Revised
Geotechnical Engineering Study
901 H Street, NE
Washington, DC
HCEA Job No. 14441A

Prepared for:

The Rappaport Companies
8405 Greensboro Drive, 8th Floor
McLean, Virginia 22102-5121

HILLIS-CARNES ENGINEERING ASSOCIATES, INC.

HILLIS-CARNES

ENGINEERING ASSOCIATES, INC.

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March 9, 2015

The Rappaport Companies
8405 Greensboro Drive, 8th Floor
McLean, Virginia 22102-5121

Attention: Ms. Emily L. Struck

Re: Revised Geotechnical Engineering Study
901 H Street, NE
Washington, DC
HCEA Job No. 14441A

Dear Ms. Struck:

Hillis-Carnes Engineering Associates, Inc. (HCEA) is pleased to submit this revised report concerning the subsurface exploration and subsequent geotechnical evaluation for the development of 901 H Street in northeast Washington, DC.

We wish to advise you that the boring samples will be stored at our Annapolis Junction, Maryland office for a period of 30 days from the date of this letter. Should you wish the samples to be stored for a longer period of time or to be delivered to you or another party, please advise us in writing prior to the end of the 30-day period. Otherwise, the samples will be discarded at the end of the 30-day storage period.

HCEA appreciates having had the opportunity to provide the geotechnical consultation for this project, and we will remain available for further consultation during the various design stages. Should you have any questions concerning the contents of this report, or require additional consultation, design, inspection, or testing services, please contact our Office.

Very truly yours,
HILLIS-CARNES ENGINEERING ASSOCIATES, INC.

Grant K. Autry, PE, PLS, LEED AP

Michael P. Johnson, PE

DISTRICT OF COLUMBIA
TIMOTHY B. HILL
No. 9052
REGISTERED
PROFESSIONAL ENGINEER

Timothy B. Hill, PE

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GEOTECHNICAL ENGINEERING STUDY
901 H STREET, NE
WASHINGTON, DC
HCEA JOB NO. 14441A

1.0 PURPOSE AND SCOPE

The purpose of this study was to determine the general subsurface conditions at the boring locations and to evaluate those conditions with respect to concept and design of a foundation system and floor slabs for the proposed construction.

The evaluations and recommendations presented in this report were developed from an analysis of project characteristics and an interpretation of the general subsurface conditions at the site based on the boring information. The stratification lines indicated on the boring logs represent the approximate boundaries between soil types. In-situ, however, the transitions may be gradual. Such variations can best be evaluated during construction and, if necessary, any minor design changes can be made at that time.

An evaluation of the site with respect to potential construction problems and foundation recommendations are also included. The construction inspection is considered necessary to verify the subsurface conditions and to verify that the soils-related construction phases are performed properly.

The Appendix contains a summary of the field work on which this report is based.

2.0 PROJECT CHARACTERISTICS

The 87,053 sq ft project site is located at 901 H Street, NE in Washington, DC as shown on the Project Location Map (Figure 1) in the Appendix. We understand that the proposed construction at the site is to include a structure that will contain a level of at-grade retail with seven stories of residential above and three levels of parking below. It is anticipated that the lowest level of the majority of the structure will extend approximately 30± ft below existing site grades. An exception to this occurs in the southwestern corner of the site at the garage entry ramp area where the building projects out of the footprint below. In this area, there are columns and basement walls that will be supported at an elevation approximately 2.5 ft below the G1 level.

Portions of the site are currently occupied by existing structures (a neighborhood retail center with an approximate total footprint of 37,991 sq ft) and associated parking areas. All structures are to be razed prior to the initiation of new construction.

A Boschke Map indicating the location (in 1861) of the previous Tiber Creek was provided to this office by the Structural Engineer (Smislova, Kehnemui & Associates, PA). A copy of the portion of the map in the project vicinity is contained in the Appendix of this report.

According to the Structural Engineer (SK&A Structural Engineers, PA) the estimated maximum column loads have been estimated at 1350 kips. The columns that are to be supported on about G1 level at the garage entry ramp area will have 500 kips of service load. A Maximum Soil Bearing Pressure Plan was developed and provided by the Structural Engineer. In general, the majority of the mat is subjected to maximum bearing pressures on the order of 4,000 psf, or less. An exception to this occurs along the southwestern side of the structure (along column line G between column lines 2 and 16) where maximum bearing pressures of as much as 6,479 psf are estimated. Settlements on the order of 1.5-inch total and 0.75-inch differential have been assumed to be tolerable by the structure if supported on a mat foundation system.

Additional details concerning the proposed construction were not available at the time that this report was being prepared. Should any of the project characteristics, assumed loading conditions, or required settlement criteria differ from those outlined above, then this office should be contacted for a re-evaluation of the site.

3.0 FIELD EXPLORATION

In order to determine the general foundation soil types and to develop design parameters, nine Standard Penetration Test (SPT) soil borings were drilled to depths of 75 ft below existing site grades in accessible areas at the site. The boring locations were staked in the field by the Civil Engineer. The boring locations are shown on the Boring Location Plan (Figure 2) in the Appendix.

The borings were advanced with hollow-stem augers and the subsurface soils were sampled at 2.5 ft and 5.0 ft intervals. Samples were taken by driving a 1-3/8 inch I.D. (2-inch O.D.) split-spoon sampler in accordance with ASTM D-1586 specifications. The sampler was first seated 6 inches to penetrate any loose cuttings and then was driven an additional foot with blows of a 140 pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the additional foot is designated as the "Penetration Resistance" or "N" value. The penetration resistance, when properly evaluated, is an index to the soil strength and compression characteristics.

Representative portions of each soil sample were placed in glass jars and transported to HCEA's laboratory. In the laboratory, the samples were visually examined by the Geotechnical Engineer to verify the driller's field classifications. The samples were visually classified in general accordance with the Unified Soil Classification System and the field classifications were revised where necessary.

The Unified Soil Classification Symbols appear on the Boring Logs and the system nomenclature is briefly described in the Appendix.

In order to better define the general subsurface conditions, three Cone Penetrometer Test (CPT) soundings were performed. The CPT locations generally correlated with the following boring locations:

Test Number	Approximate Boring Location
CPT-1	B-6
CPT-2	B-7
CPT-3	B-8

The CPT is a subsurface soil exploration method that involves pushing a conical-shaped probe into a soil deposit and recording the resistance of the soil to penetration. The test equipment consists of a cone assembly, a series of hollow sounding rods, a hydraulic frame to push the cone and rods into the soil, an electronic data processing unit, and an anchored drill rig to provide thrust resistance. Testing is performed in conformance with ASTM test method D5778-95.

In a CPT test, output quantities for both tip resistance and sleeve friction are simultaneously recorded in units of tons per square foot per foot of depth. The data processing unit also calculates and records the ratio of friction resistance to tip resistance (generally referred to as the friction ratio). In addition, dissipation of excess pore water pressure can be recorded at discrete depth locations during testing.

4.0 SUBSURFACE CONDITIONS

Details of the subsurface conditions encountered at the site are shown on the Records of Soil Exploration. A brief description of the subsurface conditions and pertinent engineering characteristics of the soils are given below.

