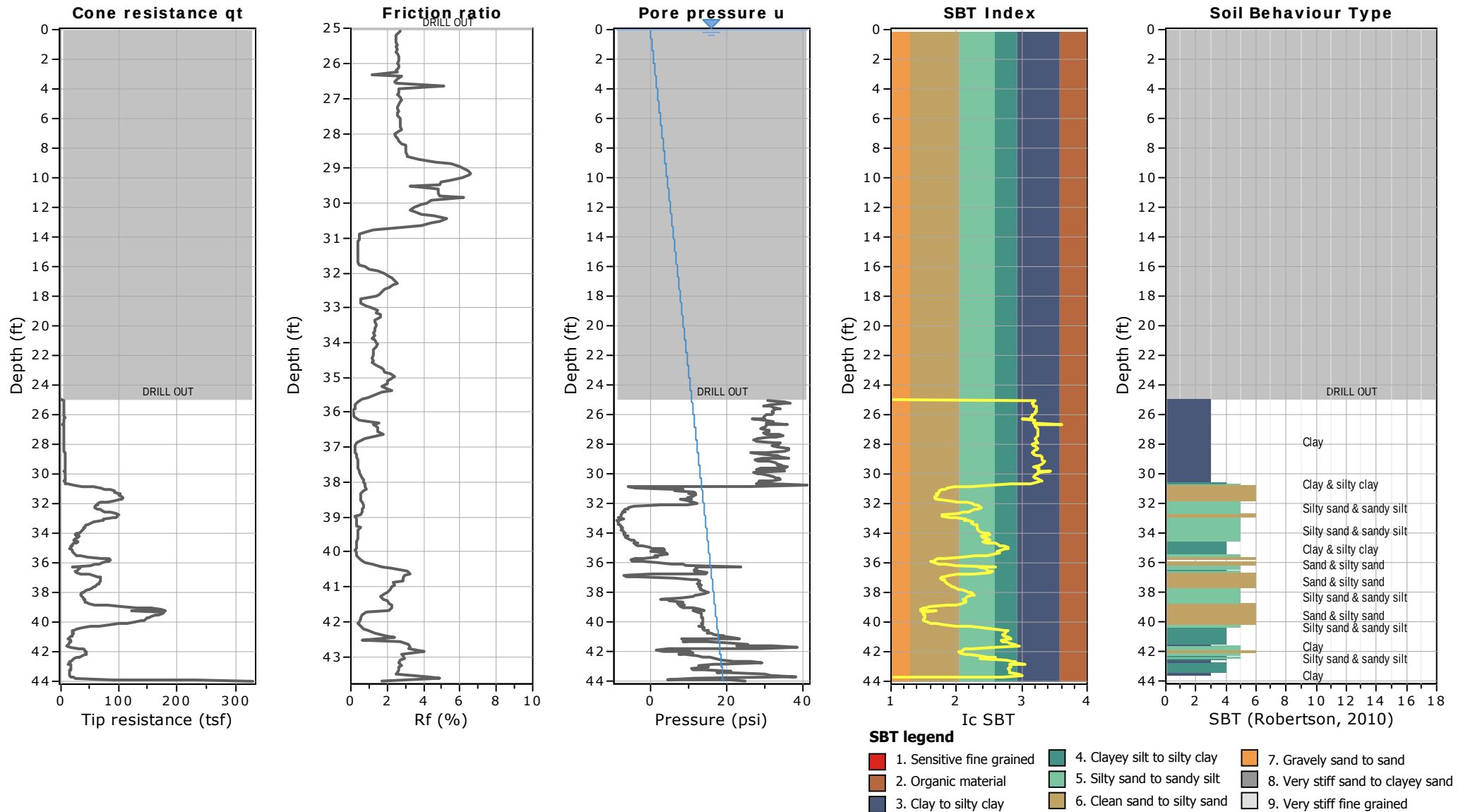
Craig Geotechnical Drilling
5435 Harding Hwy
Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft





Craig Geotechnical Drilling

5435 Harding Hwy

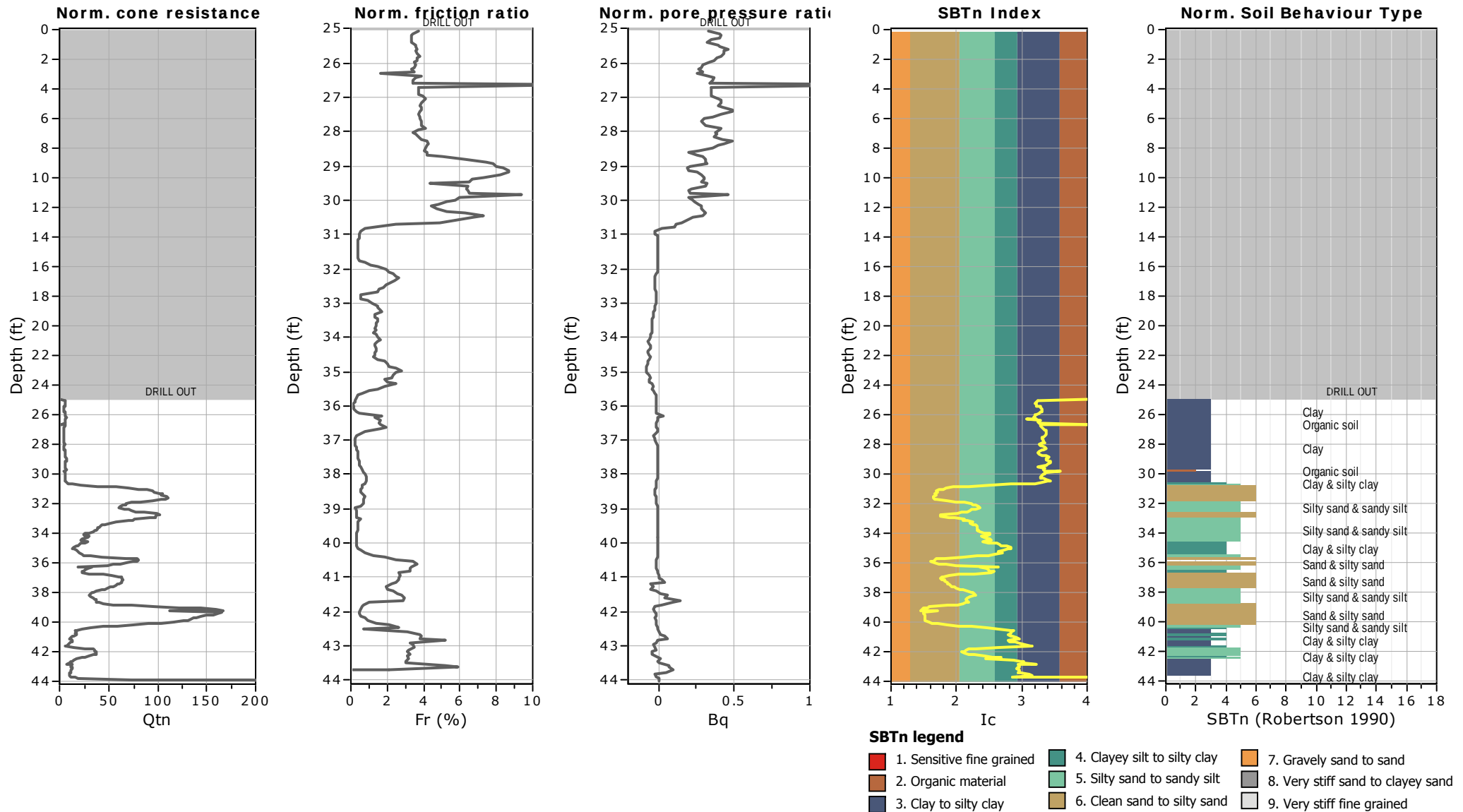
GEOTECHNICAL DRILLING CO., INC. Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-4

Total depth: 44.03 ft

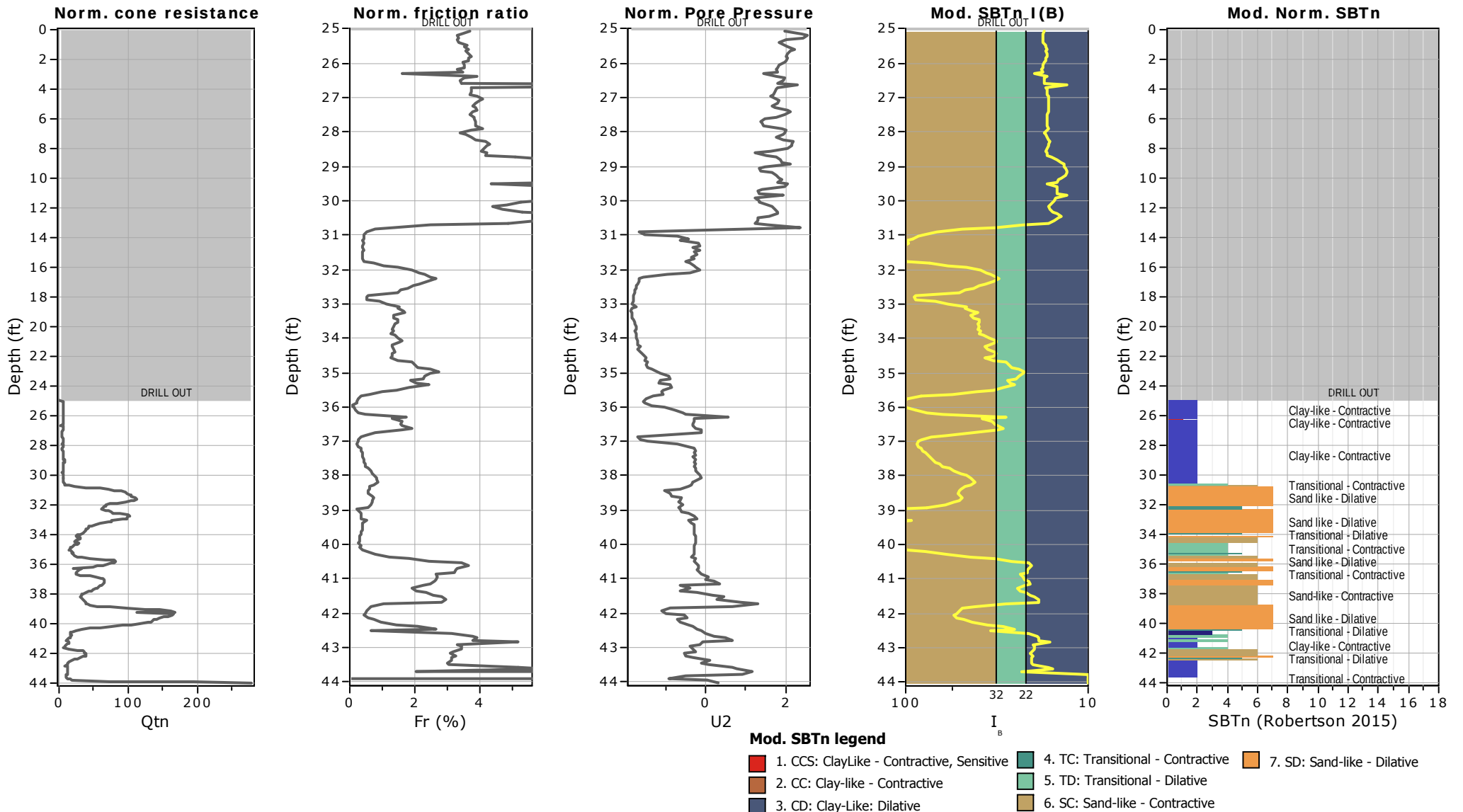


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft





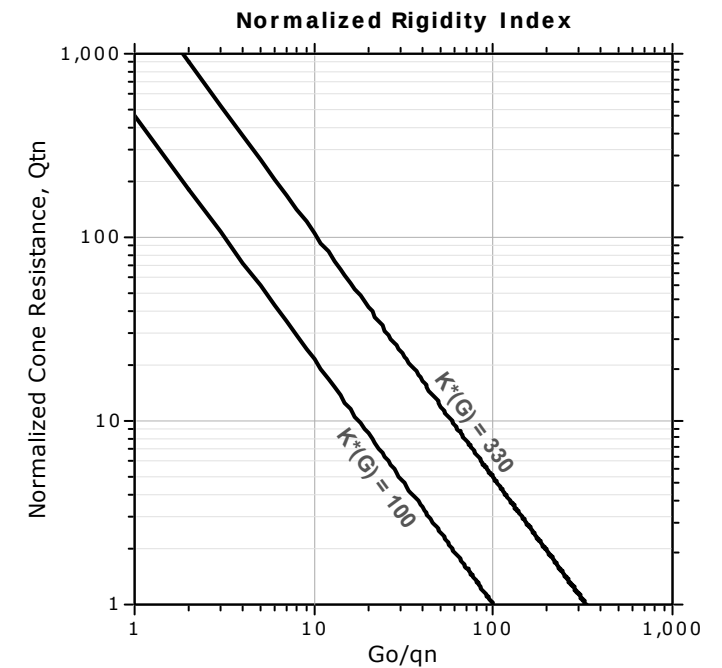
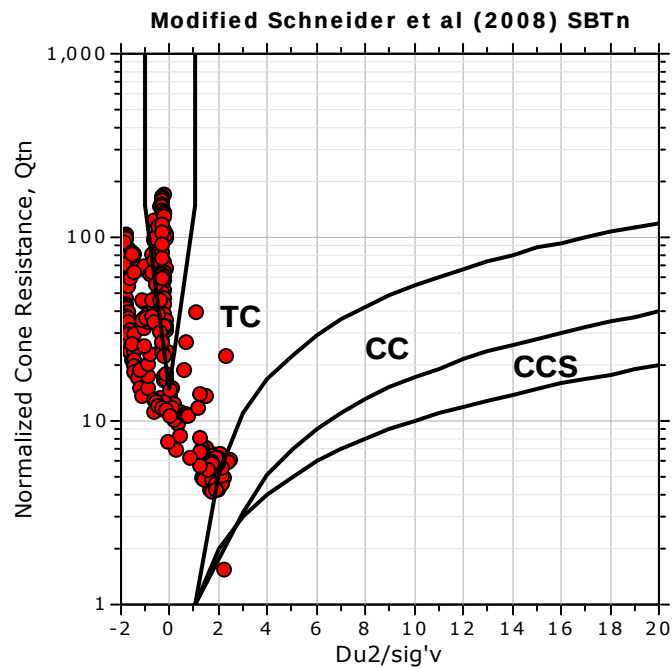
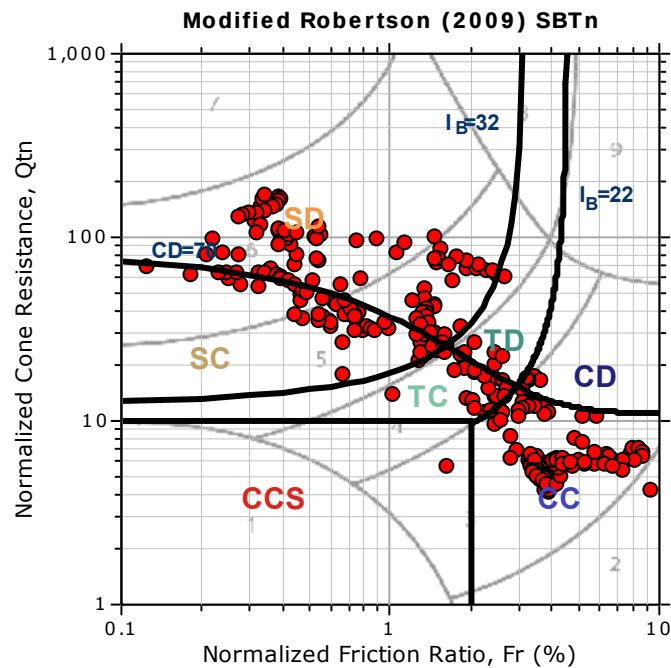
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative



Craig Geotechnical Drilling

5435 Harding Hwy

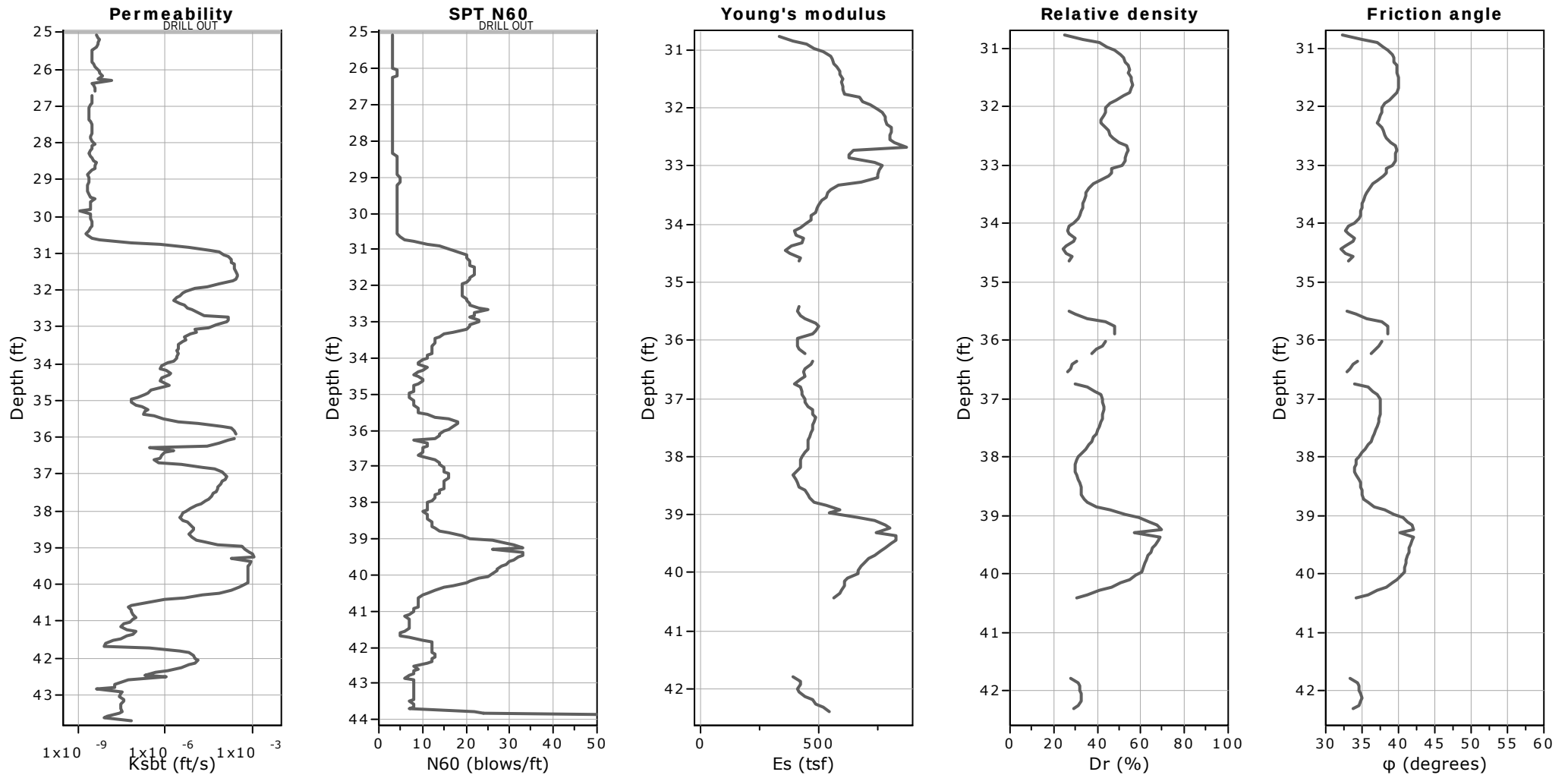
GEOTECHNICAL DRILLING CO., INC. Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft



Calculation parameters

Permeability: Based on SBT_n

SPT N_{60} : Based on I_c and q_t

Young's modulus: Based on variable alpha using I_c (Robertson, 2009)

Relative density constant, C_{Dr} : 350.0

Phi: Based on Kulhawy & Mayne (1990)

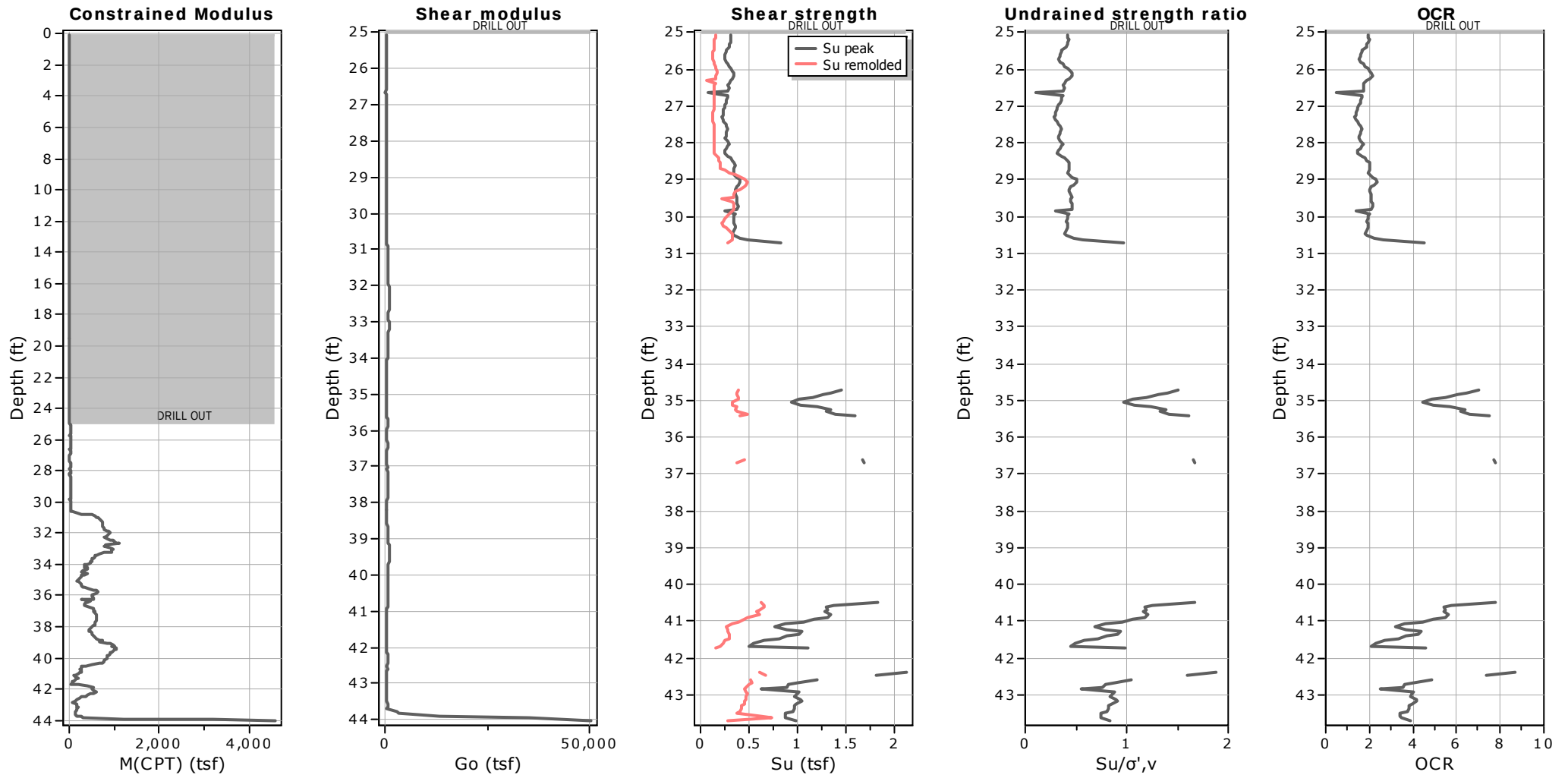
● User defined estimation data

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft



Calculation parameters

Constrained modulus: Based on variable α using I_c and Q_m (Robertson, 2009)

G_o : Based on variable α using I_c (Robertson, 2009)

Undrained shear strength cone factor for clays, N_{kt} : 14

OCR factor for clays, N_{kt} : 0.33

● User defined estimation data

● Flat Dilatometer Test data

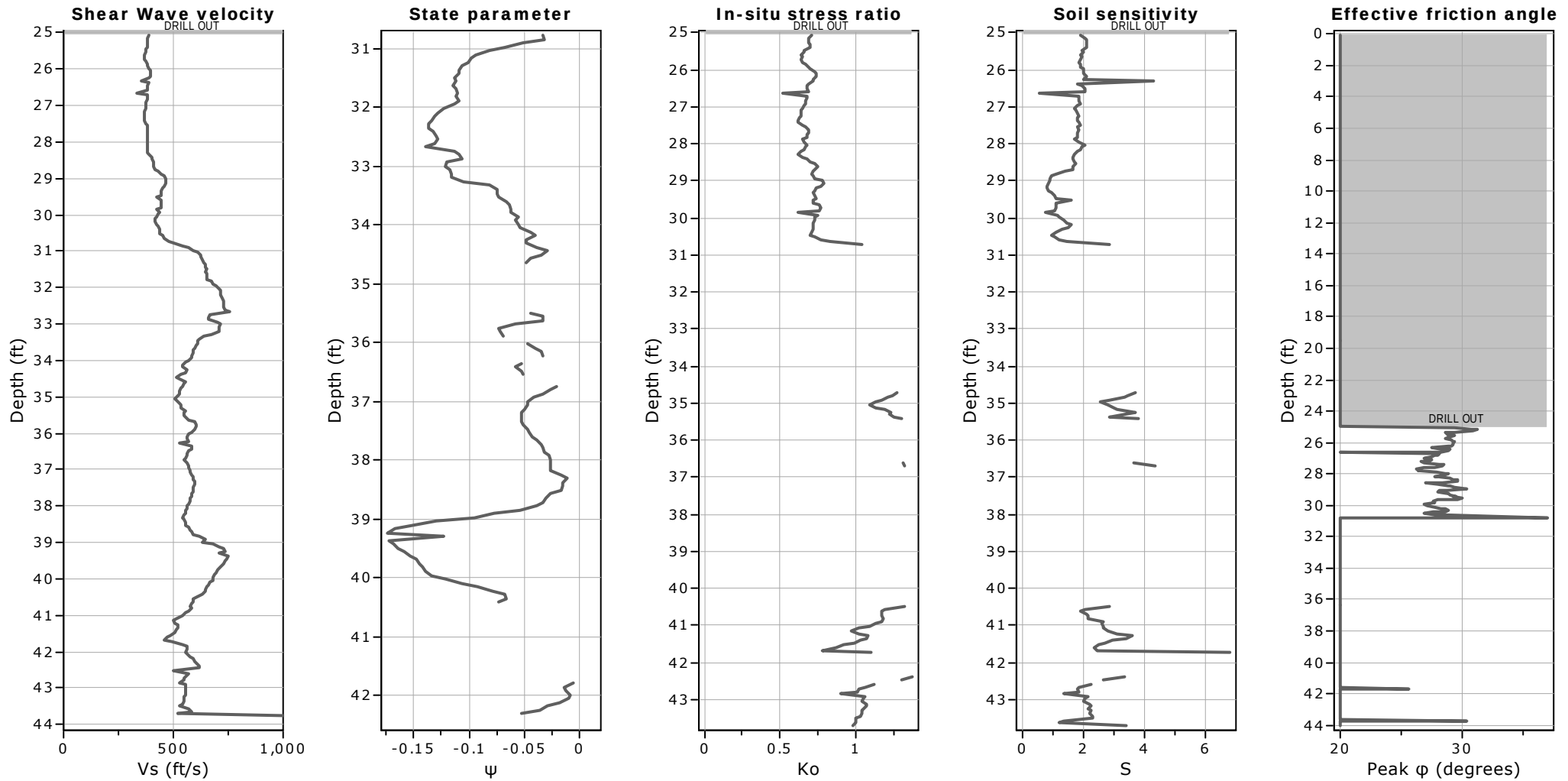


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft



Calculation parameters

Soil Sensitivity factor, N_s : 7.00

—●— User defined estimation data

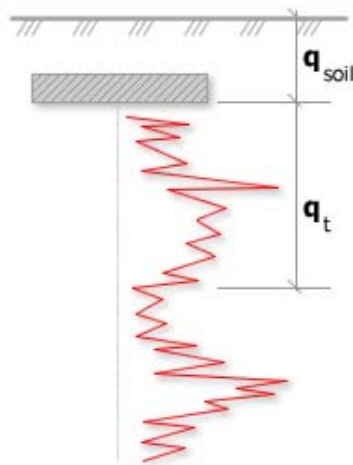


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-4

Total depth: 44.03 ft



Bearing Capacity calculation is performed based on the formula:

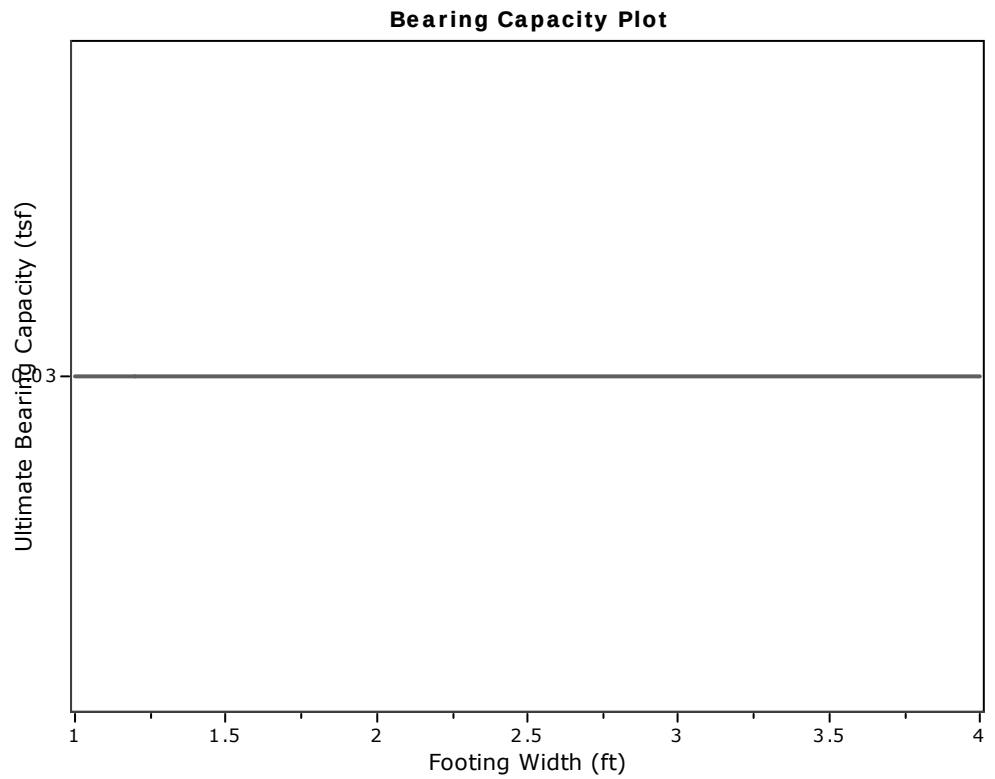
$$Q_{ult} = R_k \times q_t + q_{soil}$$

where:

R_k : Bearing capacity factor

q_t : Average corrected cone resistance over calculation depth

q_{soil} : Pressure applied by soil above footing



:: Tabular results ::

No	B (ft)	Start Depth (ft)	End Depth (ft)	Ave. q_t (tsf)	R_k	Soil Press. (tsf)	Ult. bearing cap. (tsf)
1	1.00	0.50	2.00	0.00	0.20	0.03	0.03
2	1.20	0.50	2.30	0.00	0.20	0.03	0.03
3	1.40	0.50	2.60	0.00	0.20	0.03	0.03
4	1.60	0.50	2.90	0.00	0.20	0.03	0.03
5	1.80	0.50	3.20	0.00	0.20	0.03	0.03
6	2.00	0.50	3.50	0.00	0.20	0.03	0.03
7	2.20	0.50	3.80	0.00	0.20	0.03	0.03
8	2.40	0.50	4.10	0.00	0.20	0.03	0.03
9	2.60	0.50	4.40	0.00	0.20	0.03	0.03
10	2.80	0.50	4.70	0.00	0.20	0.03	0.03
11	3.00	0.50	5.00	0.00	0.20	0.03	0.03
12	3.20	0.50	5.30	0.00	0.20	0.03	0.03
13	3.40	0.50	5.60	0.00	0.20	0.03	0.03
14	3.60	0.50	5.90	0.00	0.20	0.03	0.03
15	3.80	0.50	6.20	0.00	0.20	0.03	0.03
16	4.00	0.50	6.50	0.00	0.20	0.03	0.03