Strata divisions shown on the Records of Soil Exploration and Soil Profiles have been estimated based on visual examinations of the recovered boring samples. In the field, strata changes could occur gradually and/or at slightly different levels than indicated. Also, groundwater conditions indicated on the Records of Soil Exploration are those observed during the period of the subsurface exploration. Fluctuations in groundwater levels could occur seasonally and might also be influenced by changes in grading, runoff and infiltration rates, and other influencing factors.

Generalized subsurface conditions based on the results of the widely spaced borings are discussed below:

4.1 Site Geology

The Geologic Map of Montgomery County and the District of Columbia (1953) indicates that the site is mapped in an area where the shallow subsurface materials appear to belong to the Wicomico formation of Pleistocene age. The soils in this formation are stream deposits typically consisting of gravel, sand, and silt and are typically underlain by deposits of the Potomac Group.

It is typical in the Washington, DC area to find man-placed fill materials associated with previous construction activities situated atop the above-mentioned natural soils.

4.2 Man-Placed Fill Materials

Materials specifically identified as man-placed fill materials or possible man-placed fill materials were encountered at the following locations in the borings:

Boring	Approximate Depth of Fill Material (ft)
B-1	8.5
B-2	8.5
B-4	8.5
B-5	8.5
B-6	8.5
B-7	8.5
B-8	8.5
B-9	5.0

Since the size of the samples obtained is relatively small in comparison to the areal extent of the site and since the fill materials could be of similar composition to the natural soils encountered at the site, it is often difficult to determine the presence and composition of fill materials from the SPT samples. It should be anticipated that man-placed fill materials may be encountered at other locations and to different depths across the site due to the previous construction that has occurred on and around the project site.

4.3 Natural Materials

The subsurface soils encountered in our borings were consistent with the area geology described above. The natural soils encountered at the site were visually classified in general accordance with the Unified Soil Classification System as being silty sand and gravel (SM-GM), poorly-graded sand (SP), silty sand (SM), clayey sand (SC), clayey silt (ML), silty or sandy clay (CL) and combinations thereof.

"N" values from the Standard Penetration Test (SPT) borings generally indicated relative densities in the very loose to very dense range for the more granular materials encountered. The more fine-grained materials typically exhibited consistencies in the very soft to hard range.

Refusal to augering occurred in three of the borings drilled at the site. Refusal may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of the refusal materials. Refusal was encountered at the following locations:

Boring	Approximate Depth of Refusal (ft)
B-4	69.0
B-5	69.5
B-9	72.0

Refer to the Records of Soil Exploration in the Appendix of this report for more detailed information regarding the specific soil conditions encountered in the individual borings.

4.4 Groundwater

Groundwater levels were monitored during drilling operations. Groundwater was encountered at depths ranging from 22± ft to 24± ft below the existing ground surface during the drilling operations. Since water and/or drilling mud were utilized in the drilling of the borings, it was not possible to obtain accurate water readings at the completion of drilling operations. Additionally, the borings were backfilled at completion for safety purposes related to the existing retail center, so twenty-four hour groundwater readings were not obtained.

It should also be anticipated that perched water may be encountered in pockets within the fill materials, at the fill material/natural soil interface or over denser or more fine-grained layers.

A more accurate determination of the hydrostatic water table would require the installation of perforated pipes or piezometers which could be monitored over an extended period of time. The actual level of the hydrostatic water table and the amount and level of perched water should be anticipated to fluctuate throughout the year, depending on variations in precipitation, surface run-off, infiltration, site topography, and drainage.

Additionally, Tiber Creek previously flowed through the project site area (as shown on the Boschke Map in the Appendix. It should be anticipated that this former stream location could contain large amounts of groundwater, even if on a limited basis, that could impact the proposed below-grade construction.

5.0 EVALUATIONS AND RECOMMENDATIONS

Our findings suggest that the site can be developed for the anticipated type of construction. With the anticipation of construction extending three-stories below site grades; proper dewatering operations, temporary support of excavations, and preparation/protection of the foundation subgrade soils will be of the utmost concern during construction.

The following recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions. If there are any changes to the project characteristics or if different subsurface conditions are encountered during construction, HCEA should be consulted so that the recommendations of this report can be reviewed and revised, if necessary.

5.1 General Site Preparation

All existing structures (including all above and below ground construction) within the areas to be developed should be removed prior to the initiation of new construction. We suggest that all available information regarding the existing utilities at the site be reviewed prior to construction.

Removal should include all underground pipes, utilities, and underground structures that will interfere with the necessary foundation excavations. In areas outside the proposed limits of below-grade foundation excavations, and in areas of construction such as new utility lines, underground utilities which are to be adandoned should be grouted solid or removed. Provisions should be made in the construction specifications and budget to restore the subgrade to stable condition following removal. Restoration should include backfilling and compaction of the excavation areas.

5.2 Foundation Excavations

With the anticipation of three below-grade levels, expected excavations on the order of 30± ft to reach foundation levels, and the close proximity of existing roadways and adjacent structures, a temporary excavation support system will be required in conjunction with an extensive dewatering system.

Although design of the earth retention system is best performed by a specialty contractor, a free-draining system, consisting of soldier piles and wood lagging with the required lateral bracing is typical in downtown DC.

The system will have to be braced internally using struts and/or rakers or externally using tiebacks. Soldier piles and lagging should be designed for an appropriate lateral earth pressure diagram. The earth pressure diagram should be reviewed by the geotechnical engineer. The temporary excavation support system should consider loading due to construction equipment, soil stockpiles, and other surcharge effects adjacent to the top of the excavation during construction.

The spacing of the soldier piles and braces should be determined by a structural analysis. The design of the retention system is beyond this scope of work; however, we recommend that a maximum center-to-center spacing of soldier piles not exceed eight feet. In addition, wood lagging, if utilized, should have a minimum thickness of three inches.

5.3 Lateral Earth Pressures

The magnitude of lateral earth pressure against subsurface walls is dependent on the type of backfill soil, drainage provisions, and whether the walls are permitted to yield during and/or after placement of the backfill.

Walls with Drained Conditions

The recommendations provided in this section can be utilized in areas where shallower below-grade walls may be utilized (such as in the garage entry ramp area) where drainage is provided behind the walls. For walls that are designed such that movement of the top of the wall is prohibited, an equivalent fluid pressure distribution considering an equivalent fluid weight of 65 lbs/ft (per foot of wall height) should be used for design purposes. If the walls are designed as free-standing walls with unrestricted rotation at the top, then an equivalent fluid pressure distribution considering an equivalent fluid weight of 45 lbs/ft can be used for design purposes. Any surcharge loadings must also be considered in the wall designs. We recommend a coefficient of 0.5 for surcharge effects, applied to the wall using a uniform pressure distribution in addition to the design equivalent fluid pressures provided above.

Walls with Undrained Conditions

Based on the design team meeting to discuss foundation and groundwater issues, it was determined that the proposed below-grade portion of the structure is to be designed as a “bathtub” to avoid the necessity to provide long-term subsurface drainage. Hydrostatic pressures will therefore also need to be considered in the mat foundation and wall designs. The borings indicated groundwater as shallow as 22± ft below the existing site grades during drilling operations. It is recommended that it be assumed for design

purposes that a 5 ft fluctuation in the groundwater level could occur seasonally (that is, that water may be encountered at depths as shallow as 17± ft below existing site grades).It is recommended that waterproofing be extended up to a point that is located a minimum of 15 ft below existing site grades. Since it was not possible to obtain 24 hour water readings, it is recommended that a contingency be provided to provide additional waterproofing during construction should the exposed conditions indicate that such additional measures would be prudent.

Lateral earth pressures for undrained walls should be calculated in accordance with the appropriate earth pressure diagram in the Appendix of this report.

General Wall Considerations

Any surcharge loadings must also be considered in the wall designs. We recommend a coefficient of 0.5 for surcharge effects, applied to the wall using a uniform pressure distribution in addition to the design lateral earth pressures provided above. Lateral earth pressure diagrams are provided in the Appendix of this report.

Generally, backfill materials behind the walls should consist of granular soils having a Unified Soil Classification of SM or better. Where required, wall backfill materials should be compacted to minimum dry densities of 95 percent of the Standard Proctor maximum dry density. It may be necessary to use smaller walk-behind compaction equipment near the walls to attain the proper compaction and to avoid damaging the walls. Also, the walls should be properly braced during backfilling operations.

5.4 Fill Selection, Placement and Compaction

All material to be used as fill or backfill, if required, should be inspected, tested and approved by the Geotechnical Engineer. In general, the on-site soils which are free from organic and other deleterious components can be re-used as general site fill. Materials suitable for various construction purposes can be identified by an experienced Soils Inspector during grading/excavation operations.

All fill should be placed in relatively horizontal 8-inch (maximum) loose lifts and should be compacted to a minimum of 98 percent of the Standard Proctor (ASTM D-698) maximum dry density. Field moisture contents should be maintained within 3± percentage points of the optimum moisture content in order to provide adequate compaction.

Within the foundation excavation, should any structural fills be required due to circumstances such as the undercutting of any soft and/loose soils, it is

our opinion that these operations would be most easily performed through the use of lean concrete or an imported gravel or stone material, depending on the depth and lateral extent of the unsuitable materials being removed.

5.5 Suitability of Excavated Soils

It appears that the majority, if not all, of the existing fill materials will be removed during the anticipated excavation. The excavated fill materials may be selectively re-used as structural fill, predominantly depending moisture content. Careful excavation and segregation may result in the ability to re-use some of these existing fill materials but can become timely and cost ineffective. It should also be pointed out that the results of an environmental study being performed for the site may also impact the ability to re-use some of the existing fill materials.

The natural soils encountered below the existing fill materials and above the groundwater table appear to be generally suitable for re-use as structural fill. It should be anticipated that the natural soils located below the groundwater table would most likely require moisture conditioning such as air drying, discing, or chemical/mechanical alterations prior to their use as structural fills.

5.6 Foundations

Mat Foundation

As discussed in a design meeting with the project team, with foundation excavations extending to depths on the order of 30 ft below the existing site grades, in conjunction with the groundwater conditions encountered and anticipated structural loading conditions, a mat foundation appears to be the best foundation alternative for the project. Although maybe slightly more expensive initially than a pile foundation, a mat foundation will be better equipped to handle resistance of uplift forces associated with construction below the water table and will provide aid in protecting groundwater intrusion at the foundation level with respect to on-going building construction.

The structural design of the concrete mat may be designed based on the maximum bearing pressures indicated on the Maximum Soil Bearing Pressure Plan provided by the Structural Engineer. A composite modulus of subgrade reaction (k) of 150 pci can be utilized for the design of the mat. It is also recommended that a minimum three-inch thick concrete working mat be placed on the approved subgrade to protect the subgrade during placement of the reinforcing steel. The thickness of the mat may have to be increased at the column locations to evenly distribute the mat pressure. Additionally, the mat foundation should be designed to resist the anticipated uplift forces due to the presence of the groundwater table.

Based on the results of the borings, it should be anticipated that somewhat looser and/or softer soils will be present at the proposed foundation grades. This condition may result in the need to perform some undercutting and replacement of these materials in order to provide a stable subgrade upon which to construct the mat foundation. Particular attention should be paid to the vicinity of Boring B- 6 where relatively loose materials were encountered near the anticipated foundation bearing elevation. The temporary excavation support system should extend to adequate depths to safely allow for additional undercuts below the proposed foundation subgrade should they be required. For estimation purposes, it should be assumed that 2±ft of undercutting may be necessary below the bottom of slab elevation in this area. The actual limits of any required undercutting will need to be determined in the field during construction. Any required undercut and replacement operations should be performed in accordance with the recommendations provided in Section 5.4 of this report.

Spread Footing Foundations

As stated previously, there is an area in the southwestern corner of the site at the garage entry ramp area where the building projects out of the footprint below. In this area, there are columns and basement walls that will be supported at an elevation approximately 2.5 ft below the G1 level. It is anticipated that foundations in this area will be located approximately 12 ft to 14 ft below existing site grades. At this depth, spread footing foundations can be utilized for this portion of the structure.

Based on the structural loads provide, the maximum tolerable settlement, and the general soil conditions which were encountered, it is our judgment that the design net allowable soil bearing pressure of 3,000 lbs/sq ft will be available for proportioning footings in firm, stable ground.

All footing excavations should be inspected by a Geotechnical Engineer or experienced Soils Inspector prior to the placement of concrete. The purpose of the inspection would be to verify that the exposed materials will be capable of supporting the design bearing pressure. If soft or loose pockets are encountered in the footing excavations, the unsuitable materials should be removed and the footings should be located at a lower elevation. Alternatively, the unsuitable materials could be undercut and replaced with either new fill placed and compacted in accordance with the recommendations of Sections 5.1 and 5.4 of this report or with lean (2000 psi) concrete.

In all areas where foundations will be supported on structural fill, the structural fill should extend a sufficient distance laterally beyond the perimeters of footings. For design purposes, plans should reflect structural

fill extending a minimum distance of 9 inches laterally beyond a footing perimeter for each linear foot of structural fill below the bearing level.

To preclude punching shear failures, wall footings should be at least 16 inches wide and column footings should be at least 24 inches wide. It is recommended that wall footings be provided with longitudinal reinforcement. Such reinforcement would provide the footings with greater bending capacity that should allow them to span across any localized weak zones that may go undetected during construction. Since a net soil pressure is specified, the weights of the footing concrete and backfill need not be added to the structural loads when proportioning the footings.

Exterior footings and footings in unheated areas should be located at depths of at least 2.5 ft below final exterior grades so as to provide adequate protection from frost heave. If the structure is to be constructed during the winter months or if the building interior will likely be subjected to freezing temperatures after footing construction, then all footings should be provided with adequate frost cover protection. Otherwise, interior footings can be located on suitable materials at nominal depths below finished floor grade.

New footings should be located in such a way that stresses imposed by the new footings will not overstress adjacent footings, the soils under the adjacent footings or adjacent walls. This can be done by locating new footings in such a manner that imaginary lines extended downward and outward from the bottom edge of the new footings at a 45 degree angle will not intersect adjacent footings or walls. To help preclude the possible undermining of any existing adjacent footings, excavations for new footings should not extend below imaginary lines extending downward and outward from the bottom edges of the adjacent footings at a 45 degree angle. If any of these criteria cannot be met, HCEA should be consulted for further evaluation.