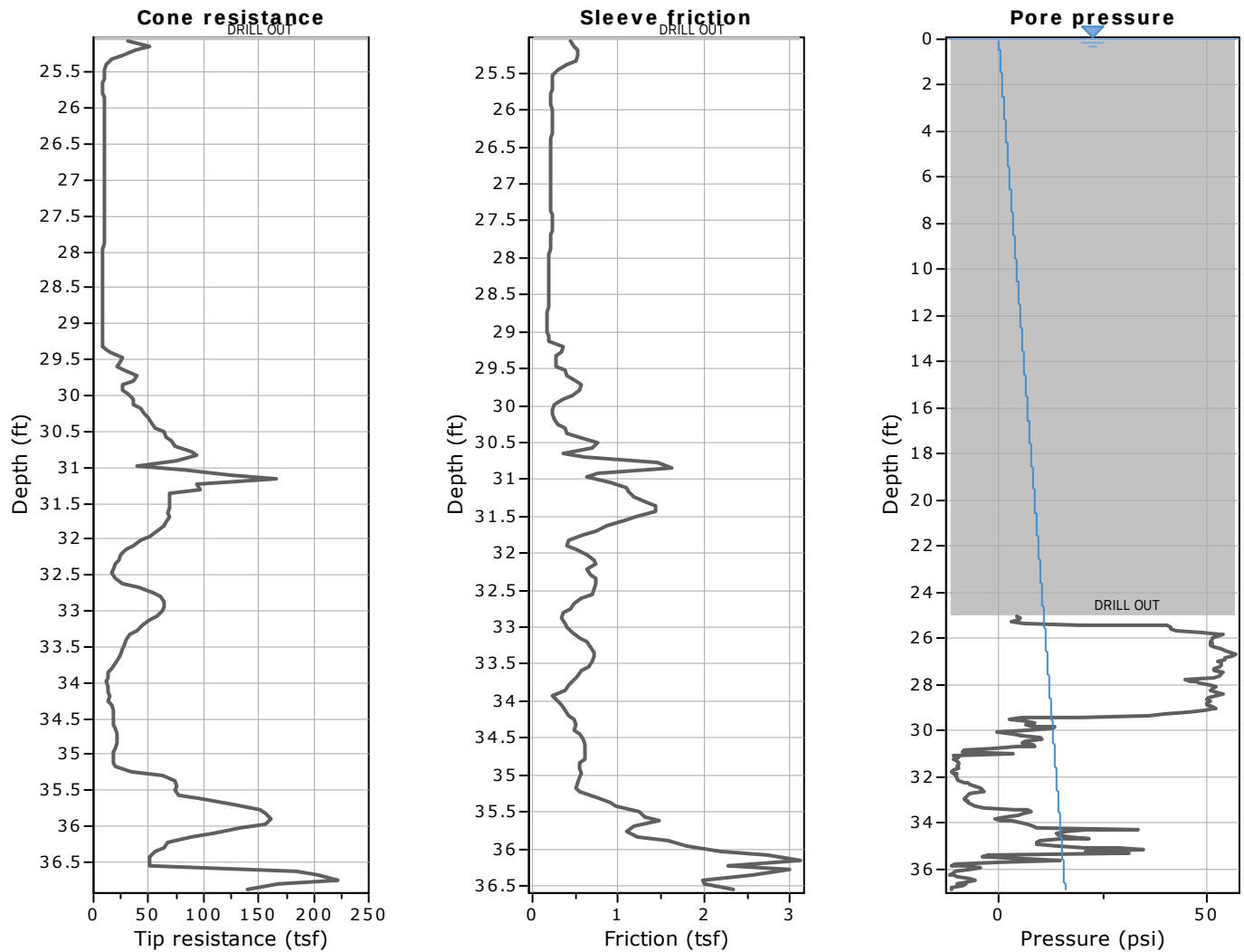


Project: GeoDesign

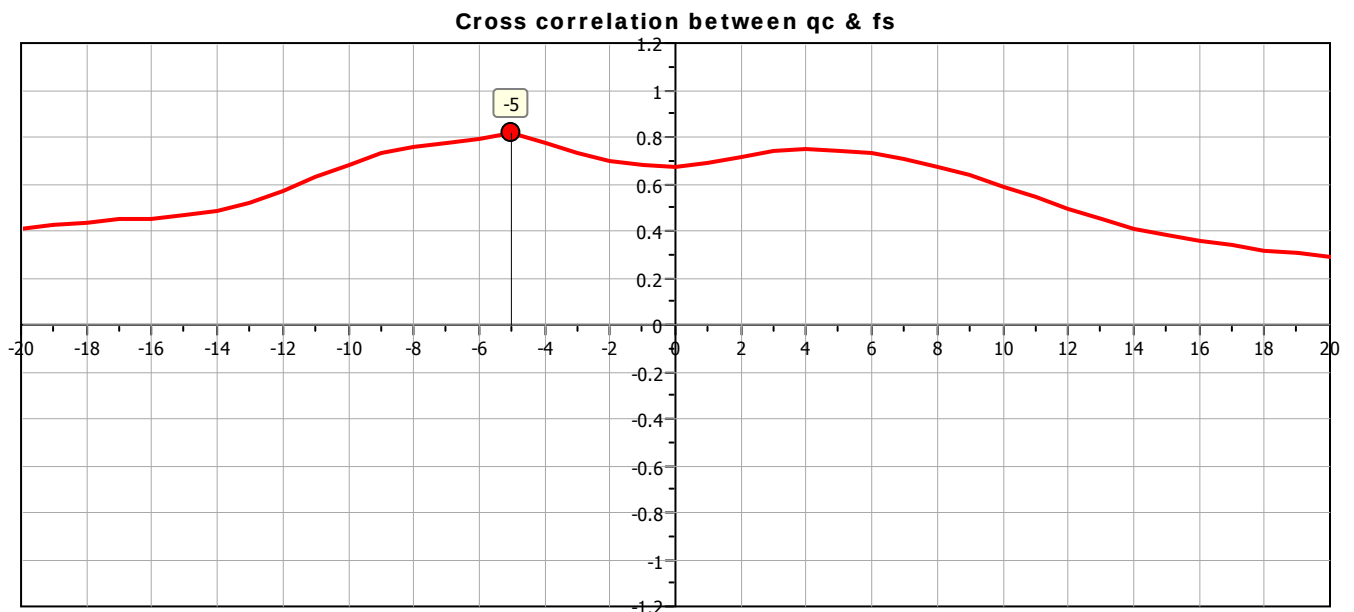
Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





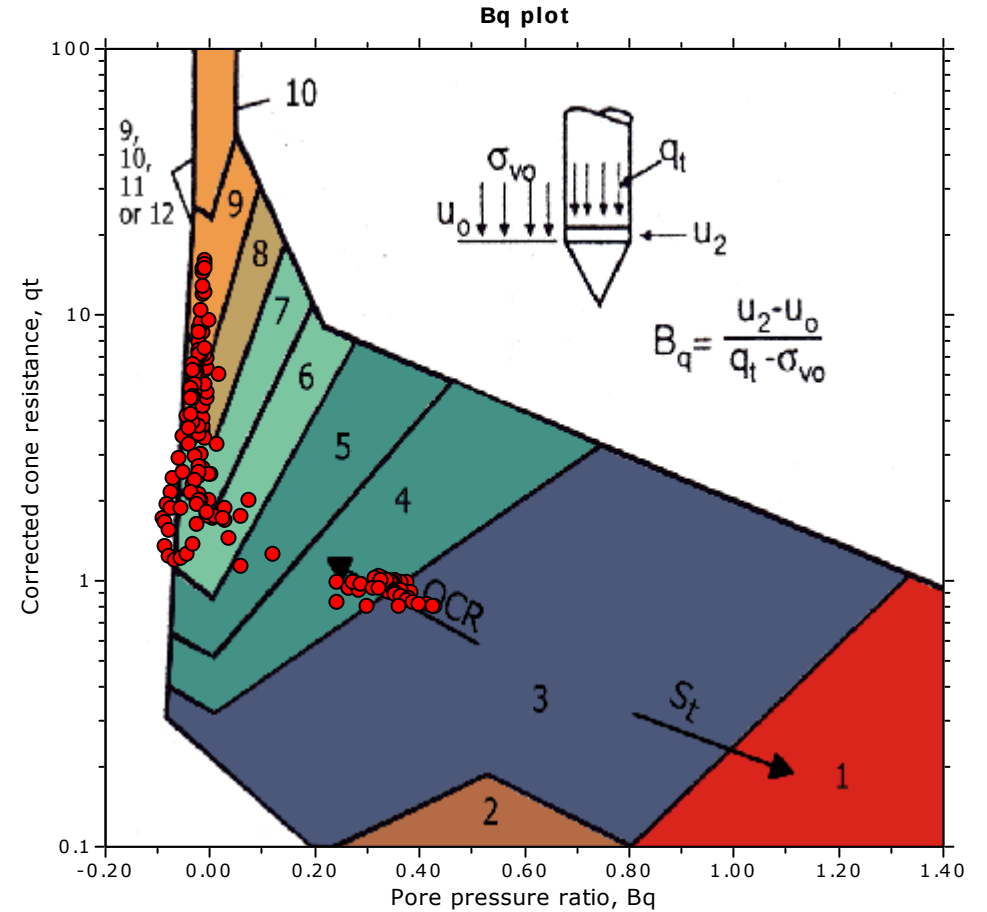
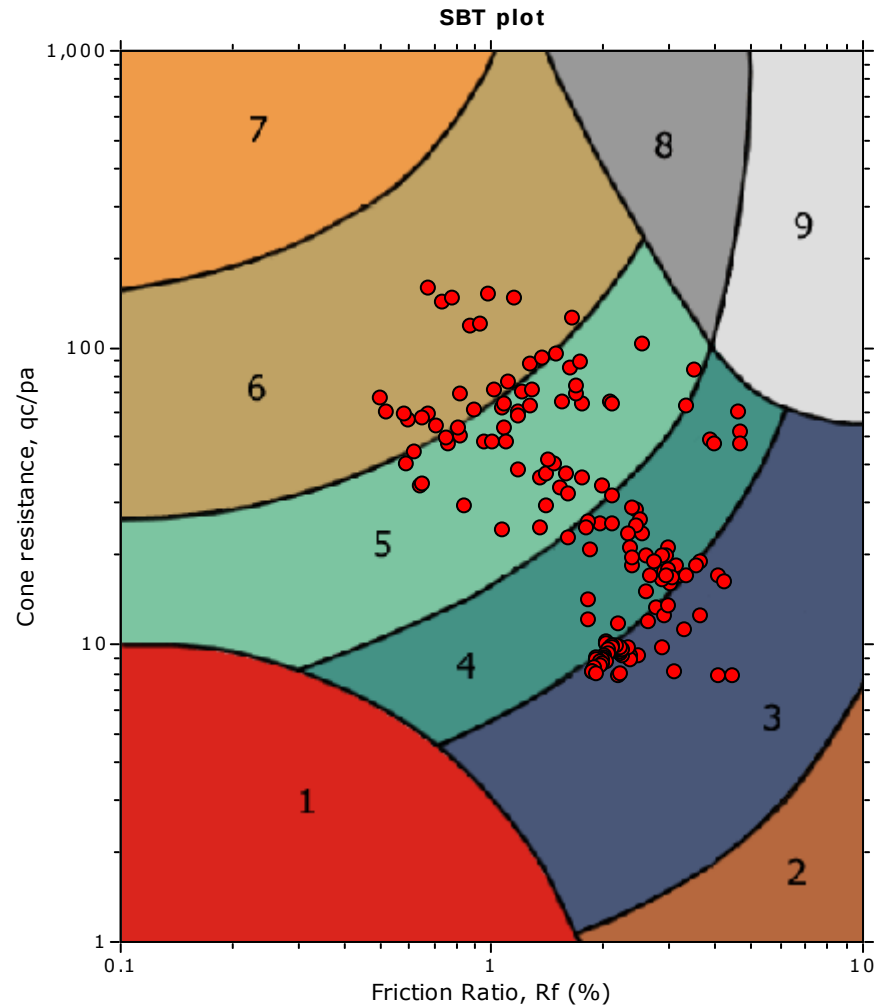
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft

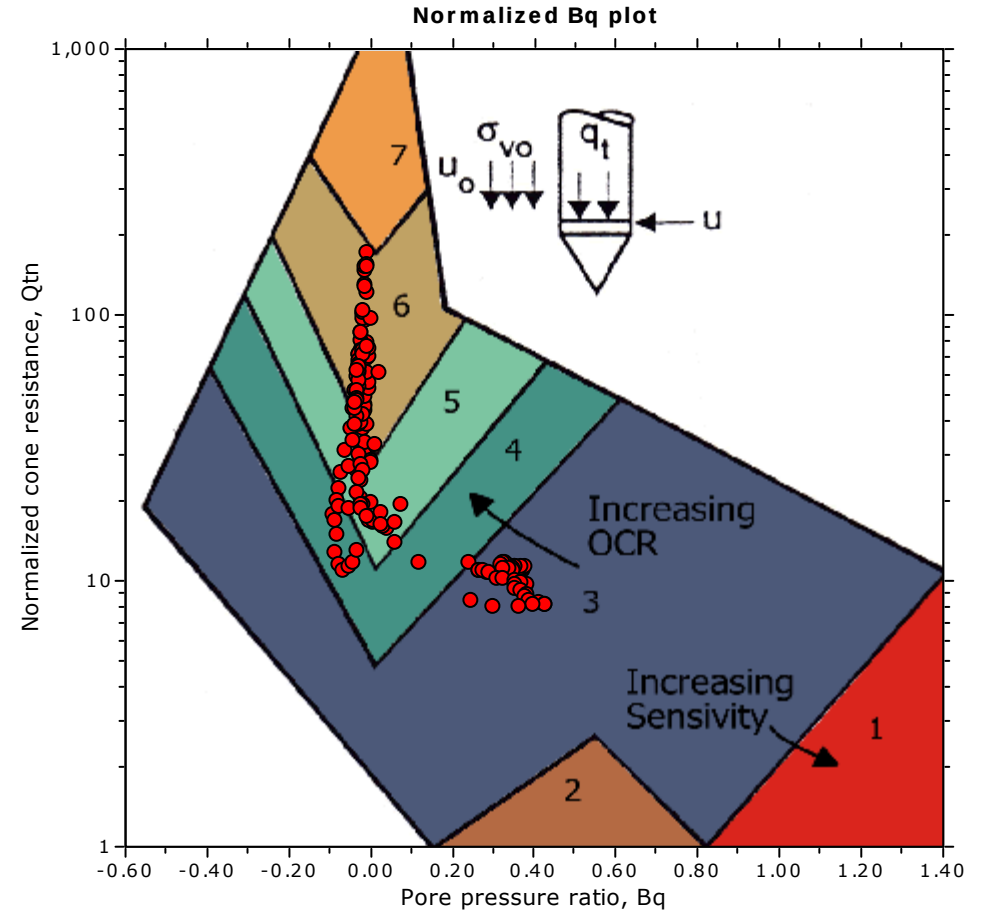
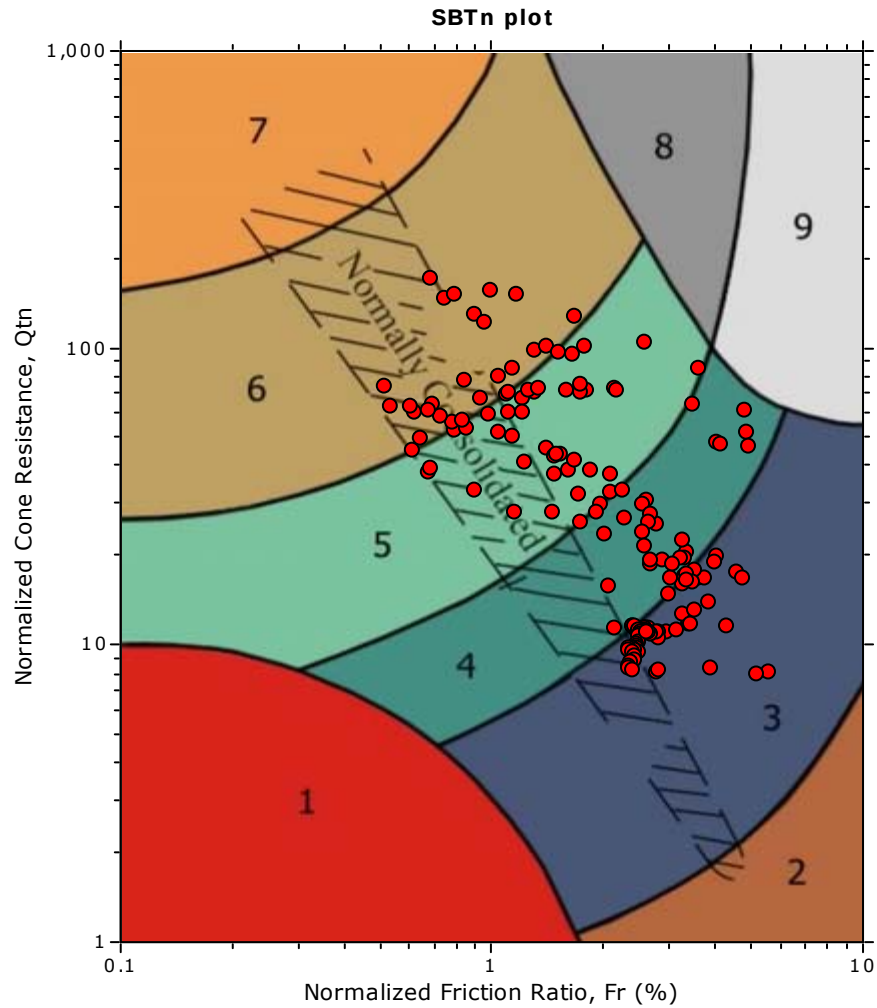
SBT - Bq plots



SBT legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |

SBT - Bq plots (normalized)



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



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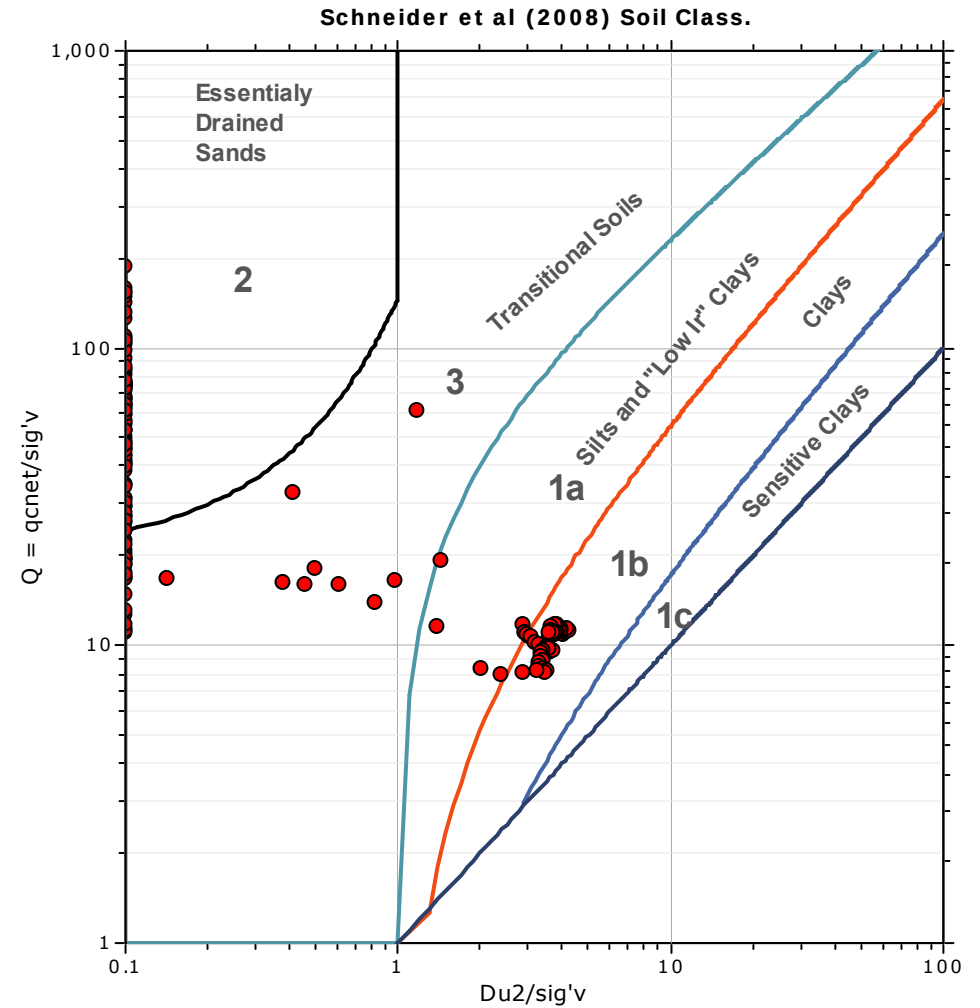
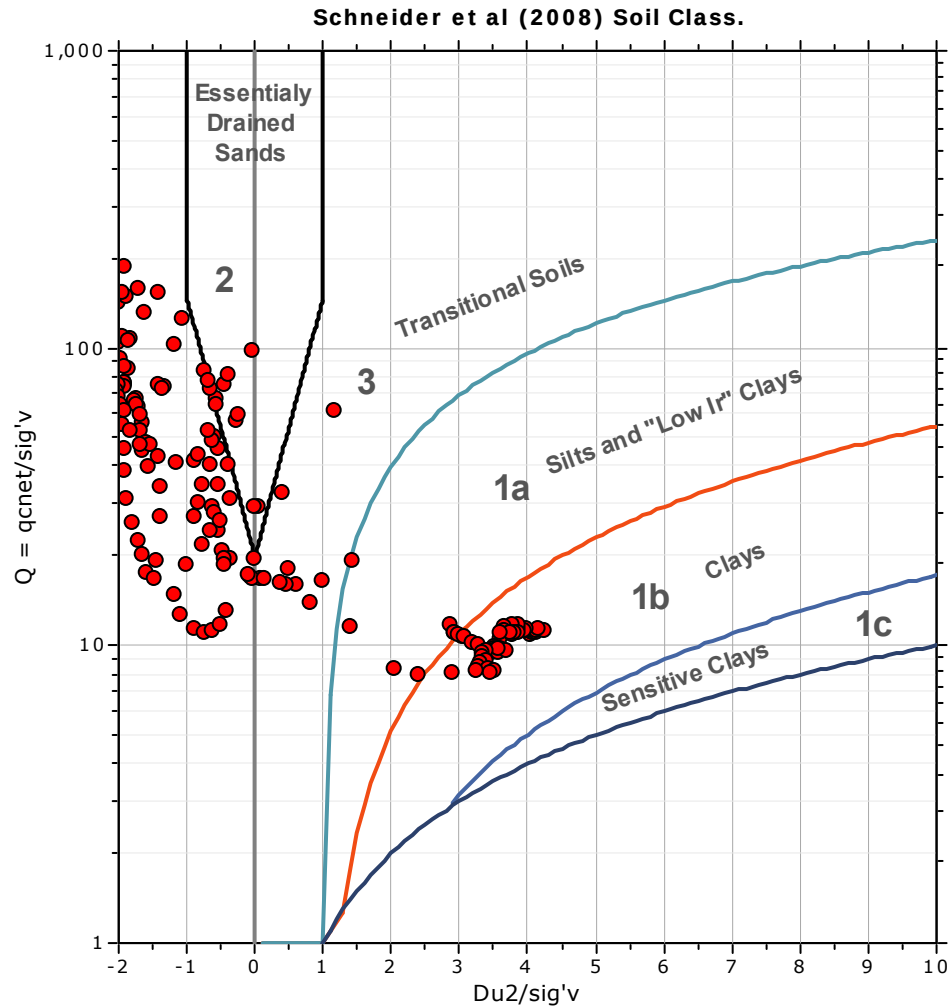
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-5

Total depth: 36.88 ft

Bq plots (Schneider)



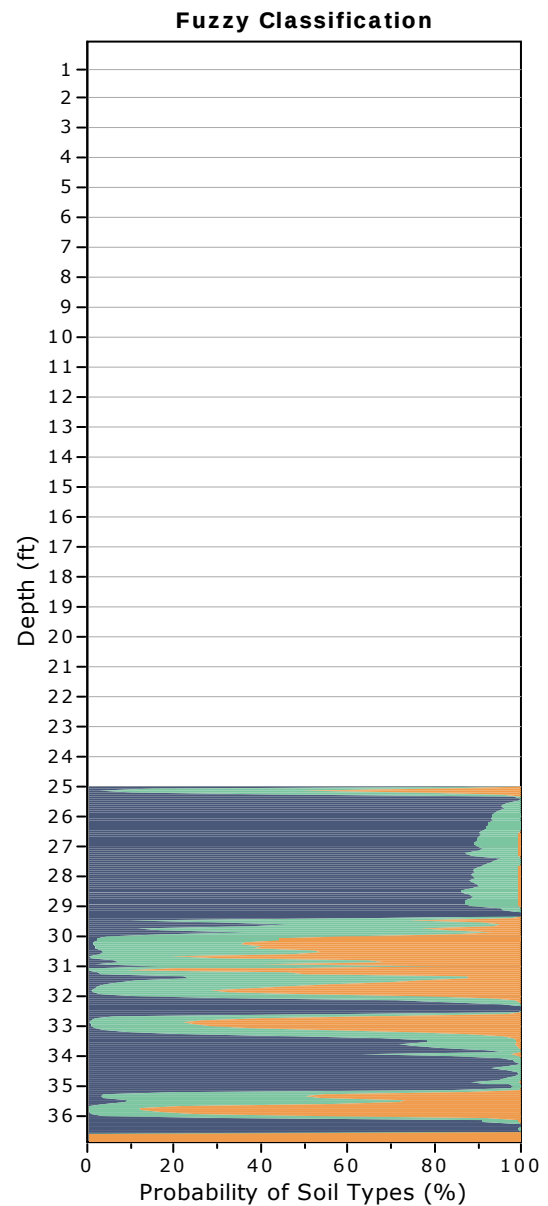
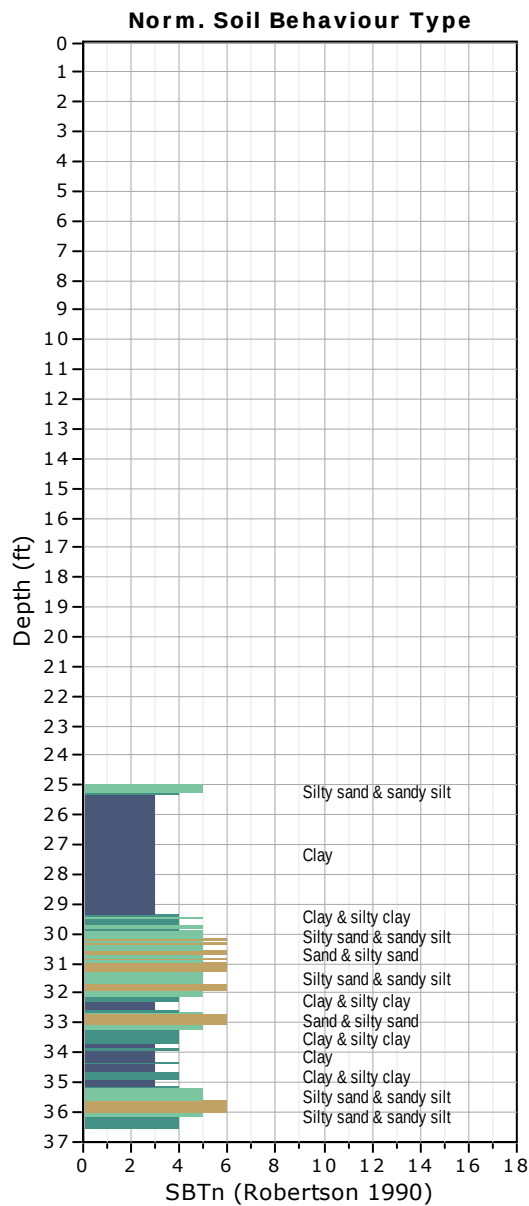


Project: **GeoDesign**

Location: **Stevenson Commons, Bronx NY**

CPT: B3-5

Total depth: 36.88 ft



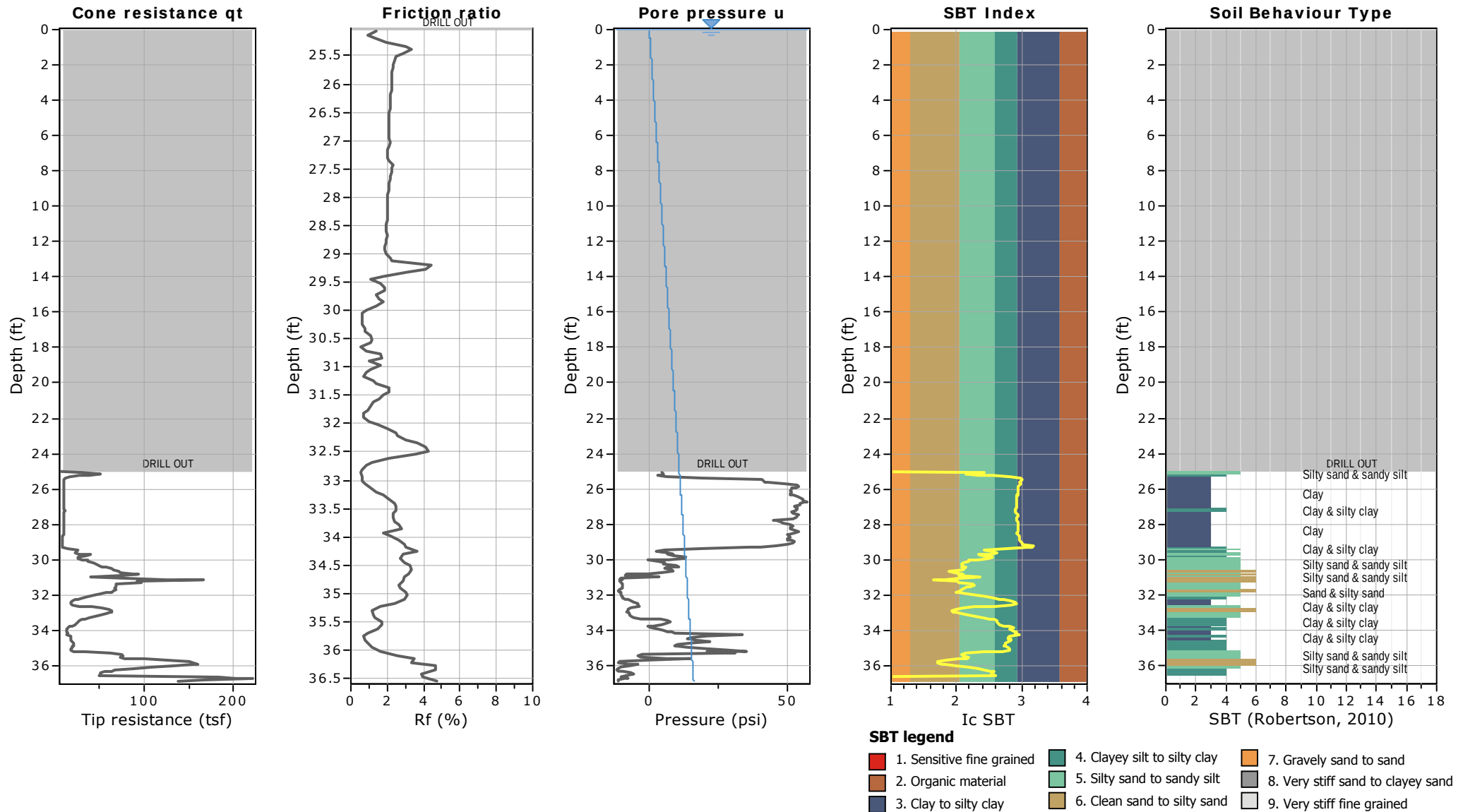


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft





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5435 Harding Hwy

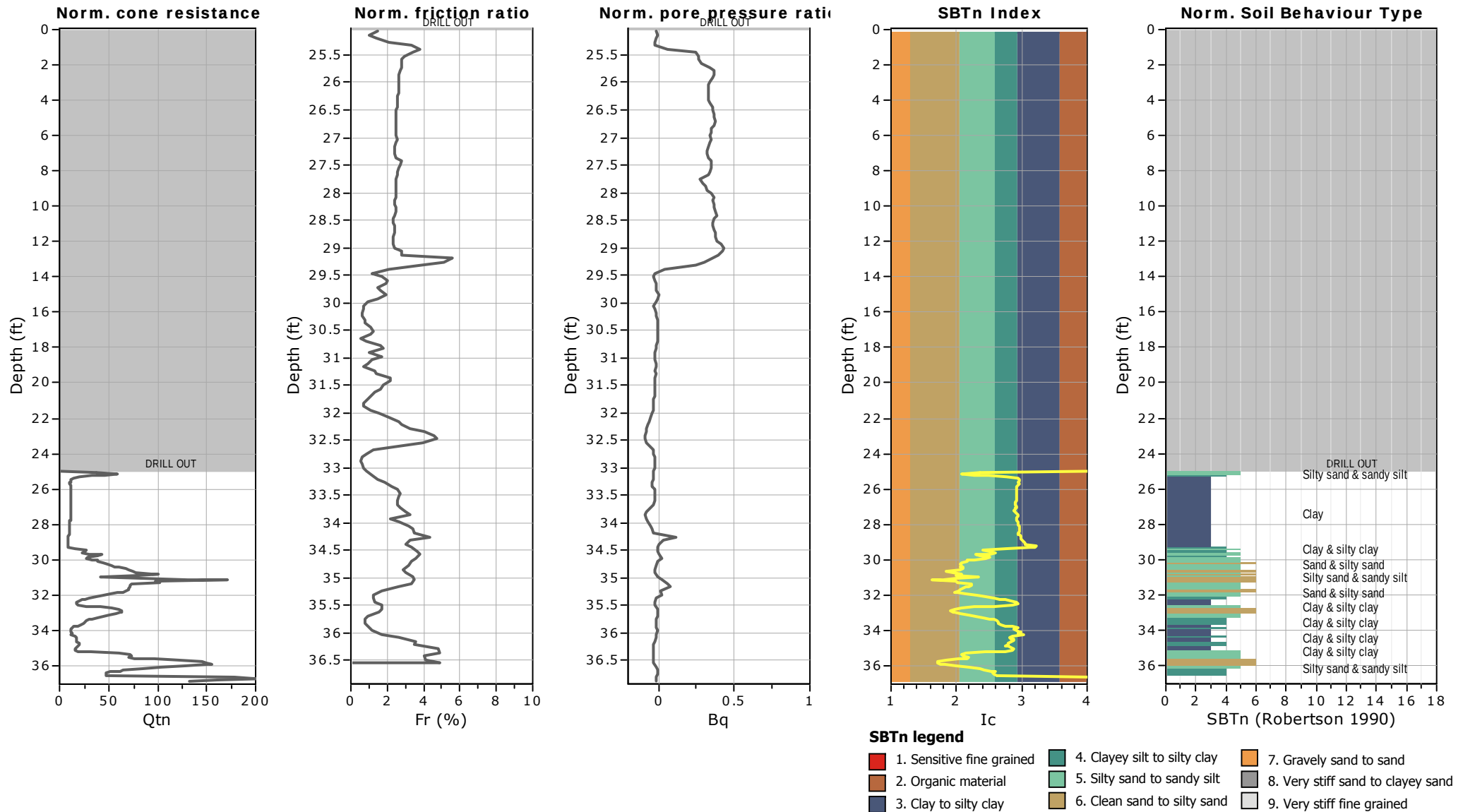
GEOTECHNICAL DRILLING CO., INC. Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-5