5.7 Groundwater and Dewatering

Based on the subsurface conditions encountered in the borings, and the knowledge that excavations will extend to depths on the order of 30± ft below the existing site grades, it is our opinion that dewatering will be of high importance. As stated previously, the borings indicated groundwater as shallow as 22± ft below the existing site grades during drilling operations. It is recommended that it be assumed for design purposes that a 5 ft fluctuation in the groundwater level could occur seasonally (that is, that water may be encountered at depths as shallow as 17± ft below existing site grades). It is also possible that the location of the previous stream area could still contain or transmit a significant amount of groundwater, even if on a limited basis, that could significantly impact the proposed underground construction.

Temporary dewatering during construction should be designed and installed by a specialty subcontractor who specializes in deep foundation excavation drainage. Dewatering on projects such as this is typically best performed through the use of deep well points around both the perimeter and interior of the proposed excavation in conjunction with open pumping from trenches and sump pits as the excavation progresses.

5.8 Site Seismicity

Based on the results of the borings performed, a site seismic classification of "D" based on the IBC 2009 codes should be utilized for design.

6.0 REMARKS

This report has been prepared to aid in the evaluation of the site for the proposed construction. It is considered that adequate recommendations have been provided to serve as a basis for design and preparation of plans and specifications. Additional recommendations can be provided as needed.

These analyses and recommendations are, of necessity, based on the information made available to us at the time of the actual writing of the report and the on-site conditions, surface, and subsurface that existed at the time the exploratory borings were performed. Further assumption has been made that the limited exploratory borings, in relation both to the areal extent of the site and to depth, are representative of conditions across the site.

If subsurface conditions are encountered which differ from those reported herein, this Office should be notified immediately so that the analyses and recommendations can be reviewed and/or revised as necessary. It is also recommended that:

1. We be given the opportunity to review any plans and specifications prepared subsequent to the final geotechnical study in order to comment on the interaction of the soil conditions as described herein and the design requirements.

2. A Geotechnical Engineer or experienced Soils Inspector be present at the site during the construction phase to verify installation according to the approved plans and specifications. This is particularly important during excavation, placement, and compaction of fill materials.

Please note that successful completion of the project is dependent on your compliance with all of the recommendations provided in this report. While represented separately, the recommendations represent work that is intertwined.

The successful completion of the project is specifically conditioned on your complying with all recommendations.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties either implied or expressed. Hillis-Carnes Engineering Associates, Inc. assumes no responsibility for interpretations made by others based on work or recommendations made by HCEA.