Total depth: 36.88 ft



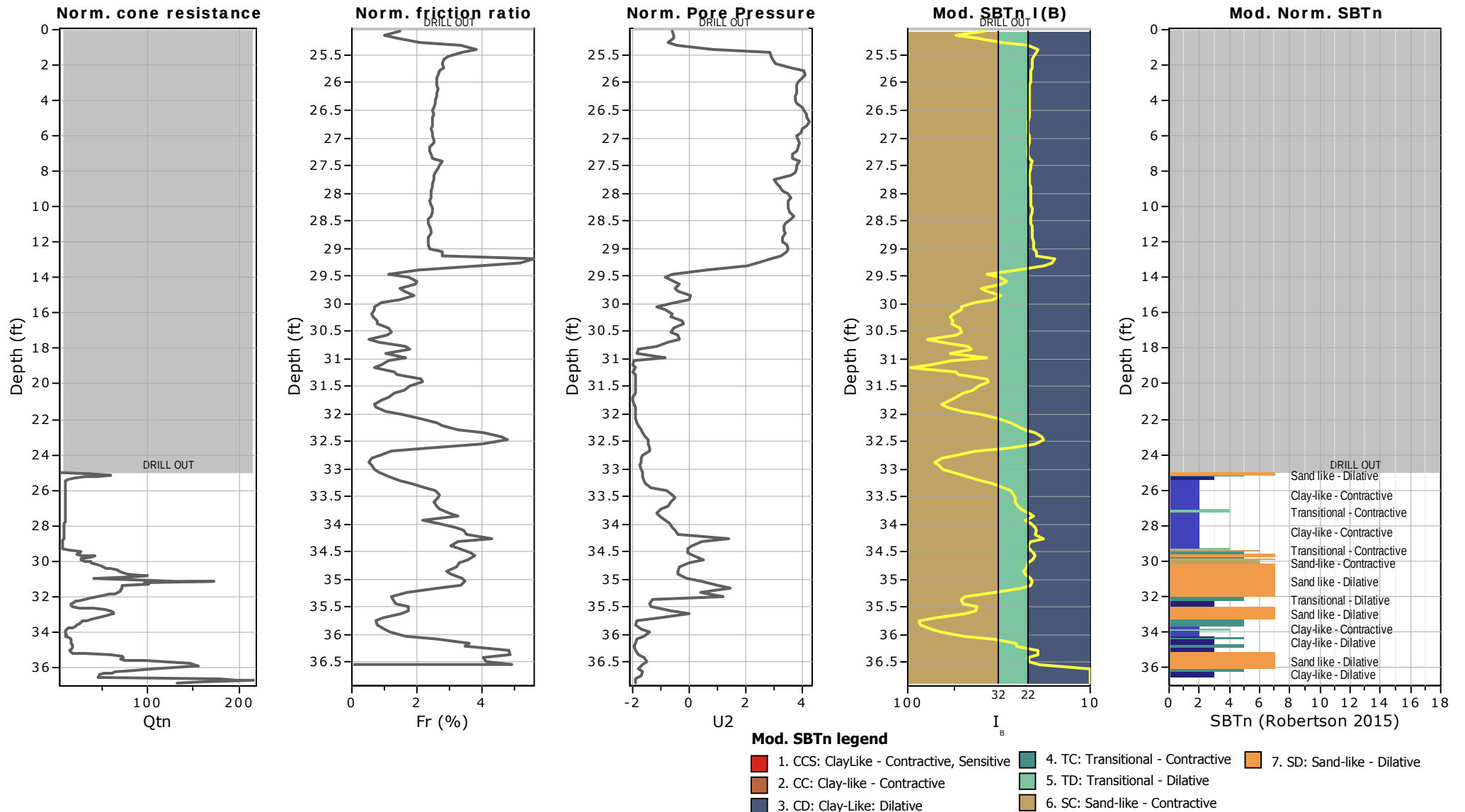


Project: GeoDesign

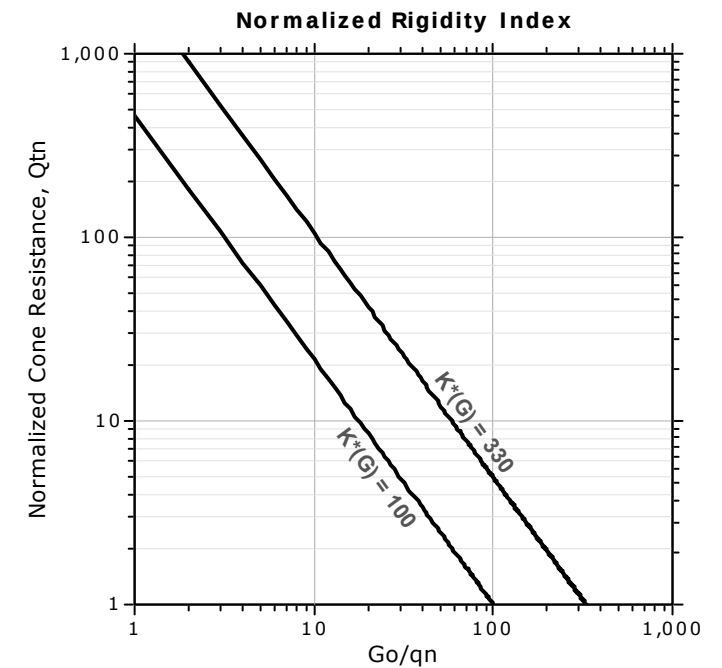
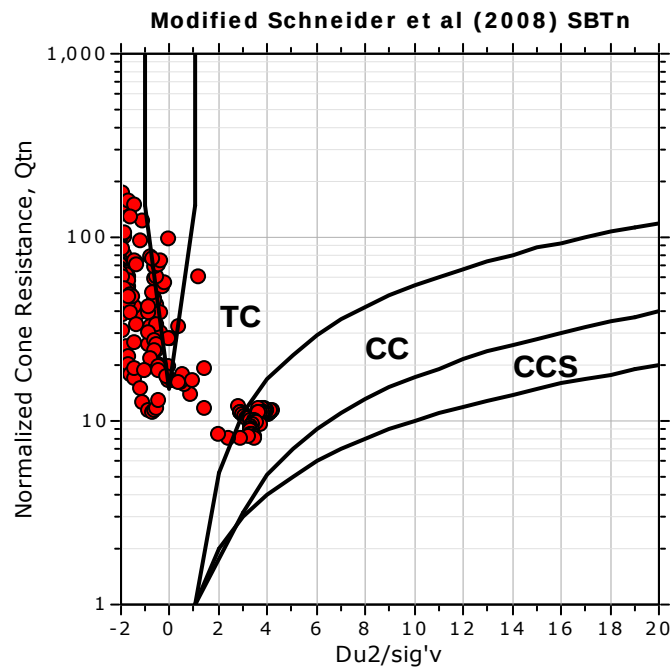
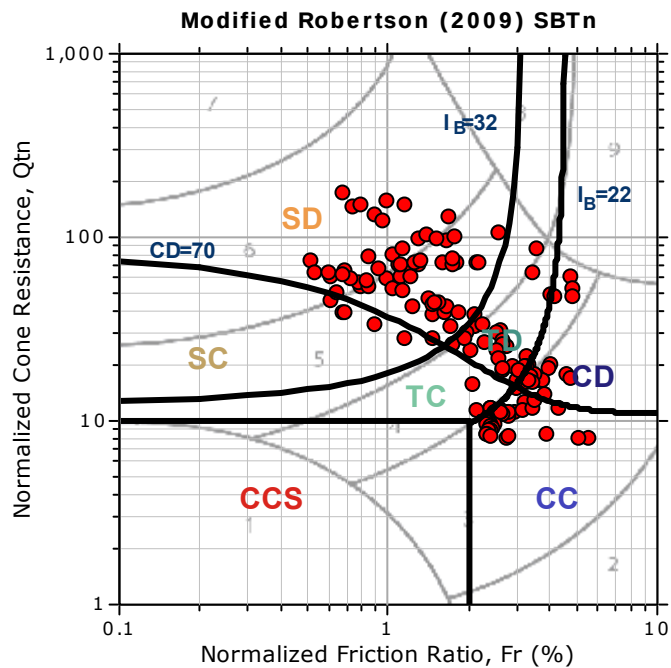
Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft



Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative



Craig Geotechnical Drilling

5435 Harding Hwy

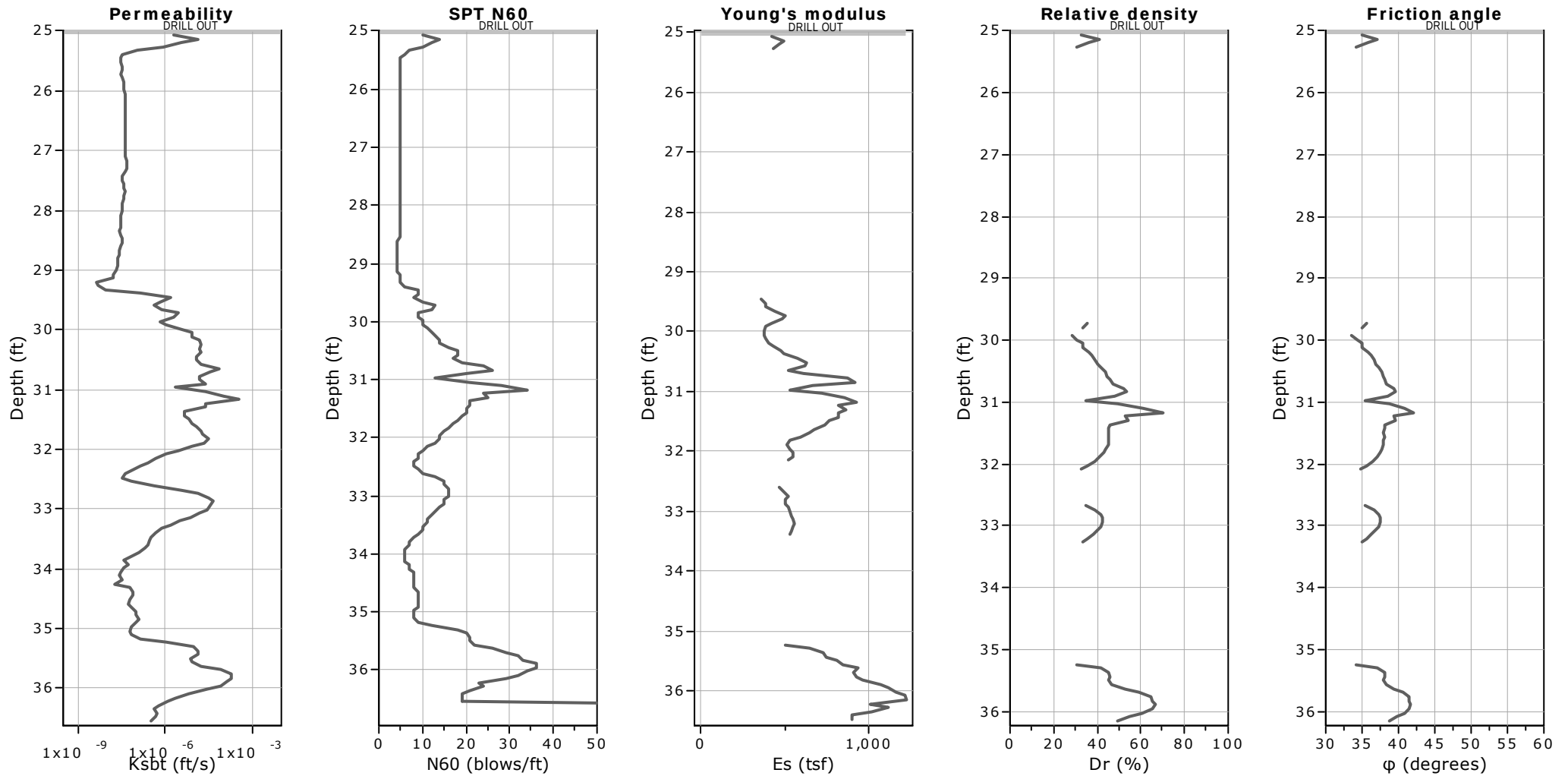
GEOTECHNICAL DRILLING CO., INC. Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft



Calculation parameters

Permeability: Based on SBT_n

SPT N_{60} : Based on I_c and q_t

Young's modulus: Based on variable α using I_c (Robertson, 2009)

Relative density constant, C_{Dr} : 350.0

Phi: Based on Kulhawy & Mayne (1990)

—●— User defined estimation data

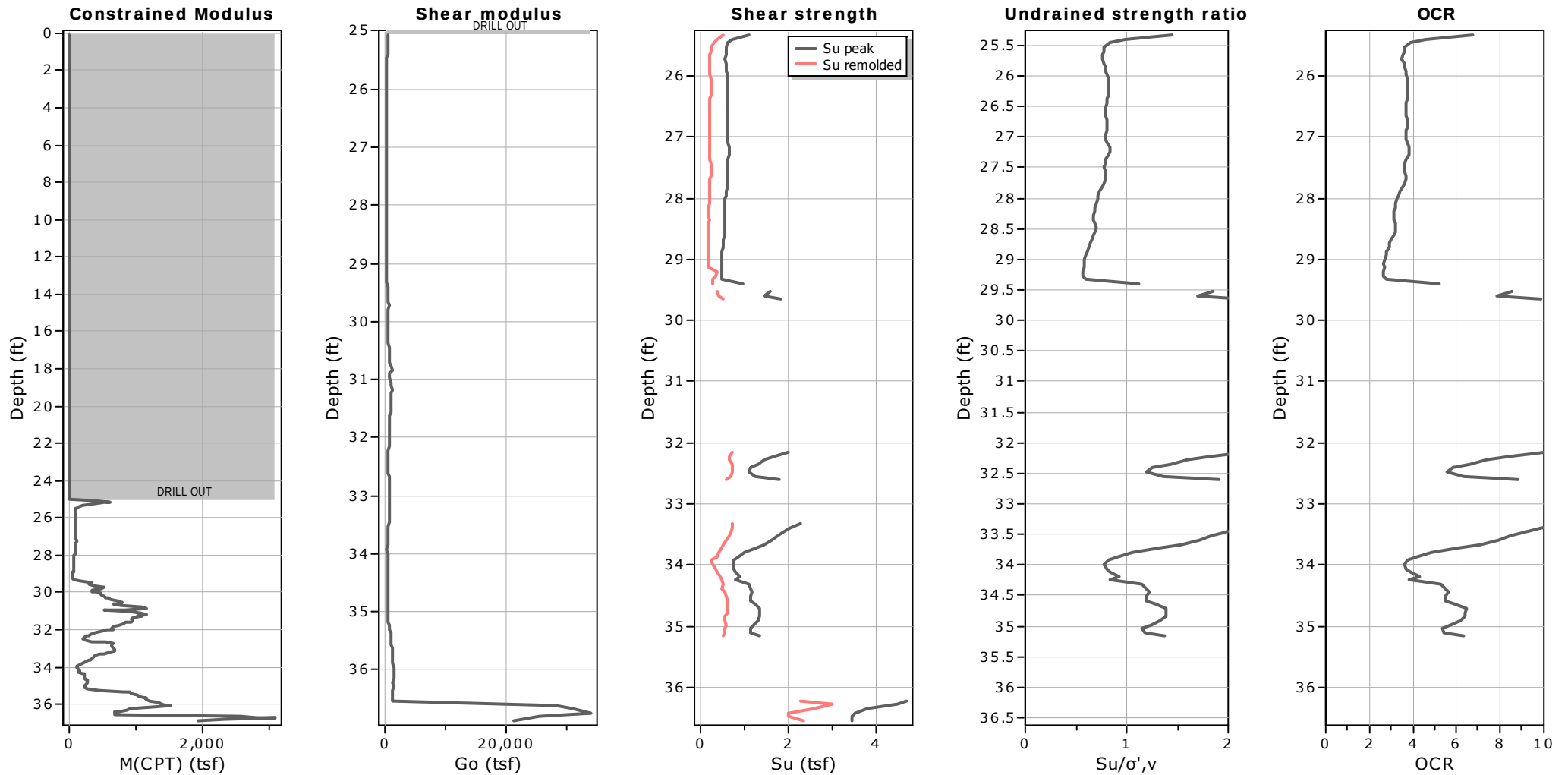


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft



Calculation parameters

Constrained modulus: Based on variable α using I_c and Q_m (Robertson, 2009)

Go: Based on variable α using I_c (Robertson, 2009)

Undrained shear strength cone factor for clays, N_{kt} : 14

OCR factor for clays, N_{kt} : 0.33

● User defined estimation data

● Flat Dilatometer Test data



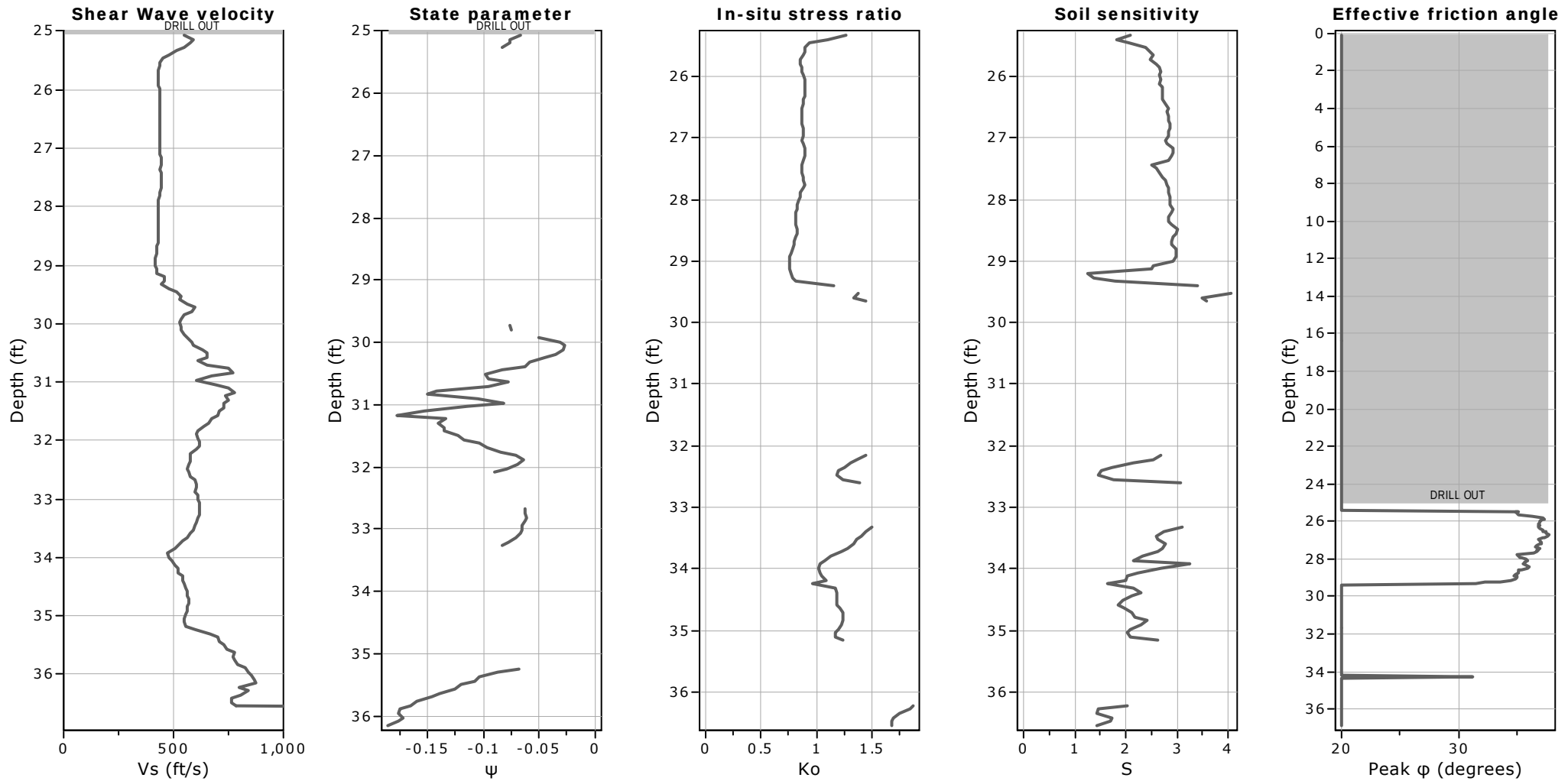
Craig Geotechnical Drilling
5435 Harding Hwy
Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft



Calculation parameters

Soil Sensitivity factor, N_s : 7.00

—●— User defined estimation data

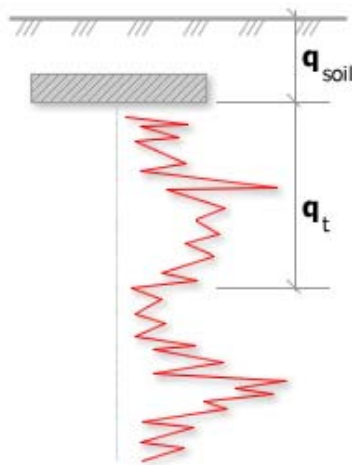


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-5

Total depth: 36.88 ft



Bearing Capacity calculation is performed based on the formula:

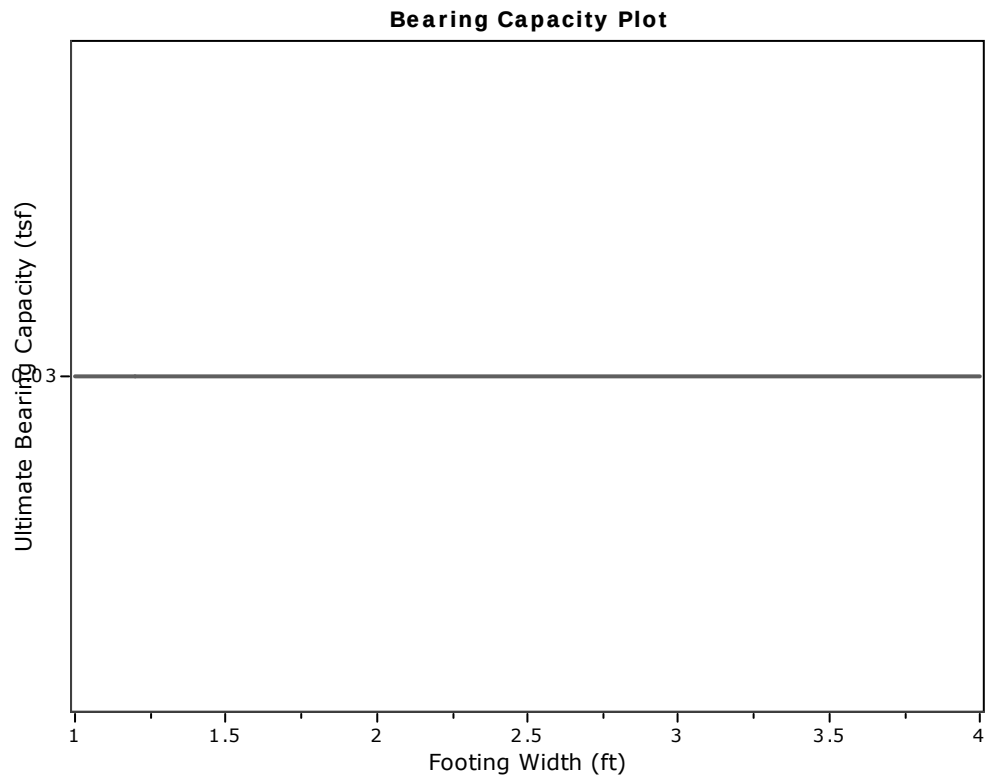
$$Q_{ult} = R_k \times q_t + q_{soil}$$

where:

R_k : Bearing capacity factor

q_t : Average corrected cone resistance over calculation depth

q_{soil} : Pressure applied by soil above footing



:: Tabular results ::

No	B (ft)	Start Depth (ft)	End Depth (ft)	Ave. q_t (tsf)	R_k	Soil Press. (tsf)	Ult. bearing cap. (tsf)
1	1.00	0.50	2.00	0.00	0.20	0.03	0.03
2	1.20	0.50	2.30	0.00	0.20	0.03	0.03
3	1.40	0.50	2.60	0.00	0.20	0.03	0.03
4	1.60	0.50	2.90	0.00	0.20	0.03	0.03
5	1.80	0.50	3.20	0.00	0.20	0.03	0.03
6	2.00	0.50	3.50	0.00	0.20	0.03	0.03
7	2.20	0.50	3.80	0.00	0.20	0.03	0.03
8	2.40	0.50	4.10	0.00	0.20	0.03	0.03
9	2.60	0.50	4.40	0.00	0.20	0.03	0.03
10	2.80	0.50	4.70	0.00	0.20	0.03	0.03
11	3.00	0.50	5.00	0.00	0.20	0.03	0.03
12	3.20	0.50	5.30	0.00	0.20	0.03	0.03
13	3.40	0.50	5.60	0.00	0.20	0.03	0.03
14	3.60	0.50	5.90	0.00	0.20	0.03	0.03
15	3.80	0.50	6.20	0.00	0.20	0.03	0.03
16	4.00	0.50	6.50	0.00	0.20	0.03	0.03

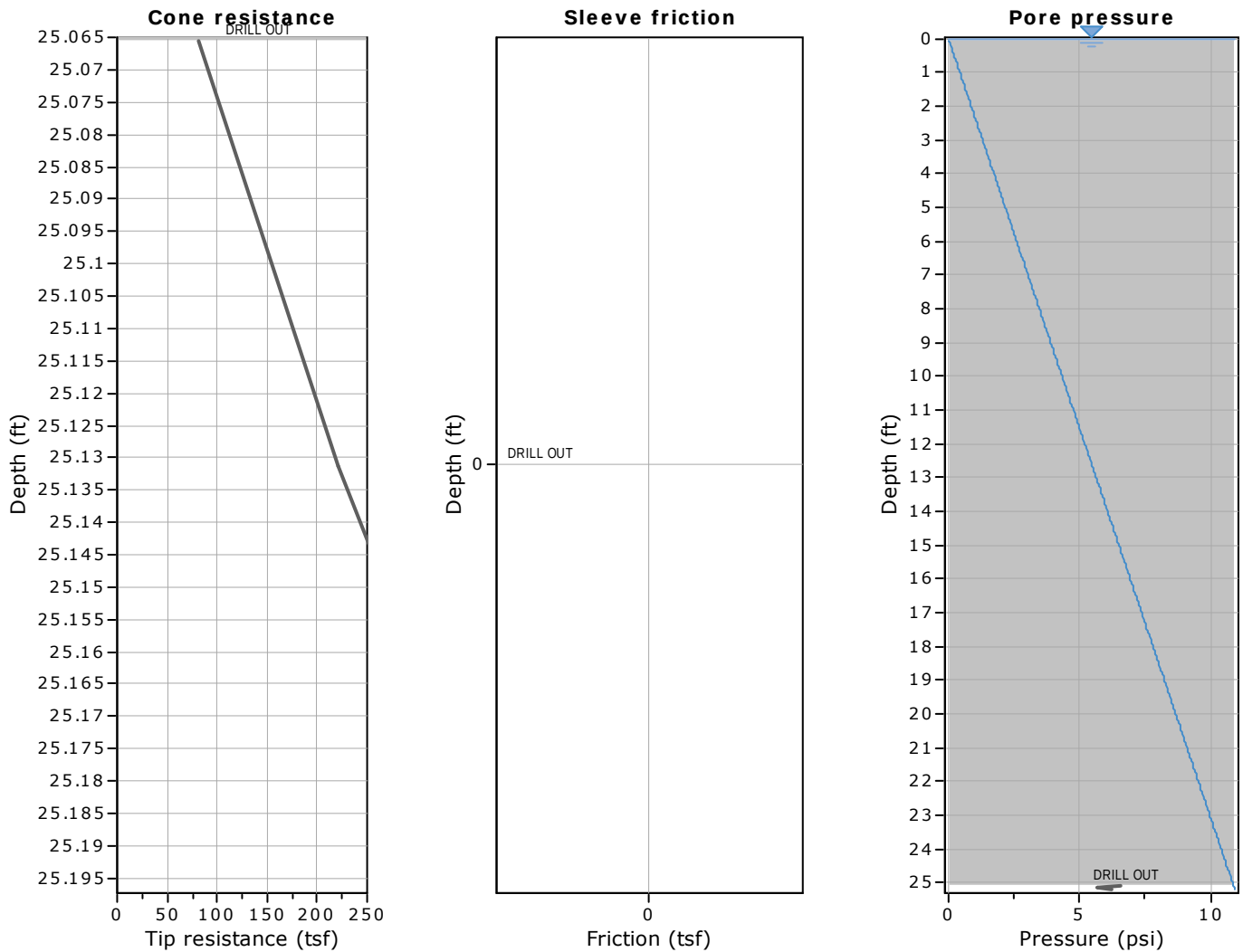


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

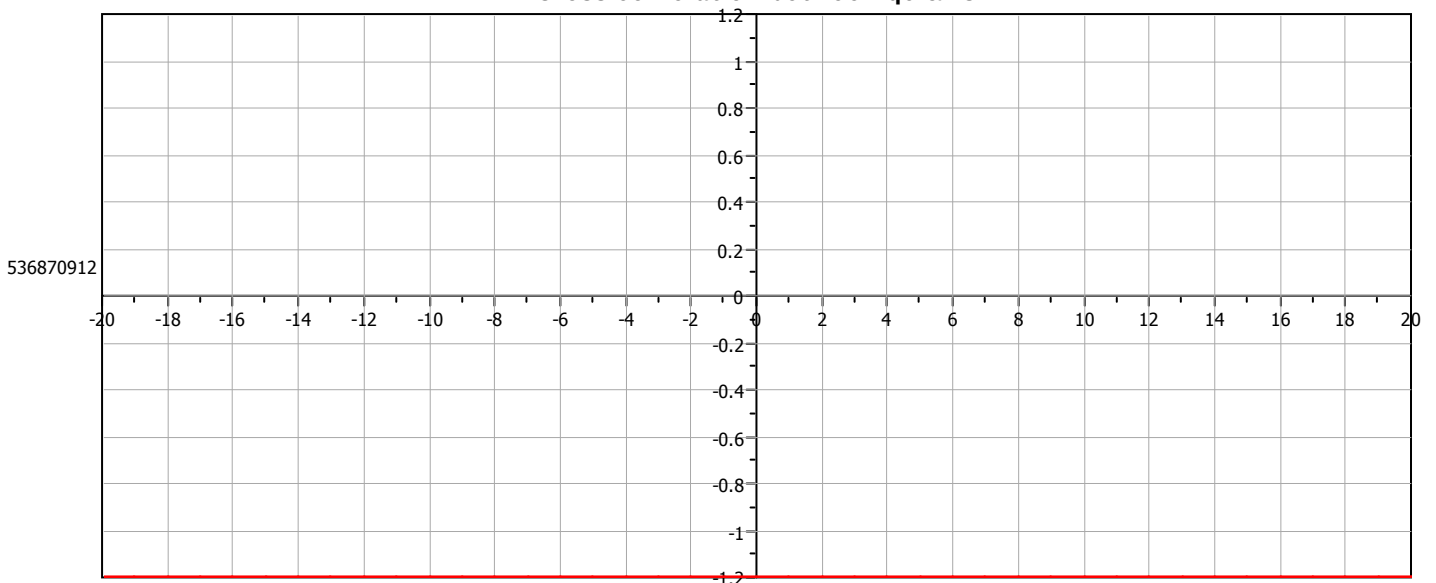
B3-7

Total depth: 25.20 ft



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).