APPENDIX

Figure 1: Project Location Map

Figure 2: Boring Location Plan

Boschke Map – Tiber Creek - 1861

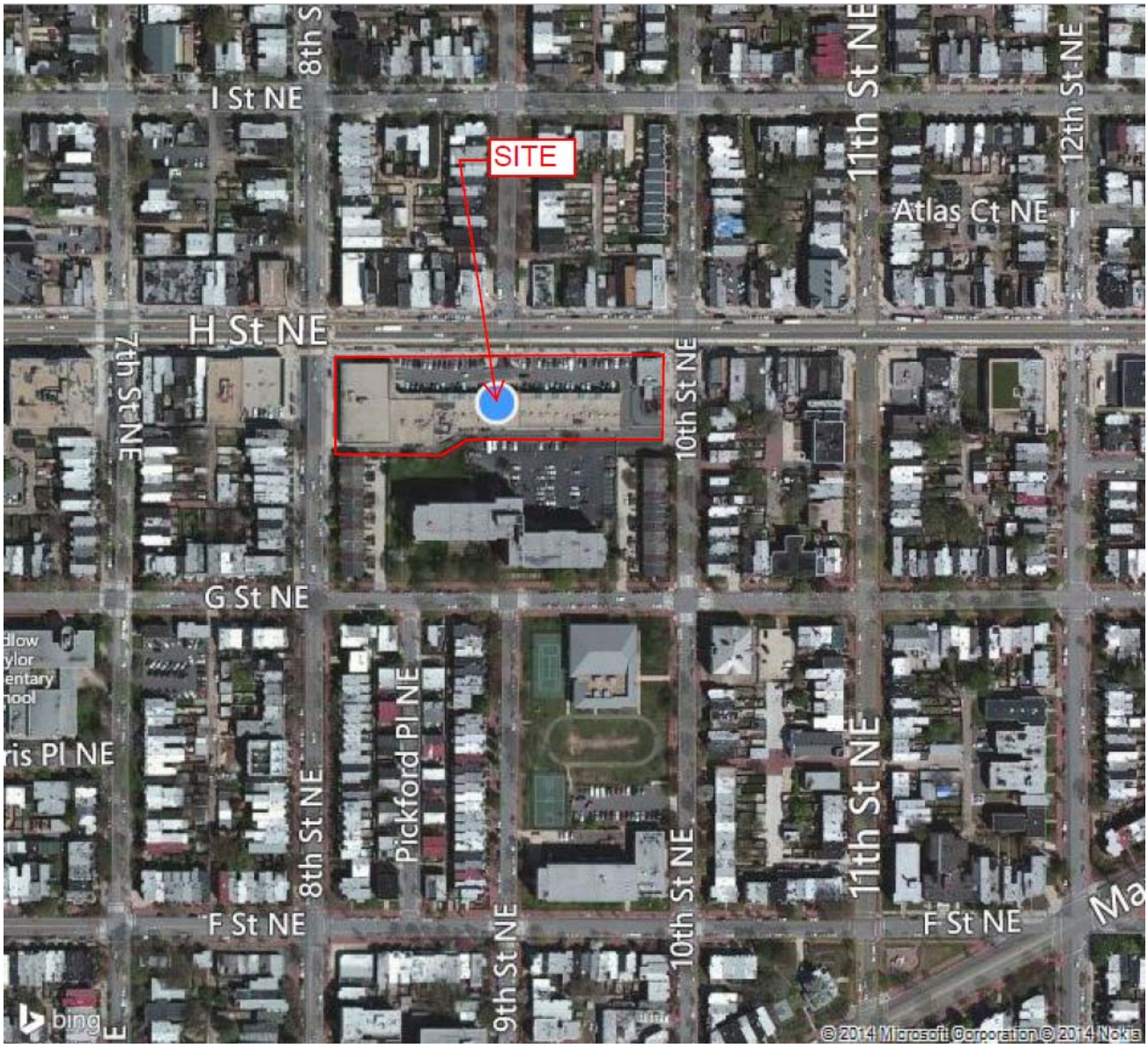
Boring Profiles

Records of Soil Exploration

Soil Description Sheet

Lateral Earth Pressure Diagrams

In-Situ (CPT) Testing Results

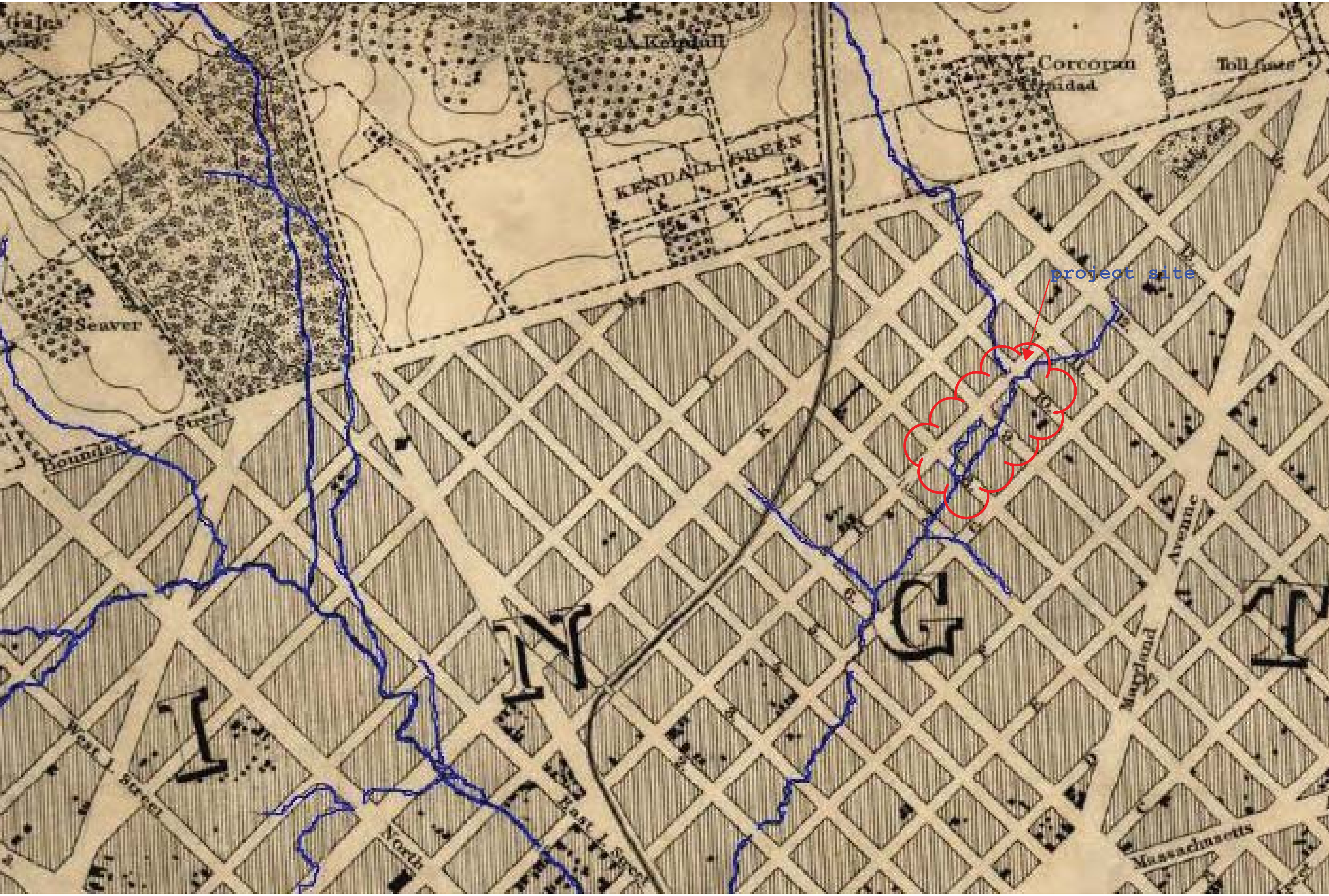


HILLIS-CARNES

ENGINEERING ASSOCIATES, INC.

PROJECT LOCATION MAP

Scale: Reduced **Figure: 1**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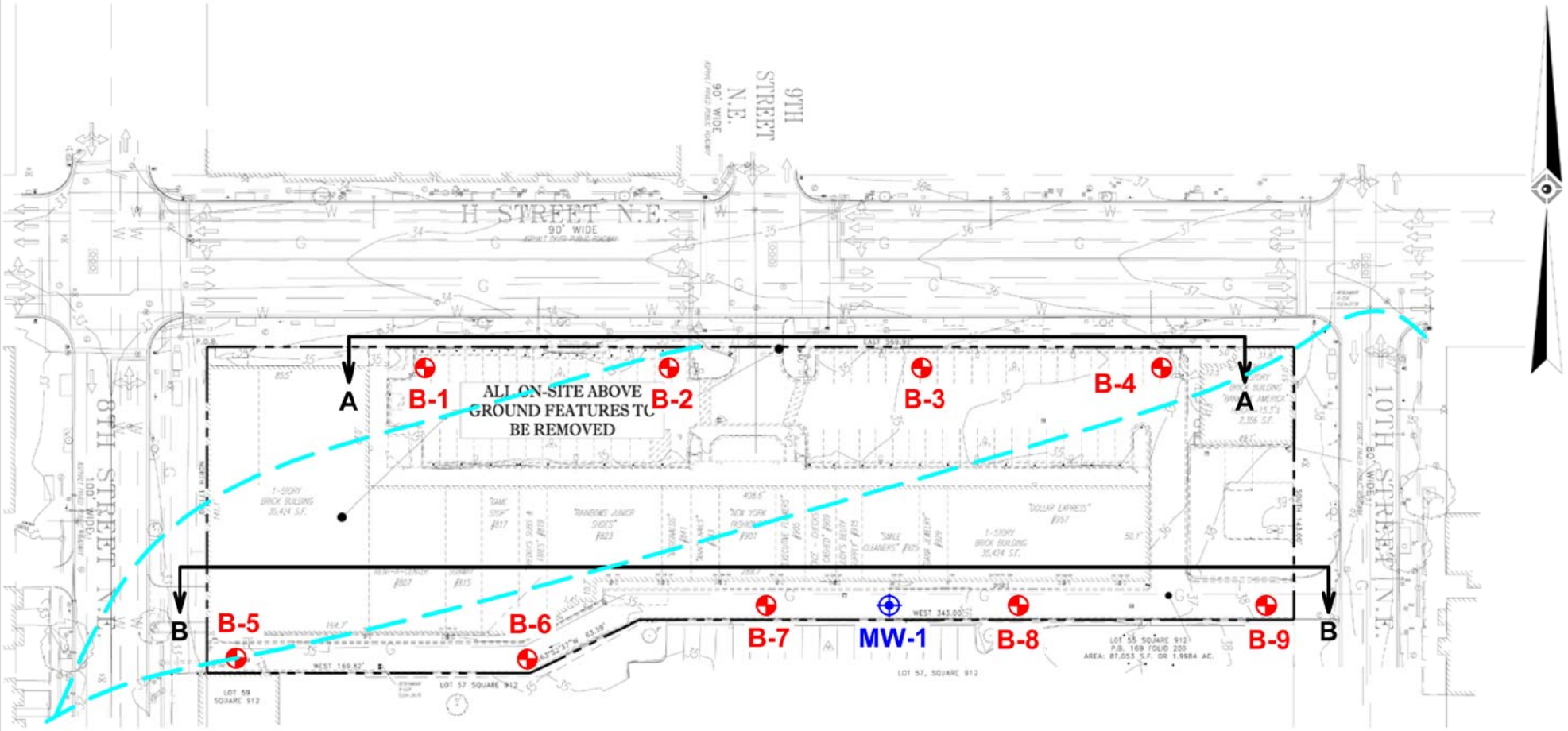
W.W. Corcoran
Toll Gate
Seaver
Street
Avenue
Maryland
Massachusetts
North
I
N
G
T