Cross correlation between qc & fs





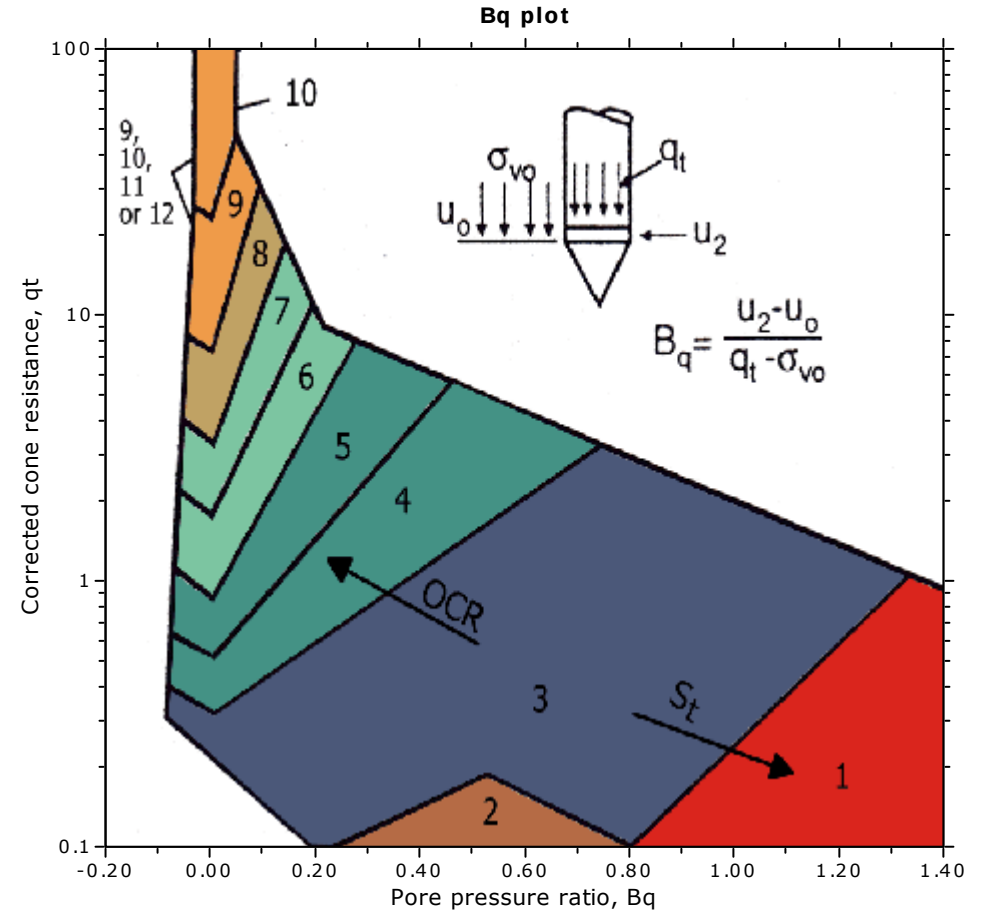
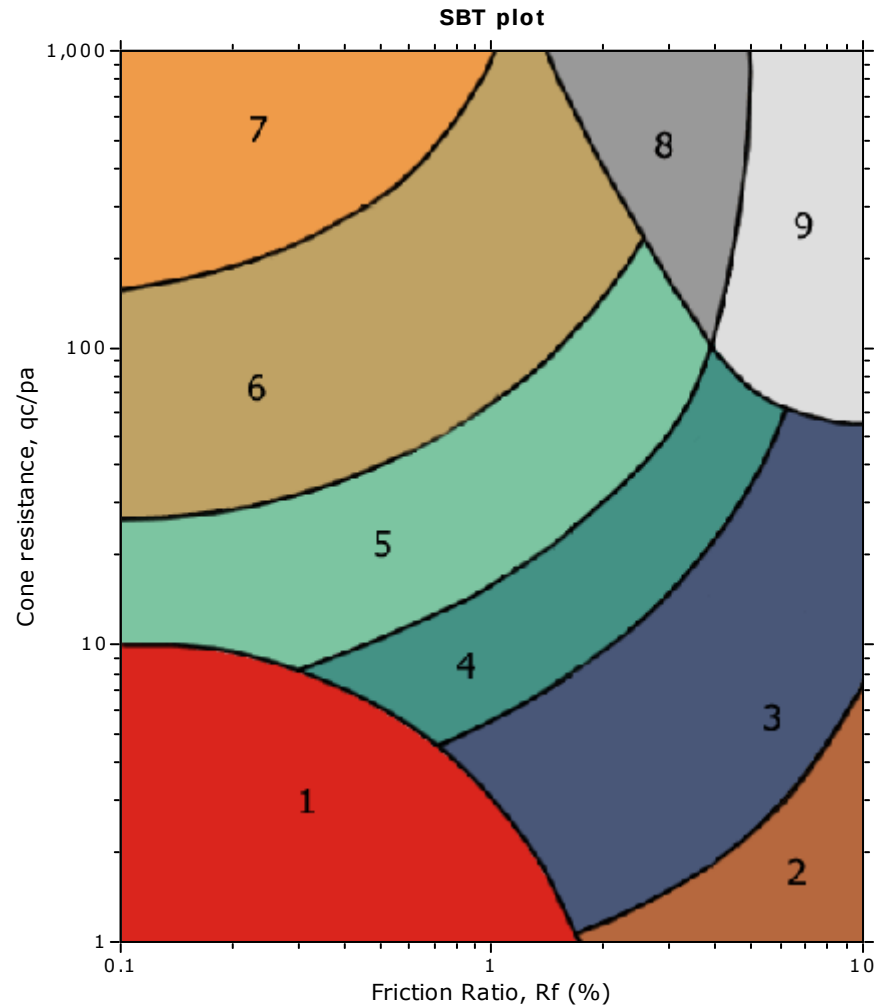
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft

SBT - Bq plots



SBT legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



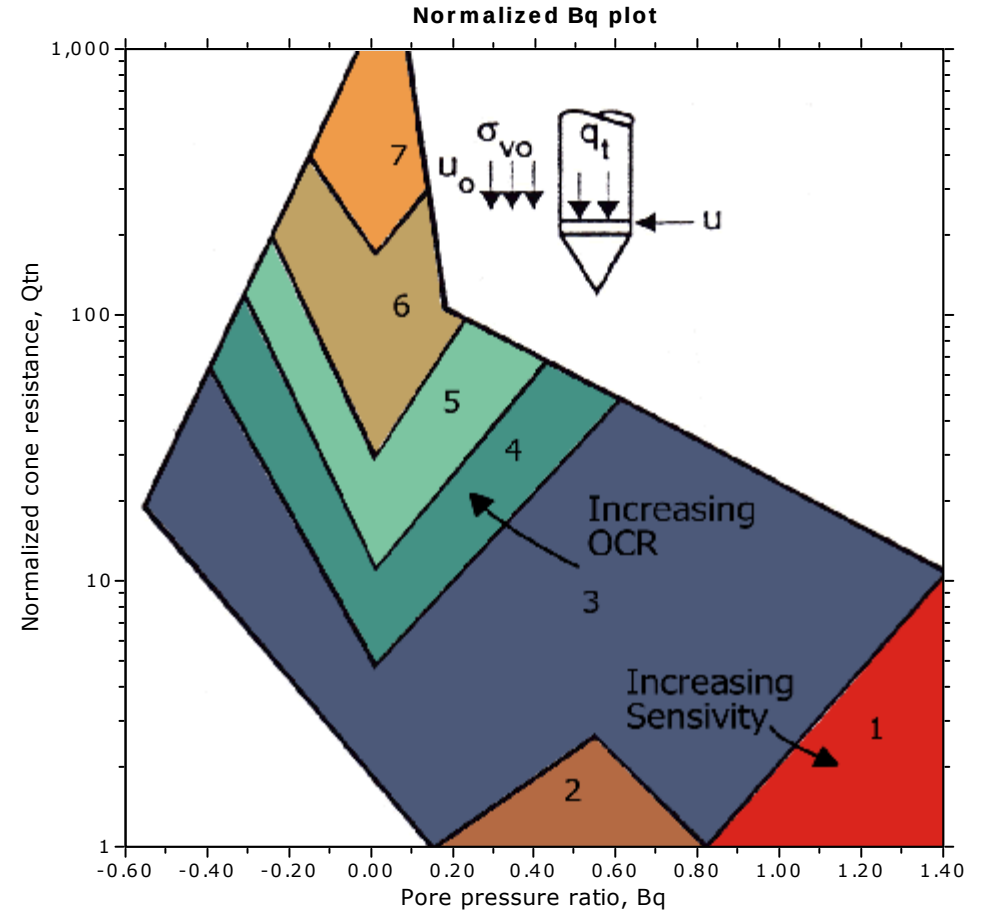
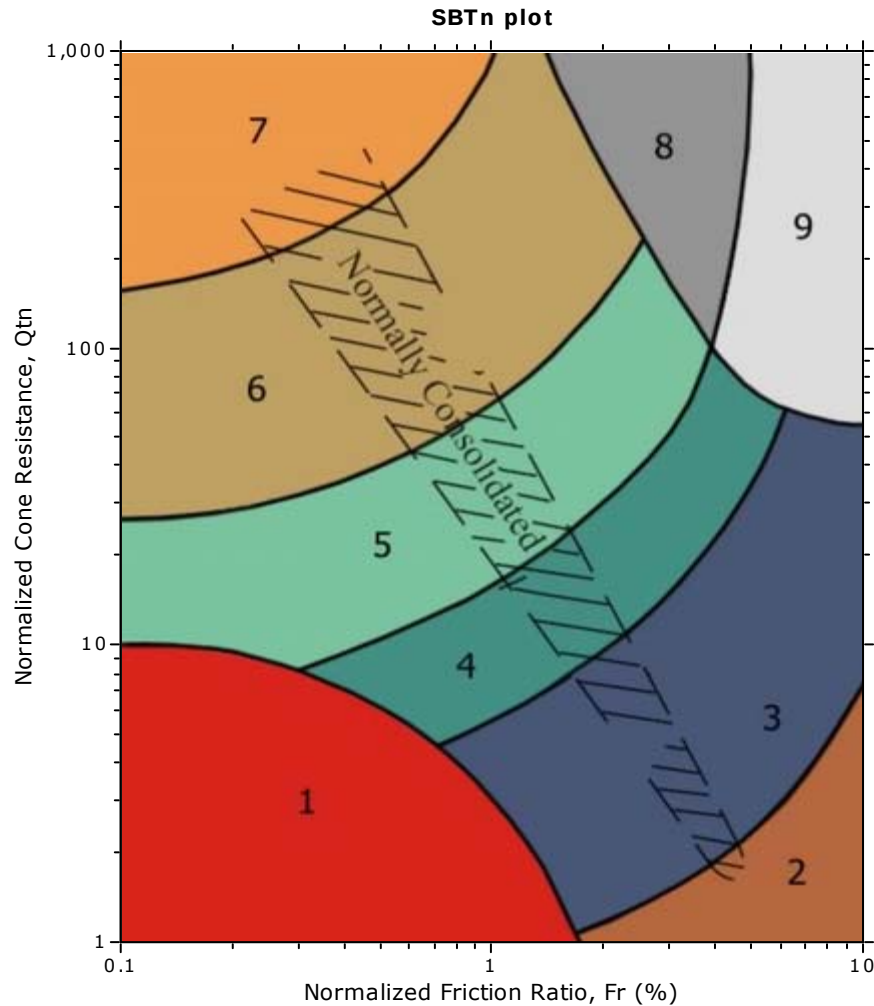
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-7

Total depth: 25.20 ft

SBT - Bq plots (normalized)

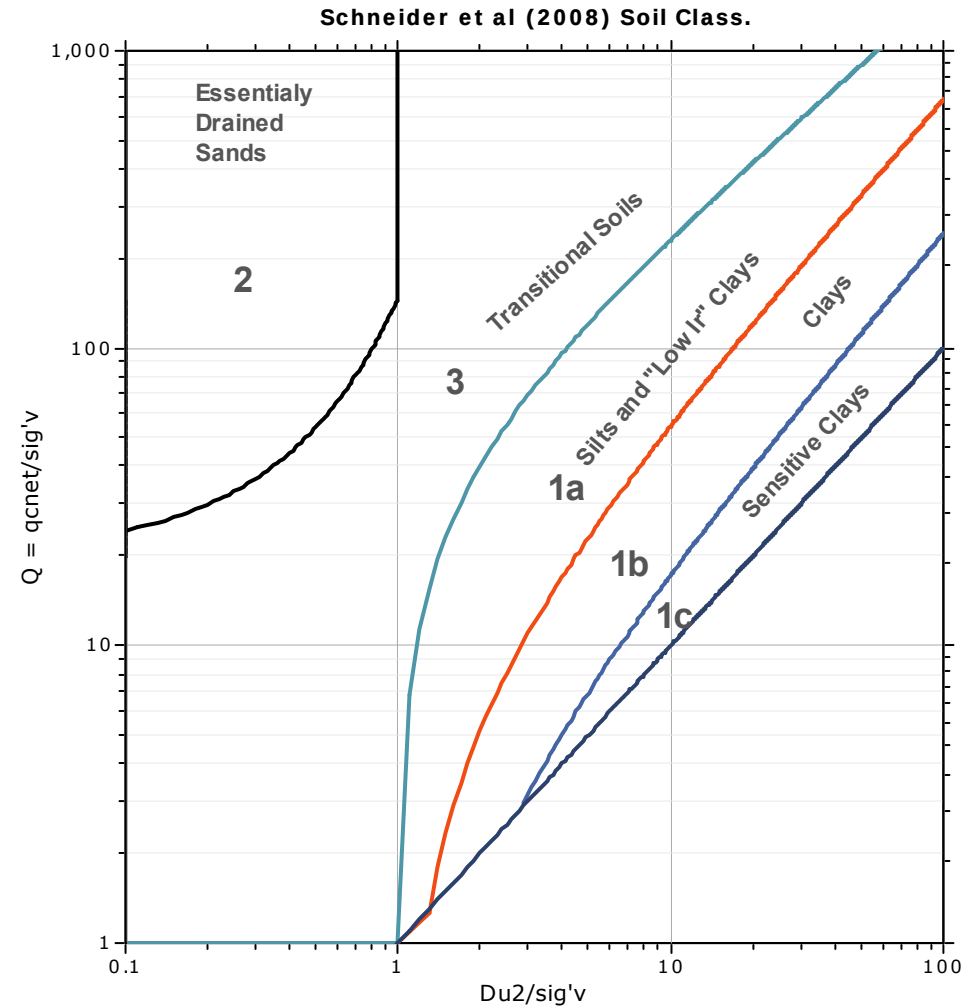
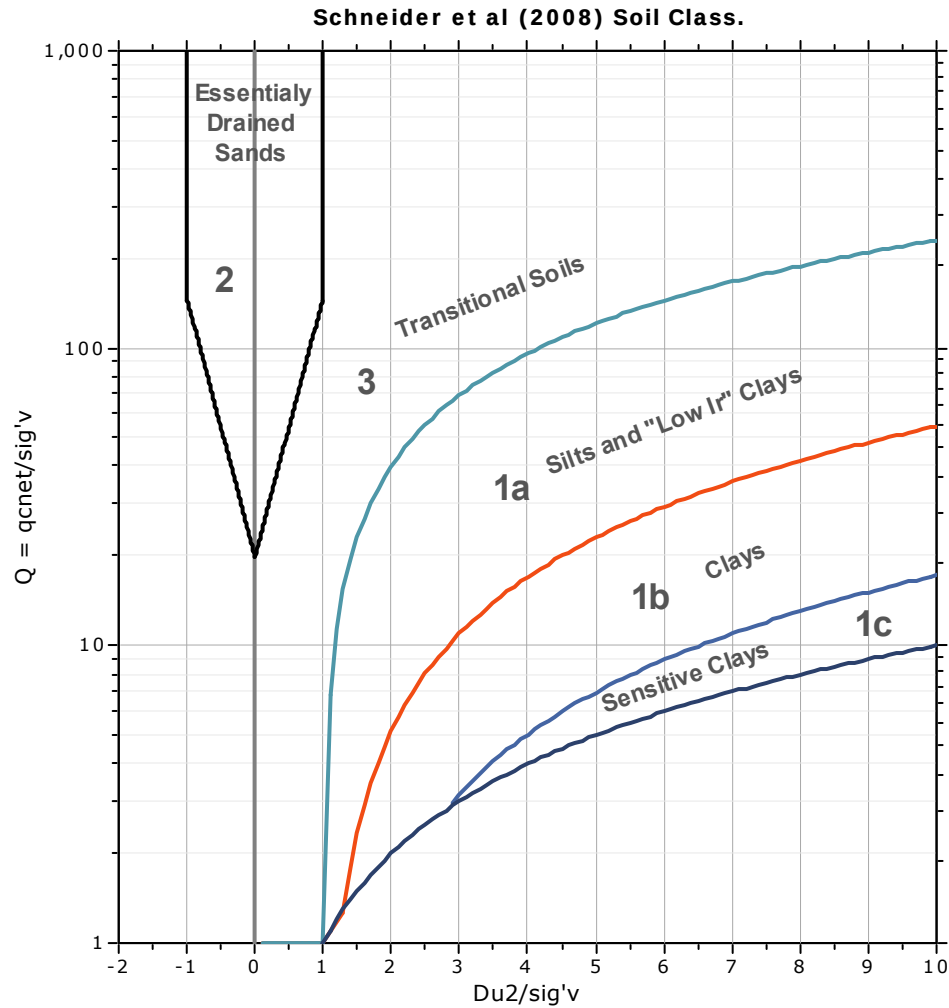


SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |



Bq plots (Schneider)



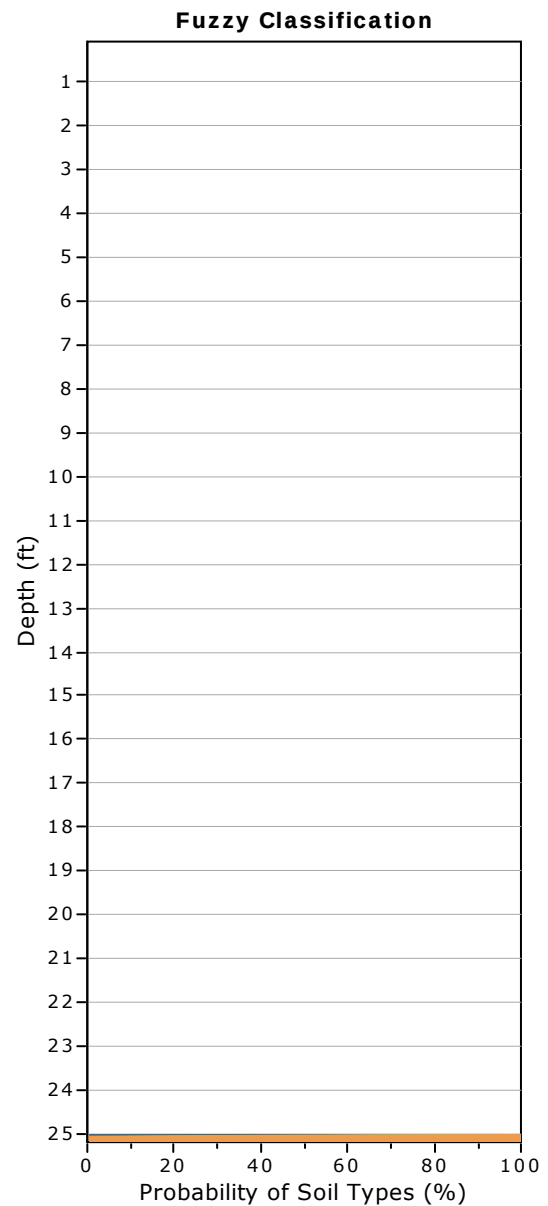
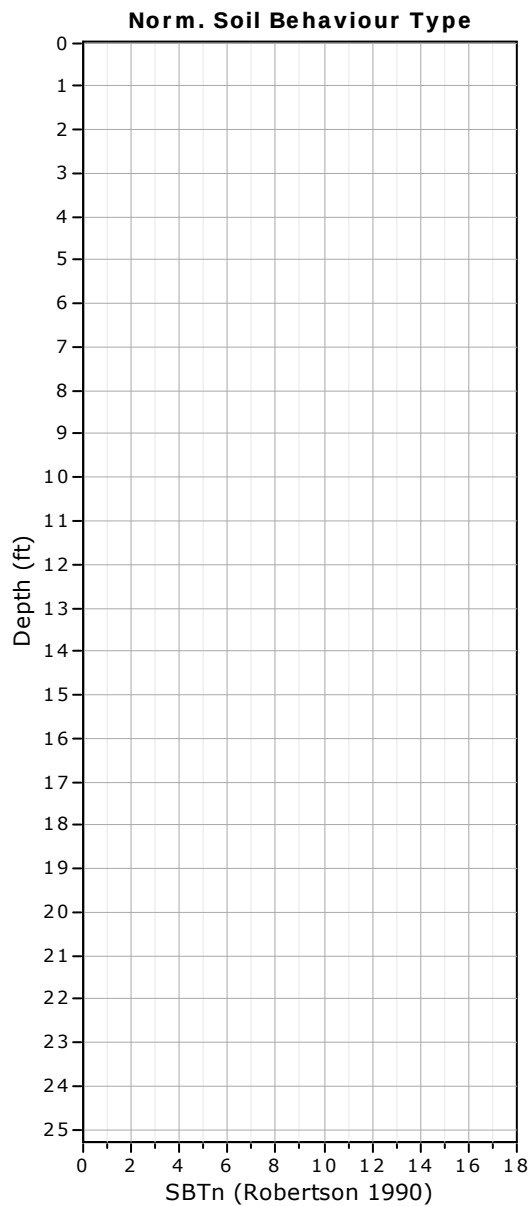


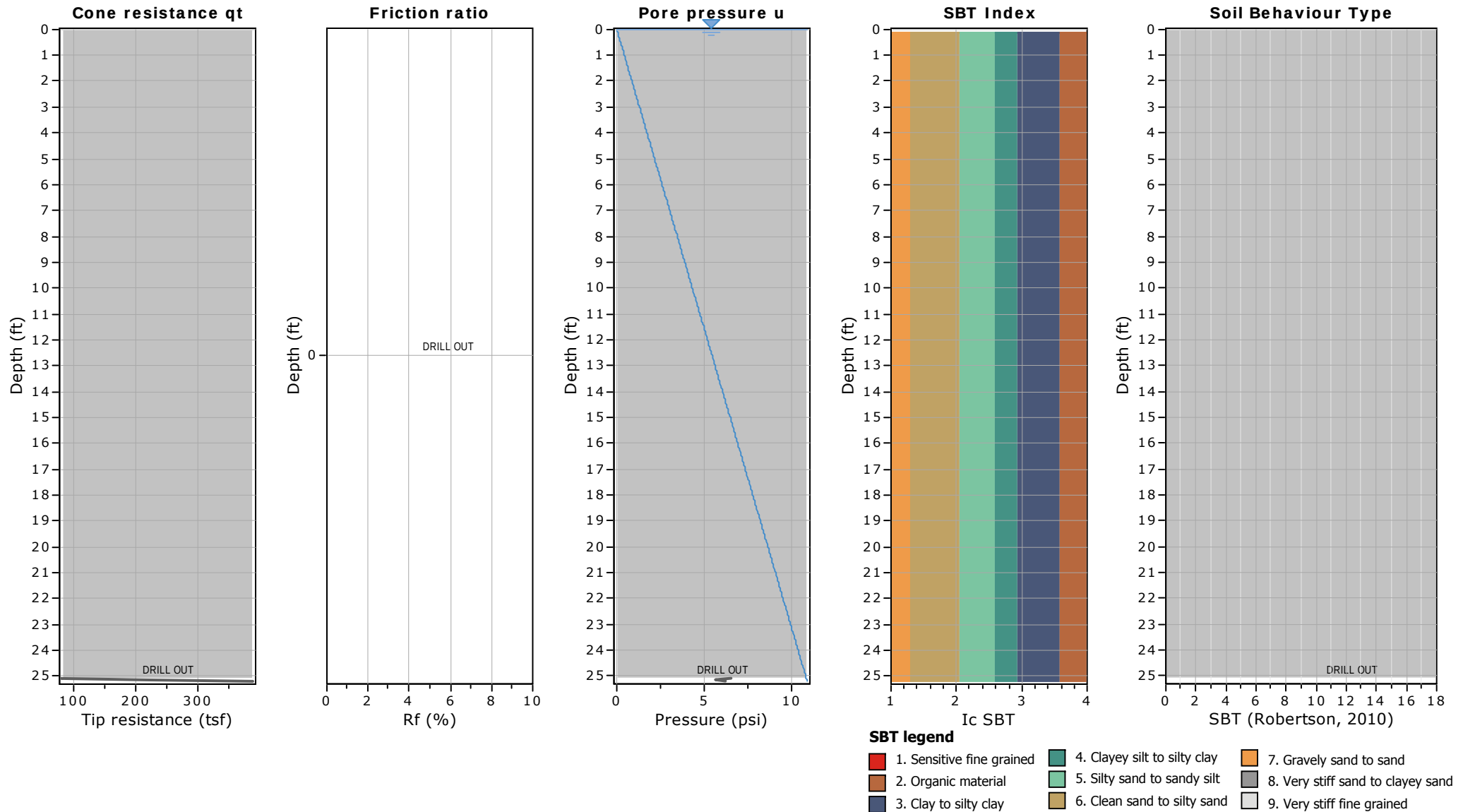
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

CPT: B3-7

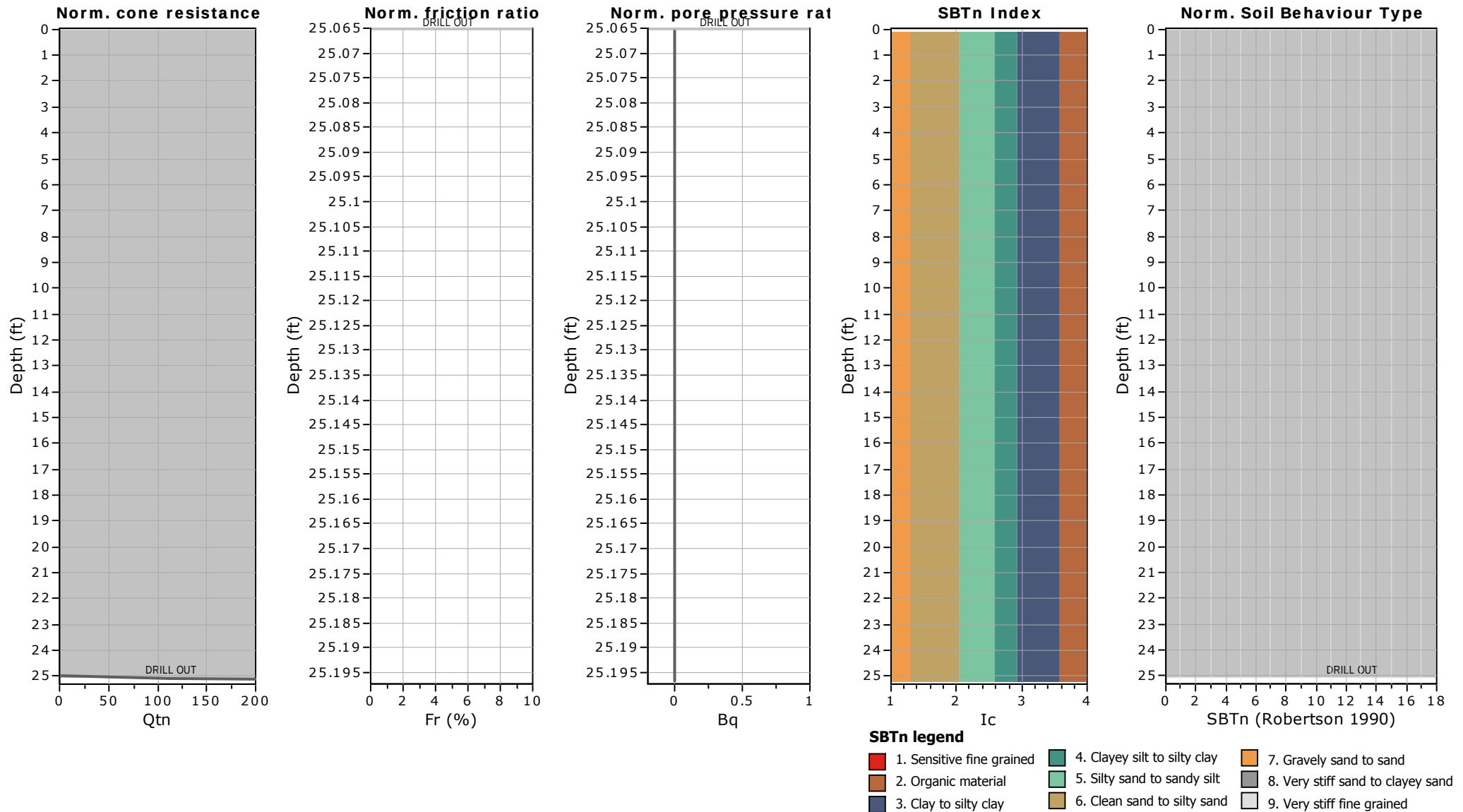
Total depth: 25.20 ft





Project: GeoDesign
Location: Stevenson Commons, Bronx NY

CPT: B3-7
Total depth: 25.20 ft



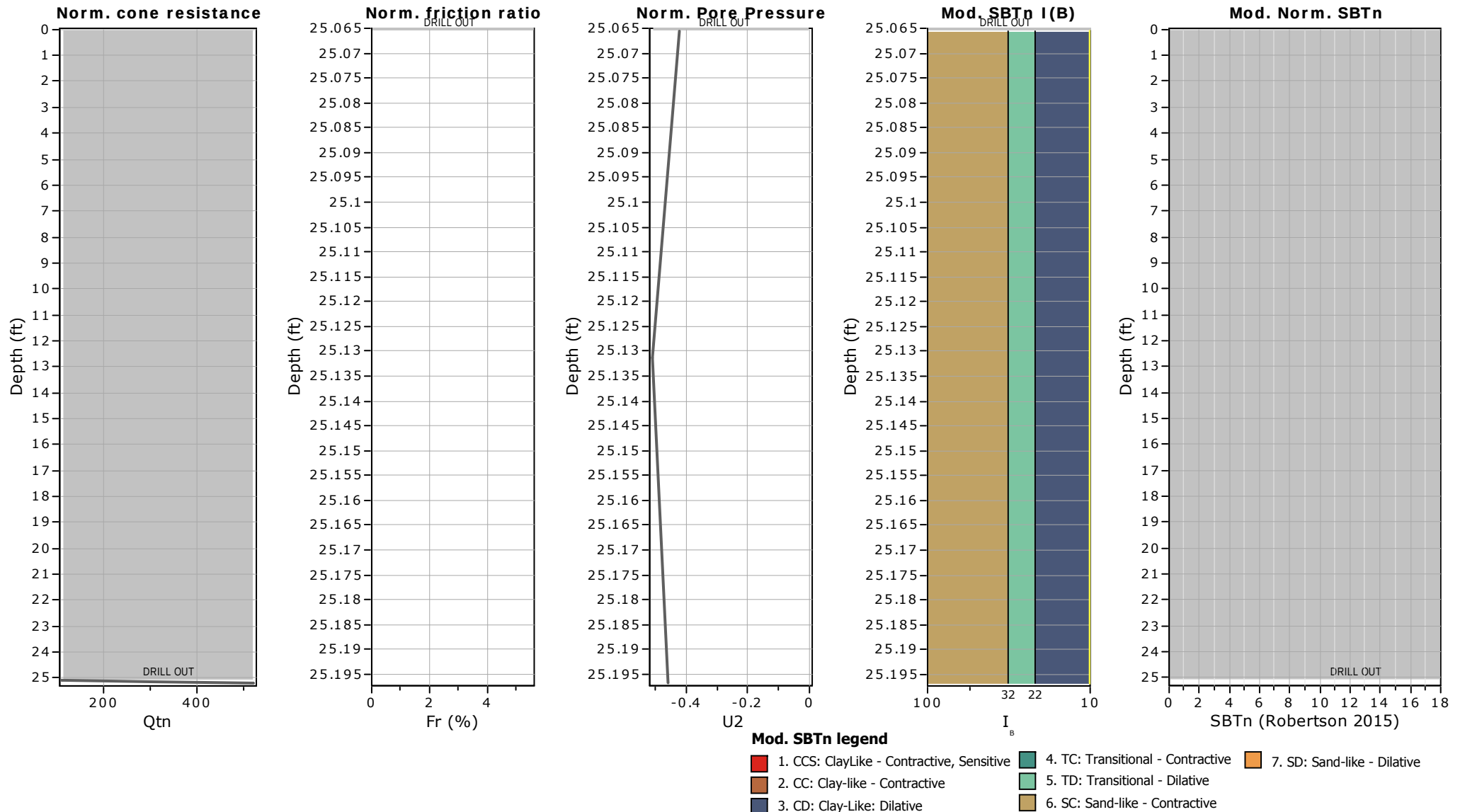


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft



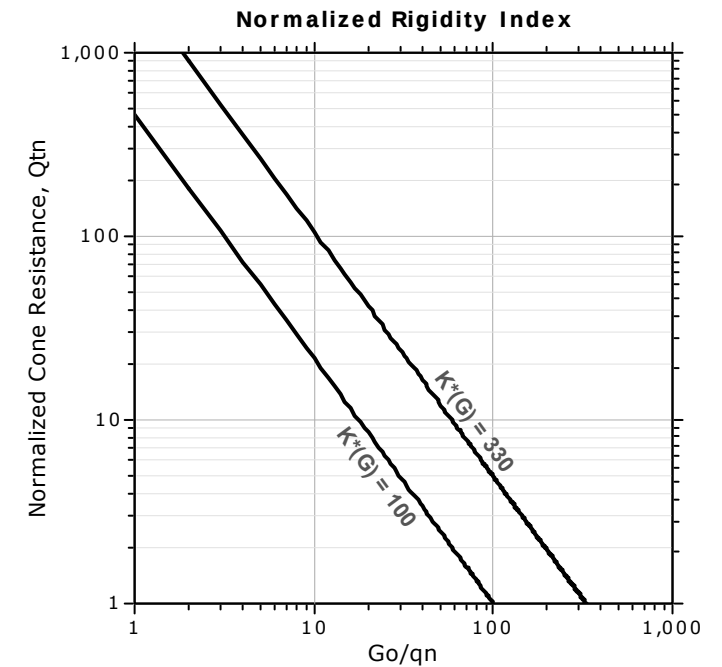
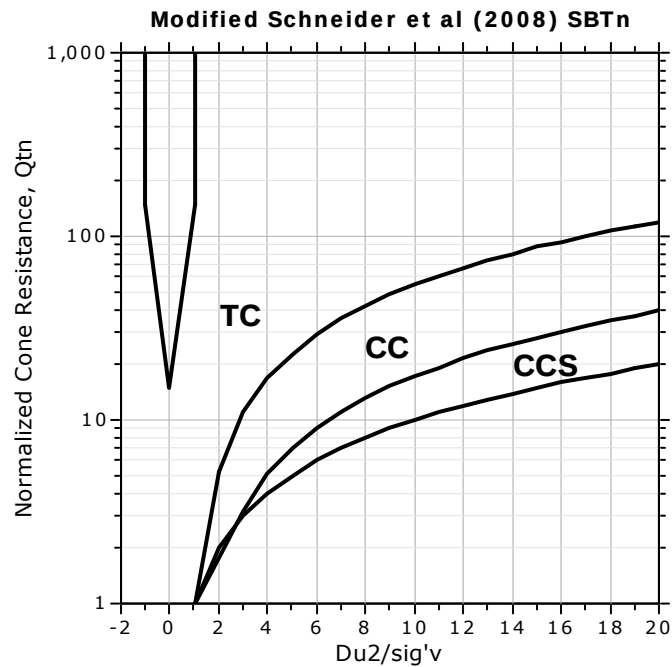
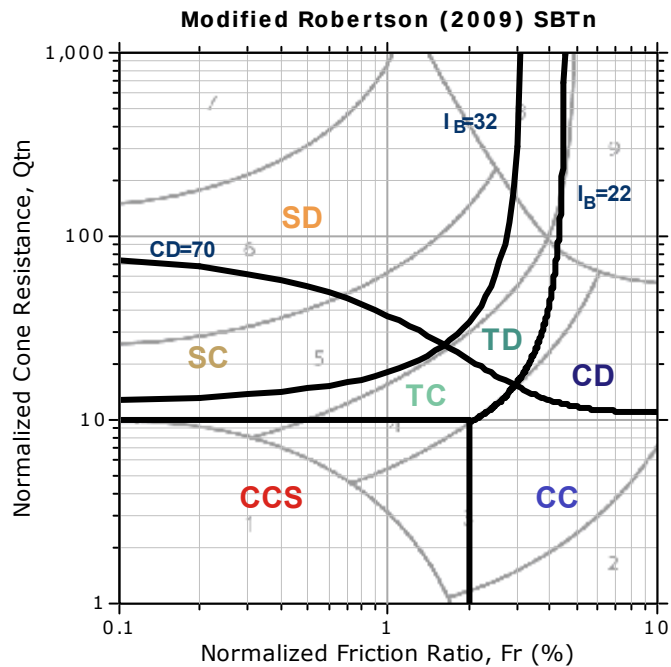
Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