LEGEND:

- SOIL BORING LOCATION
- MONITORING WELL
- APPROXIMATE LOCATION OF PREVIOUS TIBER CREEK BASED ON BOSCHKE MAP (1861)

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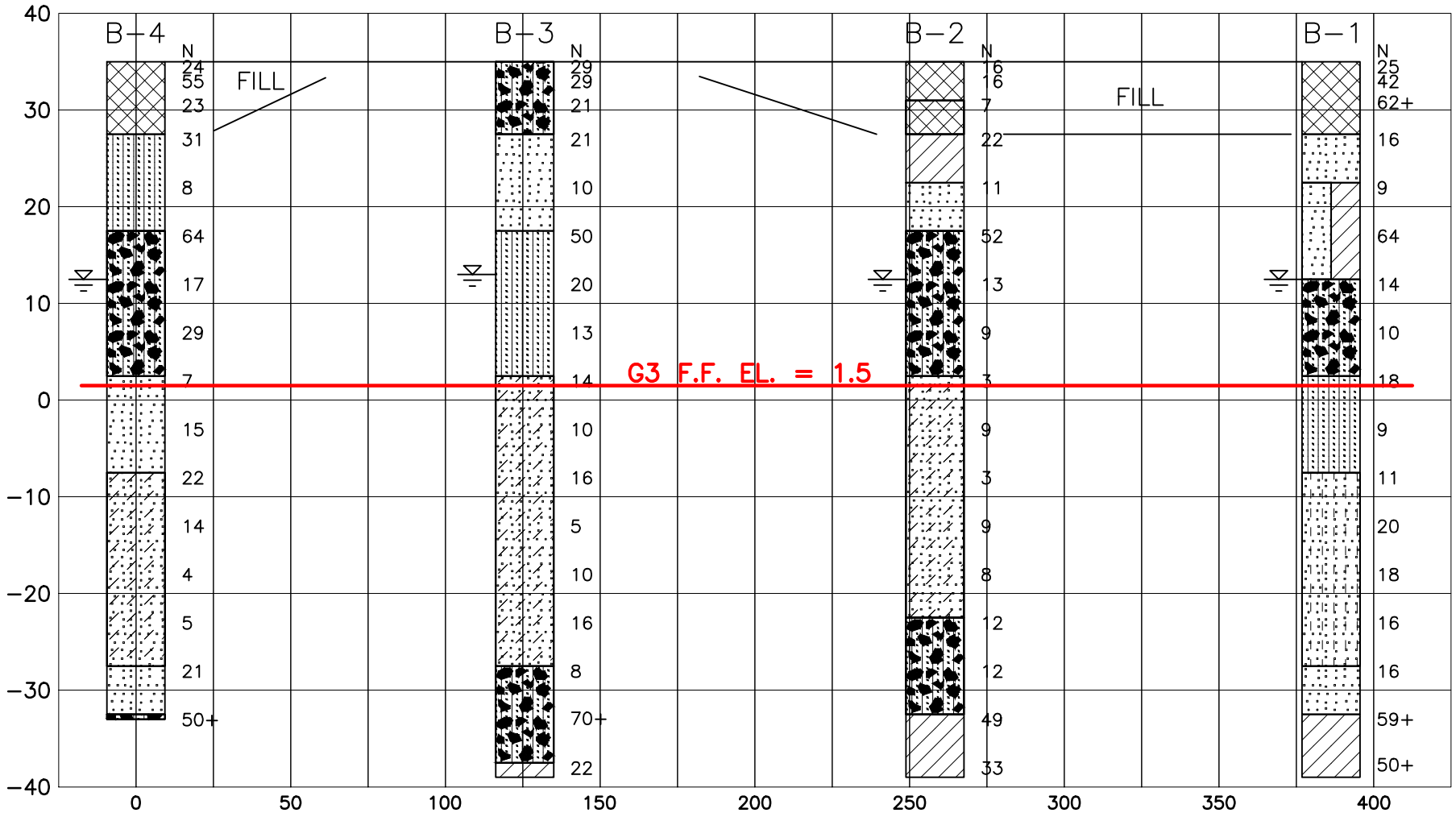
BORING LOCATION PLAN

901 H STREET, NE

WASHINGTON, DC

PROJ. NO:	14441A	DESIGN BY:	WH
DATE:	12/10/14	DRAWN BY:	AM
SCALE:	1" = 80'	CHECKED BY:	MPJ
SHEET:	1		



LEGEND

- Fill/Possible fill
- Poorly graded sand
- Silt
- Low plasticity clay
- Silty sand and gravel
- Silty sand
- Poorly graded sand with silt
- Poorly graded sand and gravel
- Poorly graded sand with clay
- Clayey sand/ Low plasticity clay
- Low plasticity organic silts
- Water encountered while drilling
- Water level after 24 hours