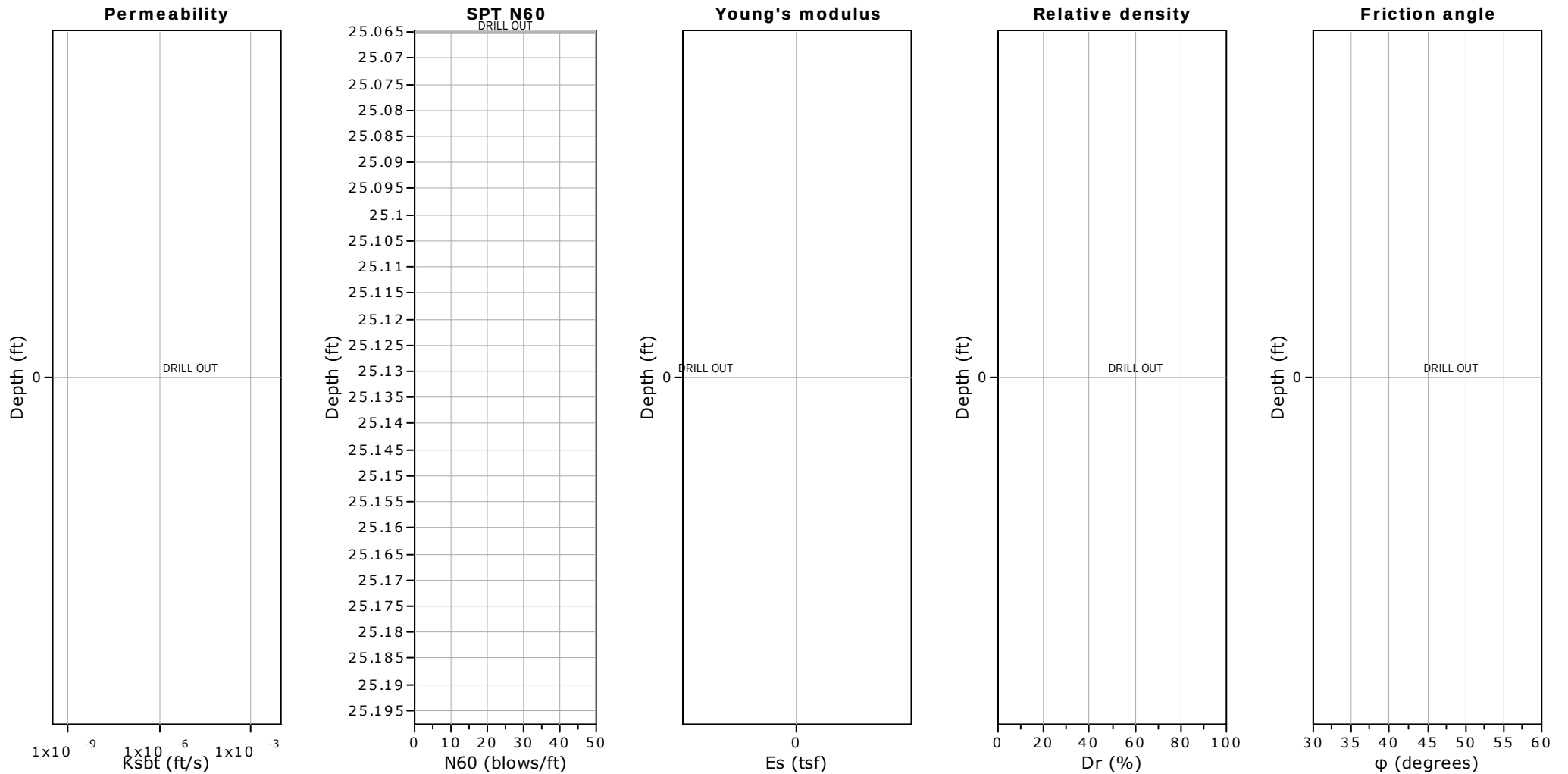


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft



Calculation parameters

Permeability: Based on SBT_n

SPT N₆₀: Based on I_c and q_t

Young's modulus: Based on variable alpha using I_c (Robertson, 2009)

Relative density constant, C_{Dr}: 350.0

Phi: Based on Kulhawy & Mayne (1990)

—●— User defined estimation data

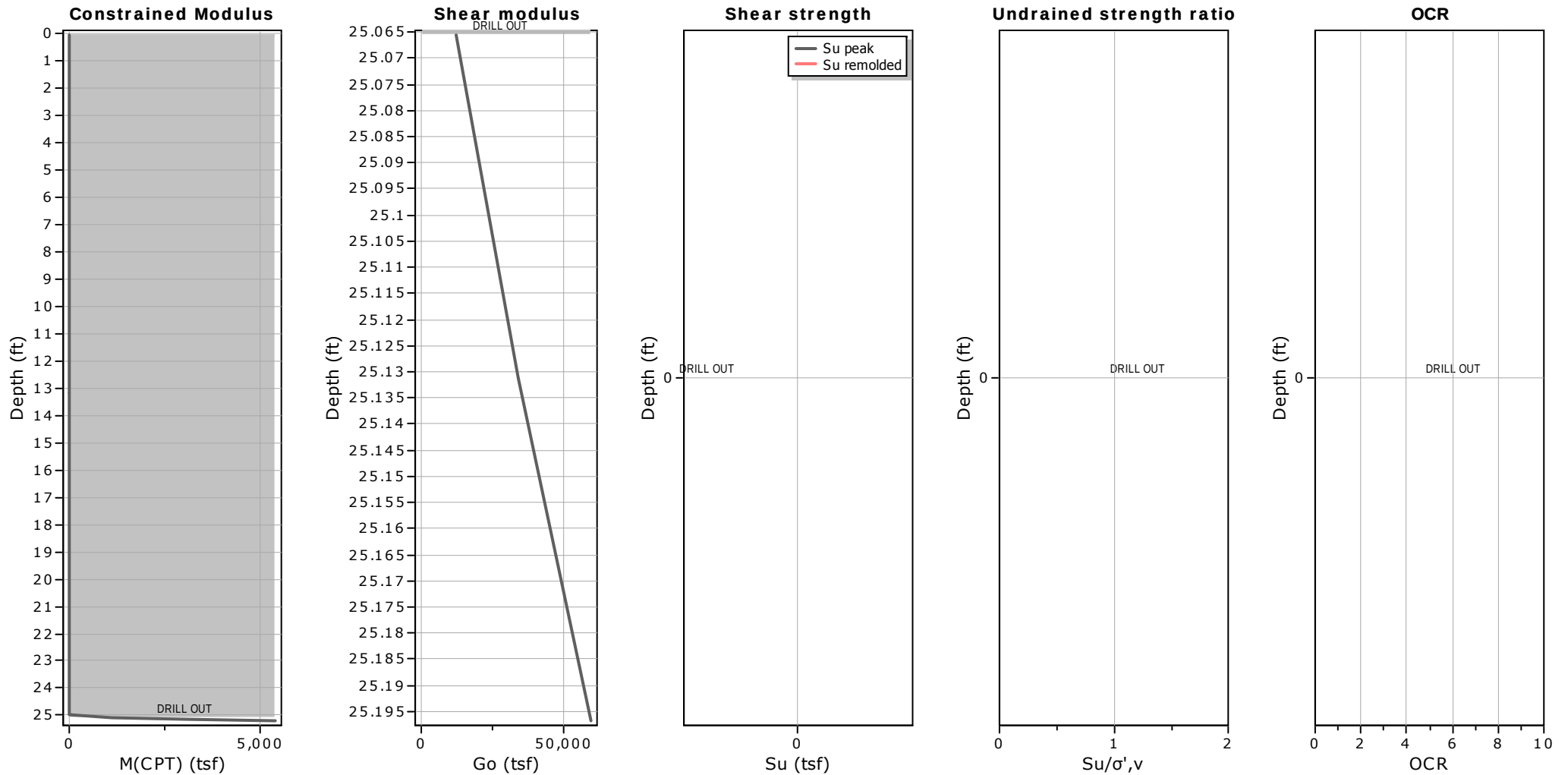


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft



Calculation parameters

Constrained modulus: Based on variable α using I_c and Q_m (Robertson, 2009)

Go: Based on variable α using I_c (Robertson, 2009)

Undrained shear strength cone factor for clays, N_{kt} : 14

OCR factor for clays, N_{kt} : 0.33

—●— User defined estimation data

—●— Flat Dilatometer Test data



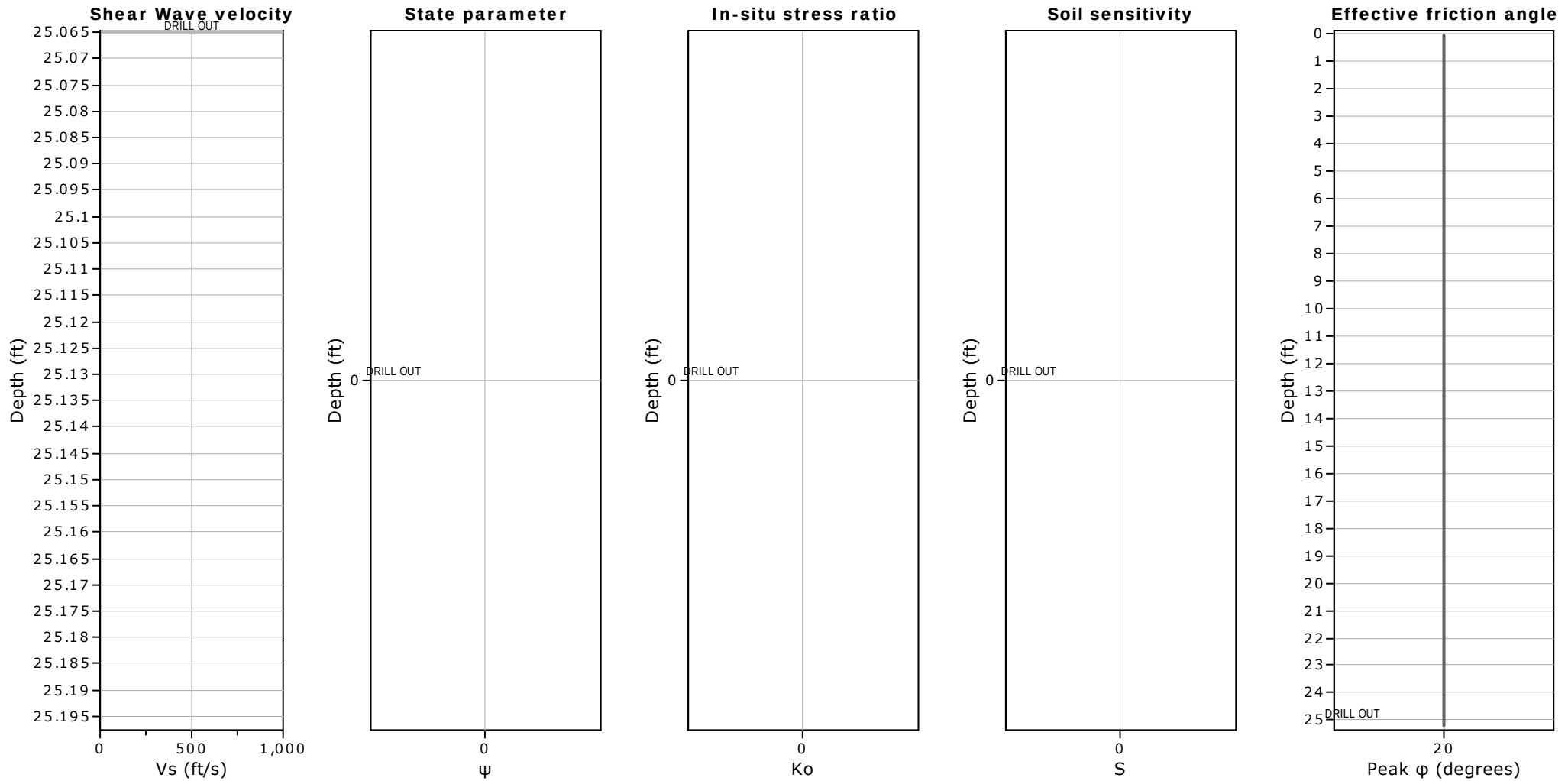
Craig Geotechnical Drilling
5435 Harding Hwy
Mays Landing, NJ

Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft



Calculation parameters

Soil Sensitivity factor, N_s : 7.00

—●— User defined estimation data

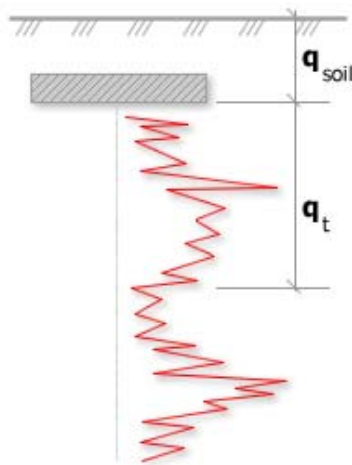


Project: GeoDesign

Location: Stevenson Commons, Bronx NY

B3-7

Total depth: 25.20 ft



Bearing Capacity calculation is performed based on the formula:

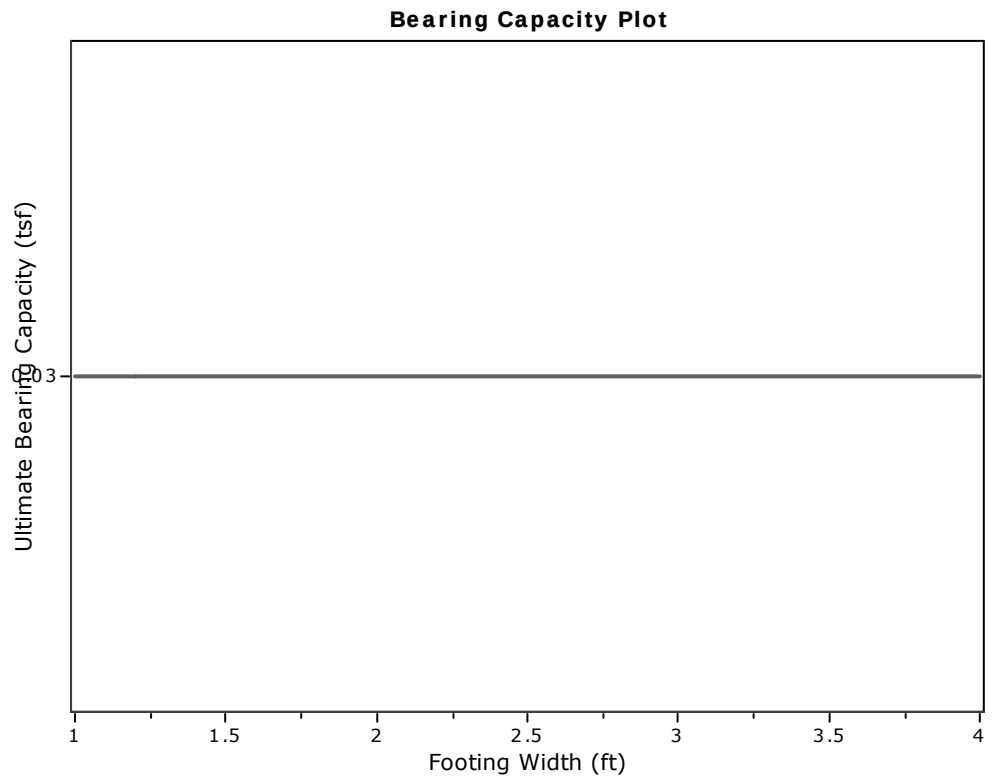
$$Q_{ult} = R_k \times q_t + q_{soil}$$

where:

R_k : Bearing capacity factor

q_t : Average corrected cone resistance over calculation depth

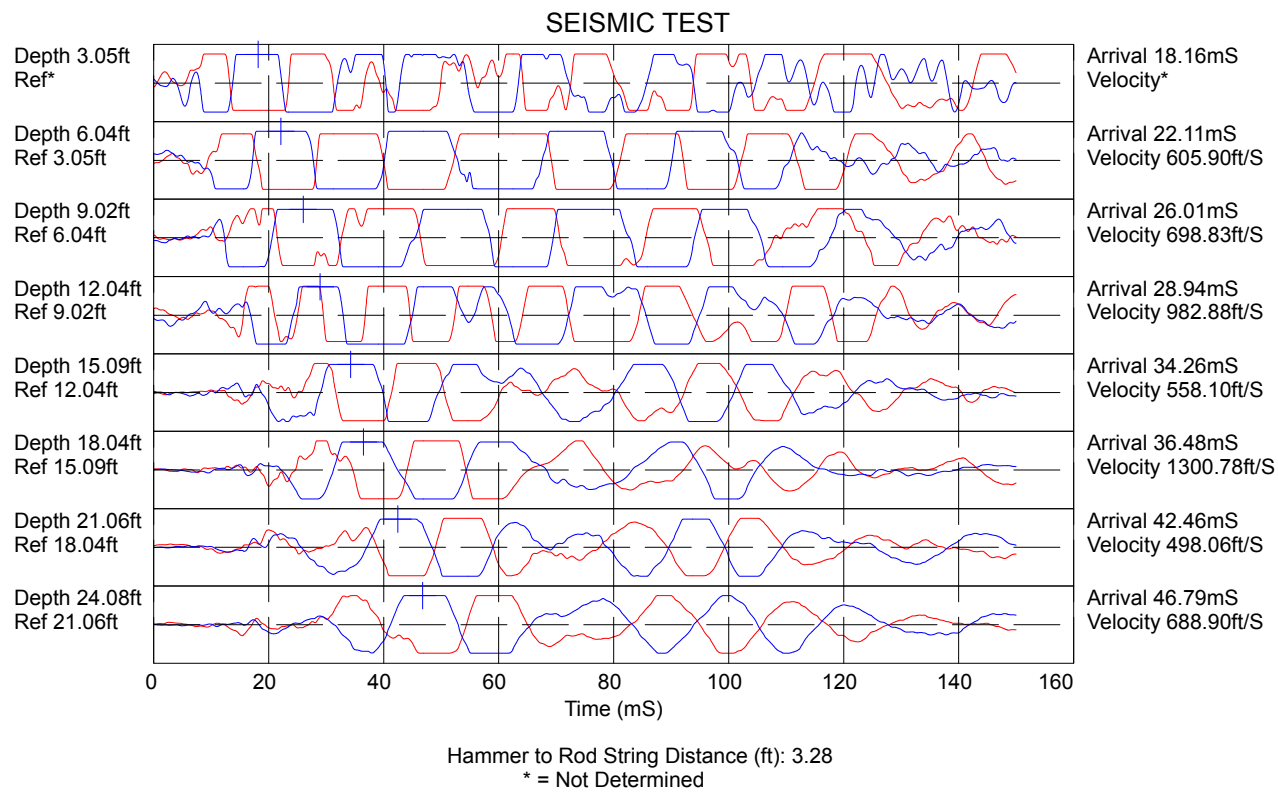
q_{soil} : Pressure applied by soil above footing



:: Tabular results ::

No	B (ft)	Start Depth (ft)	End Depth (ft)	Ave. q_t (tsf)	R_k	Soil Press. (tsf)	Ult. bearing cap. (tsf)
1	1.00	0.50	2.00	0.00	0.20	0.03	0.03
2	1.20	0.50	2.30	0.00	0.20	0.03	0.03
3	1.40	0.50	2.60	0.00	0.20	0.03	0.03
4	1.60	0.50	2.90	0.00	0.20	0.03	0.03
5	1.80	0.50	3.20	0.00	0.20	0.03	0.03
6	2.00	0.50	3.50	0.00	0.20	0.03	0.03
7	2.20	0.50	3.80	0.00	0.20	0.03	0.03
8	2.40	0.50	4.10	0.00	0.20	0.03	0.03
9	2.60	0.50	4.40	0.00	0.20	0.03	0.03
10	2.80	0.50	4.70	0.00	0.20	0.03	0.03
11	3.00	0.50	5.00	0.00	0.20	0.03	0.03
12	3.20	0.50	5.30	0.00	0.20	0.03	0.03
13	3.40	0.50	5.60	0.00	0.20	0.03	0.03
14	3.60	0.50	5.90	0.00	0.20	0.03	0.03
15	3.80	0.50	6.20	0.00	0.20	0.03	0.03
16	4.00	0.50	6.50	0.00	0.20	0.03	0.03

B3-7 SEISMIC TEST RESULTS



COMMENT:

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log\left(\frac{q_t}{p_a}\right) + 1.236 \right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$$I_c < 3.27 \text{ and } I_c > 1.00 \text{ then } k = 10^{0.952 - 3.04 \cdot I_c}$$

$$I_c \leq 4.00 \text{ and } I_c > 3.27 \text{ then } k = 10^{-4.52 - 1.37 \cdot I_c}$$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{p_a} \right) \cdot \frac{1}{10^{1.1268 - 0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268 - 0.2817 \cdot I_c}}$$

:: Young's Modulus, E_s (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$$

(applicable only to $I_c < I_{c_cutoff}$)

:: Relative Density, Dr (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}} \quad \text{(applicable only to SBT}_n\text{: 5, 6, 7 and 8 or } I_c < I_{c_cutoff}\text{)}$$

:: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$$

:: Peak drained friction angle, ϕ (°) ::

$$\phi = 17.60 + 11 \cdot \log(Q_{tn})$$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$$a = 14 \text{ for } Q_{tn} > 14$$

$$a = Q_{tn} \text{ for } Q_{tn} \leq 14$$

$$M_{CPT} = a \cdot (q_t - \sigma_v)$$

If $I_c \leq 2.20$

$$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

:: Small strain shear Modulus, G_0 (MPa) ::

$$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

:: Shear Wave Velocity, V_s (m/s) ::

$$V_s = \left(\frac{G_0}{\rho} \right)^{0.50}$$

:: Undrained peak shear strength, S_u (kPa) ::

$$N_{kt} = 10.50 + 7 \cdot \log(F_r) \text{ or user defined}$$

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Remolded undrained shear strength, $S_u(rem)$ (kPa) ::

$$S_{u(rem)} = f_s \quad \text{(applicable only to SBT}_n\text{: 1, 2, 3, 4 and 9 or } I_c > I_{c_cutoff}\text{)}$$

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 + 7 \cdot \log(F_r))} \right]^{1.25} \text{ or user defined}$$

$$OCR = k_{OCR} \cdot Q_{tn}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: In situ Stress Ratio, K_0 ::

$$K_0 = (1 - \sin \phi') \cdot OCR^{\sin \phi'}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_s}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Effective Stress Friction Angle, ϕ' (°) ::

$$\phi' = 29.5^\circ \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$$

(applicable for $0.10 < B_q < 1.00$)

References

- Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5th Edition, November 2012
- Robertson, P.K., Interpretation of Cone Penetration Tests - a unified approach., Can. Geotech. J. 46(11): 1337–1355 (2009)

APPENDIX E
Groundwater Monitoring Reports

APPENDIX F

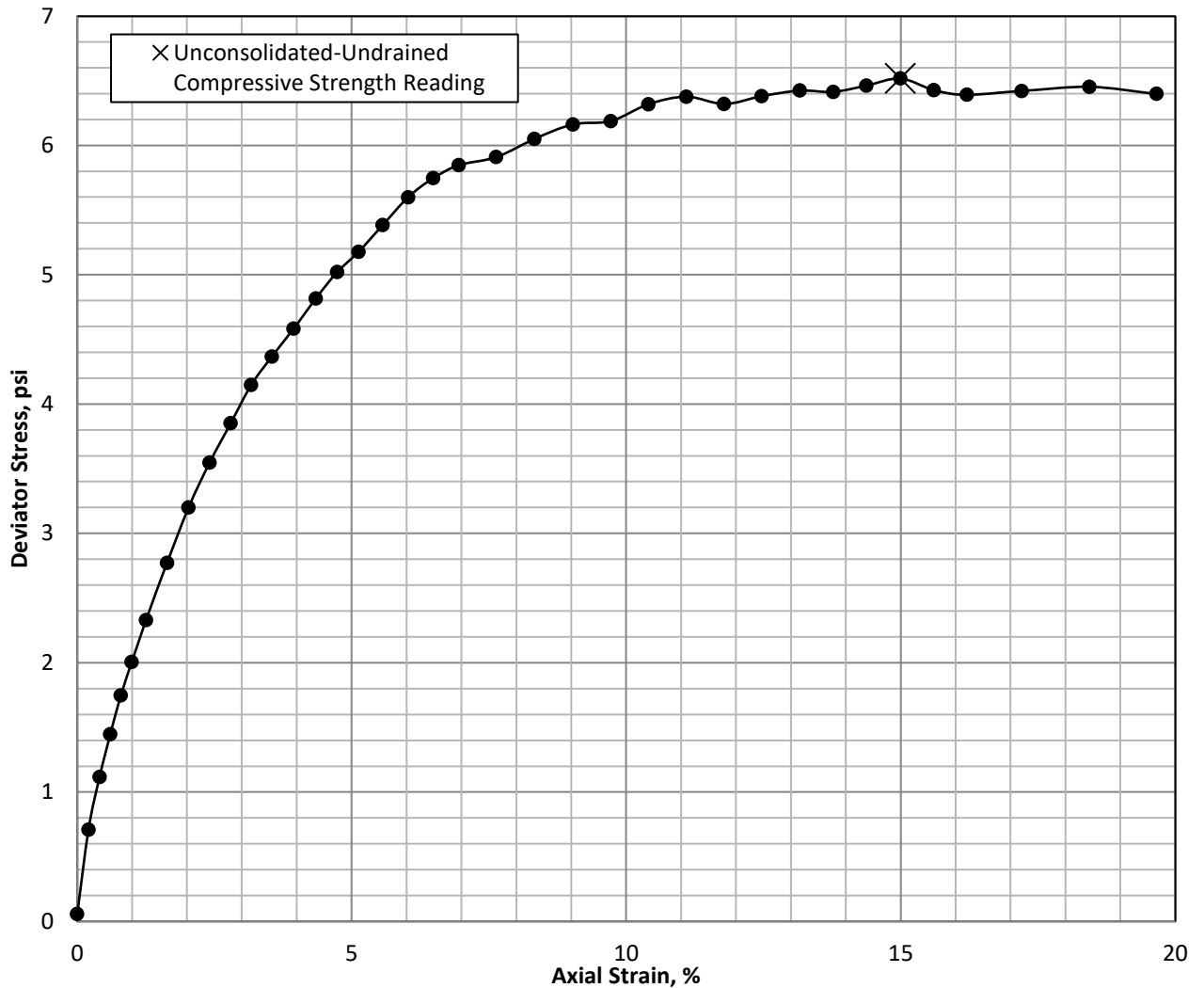
Laboratory Test Results

Haley & Aldrich #0211067-000-001-01
Stevenson Commons - Building 3 - Bronx, NY
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS										STRENGTH			CONSOLIDATION		REMARKS / TEST ID
			WATER CONTENT (%)	LIQUID LIMIT (-)	PLASTIC LIMIT (-)	PLAS. INDEX (-)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	ORGANIC CONTENT (burnoff) (%)	TOTAL UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	SPECIFIC GRAVITY (-)	Type Test	PEAK DEVIATOR STRESS (psi)	AXIAL STRAIN @ PEAK STRESS (%)	INITIAL CONDITIONS		
																VOID RATIO (-)	SATUR- ATION (%)	
HA-01(OW)	T-1	26-28								90.3								
HA-01 (OW)	T-1C	27.45	80.4				OH			93.6	51.9		UU@16.00	6.52	15.0			UU24083
HA-01(OW)	T-1D	27.9	86.4	108	44	64	OH		5.2	93.5	50.1	2.626				2.270	100	C24139
HA-03	T-1	24-26								111.4						dented - no UU		
HA-03	T-1A	24.15	21.3	26	21	5	CL-ML		0.6	132.3	109.1					0.591	100	C24140
HA-04(OW)	T-1	29-31								123.2								
HA-04(OW)	T-1	29.25	22.9															
HA-04 (OW)	T-1A	29.55	21.5	33	17	16	CL		0.8	130.3	107.2					0.618	97	C24141
HA-04(OW)	T-1	29.8	25.3															
HA-04(OW)	T-1	30.35	14.8															

Note: (1) USCS symbol based on visual observation and Sieve and Atterberg limits reported.

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

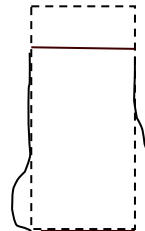
Sample Type: Intact tube sample

Description and/or Classification: OH, gray organic silt

Cell Pressure (psi)	Water Content (%) ⁽¹⁾	Wet Unit Weight (pcf)	Dry Unit Weight (pcf) ⁽¹⁾	Void Ratio (-)	Saturation (%) ⁽²⁾	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific Gravity (-) ⁽²⁾
0 (Initial)	80.4	93.6	51.9	2.16	97.7	5.995	2.844	2.1			2.63
16.0	80.4	94.3	52.3	2.14	98.8	5.980	2.837	2.1			

Failure Summary

U-U Compressive Strength (psi)	U-U Shear Strength, s_u (psi)	Strain to Peak (%)	Strain Rate (%/min)
6.52	3.26	15.0	0.77



FAILURE SKETCH

Remarks and Notes:

- (1) Water Content determined after shear from partial specimen.
- (2) Assumed specific gravity

Tested by: DD

Reviewed by: CMJ

Test Date: 10/4/2024

Review Date: 10/17/2024

Haley & Aldrich



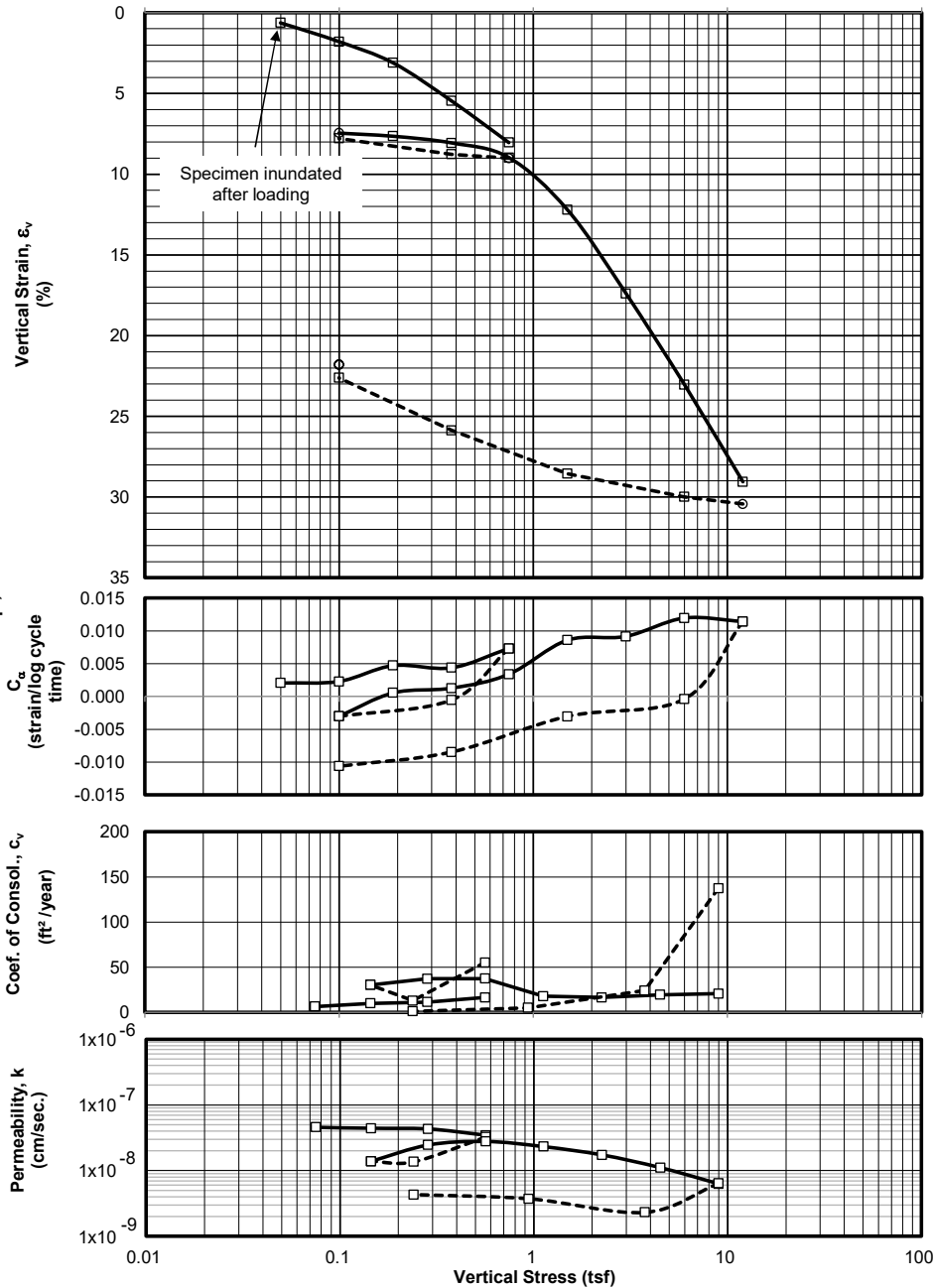
Project #
0211067-000-001-01

Project #
24010669A

Stevenson Commons
Building 3
Bronx, NY

UNCONSOLIDATED-UNDRAINED
COMPRESSION TEST

Boring: HA-01 (OW) Sample: T-1
Section: C Depth: 27.45 ft.