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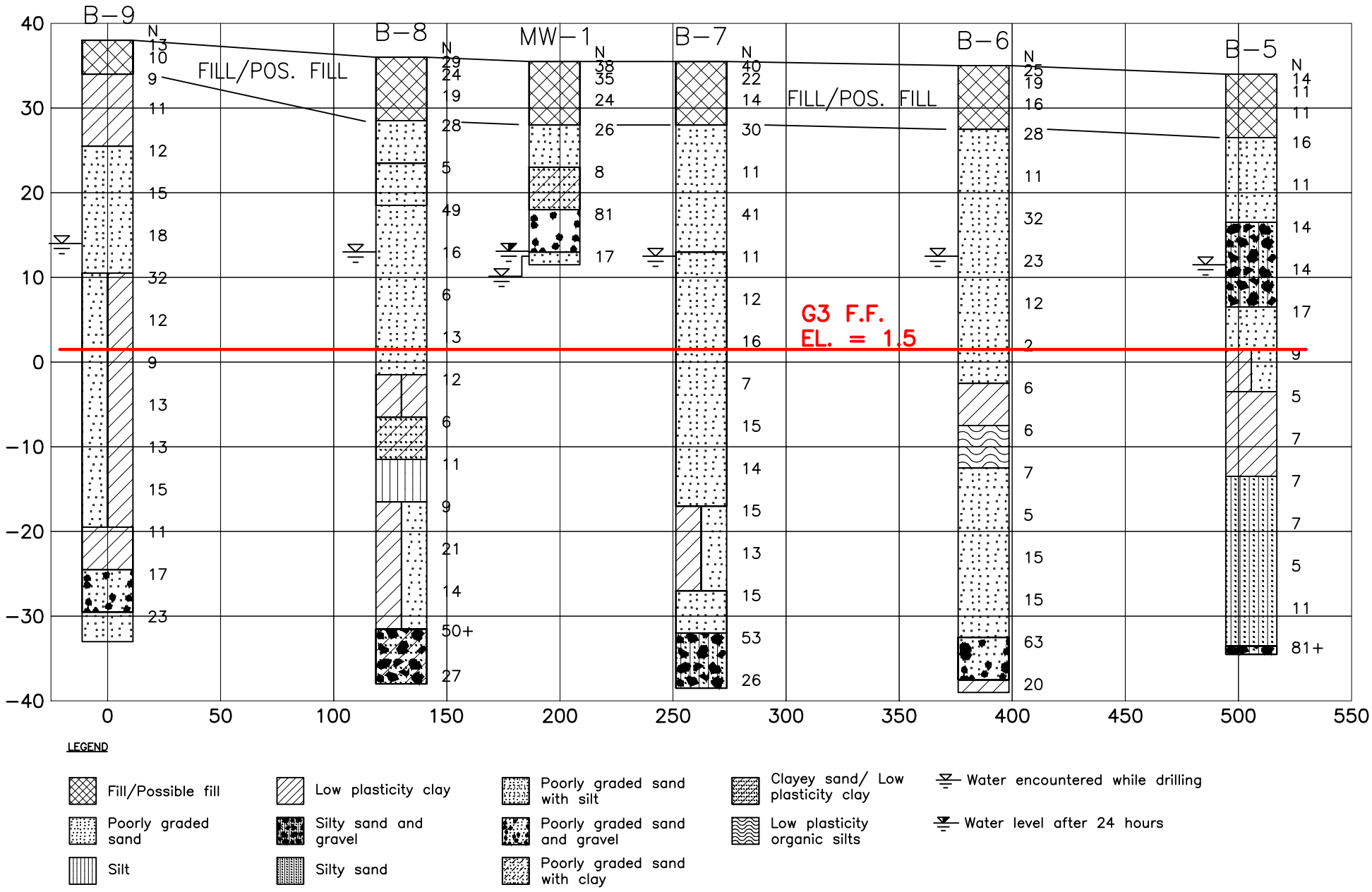
BORING PROFILE A - A
901 H STREET, NE
WASHINGTON, DC

PROJECT NO:	14441A
DATE:	02/18/15
SCALE:	AS SHOWN
SHEET:	2
DESIGN BY:	WH
DRAWN BY:	AM
CHECKED BY:	MPJ



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BORING PROFILE B - B
901 H STREET, NE
WASHINGTON, DC

PROJECT NO:	14441A
DATE:	02/18/15
SCALE:	AS SHOWN
SHEET:	3
DESIGN BY:	WH
DRAWN BY:	AM
CHECKED BY:	MPJ

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-1

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/6/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/6/14

Elevation / Depth	SOIL SYMBOLS / SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
30 / 5	D	Brown, moist, medium dense to dense silty SAND and GRAVEL (FILL)	4" Asphalt 6" Stone	16"		10-12-13	25	
	D			13"		12-19-23	42	
	D			10"		12-50/4"	62+	62+
25 / 10	D	Tan, moist, medium dense, fine to medium SAND (SP)		15"		12-7-9	16	
20 / 15	D	Tan, moist, medium dense to very dense, fine to medium SAND with brown clay seams (SP)	Groundwater encountered at 22.5 ft while drilling	11"		4-4-5	9	
	D			3"		37-40-24	64	64
15 / 20	D	Brown, wet, medium dense, silty SAND and GRAVEL (GM-SM)		17"		2-6-8	14	
	D			18"		1-4-6	10	
10 / 25	D		G3 FF EI 1.5	15"		6-9-9	18	
5 / 30	D	Gray, wet, medium dense to loose silty SAND, trace clay (SM)						
0 / 35								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-1

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/6/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/6/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-5 40	D			14"		2-4-5	9	
-10 45	D	Gray, damp, medium dense, intermittent layers of fine SAND and SILT (SP/SM)		18"		4-5-6	11	
-15 50	D			18"		5-10-10	20	
-20 55	D			18"		2-10-8	18	
-25 60	D			18"		4-6-10	16	
-30 65	D	Brown, wet, medium dense, medium to coarse SAND (SP)		18"		4-6-10	16	
		Light Gray, moist, hard silty CLAY		17"		8-9-50/5"	59+	

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-1

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/6/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/6/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-35 70	D	(CL)						
	D			4"		50/4"	50+	
-40 75		Bottom of boring at 73.8 ft	Boring backfilled with grout at completion					
-45 80								
-50 85								
-55 90								
-60 95								
-65 100								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-2

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/8/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/8/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
35 / 0	D	Brown, moist, medium dense, clayey SAND, some gravel (FILL)	4" Asphalt 6" Stone	9"		2-6-10	16	
	D			4"		4-10-6	16	
30 / 5	D	Brown, moist, loose silty SAND with some gravel (FILL)		10"		3-4-3	7	
	D	Light Gray, moist, stiff silty CLAY, some sand seams (CL)		17"		9-11-11	22	
25 / 10	D	Tan, moist, medium dense fine SAND, some clay seams (SP)	Groundwater encountered at 22.5 ft while drilling	16"		3-4-7	11	
20 / 15	D	Brown, moist to wet, dense to medium dense silty SAND and GRAVEL (GM-SM)		10"		47-25-17	52	
	D			18"		4-6-7	13	
15 / 20	D			13"		5-4-5	9	
10 / 25	D		G3 FF El 1.5					
5 / 30	D	Gray, damp to wet, very soft/very loose to loose/medium stiff,		18"		1-1-2	3	
0 / 35								

Curve: 10 30 50

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-2

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/8/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/8/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
		intermittent layers of SAND and CLAY (SP/SC)						
-5 — 40	D			18"		4-3-6	9	
-10 — 45	D			18"		WOH/6"-1-2	3	
	D	trace organics		18"		6-4-5	9	
-15 — 50								
-20 — 55	D			18"		2-3-5	8	
-25 — 60	D	Brown, wet, medium dense silty SAND and GRAVEL (GM-SM)		18"		6-7-5	12	
-30 — 65	D			8"		4-6-6	12	
		Gray, wet, hard CLAY (CL)		18"		39-39-10	49	

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-2

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/8/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/8/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-35 70	D							
	D			18"		15-15-18	33	
-40 75		Bottom of boring at 73.8 ft	Boring backfilled with grout at completion					
-45 80								
-50 85								
-55 90								
-60 95								
-65 100								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-3

Location: Washington, DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/8/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/8/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
30 / 5	D	Brown, moist, medium dense silty SAND and GRAVEL (GM-SM)	5" Asphalt 6" Stone	9"		11-14-15	29	
	D			8"		12-14-15	29	
	D			12"		10-10-11	21	
25 / 10	D	Tan to Brown, medium dense to loose fine to medium SAND (SP)	Groundwater encoutnered at 22.0 ft while drilling	16"		9-10-11	21	
	D			17"		4-5-5	10	
20 / 15	D	Brown, moist to wet dense to medium dense silty SAND with some gravel (SM)		13"		25-30-20	50	
	D			16"		4-7-13	20	
15 / 20	D			11"		6-7-6	13	
10 / 25	D		G3 FF El 1.5	18"		4-6-8	14	
5 / 30	D	Gray, damp to wet, loose to medium dense, intermittent layers						
0 / 35								