SAMPLE INFORMATION

Boring: HA-01(OW)
Sample: T-1D
Depth: 27.90 ft
Elevation:
Type: 3-inch thin wall tube
Description: OH, gray organic silt

LL = 108, PL = 44, PI = 64

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.60 inch
Diameter: 2.50 inch

Initial water content: 86.4 %
Initial total unit weight: 93.5 pcf
Initial dry unit weight: 50.1 pcf
Initial void ratio: 2.270
Initial degree of saturation: 100 %

Final water content: 65.1 %
Final total unit weight: 99.6 pcf
Final dry unit weight: 60.3 pcf
Final void ratio: 1.719
Final degree of saturation: 100 % (measured specific gravity = 2.63)

TEST SUMMARY

Construction Method: Casagrande (Log)
Estimated preconsolidation stress (tsf): 1.3 (Range: 1.2 to 1.4)
Estimated in situ effective overburden stress (tsf):
Compression Ratio (strain per log cycle stress): 0.194
Compression Index (void ratio per log cycle stress): 0.634
Swell Ratio (strain per log cycle stress): 0.017
Swell Index (void ratio per log cycle stress): 0.056
Recompression Ratio (strain per log cycle stress): 0.014
Recompression Index (void ratio per log cycle stress): 0.046
Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 9/30/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-01(OW) Depth: 27.90 ft
 TERRASENSE Geotechnical Laboratory	Project No. 24010669A	October 2024

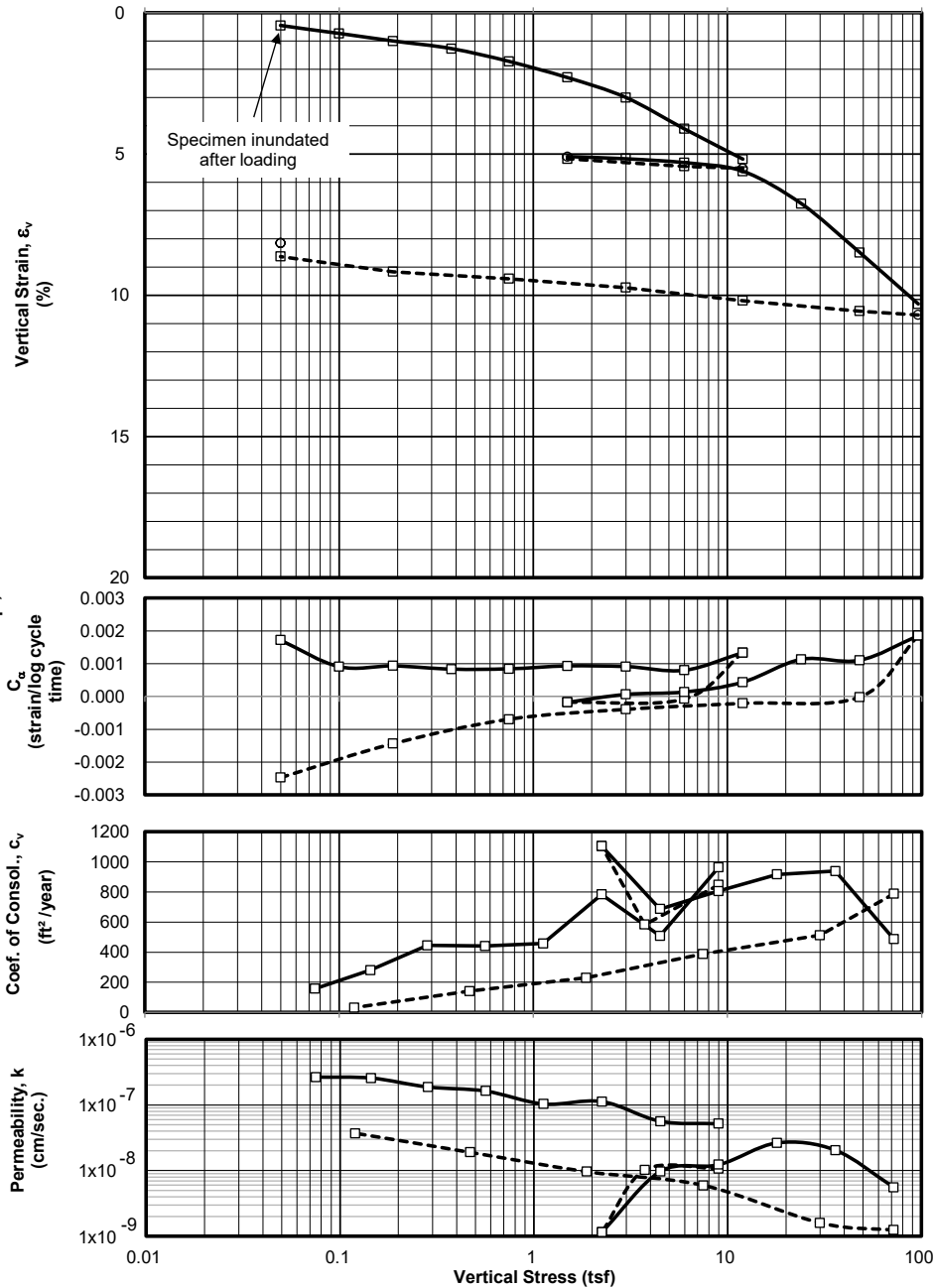
PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.603 inch	Final height:	0.501 inch
BORING:	HA-01(OW)	Initial water content:	86.4 %	Final water content:	65.1 %
SAMPLE:	T-1D	Initial dry density:	50.1 pcf	Final dry density:	60.3 pcf
TEST:	C24139	Initial total density:	93.5 pcf	Final total density:	99.6 pcf
DEPTH, feet:	27.9	Initial saturation:	100 %	Final saturation:	100 %
BY:	MCT	Initial void ratio:	2.270	Final void ratio:	1.719
TEST DATE:	9/30/2024			Final strain:	16.9 %

EQUIPMENT: SPECIMEN DESCRIPTION: OH, gray organic silt

Load Frame No.: 11
Ring Diameter: 2.5 inch

G 2.626 LL 108 PL 44 PI 64

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.050	0.0038	0.626	2.249	0.805	2.244	30	0.0020	8	1E-07
2	0.100	0.0108	1.797	2.211	2.049	2.203	7	0.0023	4	5E-08
3	0.190	0.0187	3.108	2.168	3.576	2.153	10	0.0047	7	4E-08
4	0.380	0.0330	5.469	2.091	6.056	2.072	12	0.0044	8	4E-08
5	0.750	0.0485	8.043	2.007	9.017	1.975	16	0.0073	14	3E-08
6	0.380	0.0528	8.765	1.983	8.652	1.987	55	-0.0005	51	3E-08
7	0.100	0.0469	7.789	2.015	7.457	2.026	13	-0.0030	29	1E-08
8	0.190	0.0461	7.653	2.020	7.715	2.018	30	0.0005	66	1E-08
9	0.380	0.0486	8.069	2.006	8.212	2.001	37	0.0013	46	2E-08
10	0.750	0.0541	8.983	1.976	9.390	1.963	37	0.0034	41	3E-08
11	1.50	0.0735	12.200	1.871	13.936	1.814	18	0.0086	23	2E-08
12	3.00	0.1049	17.396	1.701	19.186	1.643	17	0.0091	29	2E-08
13	6.00	0.1389	23.041	1.516	24.403	1.472	20	0.0119	53	1E-08
14	12.0	0.1752	29.062	1.320	30.436	1.275	21	0.0114	100	6E-09
15	6.00	0.1808	29.986	1.289	29.863	1.293	137	-0.0004	649	6E-09
16	1.50	0.1721	28.554	1.336	28.237	1.347	24	-0.0030	314	2E-09
17	0.380	0.1560	25.872	1.424	25.202	1.446	5	-0.0085	42	4E-09
18	0.100	0.1363	22.615	1.530	21.801	1.557	1	-0.0106	9	4E-09



SAMPLE INFORMATION

Boring: HA-03
Sample: T-1A
Depth: 24.15 feet
Elevation:
Type: 3-inch thin wall tube
Description: CL-ML, gray silty clay with sand

LL = 26, PL = 21, PI = 5

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.60 inch
Diameter: 2.50 inch

Initial water content: 21.3 %
Initial total unit weight: 132.3 pcf
Initial dry unit weight: 109.1 pcf
Initial void ratio: 0.591
Initial degree of saturation: 100 %

Final water content: 17.2 %
Final total unit weight: 137.2 pcf
Final dry unit weight: 117.1 pcf
Final void ratio: 0.482
Final degree of saturation: 99 % (assumed specific gravity = 2.78)

TEST SUMMARY

Construction Method: Casagrande (Log)
Estimated preconsolidation stress (tsf): 8.1 (Range: 7.2 to 9.2)
Estimated in situ effective overburden stress (tsf):
Compression Ratio (strain per log cycle stress): 0.059
Compression Index (void ratio per log cycle stress): 0.094
Swell Ratio (strain per log cycle stress): 0.004
Swell Index (void ratio per log cycle stress): 0.006
Recompression Ratio (strain per log cycle stress): 0.005
Recompression Index (void ratio per log cycle stress): 0.008
Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/1/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-03 Depth: 24.15 feet
TERRASense Geotechnical Laboratory	Project No. 24010669A	October 2024

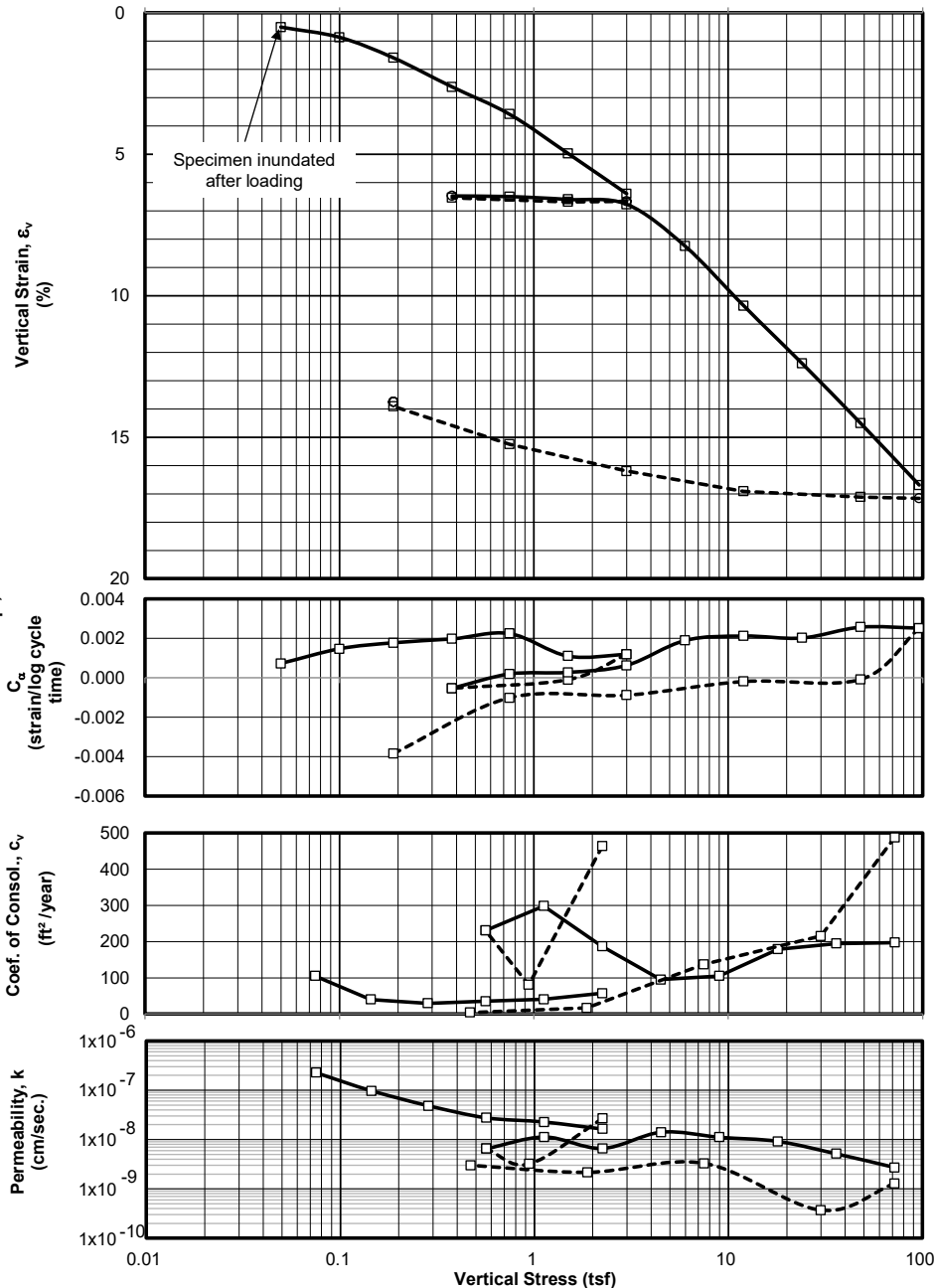
PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.601 inch	Final height:	0.560 inch
BORING:	HA-03	Initial water content:	21.3 %	Final water content:	17.2 %
SAMPLE:	T-1A	Initial dry density:	109.1 pcf	Final dry density:	117.1 pcf
TEST:	C24140	Initial total density:	132.3 pcf	Final total density:	137.2 pcf
DEPTH, feet:	24.15	Initial saturation:	100 %	Final saturation:	99 %
BY:	MCT	Initial void ratio:	0.591	Final void ratio:	0.482
TEST DATE:	10/1/2024			Final strain:	6.8 %

EQUIPMENT: SPECIMEN DESCRIPTION: CL-ML, gray silty clay with sand

Load Frame No.: 12
Ring Diameter: 2.5 inch

G 2.78 LL 26 PL 21 PI 5

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.050	0.0027	0.456	0.583	0.499	0.583	82	0.0017	11	2E-07
2	0.100	0.0044	0.736	0.579	0.898	0.576	157	0.0009	18	3E-07
3	0.190	0.0061	1.008	0.575	1.256	0.571	281	0.0009	33	3E-07
4	0.380	0.0077	1.273	0.570	1.438	0.568	445	0.0008	72	2E-07
5	0.750	0.0104	1.728	0.563	1.904	0.560	441	0.0008	81	2E-07
6	1.50	0.0138	2.291	0.554	2.486	0.551	457	0.0009	133	1E-07
7	3.00	0.0181	3.007	0.543	3.234	0.539	784	0.0009	210	1E-07
8	6.00	0.0247	4.111	0.525	4.323	0.522	508	0.0008	272	6E-08
9	12.0	0.0312	5.185	0.508	5.512	0.503	962	0.0013	559	5E-08
10	6.00	0.0327	5.438	0.504	5.421	0.504	846	-0.0001	2375	1E-08
11	1.50	0.0311	5.176	0.508	5.097	0.510	583	-0.0002	1714	1E-08
12	3.00	0.0311	5.170	0.508	5.205	0.508	1105	0.0001	28885	1E-09
13	6.00	0.0319	5.311	0.506	5.346	0.506	687	0.0001	2130	1E-08
14	12.0	0.0338	5.616	0.501	5.745	0.499	806	0.0004	1970	1E-08
15	24.0	0.0407	6.762	0.483	7.059	0.478	917	0.0011	1047	3E-08
16	48.0	0.0511	8.492	0.456	8.780	0.451	939	0.0011	1387	2E-08
17	96.0	0.0620	10.310	0.427	10.700	0.420	488	0.0019	2641	6E-09
18	48.0	0.0635	10.561	0.423	10.551	0.423	787	0.0000	19117	1E-09
19	12.0	0.0613	10.188	0.429	10.102	0.430	512	-0.0002	9668	2E-09
20	3.00	0.0585	9.732	0.436	9.653	0.437	389	-0.0004	1971	6E-09
21	0.750	0.0566	9.419	0.441	9.287	0.443	230	-0.0007	718.61	1E-08
22	0.190	0.0551	9.169	0.445	8.971	0.448	142	-0.0014	224	2E-08
23	0.050	0.0519	8.630	0.453	8.156	0.461	32	-0.0025	25.98	4E-08



SAMPLE INFORMATION

Boring: HA-04 (OW)
 Sample: T-1A
 Depth: 29.55 ft
 Elevation:
 Type: 3-inch thin wall tube
 Description: CL, gray clay with sand

LL = 33, PL = 17, PI = 16

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.60 inch
 Diameter: 2.50 inch

Initial water content: 21.5 %
 Initial total unit weight: 130.3 pcf
 Initial dry unit weight: 107.2 pcf
 Initial void ratio: 0.618
 Initial degree of saturation: 97 %

Final water content: 17.2 %
 Final total unit weight: 137.8 pcf
 Final dry unit weight: 117.6 pcf
 Final void ratio: 0.476
 Final degree of saturation: 100 % (assumed specific gravity = 2.78)

TEST SUMMARY

Construction Method: Casagrande (Log)
 Estimated preconsolidation stress (tsf): 2.5 (Range: 2.4 to 3.0)
 Estimated in situ effective overburden stress (tsf):
 Compression Ratio (strain per log cycle stress): 0.070
 Compression Index (void ratio per log cycle stress): 0.113
 Swell Ratio (strain per log cycle stress): 0.002
 Swell Index (void ratio per log cycle stress): 0.003
 Recompression Ratio (strain per log cycle stress): 0.003
 Recompression Index (void ratio per log cycle stress): 0.005
 Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/2/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-04 (OW) Depth: 29.55 ft
TERRASENSE Geotechnical Laboratory	Project No. 24010669A	October 2024

PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.602 inch	Final height:	0.549 inch
BORING:	HA-04 (OW)	Initial water content:	21.5 %	Final water content:	17.2 %
SAMPLE:	T-1A	Initial dry density:	107.2 pcf	Final dry density:	117.6 pcf
TEST:	C24141	Initial total density:	130.3 pcf	Final total density:	137.8 pcf
DEPTH, feet:	29.55	Initial saturation:	97 %	Final saturation:	100 %
BY:	MCT	Initial void ratio:	0.618	Final void ratio:	0.476
TEST DATE:	10/2/2024			Final strain:	8.8 %

EQUIPMENT: SPECIMEN DESCRIPTION: CL, gray clay with sand

Load Frame No.: 13
Ring Diameter: 2.5 inch

G LL PL PI
2.78 33 17 16

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.050	0.0031	0.515	0.610	0.571	0.609	56	0.0007	10	2E-07
2	0.100	0.0053	0.873	0.604	1.161	0.599	105	0.0015	14	2E-07
3	0.190	0.0096	1.597	0.592	1.892	0.588	40	0.0018	12	1E-07
4	0.380	0.0158	2.624	0.576	2.848	0.572	30	0.0020	18	5E-08
5	0.750	0.0216	3.583	0.560	3.870	0.556	35	0.0022	39	3E-08
6	1.50	0.0299	4.974	0.538	5.117	0.535	41	0.0011	54	2E-08
7	3.00	0.0385	6.399	0.515	6.663	0.510	57	0.0012	105	2E-08
8	1.50	0.0402	6.686	0.510	6.638	0.511	463	-0.0001	522	3E-08
9	0.380	0.0393	6.539	0.512	6.471	0.513	81	-0.0005	759	3E-09
10	0.750	0.0391	6.504	0.513	6.555	0.512	231	0.0002	1061	7E-09
11	1.50	0.0397	6.597	0.511	6.654	0.511	299	0.0003	803	1E-08
12	3.00	0.0407	6.773	0.509	6.870	0.507	187	0.0006	852	7E-09
13	6.00	0.0496	8.247	0.485	8.483	0.481	95	0.0019	204	1E-08
14	12.0	0.0623	10.358	0.451	10.752	0.444	105	0.0021	284	1E-08
15	24.0	0.0746	12.395	0.418	12.680	0.413	179	0.0020	589	9E-09
16	48.0	0.0873	14.507	0.383	14.957	0.376	195	0.0026	1136	5E-09
17	96.0	0.1004	16.694	0.348	17.160	0.341	197	0.0025	2195	3E-09
18	48.0	0.1030	17.116	0.341	17.093	0.342	488	-0.0001	11378	1E-09
19	12.0	0.1017	16.911	0.345	16.877	0.345	215	-0.0002	17554	4E-10
20	3.00	0.0974	16.198	0.356	15.938	0.360	137	-0.0009	1263	3E-09
21	0.750	0.0917	15.246	0.371	15.182	0.373	17	-0.0010	236.42	2E-09
22	0.190	0.0837	13.912	0.393	13.752	0.396	4	-0.0038	41.95	3E-09

Haley & Aldrich #0211067-000-001-01
Stevenson Commons - Building 3 - Bronx, NY
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS									STRENGTH			CONSOLIDATION		REMARKS / TEST ID
			WATER CONTENT (%)	LIQUID LIMIT (-)	PLASTIC LIMIT (-)	PLAS. INDEX (-)	USCS SYMB. (1)	ORGANIC CONTENT (burnoff) (%)	TOTAL UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	SPECIFIC GRAVITY (-)	Type Test	PEAK DEVIATOR STRESS (psi)	AXIAL STRAIN @ PEAK STRESS (%)	INITIAL CONDITIONS VOID RATIO (-)	SATUR- ATION (%)	
HA-10	T-1	22-24							91.7								
HA-10	T-1B	23.05	88.9				OH		92.5	48.9		UU@14.0	7.45	11.1			UU24088
HA-10	T-1	23.3	89.7														
HA-10	T-1C	23.6	91.1	119	46	73	OH	5.0	93.2	48.8					2.584	99	C24158
HA-10	T-2	30-32							118.3								
HA-10	T-2A	30.45	32.9	49	21	28	CL	2.9	118.0	88.8					0.878	100	C24160
HA-10	T-2	30.7	29.8														
HA-10	T-2B	31.00	30.9				CL		120.1	91.8		UU@18.0	19.19	15.0			UU24090
HA-10	T-2	31.25	29.4														
HA-11	T-2	36-38							120.2								
HA-11	T-2	36.6	38.4														
HA-11	T-2B	37.3	37.6	37	23	14	CL		116.1	84.4	2.748				1.032	100	C24152
HA-11	T-2	37.45	39.5														
HA-11	T-2C	37.75	32.8				CL		119.3	89.8		UU@20.0	9.26	15.0			UU24086
HA-12	T-1	22-24							90.9								
HA-12	T-1	22.75	91.1														
HA-12	T-1	23.3	85.3														
HA-12	T-1C	23.6	87.5	106	37	69	OH	4.9	92.9	49.6					2.262	100	C24164

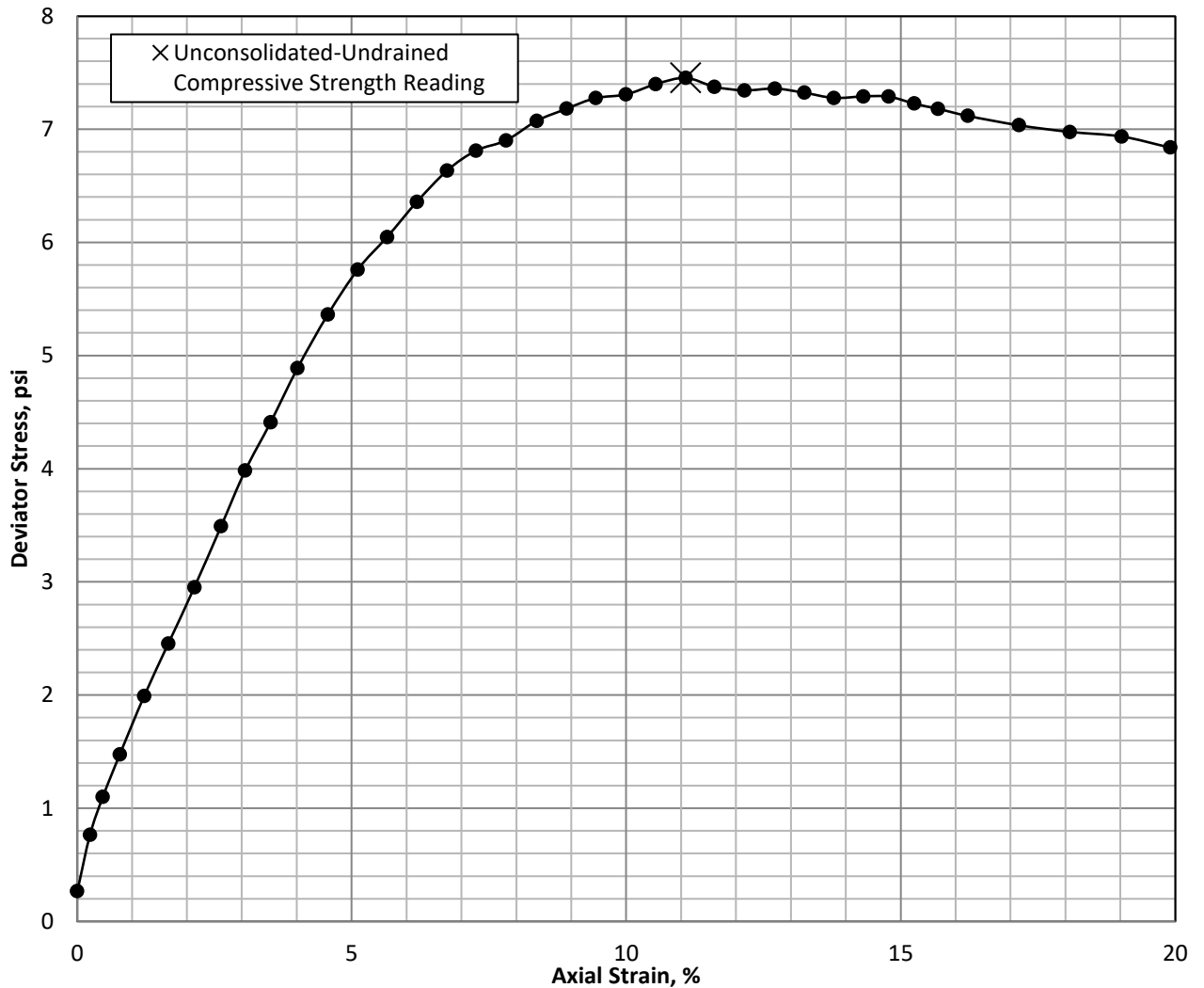
Note: (1) USCS symbol based on visual observation and Atterberg limits reported.

Prepared by: NG
Reviewed by: CMJ
Date: 11/7/2024

 **TERRASENSE**
Geotechnical Laboratory
45H Commerce Way
Totowa, NJ 07512

Project No.: 24010669A
File: Indx2.xlsx
Page 1 of 1

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

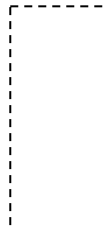
Sample Type: Intact tube sample

Description and/or Classification: OH, gray organic clay

Cell Pressure (psi)	Water ⁽¹⁾ Content (%)	Wet Unit Weight (pcf)	Dry Unit ⁽¹⁾ Weight (pcf)	Void Ratio (-)	Saturation ⁽²⁾ (%)	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific ⁽²⁾ Gravity (-)
0 (Initial)	88.9	92.5	48.9	2.57	96.8	5.982	2.819	2.1			2.80
14.0	88.9	93.0	49.2	2.55	97.6	5.969	2.813	2.1			

Failure Summary

U-U Compressive Strength (psi)	U-U Shear Strength, s_u (psi)	Strain to Peak (%)	Strain Rate (%/min)
7.45	3.73	11.1	0.77



Remarks and Notes:

- (1) Water Content determined after shear from partial specimen.
- (2) Assumed specific gravity

Tested by: DD

Reviewed by: CMJ

Test Date: 10/17/2024

Review Date: 11/7/2024

FAILURE SKETCH

Haley & Aldrich



Project #
0211067-000-001-01

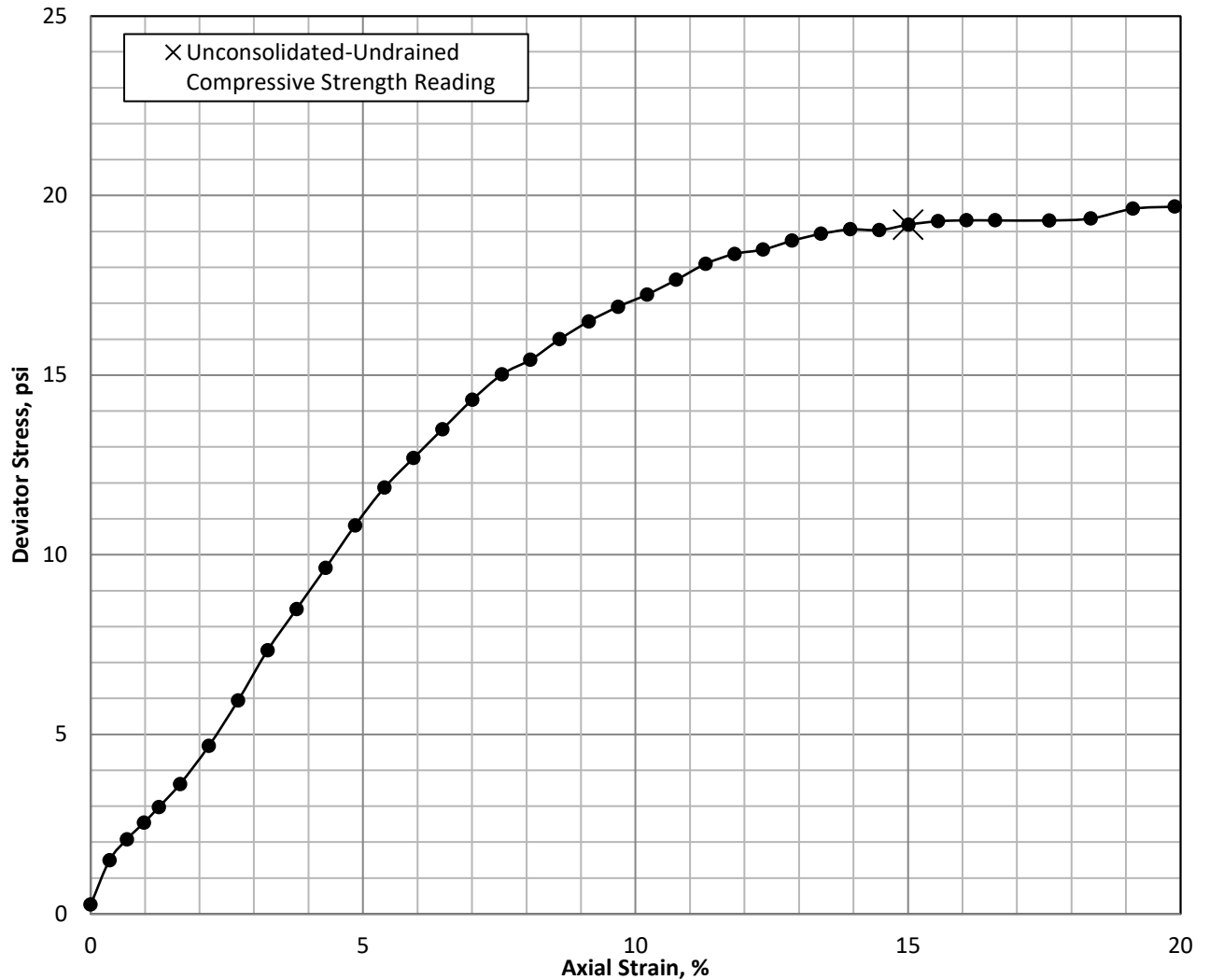
Project #
24010669A

**Stevenson Commons
Building 3
Bronx, NY**

**UNCONSOLIDATED-UNDRAINED
COMPRESSION TEST**

**Boring: HA-10 Sample: T-1
Section: B Depth: 23.05 ft.**

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

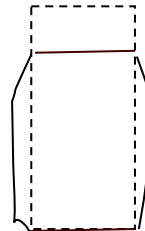
Sample Type: Intact tube sample

Description and/or Classification: CL, gray lean clay

Cell Pressure (psi)	Water Content (%) ⁽¹⁾	Wet Unit Weight (pcf)	Dry Unit Weight (pcf) ⁽¹⁾	Void Ratio (-)	Saturation (%) ⁽²⁾	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific Gravity (-) ⁽²⁾
0 (Initial)	30.9	120.1	91.8	0.84	99.3	6.054	2.826	2.1			2.71
18.0	30.9	120.4	92.0	0.84	99.8	6.049	2.824	2.1			

Failure Summary

U-U Compressive Strength (psi)	U-U Shear Strength, s_u (psi)	Strain to Peak (%)	Strain Rate (%/min)
19.19	9.59	15.0	0.77



FAILURE SKETCH

Remarks and Notes:

- (1) Water Content determined after shear from partial specimen.
- (2) Assumed specific gravity

Tested by: MB

Reviewed by: CMJ

Test Date: 10/18/2024

Review Date: 11/7/2024

Haley & Aldrich



Project #

0211067-000-001-01

Project #

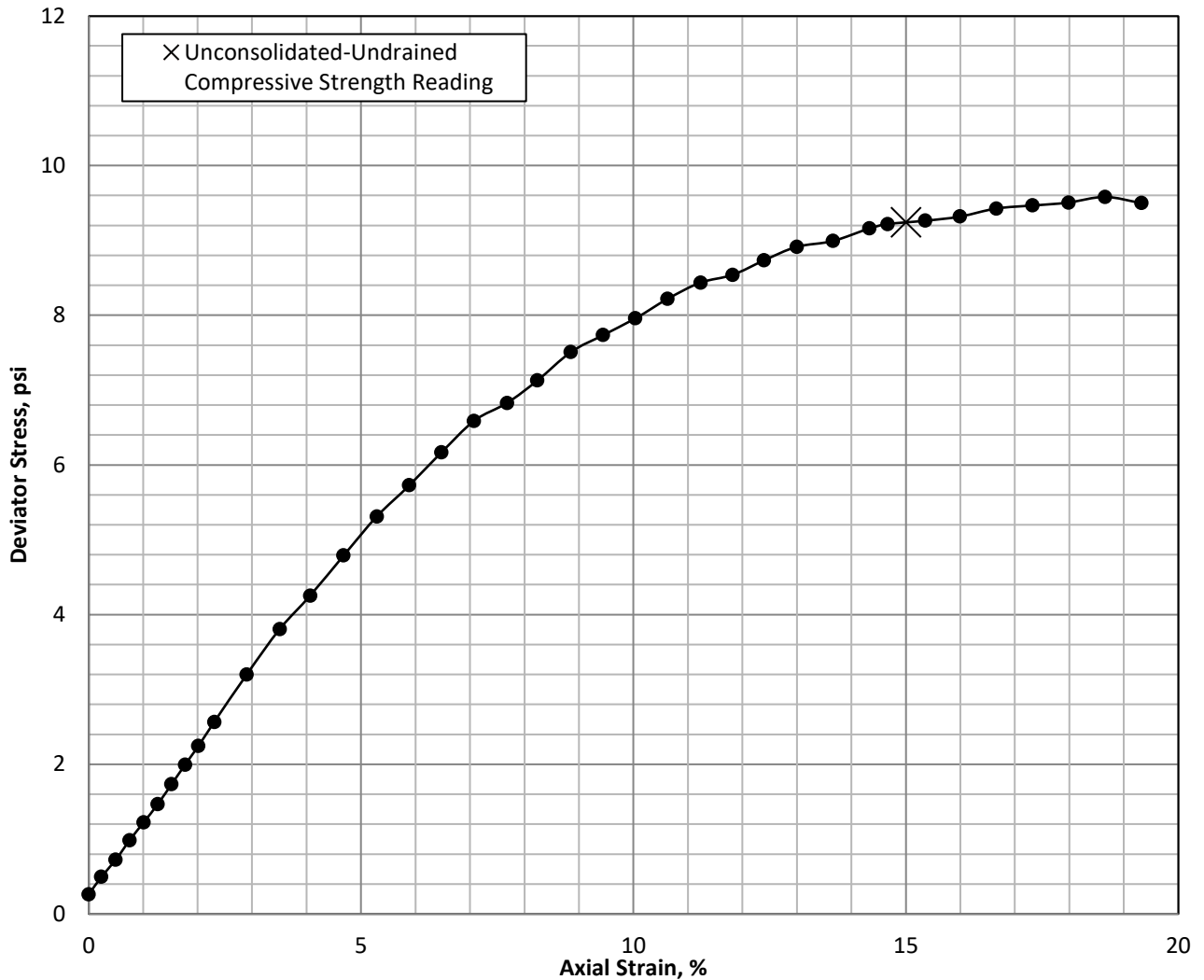
24010669A

**Stevenson Commons
Building 3
Bronx, NY**

**UNCONSOLIDATED-UNDRAINED
COMPRESSION TEST**

**Boring: HA-10 Sample: T-2
Section: B Depth: 31.00 ft.**

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

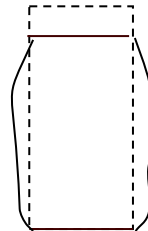
Sample Type: Intact tube sample

Description and/or Classification: CL, gray lean clay

Cell Pressure (psi)	Water Content (%) ⁽¹⁾	Wet Unit Weight (pcf)	Dry Unit Weight (pcf) ⁽¹⁾	Void Ratio (-)	Saturation (%) ⁽²⁾	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific Gravity (-) ⁽²⁾
0 (Initial)	32.8	119.3	89.8	0.91	98.9	6.184	2.828	2.2			2.75
20.0	32.8	119.6	90.0	0.91	99.4	6.179	2.826	2.2			

Failure Summary

U-U Compressive Strength (psi)	U-U Shear Strength, s_u (psi)	Strain to Peak (%)	Strain Rate (%/min)
9.26	4.63	15.0	0.74



FAILURE SKETCH

Remarks and Notes:

- (1) Water Content determined after shear from partial specimen.
- (2) Assumed specific gravity

Tested by: DD

Reviewed by: CMJ

Test Date: 10/10/2024

Review Date: 11/7/2024

Haley & Aldrich



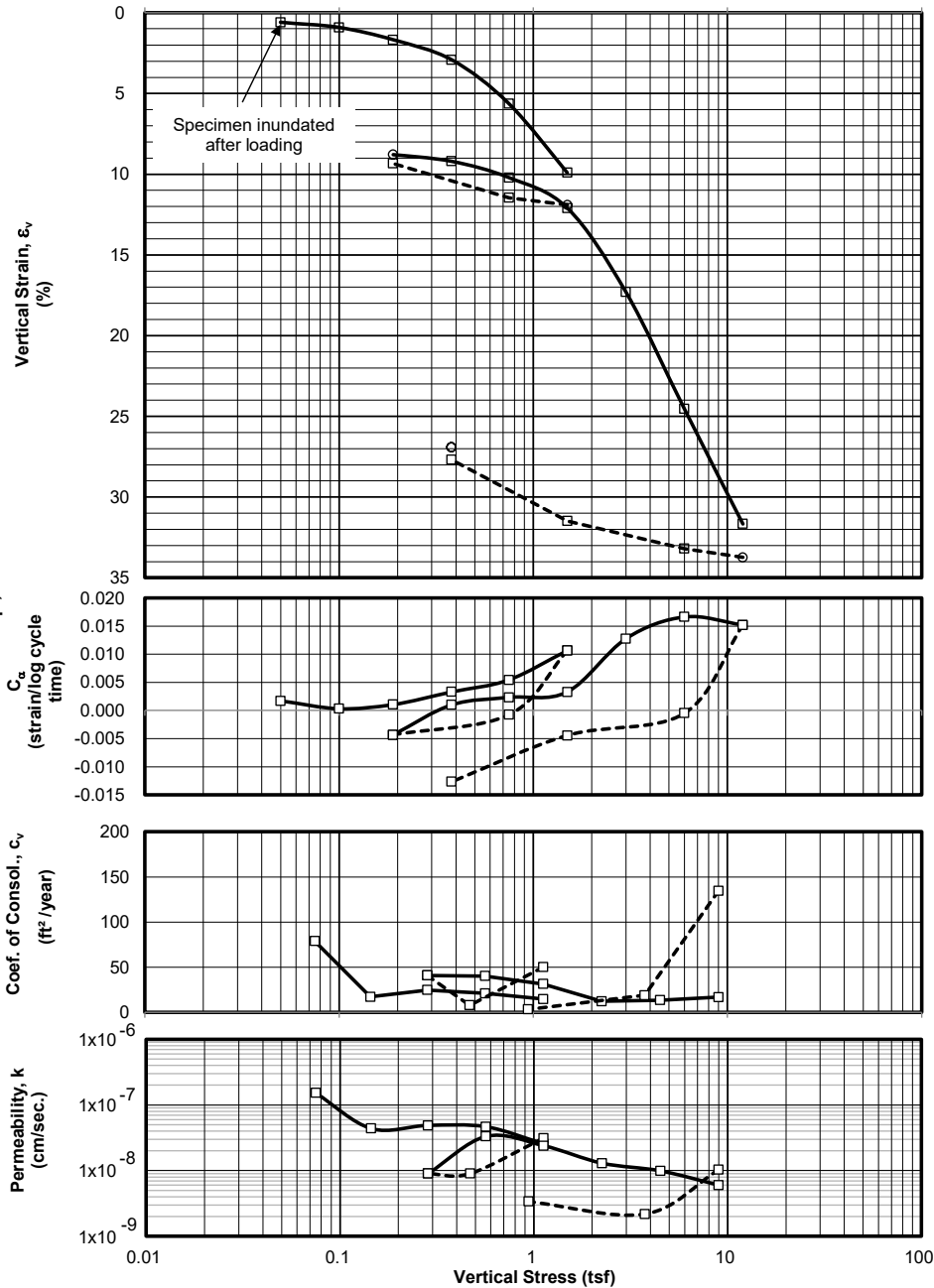
Project #
0211067-000-001-01

Project #
24010669A

Stevenson Commons
Building 3
Bronx, NY

UNCONSOLIDATED-UNDRAINED COMPRESSION TEST

Boring: HA-11 Sample: T-2
Section: C Depth: 37.75 ft.



SAMPLE INFORMATION

Boring: HA-10
 Sample: T-1C
 Depth: 23.60 feet
 Elevation:
 Type: 3-inch thin wall tube
 Description: OH, gray organic clay; fibers noted

LL = 119, PL = 46, PI = 73

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.61 inch
 Diameter: 2.50 inch

Initial water content: 91.1 %
 Initial total unit weight: 93.2 pcf
 Initial dry unit weight: 48.8 pcf
 Initial void ratio: 2.584
 Initial degree of saturation: 99 %

Final water content: 68.7 %
 Final total unit weight: 101.2 pcf
 Final dry unit weight: 60.0 pcf
 Final void ratio: 1.914
 Final degree of saturation: 100 % (assumed specific gravity = 2.80)

TEST SUMMARY

Construction Method: Casagrande (Log)
 Estimated preconsolidation stress (tsf): 1.0 (Range: 0.9 to 1.2)
 Estimated in situ effective overburden stress (tsf):
 Compression Ratio (strain per log cycle stress): 0.238
 Compression Index (void ratio per log cycle stress): 0.853
 Swell Ratio (strain per log cycle stress): 0.036
 Swell Index (void ratio per log cycle stress): 0.129
 Recompression Ratio (strain per log cycle stress): 0.034
 Recompression Index (void ratio per log cycle stress): 0.122
 Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/17/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-10 Depth: 23.60 feet
TERRA SENSE Geotechnical Laboratory	Project No. 24010669A	November 2024

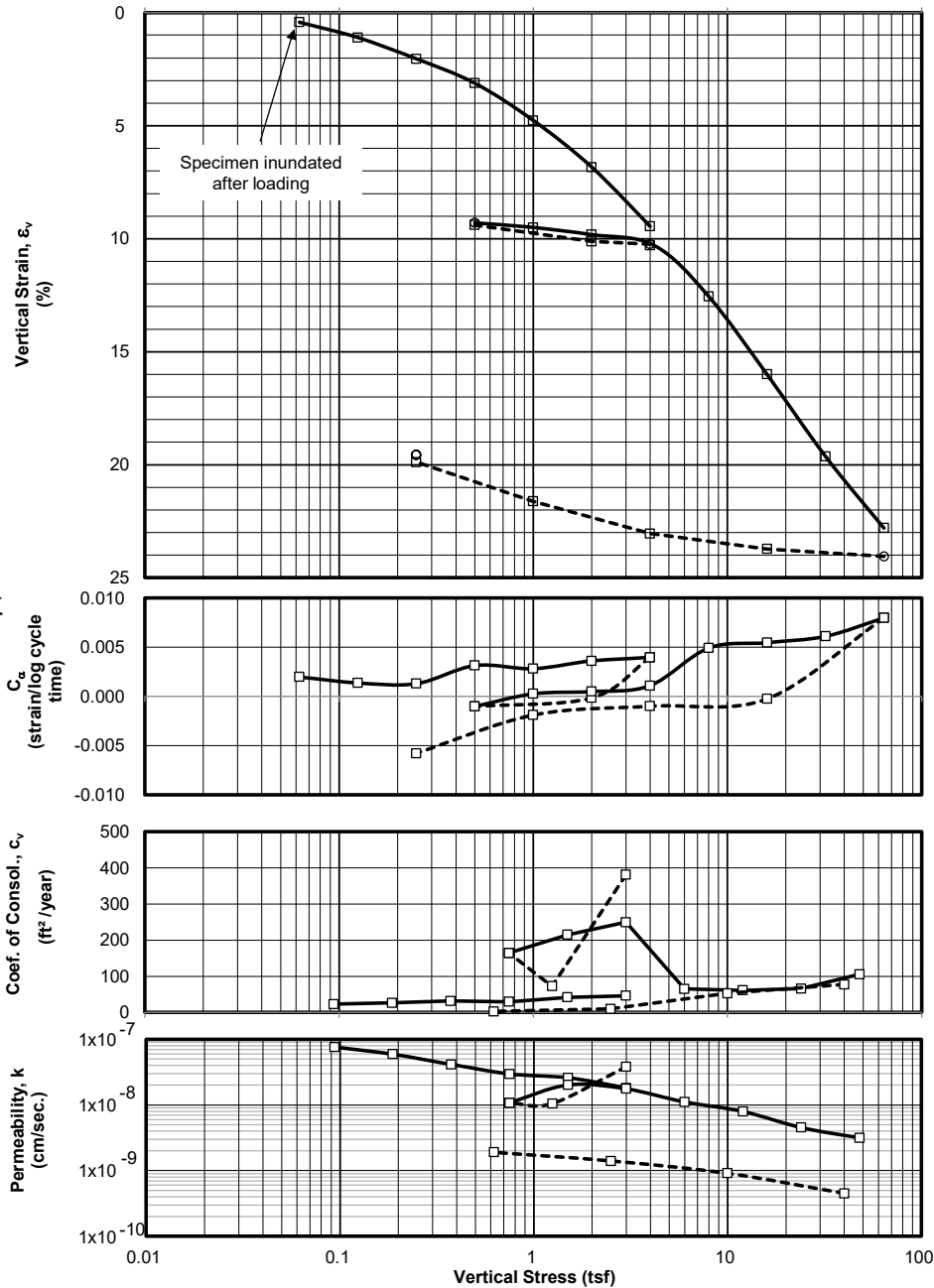
PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.605 inch	Final height:	0.492 inch
BORING:	HA-10	Initial water content:	91.1 %	Final water content:	68.7 %
SAMPLE:	T-1C	Initial dry density:	48.8 pcf	Final dry density:	60.0 pcf
TEST:	C24158	Initial total density:	93.2 pcf	Final total density:	101.2 pcf
DEPTH, feet:	23.6	Initial saturation:	99 %	Final saturation:	100 %
BY:	MCT	Initial void ratio:	2.584	Final void ratio:	1.914
TEST DATE:	10/17/2024			Final strain:	18.7 %

EQUIPMENT: SPECIMEN DESCRIPTION: OH, gray organic clay; fibers noted

Load Frame No.: 11
Ring Diameter: 2.5 inch

G	LL	PL	PI
2.8	119	46	73

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.050	0.0036	0.600	2.563	0.674	2.560	378	0.0017	8	1E-06
2	0.100	0.0056	0.920	2.551	0.964	2.550	79	0.0003	16	2E-07
3	0.190	0.0102	1.680	2.524	1.831	2.519	17	0.0011	12	4E-08
4	0.380	0.0177	2.923	2.480	3.402	2.463	25	0.0033	15	5E-08
5	0.750	0.0341	5.637	2.382	6.691	2.345	21	0.0054	14	5E-08
6	1.50	0.0600	9.915	2.229	11.906	2.158	15	0.0107	18	3E-08
7	0.750	0.0694	11.467	2.173	11.385	2.176	50	-0.0008	48	3E-08
8	0.190	0.0565	9.347	2.249	8.790	2.269	8	-0.0043	26	9E-09
9	0.380	0.0557	9.208	2.254	9.336	2.250	41	0.0010	137	9E-09
10	0.750	0.0618	10.217	2.218	10.493	2.208	40	0.0023	37	3E-08
11	1.50	0.0732	12.104	2.151	12.459	2.138	31	0.0033	40	2E-08
12	3.00	0.1047	17.311	1.964	19.203	1.896	12	0.0128	29	1E-08
13	6.00	0.1485	24.549	1.705	26.372	1.639	14	0.0166	41	1E-08
14	12.0	0.1916	31.662	1.450	33.736	1.375	17	0.0152	84	6E-09
15	6.00	0.2008	33.190	1.395	33.059	1.399	135	-0.0005	393	1E-08
16	1.50	0.1905	31.486	1.456	31.042	1.472	19	-0.0044	264	2E-09
17	0.380	0.1675	27.693	1.592	26.918	1.620	3	-0.0127	30	3E-09



SAMPLE INFORMATION

Boring: HA-10
Sample: T-2A
Depth: 30.45 feet
Elevation:
Type: 3-inch thin wall tube
Description: CL, gray lean clay

LL = 49, PL = 21, PI = 28

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.60 inch
Diameter: 2.50 inch

Initial water content: 32.9 %
Initial total unit weight: 118.0 pcf
Initial dry unit weight: 88.8 pcf
Initial void ratio: 0.878
Initial degree of saturation: 100 %

Final water content: 24.7 %
Final total unit weight: 124.6 pcf
Final dry unit weight: 100.0 pcf
Final void ratio: 0.667
Final degree of saturation: 99 % (assumed specific gravity = 2.67)

TEST SUMMARY

Construction Method: Casagrande (Log)
Estimated preconsolidation stress (tsf): 3.1 (Range: 2.6 to 3.7)
Estimated in situ effective overburden stress (tsf):
Compression Ratio (strain per log cycle stress): 0.114
Compression Index (void ratio per log cycle stress): 0.214
Swell Ratio (strain per log cycle stress): 0.012
Swell Index (void ratio per log cycle stress): 0.023
Recompression Ratio (strain per log cycle stress): 0.010
Recompression Index (void ratio per log cycle stress): 0.019
Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/18/23	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-10 Depth: 30.45 feet
 TERRA SENSE Geotechnical Laboratory	Project No. 24010669A	November 2024

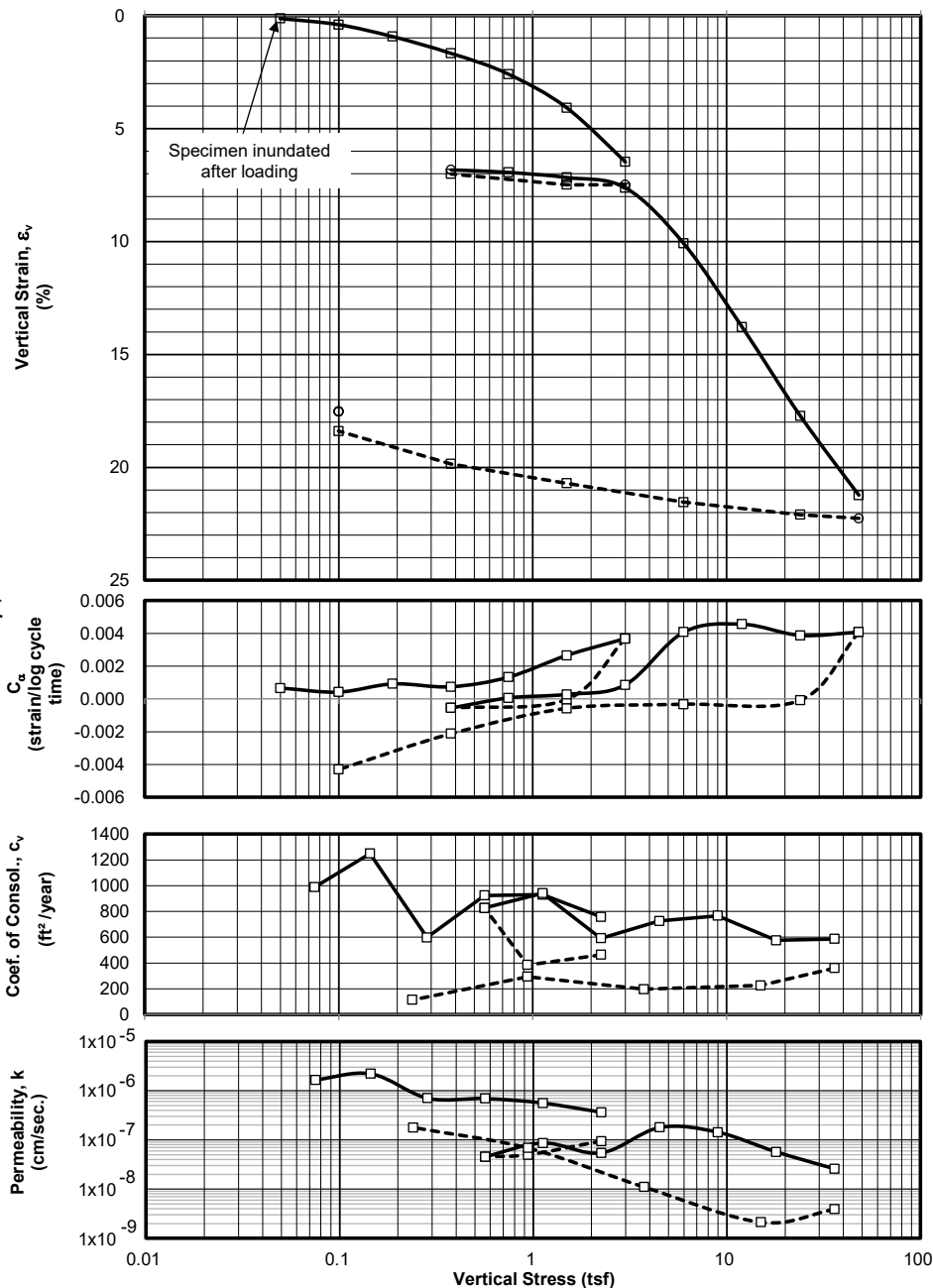
PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.604 inch	Final height:	0.536 inch
BORING:	HA-10	Initial water content:	32.9 %	Final water content:	24.7 %
SAMPLE:	T-2A	Initial dry density:	88.8 pcf	Final dry density:	100.0 pcf
TEST:	C24160	Initial total density:	118.0 pcf	Final total density:	124.6 pcf
DEPTH, feet:	30.45	Initial saturation:	100 %	Final saturation:	99 %
BY:	MCT	Initial void ratio:	0.878	Final void ratio:	0.667
TEST DATE:	10/18/2023			Final strain:	11.2 %

EQUIPMENT: SPECIMEN DESCRIPTION: CL, gray lean clay

Load Frame No.: 7
Ring Diameter: 2.5 inch

G 2.67 LL 49 PL 21 PI 28

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.063	0.0025	0.420	0.870	0.495	0.869	61	0.0020	15	1E-07
2	0.125	0.0067	1.105	0.857	1.323	0.853	23	0.0014	9	8E-08
3	0.250	0.0123	2.042	0.840	2.316	0.834	26	0.0013	13	6E-08
4	0.500	0.0188	3.120	0.819	3.459	0.813	32	0.0031	23	4E-08
5	1.00	0.0288	4.773	0.788	5.156	0.781	30	0.0028	30	3E-08
6	2.00	0.0413	6.834	0.750	7.209	0.742	42	0.0036	49	3E-08
7	4.00	0.0571	9.452	0.700	10.238	0.686	46	0.0040	76	2E-08
8	2.00	0.0611	10.120	0.688	10.081	0.689	381	-0.0001	300	4E-08
9	0.500	0.0568	9.398	0.701	9.303	0.703	73	-0.0010	208	1E-08
10	1.00	0.0574	9.507	0.699	9.551	0.698	164	0.0003	460	1E-08
11	2.00	0.0593	9.818	0.693	9.899	0.692	215	0.0005	321	2E-08
12	4.00	0.0621	10.288	0.685	10.487	0.681	250	0.0011	426	2E-08
13	8.00	0.0758	12.550	0.642	13.574	0.623	65	0.0049	177	1E-08
14	16.0	0.0966	16.001	0.577	16.753	0.563	61	0.0055	232	8E-09
15	32.0	0.1186	19.634	0.509	20.355	0.496	66	0.0061	440	5E-09
16	64.0	0.1377	22.804	0.450	24.055	0.426	106	0.0080	1009	3E-09
17	16.0	0.1433	23.729	0.432	23.700	0.433	77	-0.0002	5186	4E-10
18	4.00	0.1392	23.044	0.445	22.946	0.447	53	-0.0010	1750	9E-10
19	1.00	0.1306	21.623	0.472	21.406	0.476	10	-0.0019	211	1E-09
20	0.250	0.1201	19.885	0.504	19.569	0.510	3	-0.0058	43	2E-09



SAMPLE INFORMATION

Boring: HA-11
 Sample: T-2B
 Depth: 37.30 feet
 Elevation:
 Type: 3-inch thin wall tube
 Description: CL, gray lean clay

LL = 37, PL = 23, PI = 14

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.61 inch
 Diameter: 2.50 inch

Initial water content: 37.6 %
 Initial total unit weight: 116.1 pcf
 Initial dry unit weight: 84.4 pcf
 Initial void ratio: 1.032
 Initial degree of saturation: 100 %

Final water content: 27.4 %
 Final total unit weight: 124.8 pcf
 Final dry unit weight: 97.9 pcf
 Final void ratio: 0.752
 Final degree of saturation: 100 % (measured specific gravity = 2.75)

TEST SUMMARY

Construction Method: Casagrande (Log)
 Estimated preconsolidation stress (tsf): 2.3 (Range: 1.9 to 2.5)
 Estimated in situ effective overburden stress (tsf):
 Compression Ratio (strain per log cycle stress): 0.124
 Compression Index (void ratio per log cycle stress): 0.252
 Swell Ratio (strain per log cycle stress): 0.008
 Swell Index (void ratio per log cycle stress): 0.016
 Recompression Ratio (strain per log cycle stress): 0.008
 Recompression Index (void ratio per log cycle stress): 0.016
 Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/10/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-11 Depth: 37.30 feet
TERRA SENSE Geotechnical Laboratory	Project No. 24010669A	November 2024

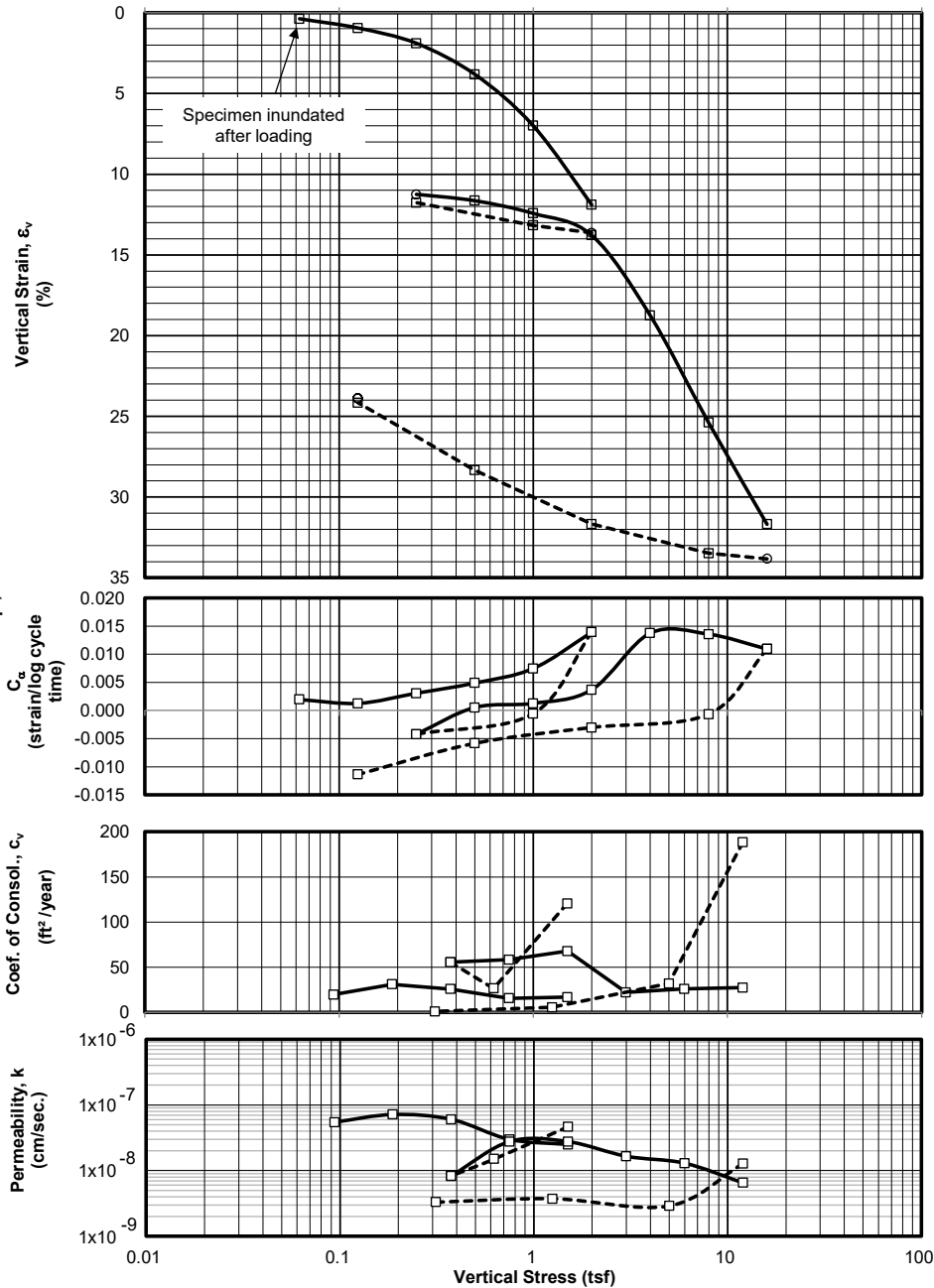
PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.607 inch	Final height:	0.523 inch
BORING:	HA-11	Initial water content:	37.6 %	Final water content:	27.4 %
SAMPLE:	T-2B	Initial dry density:	84.4 pcf	Final dry density:	97.9 pcf
TEST:	C24152	Initial total density:	116.1 pcf	Final total density:	124.8 pcf
DEPTH, feet:	37.3	Initial saturation:	100 %	Final saturation:	100 %
BY:	MCT	Initial void ratio:	1.032	Final void ratio:	0.752
TEST DATE:	10/10/2024			Final strain:	13.8 %

EQUIPMENT: SPECIMEN DESCRIPTION: CL, gray lean clay

Load Frame No.: 13
Ring Diameter: 2.5 inch

G 2.748 LL 37 PL 23 PI 14

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.050	0.0008	0.125	1.029	0.107	1.030	43	0.0007	40	3E-08
2	0.100	0.0024	0.403	1.024	0.544	1.021	988	0.0004	18	2E-06
3	0.190	0.0056	0.930	1.013	1.228	1.007	1248	0.0009	17	2E-06
4	0.380	0.0101	1.670	0.998	1.846	0.994	598	0.0007	26	7E-07
5	0.750	0.0157	2.591	0.979	3.033	0.970	924	0.0013	40	7E-07
6	1.50	0.0248	4.084	0.949	4.830	0.934	930	0.0026	50	6E-07
7	3.00	0.0393	6.476	0.900	7.484	0.880	758	0.0037	63	4E-07
8	1.50	0.0454	7.489	0.880	7.459	0.880	463	0.0000	148	9E-08
9	0.380	0.0425	7.008	0.890	6.825	0.893	385	-0.0006	233	5E-08
10	0.750	0.0421	6.940	0.891	6.990	0.890	827	0.0001	548	5E-08
11	1.50	0.0435	7.168	0.886	7.245	0.885	941	0.0003	329	9E-08
12	3.00	0.0462	7.622	0.877	7.880	0.872	592	0.0009	330	5E-08
13	6.00	0.0612	10.085	0.827	11.061	0.807	726	0.0041	122	2E-07
14	12.0	0.0837	13.792	0.752	14.927	0.729	766	0.0046	162	1E-07
15	24.0	0.1075	17.728	0.672	18.681	0.652	576	0.0039	305	6E-08
16	48.0	0.1288	21.237	0.600	22.257	0.580	587	0.0041	684	3E-08
17	24.0	0.1341	22.100	0.583	22.018	0.585	360	-0.0001	2780	4E-09
18	6.00	0.1307	21.540	0.594	21.474	0.596	226	-0.0003	3214	2E-09
19	1.50	0.1256	20.707	0.611	20.592	0.614	198	-0.0006	540	1E-08
20	0.380	0.1204	19.845	0.629	19.405	0.638	295	-0.0021	130	7E-08
21	0.100	0.1116	18.399	0.658	17.534	0.676	114	-0.0043	19.36	2E-07



SAMPLE INFORMATION

Boring: HA-12
Sample: T-1C
Depth: 23.60 feet
Elevation:
Type: 3-inch thin wall tube
Description: OH, gray organic clay

LL = 106, PL = 37, PI = 69

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.61 inch
Diameter: 2.51 inch

Initial water content: 87.5 %
Initial total unit weight: 92.9 pcf
Initial dry unit weight: 49.6 pcf
Initial void ratio: 2.262
Initial degree of saturation: 100 %

Final water content: 63.2 %
Final total unit weight: 99.7 pcf
Final dry unit weight: 61.1 pcf
Final void ratio: 1.646
Final degree of saturation: 99 % (assumed specific gravity = 2.59)

TEST SUMMARY

Construction Method: Casagrande (Log)
Estimated preconsolidation stress (tsf): 0.9 (Range: 0.8 to 1.1)
Estimated in situ effective overburden stress (tsf):
Compression Ratio (strain per log cycle stress): 0.219
Compression Index (void ratio per log cycle stress): 0.714
Swell Ratio (strain per log cycle stress): 0.023
Swell Index (void ratio per log cycle stress): 0.075
Recompression Ratio (strain per log cycle stress): 0.023
Recompression Index (void ratio per log cycle stress): 0.075
Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/24/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-12 Depth: 23.60 feet
TERRA SENSE Geotechnical Laboratory	Project No. 24010669A	November 2024

PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.612 inch	Final height:	0.496 inch
BORING:	HA-12	Initial water content:	87.5 %	Final water content:	63.2 %
SAMPLE:	T-1C	Initial dry density:	49.6 pcf	Final dry density:	61.1 pcf
TEST:	C24164	Initial total density:	92.9 pcf	Final total density:	99.7 pcf
DEPTH, feet:	23.6	Initial saturation:	100 %	Final saturation:	99 %
BY:	MCT	Initial void ratio:	2.262	Final void ratio:	1.646
TEST DATE:	10/24/2024			Final strain:	18.9 %

EQUIPMENT: SPECIMEN DESCRIPTION: OH, gray organic clay

Load Frame No.: 3
Ring Diameter: 2.505 inch

G	LL	PL	PI
2.59	106	37	69

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.063	0.0023	0.380	2.250	0.359	2.251	128	0.0020	16	2E-07
2	0.125	0.0058	0.951	2.231	1.070	2.227	20	0.0013	11	5E-08
3	0.250	0.0116	1.903	2.200	2.328	2.186	31	0.0031	13	7E-08
4	0.500	0.0234	3.826	2.138	4.591	2.113	26	0.0049	13	6E-08
5	1.00	0.0428	6.998	2.034	8.284	1.992	16	0.0074	16	3E-08
6	2.00	0.0728	11.903	1.874	13.635	1.818	17	0.0139	20	3E-08
7	1.00	0.0807	13.181	1.832	13.055	1.836	121	-0.0005	78	5E-08
8	0.250	0.0720	11.771	1.878	11.258	1.895	27	-0.0042	53	2E-08
9	0.500	0.0713	11.647	1.882	11.723	1.880	56	0.0005	201	8E-09
10	1.00	0.0761	12.431	1.857	12.704	1.848	58	0.0013	64	3E-08
11	2.00	0.0844	13.785	1.813	14.248	1.798	68	0.0037	74	3E-08
12	4.00	0.1148	18.752	1.651	20.334	1.599	22	0.0137	40	2E-08
13	8.00	0.1554	25.390	1.434	27.212	1.375	26	0.0136	60	1E-08
14	16.0	0.1939	31.683	1.229	33.824	1.159	28	0.0109	127	7E-09
15	8.00	0.2049	33.481	1.170	33.350	1.174	188	-0.0007	445	1E-08
16	2.00	0.1938	31.674	1.229	31.300	1.241	32	-0.0030	332	3E-09
17	0.500	0.1734	28.337	1.338	27.672	1.360	6	-0.0058	45	4E-09
18	0.125	0.1478	24.158	1.474	23.889	1.483	0.987	-0.0114	9	3E-09

Haley & Aldrich #0211067-000-001-01
Stevenson Commons Building 3 Bronx, NY
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS										CONSOLIDATION		REMARKS / TEST ID
			WATER CONTENT (%)	LIQUID LIMIT (-)	PLASTIC LIMIT (-)	PLAS. INDEX (-)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	ORGANIC CONTENT (burnoff) (%)	TOTAL UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	SPECIFIC GRAVITY (-)	INITIAL CONDITIONS		
													VOID RATIO (-)	SATUR- ATION (%)	
HA-01	S-2	2-4													see corrosion summary
HA-01	S-3,4,5	4-10													see corrosion summary
HA-01	S-9	22-24	52.4	131	44	87	CH		3.2						
HA-01	S-10	24-26	80.8												
HA-01	S-11	28-30	84.7												
HA-01	S-12	30-32	84.8						5.5						
HA-01	S-15	45-47	37.7	36	26	10	ML								
HA-02	S-3	4-6													see corrosion summary
HA-02	S-9	22-24	99.1	113	39	74	CH								
HA-02	S-11	28-30	89.7						5.7						
HA-02	S-12	30-32	84.2	119	42	77	CH								
HA-02	S-16	45-47	46.0	38	29	9	ML								
HA-03	S-2,3,4	2-8													see corrosion summary
HA-03	S-9	22-24	207.6						39.8						
HA-04	S-5	8-10												insufficient sample for corrosion testing	
HA-04	S-10	24-25	91.4	133	46	87	CH		8.2						
HA-04	S-14	40-42	8.4				GP-GM	8							
HA-06	S-8	20-22	295.6						57.0						
HA-06	S-9	22-24	24.5	28	21	7	CL-ML								
HA-07	S-9	25-27	15.1				SM	23				2.984			
HA-08	S-7	15-17	18.7				ML	55							
HA-09	S-9	22-24	22.9						1.3						
HA-10	S-9	24-26	90.2	118	39	79	OH		6.4						
HA-10	S-11	28-30	306.2						60.1						
HA-10	S-14	40-42	35.7	27	21	6	CL-ML	60.7							
HA-10	S-15	45-47	16.8				SM	37							
HA-10	S16	50-52	25.2				ML	62							

Prepared by: NG
Reviewed by: EF
Date: 12/17/2024

 **TERRASENSE**
Geotechnical Laboratory
45H Commerce Way
Totowa, NJ 07512

Project No.: 24010669A
File: Indx3
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Haley & Aldrich #0211067-000-001-01
Stevenson Commons Building 3 Bronx, NY
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS										CONSOLIDATION		REMARKS / TEST ID
			WATER CONTENT (%)	LIQUID LIMIT (-)	PLASTIC LIMIT (-)	PLAS. INDEX (-)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	ORGANIC CONTENT (burnoff) (%)	TOTAL UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	SPECIFIC GRAVITY (-)	INITIAL CONDITIONS		
													VOID RATIO (-)	SATUR- ATION (%)	
HA-11	T-1	22-24								92.4					
HA-11	T-1	22.4	92.3												
HA-11	T-1	22.95	90.3												
HA-11	T-1B	23.25	86.6	107	39	68	OH		6.0	94.5	50.6	2.8	2.427	99	C24169
HA-11	T-1	23.5	87.6												
HA-11	S-11	28-30	51.9				ML	88.3	4.4						
HA-11	S-14	34-36	35.7	34	23	11	CL								
HA-12	S-9	24-26	95.4						7.5						
HA-12	S-10	26-28	85.5												
HA-12	S-11	28-30	72.2												
HA-12	S-16	43-45	38.6				ML	88.8							
HA-12	S-20	52-54	9.4				SM	25							
HA-12	S-21	55-57	9.8				SP	5							

Note: (1) USCS symbol based on visual observation and Sieve and Atterberg limits reported.

Prepared by: NG
Reviewed by: EF
Date: 12/17/2024

 **TERRASense**
Geotechnical Laboratory
45H Commerce Way
Totowa, NJ 07512

Project No.: 24010669A
File: Indx3
Page 2 of 2

Haley & Aldrich #0211067-000-001-01
Stevenson Commons Building 3 Bronx, NY
Summary of Corrosion Testing

SAMPLE ID			RESISTIVITY TESTS					CHEMICAL TESTS										REMARKS
Boring No.	Sample No. *	Depth (ft)	Test Method (2)	As-Received		@ Minimum Resistivity		pH ASTM G51		AWWA Appendix A					Leachable Chloride (1) ASTM D512 (ppm)	Leachable Sulfate (1) ASTM D516 (ppm)		
				Water Content (%)	Resistivity (kΩ - cm)	Water Content (%)	Resistivity (kΩ - cm)			Redox Potential			Sulfide Response (visual)					
								pH (pH units)	Temperature (°C)	R1 (mV)	R2 (mV)	R3 (mV)		Average (mV)				
HA-01	S2	2-4	ASTM G57*	15.9	16.8	24.0	13.4	7.3	22.6	182	177	171	176	Trace to Positive	395	430	(3)	
HA-01	S3, S4, S5	4-10	ASTM G57*	14.4	16.4	58.5	8.7	7.0	21.6	135	149	153	146	Trace to Positive	75	<10		
HA-02	S3	4-6	ASTM G57*	6.1	29.4	40.8	14.7	7.7	22.9	225	217	210	217	Trace to Positive	138	30	(3)	
HA-03	S2, S3, S4	2-8	ASTM G57*	13.1	19.3	66.8	8.6	7.8	22.6	219	218	218	218	Trace to Positive	62	10		

* Tests performed on sample fraction finer than #4 sieve
KEY: (1) Test results provided by Testing Engineers International
(2) ASTM G57*: Multi point test using G187 equipment to identify minimum resistivity
(3) Insufficient sample quantity. Minimum resistivity water content interpolated.



TERRASENSE
Geotechnical Laboratory

45H Commerce Way
Totowa, NJ 07512
(973) 812-1818

Prepared by: MCT
Reviewed by: EF
Date: 12/17/2024

Project No. 24010669A
File: CorrosionSuiteG57 7788(3)
Page 1 of 1

Haley & Aldrich #0211067-000-001-01
Stevenson Commons Building 3Bronx, NY
SUMMARY OF ROCK TESTING

SAMPLE IDENTIFICATION			STATE PROPERTIES			ENGINEERING PROPERTY TESTS				REMARKS
Boring	Run	Depth	WATER CONTENT (1)	TOTAL UNIT WGT. (pcf)	DRY UNIT WGT. (pcf)	TEST TYPE (2)	UNCONFINED COMPRESSION TESTS (ASTM D7012C)			
							COMPRESSIVE STRENGTH (psi)	AXIAL STRAIN @ FAILURE (%)	ESTIMATED (5) ELASTIC MODULUS (psi)	
HA-01	C-1	58.6-59.0	0.1	168	168	UC	15,850	0.27	6E+06	
HA-03	C-1	40.3-40.7	0.1	167	167	UC	17,710	0.23	8E+06	
HA-04	C-1	46.55-46.95	0.1	172	172	UC	10,090	0.24	7E+06	

Notes:

(1) Water contents determined after trimming and shearing.

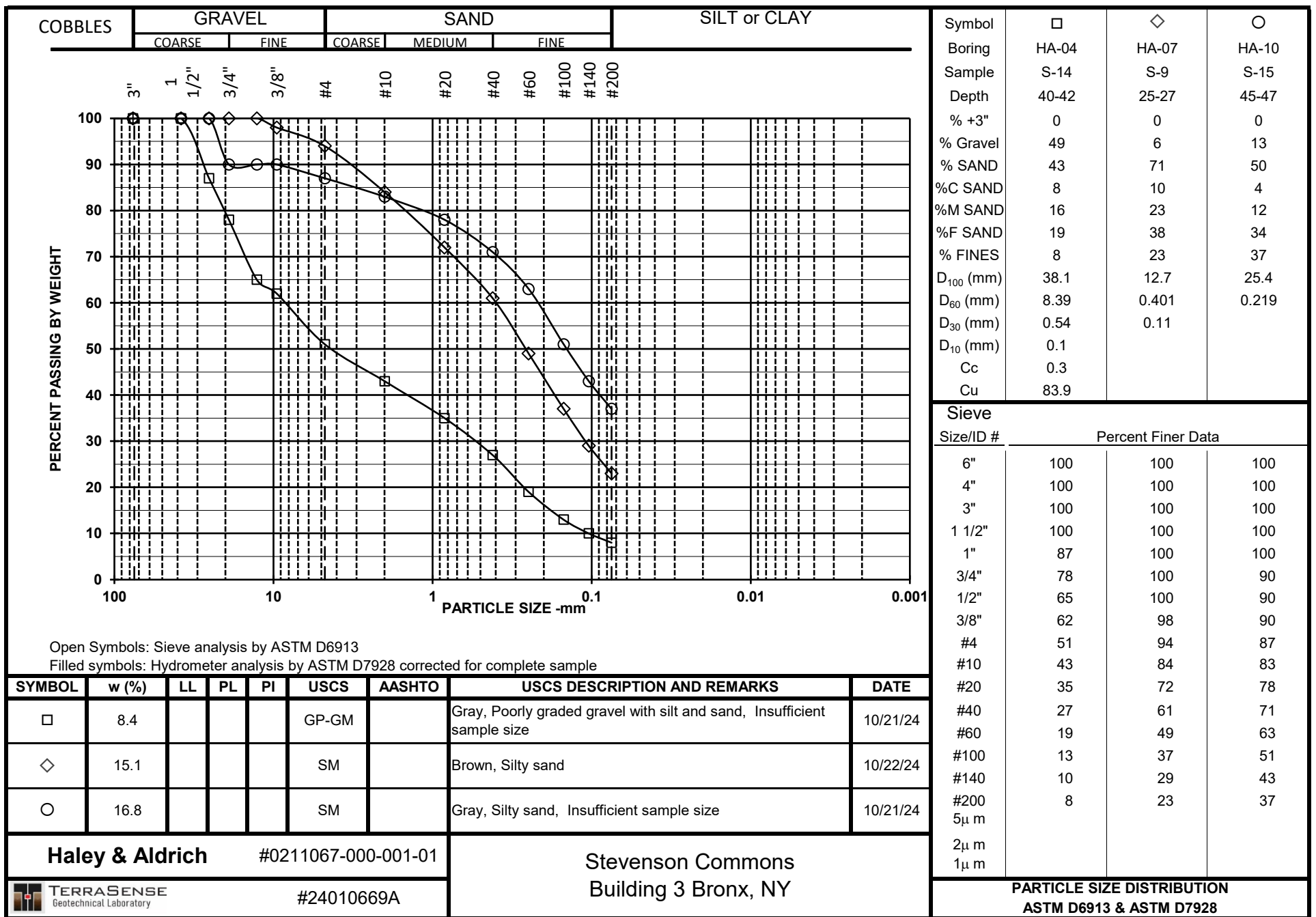
(2) Test Type Abbreviations: UC: Unconfined Compression test with estimated elastic moduli determination; Ucmol: UC test with elastic modulus determination; ISRM: Porosity/Density (& Specific Gravity) by buoyancy technique. Pore volume obtained by water saturation; C: Cerchar Abras

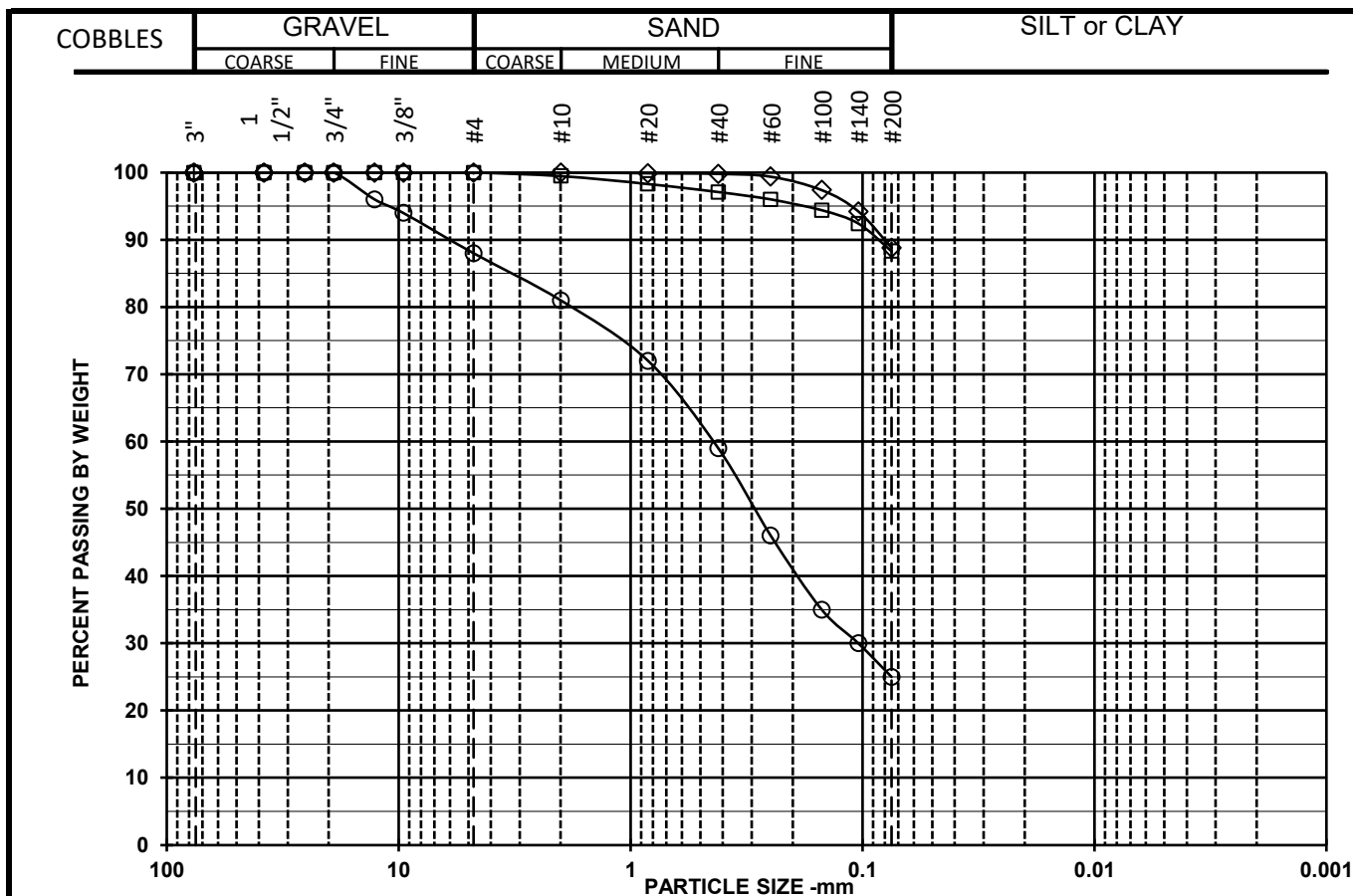
(5) Modulus estimated based on corrected gross deformations.

Prepared by: MCT
Reviewed by: EF
Date: 12/16/2024

 **TERRASense**
Geotechnical Laboratory
45H Commerce Way
Totowa, NJ 07512

Project No.: 24010669A
File: Rock Summary 7788(3)
Page 1 of 1





Open Symbols: Sieve analysis by ASTM D6913

Filled symbols: Hydrometer analysis by ASTM D7928 corrected for complete sample

SYMBOL	w (%)	LL	PL	PI	USCS	AASHTO	USCS DESCRIPTION AND REMARKS	DATE
□	51.9				ML		Gray, Silt	10/21/24
◇	38.6				ML		Gray, Silt	10/21/24
○	9.4				SM		Gray, Silty sand, Insufficient sample size	10/21/24

Haley & Aldrich #0211067-000-001-01



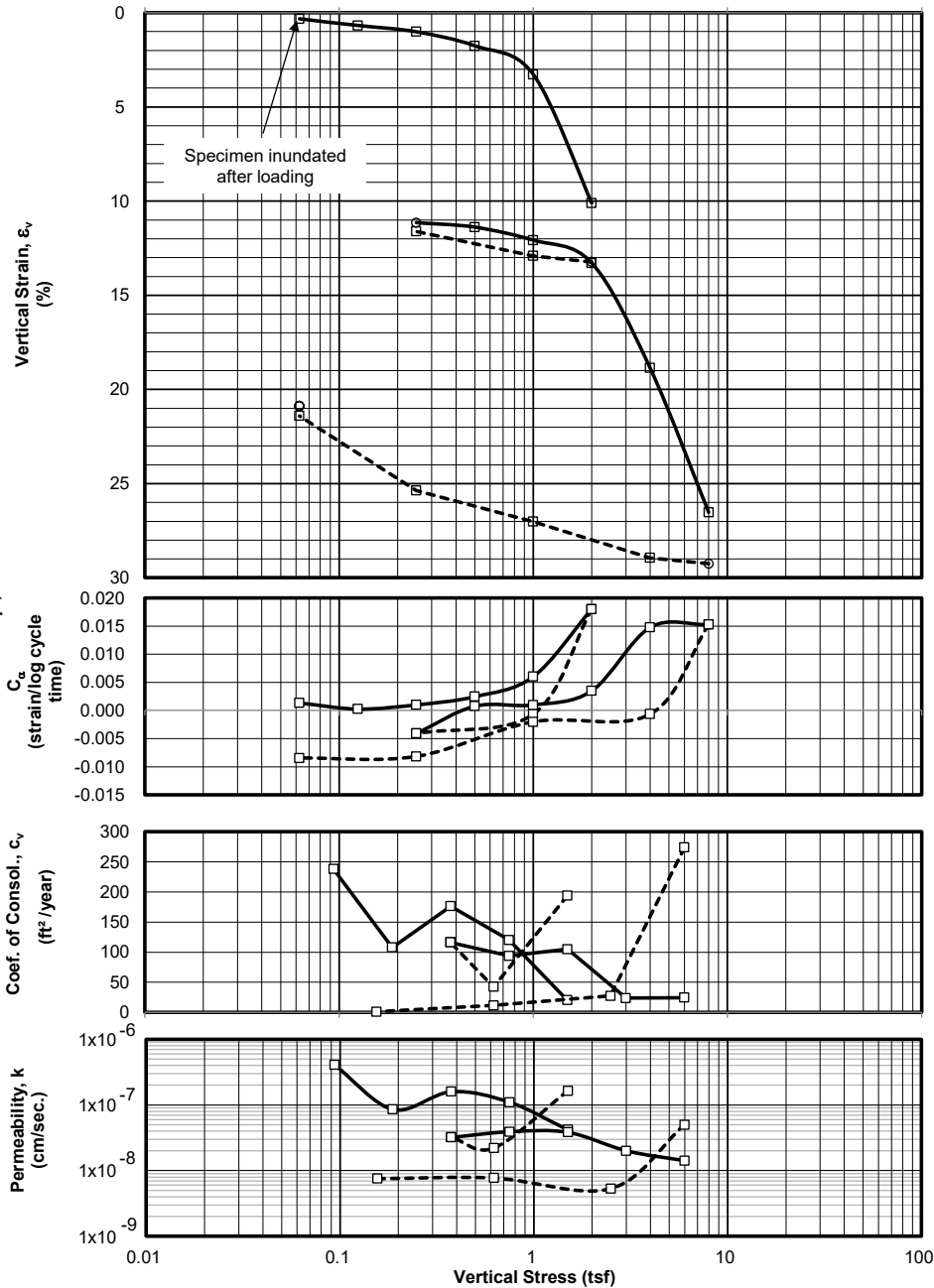
#24010669A

Stevenson Commons
Building 3 Bronx, NY

Symbol	□	◇	○
Boring	HA-11	HA-12	HA-12
Sample	S-11	S-16	S-20
Depth	28-30	43-45	52-54
% +3"	0	0	0
% Gravel	0	0	12
% SAND	11.7	11.2	63
%C SAND	0.5	0	7
%M SAND	2.4	0.2	22
%F SAND	8.8	11	34
% FINES	88.3	88.8	25
D ₁₀₀ (mm)	4.75	2	19.1
D ₆₀ (mm)			0.442
D ₃₀ (mm)			0.1
D ₁₀ (mm)			
Cc			
Cu			

Sieve	Percent Finer Data		
Size/ID #			
6"	100.0	100.0	100
4"	100.0	100.0	100
3"	100.0	100.0	100
1 1/2"	100.0	100.0	100
1"	100.0	100.0	100
3/4"	100.0	100.0	100
1/2"	100.0	100.0	96
3/8"	100.0	100.0	94
#4	100.0	100.0	88
#10	99.5	100.0	81
#20	98.3	99.9	72
#40	97.1	99.8	59
#60	96.0	99.4	46
#100	94.4	97.4	35
#140	92.4	94.2	30
#200	88.3	88.8	25
5μ m			
2μ m			
1μ m			

PARTICLE SIZE DISTRIBUTION
ASTM D6913 & ASTM D7928



SAMPLE INFORMATION

Boring: HA-11
Sample: T-1B
Depth: 23.25 feet
Elevation:
Type: 3-inch thin wall tube
Description: OH, gray organic clay; fibers noted

LL = 107, PL = 39, PI = 68

SPECIMEN INFORMATION

(NOTE: Initial and final states refer to beginning and end of test)

Initial height: 0.62 inch
Diameter: 2.50 inch

Initial water content: 86.6 %
Initial total unit weight: 94.5 pcf
Initial dry unit weight: 50.6 pcf
Initial void ratio: 2.427
Initial degree of saturation: 99 %

Final water content: 64.9 %
Final total unit weight: 102.0 pcf
Final dry unit weight: 61.9 pcf
Final void ratio: 1.805
Final degree of saturation: 100 % (assumed specific gravity = 2.78)

TEST SUMMARY

Construction Method: Casagrande (Log)
Estimated preconsolidation stress (tsf): 1.0 (Range: 0.9 to 1.2)
Estimated in situ effective overburden stress (tsf):
Compression Ratio (strain per log cycle stress): 0.255
Compression Index (void ratio per log cycle stress): 0.874
Swell Ratio (strain per log cycle stress): 0.022
Swell Index (void ratio per log cycle stress): 0.075
Recompression Ratio (strain per log cycle stress): 0.019
Recompression Index (void ratio per log cycle stress): 0.065
Remarks:

LEGEND: □ End of primary ○ End of Stage — Loading - - - - - Unloading

Test Date: 10/29/24	Tested By: MCT	Checked By: CMJ
Haley & Aldrich Project No. 0211067-000-001-01	Stevenson Commons Building 3 Bronx, NY	ONE DIMENSIONAL CONSOLIDATION TEST Boring: HA-11 Depth: 23.25 feet
TERRA SENSE Geotechnical Laboratory	Project No. 24010669A	December 2024

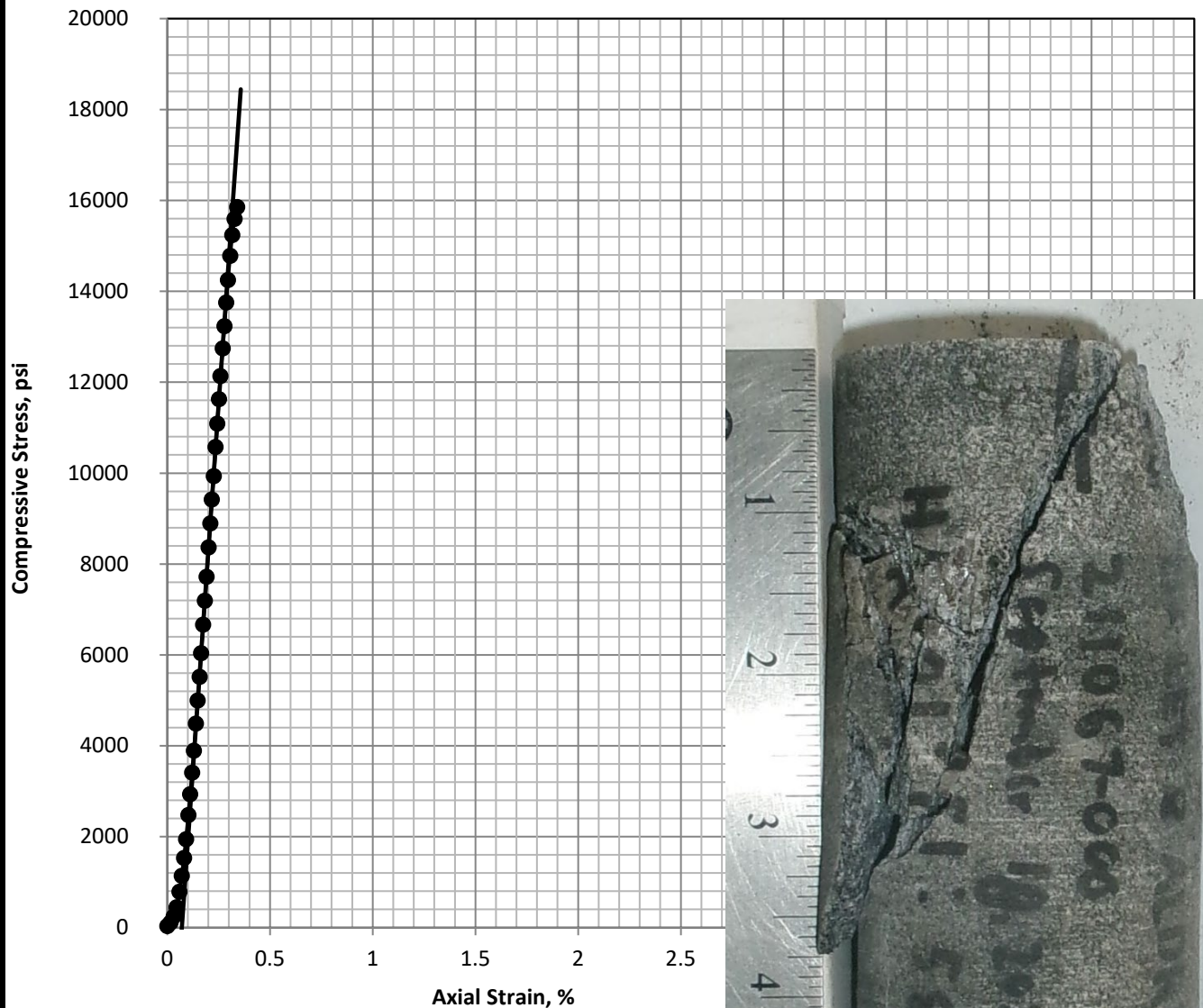
PROJECT:	Stevenson Commons				
PROJECT NO.:	24010669A	Initial height:	0.615 inch	Final height:	0.504 inch
BORING:	HA-11	Initial water content:	86.6 %	Final water content:	64.9 %
SAMPLE:	T-1B	Initial dry density:	50.6 pcf	Final dry density:	61.9 pcf
TEST:	C24169	Initial total density:	94.5 pcf	Final total density:	102.0 pcf
DEPTH, feet:	23.25	Initial saturation:	99 %	Final saturation:	100 %
BY:	MCT	Initial void ratio:	2.427	Final void ratio:	1.805
TEST DATE:	10/29/2024			Final strain:	18.1 %

EQUIPMENT: SPECIMEN DESCRIPTION: OH, gray organic clay; fibers noted

Load Frame No.: 2
Ring Diameter: 2.5 inch

G 2.78 LL 107 PL 39 PI 68

Load No.	Load (tsf)	d ₁₀₀ (inch)	t ₁₀₀ Strain (%)	t ₁₀₀ Void Ratio (-)	Final Strain (%)	Final Void Ratio (-)	c _v (ft ² /year)	C _α (strain/logt)	Constrained Modulus (tsf)	Permeability (cm/sec)
1	0.063	0.0020	0.330	2.415	0.563	2.407	20	0.0013	19	3E-08
2	0.125	0.0042	0.686	2.403	0.766	2.400	238	0.0003	18	4E-07
3	0.250	0.0063	1.016	2.392	1.132	2.388	108	0.0010	38	9E-08
4	0.500	0.0109	1.765	2.366	2.083	2.355	177	0.0025	33	2E-07
5	1.00	0.0202	3.278	2.314	4.261	2.280	120	0.0060	33	1E-07
6	2.00	0.0622	10.107	2.080	13.234	1.973	20	0.0180	15	4E-08
7	1.00	0.0795	12.916	1.984	12.811	1.988	194	-0.0006	36	2E-07
8	0.250	0.0715	11.619	2.028	11.153	2.044	43	-0.0041	58	2E-08
9	0.500	0.0701	11.391	2.036	11.511	2.032	116	0.0008	109	3E-08
10	1.00	0.0743	12.083	2.012	12.242	2.007	94	0.0010	72	4E-08
11	2.00	0.0818	13.296	1.971	14.339	1.935	105	0.0035	82	4E-08
12	4.00	0.1161	18.868	1.780	20.654	1.719	24	0.0148	36	2E-08
13	8.00	0.1632	26.530	1.517	29.253	1.424	25	0.0153	52	1E-08
14	4.00	0.1781	28.944	1.435	28.798	1.440	274	-0.0006	166	5E-08
15	1.00	0.1662	27.024	1.501	26.579	1.516	27	-0.0020	156	5E-09
16	0.250	0.1561	25.373	1.557	23.865	1.609	12	-0.0082	45	8E-09
17	0.063	0.1317	21.410	1.693	20.882	1.711	1	-0.0085	5	8E-09



Specimen Information

Water Content (%)	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Length (inch)	Diameter (inch)
0.10	168	168	4.857	1.964

Specimen meets ASTM D4543 shape tolerances

Test Summary

Strain Rate (%/min)	Corrected Strain to Peak (%)	q_u (psi)	Estimated (shown) Elastic Modulus (psi)
0.10	0.27	15850	6E+06

FAILURE PHOTO

Test by: JS
Test Date: Nov-13-24
Reviewed by: EF

Haley & Aldrich
Project # 0211067-000-001-01



TERRASENSE
Geotechnical Laboratory

Project # 24010669A

Stevenson Commons
Building 3
Bronx, NY

COMPRESSIVE STRESS VS STRAIN
UNCONFINED COMPRESSIVE
STRENGTH TEST

Boring: HA-01 Run: C-1
Depth 58.6-59.0 ft.



Specimen Information

Water Content (%)	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Length (inch)	Diameter (inch)
0.13	167	167	4.839	1.969

Specimen meets ASTM D4543 shape tolerances

Test Summary

Strain Rate (%/min)	Corrected Strain Strain to Peak (%)	q_u (psi)	Estimated (shown) Elastic Modulus (psi)
0.09	0.23	17710	8E+06

FAILURE PHOTO

Test by: JS
Test Date: Nov-13-24
Reviewed by: EF

Haley & Aldrich
Project # 0211067-000-001-01



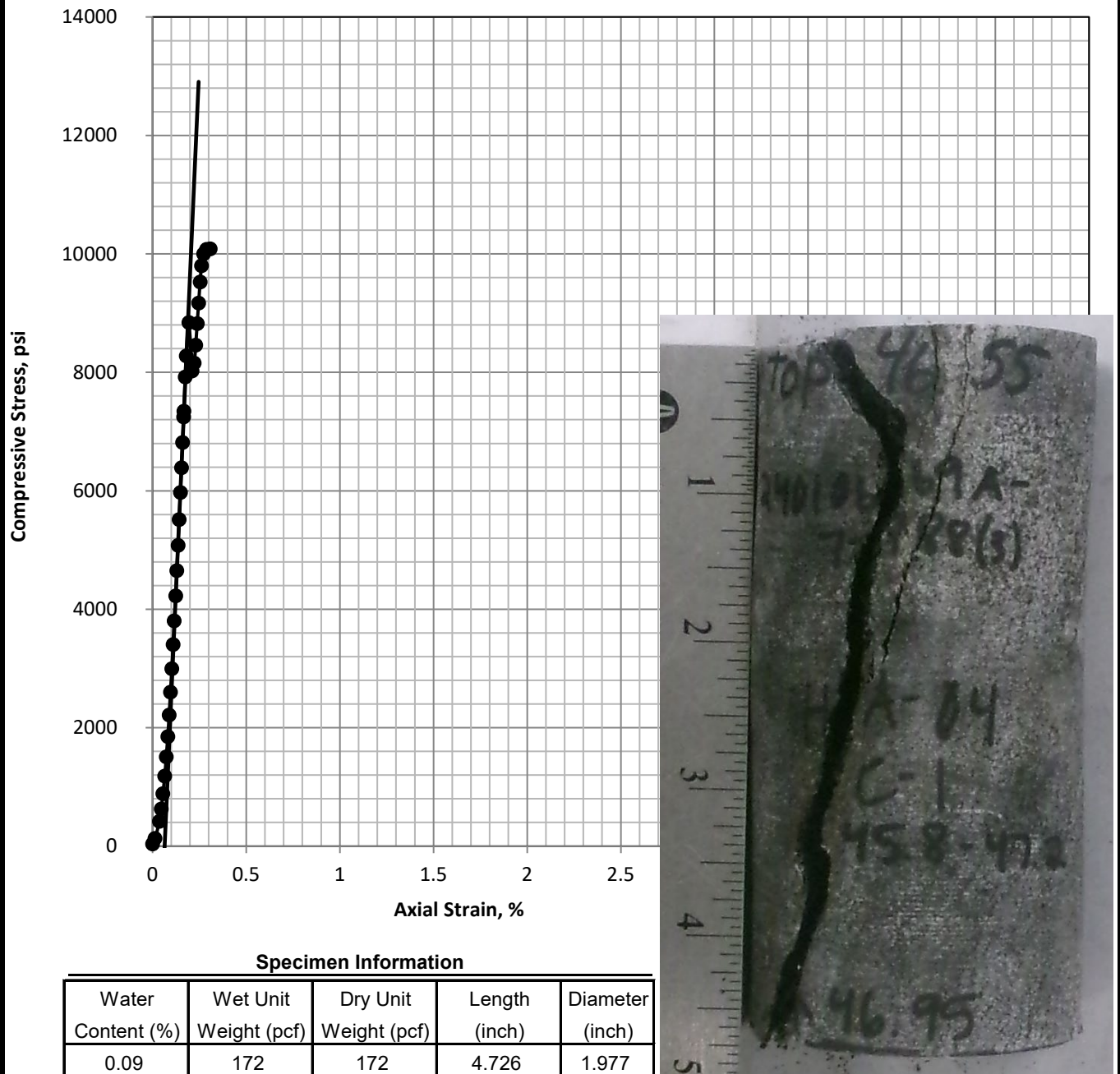
TERRASENSE
Geotechnical Laboratory

Project # 24010669A

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Building 3
Bronx, NY

**COMPRESSIVE STRESS VS STRAIN
UNCONFINED COMPRESSIVE
STRENGTH TEST**

Boring: HA-03 Run: C-1
Depth 40.3-40.7 ft.



Specimen Information

Water Content (%)	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Length (inch)	Diameter (inch)
0.09	172	172	4.726	1.977

Specimen meets ASTM D4543 shape tolerances

Test Summary

Strain Rate (%/min)	Corrected Strain Strain to Peak (%)	q_u (psi)	Estimated (shown) Elastic Modulus (psi)
0.09	0.24	10090	7E+06

FAILURE PHOTO

Test by: JS
Test Date: Nov-13-24
Reviewed by: EF

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**COMPRESSIVE STRESS VS STRAIN
UNCONFINED COMPRESSIVE
STRENGTH TEST**

Boring: HA-04 Run: C-1
Depth 46.55-46.95 ft.