SAMPLER TYPE
- DRIVEN SPLIT SPOON UNLESS OTHERWISE
- PT - PRESSED SHELBY TUBE
- CA - CONTINUOUS FLIGHT AUGER
- RC - ROCK CORE

SAMPLE CONDITIONS
- D - DISINTEGRATED
- I - INTACT
- U - UNDISTURBED
- L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
- HSA - HOLLOW STEM AUGERS
- CFA - CONTINUOUS FLIGHT AUGERS
- DC - DRIVING CASING
- MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-3
Location: Washington, DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas
Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman
Date Started: 10/8/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/8/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
		of fine SAND and CLAY (SP/CL)		18"		3-4-6	10	
-5 — 40	D							
				15"		6-7-9	16	
-10 — 45	D							
				18"		1-2-3	5	
-15 — 50	I							
				18"		3-4-6	10	
-20 — 55	I							
				18"		6-7-9	16	
-25 — 60	D							
		Brown, wet, loose to very dense silty SAND and GRAVEL (GM-SM)		16"		6-4-4	8	
-30 — 65	D							
				15"		4-20-50/3"	70+	

SPT Blows/Foot Curve: 10 30 50 — 70+ →

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-3

Location: Washington, DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/8/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/8/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-35 70	D							
	I	Brown, damp, stiff CLAY (CL)		18"		6-9-13	22	
-40 75		Bottom of boring at 75 ft	Boring grouted at completion					
-45 80								
-50 85								
-55 90								
-60 95								
-65 100								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-4

Location: Washington, DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/10/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/10/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
30 / 5	D	Brown, moist, medium dense to dense, silty SAND and GRAVEL (FILL)	5" Asphalt 6" Stone	10"		5-10-14	24	
	D			5"		15-21-34	55	
	D			11"		12-12-11	23	
25 / 10	D	Tan, moist, silty fine SAND with trace clay (SM)	Groundwater encountered at 22.5 ft while drilling	12"		15-18-13	31	
20 / 15	D			14"		3-4-4	8	
	D	Brown, moist to wet, very dense to medium dense silty SAND and GRAVEL (GM-SM)		13"		19-37-27	64	64 →
15 / 20	D			18"		6-7-10	17	
10 / 25	D			15"		10-18-11	29	
5 / 30	D		G3 FF El 1.5	18"		5-3-4	7	
0 / 35	D	Brown to Gray, wet, loose to medium dense, silty fine SAND with						

Curve: 10 30 50

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-4

Location: Washington, DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/10/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/10/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
	D	some to no clay (SP)		18"		5-5-10	15	
-5 — 40								
	D	Gray, damp to wet, loose to medium dense intermittent layers of SAND and CLAY (SP/CL)		13"		9-12-10	22	
-10 — 45								
	D			16"		7-6-8	14	
-15 — 50								
	I			18"		2-2-2	4	
-20 — 55								
	I			18"		2-3-2	5	
-25 — 60								
	D	Brown, wet, medium dense, medium to coarse SAND (SP)		10"		6-10-11	21	
-30 — 65								
		Brown, wet, very dense silty SAND		4"		50/4"	50+	

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-4
Location: Washington, DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas
Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman
Date Started: 10/10/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/10/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-35 70	D	\ and GRAVEL (GM-SM) Auger refusal at 69 ft	Boring grouted at completion					
-40 75								
-45 80								
-50 85								
-55 90								
-60 95								
-65 100								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-5

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 34 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/3/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/3/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
30 / 5	D	Brown, moist, medium dense silty SAND and GRAVEL (FILL)	4" Asphalt 7" Stone	12"		10-9-5	14	
	D			14"		10-5-6	11	
	D			9"		3-5-6	11	
25 / 10	D	Orange Brown to Light Brown, moist, medium dense SAND (SP)		18"		5-6-10	16	
20 / 15	D		Groundwater encountered at 22.5 ft while drilling	18"		5-6-5	11	
15 / 20	D	Brown to Dark Gray, damp to wet, medium dense, silty SAND and GRAVEL (GM-SM)		11"		6-9-5	14	
10 / 25	D			18"		5-5-9	14	
5 / 30	D	Brown, wet, medium dense to loose SAND (SP)		15"		7-8-9	17	
			G3 FF El 1.5					
0 / 35	D D	Brown, wet, medium stiff CLAY seam (CL)		17"		3-5-4	9	

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-5

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 34 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/3/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/3/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-5 / 40	D	Gray, damp, soft fine sandy CLAY (CL)		14"		3-2-3	5	
-10 / 45	I			18"		2-2-5	7	
-15 / 50	D	Gray, wet, loose silty SAND (SM)		18"		4-4-3	7	
-20 / 55	D			15"		3-2-5	7	
-25 / 60	D			16"		2-2-3	5	
-30 / 65	D			6"		5-5-6	11	
-35	D	Brown, wet, very dense silty SAND		7"		31-50/5"	81+	81+ →

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-5

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 34 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/3/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/3/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
70		and cobbles (SM)	Boring backfilled with grout at completion					
		Auger Refusal at 69.5 ft						
-40 / 75								
-45 / 80								
-50 / 85								
-55 / 90								
-60 / 95								
-65 / 100								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-6

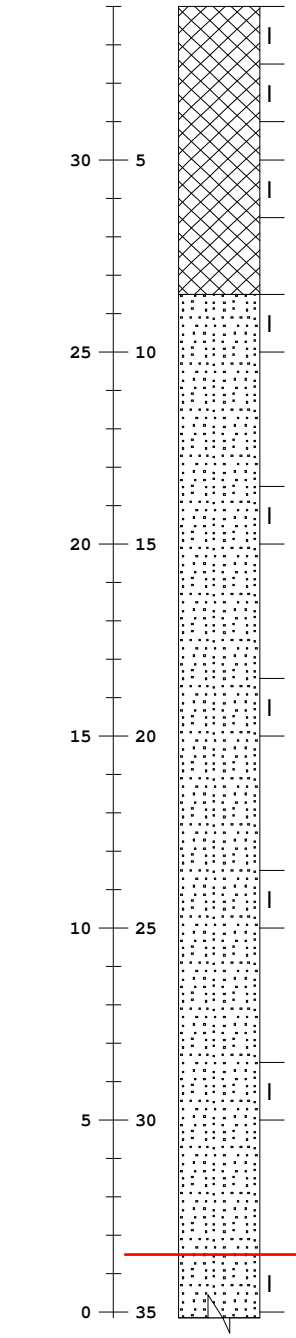
Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/2/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/2/14



Elevation/ Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N
30 / 5	Brown, damp, medium dense, silty SAND with gravel and cobbles (SM) Possible FILL	4" Asphalt 1" Stone	10"		9-13-12	25
			12"		8-9-10	19
			14"		6-7-9	16
25 / 10	Light Brown to Orange Brown, damp, medium dense to dense SAND with trace gravel (SP)	Groundwater encountered at 22.5 ft while drilling	18"		10-14-14	28
			17"		4-6-5	11
20 / 15			16"		10-14-18	32
15 / 20			15"		9-11-12	23
10 / 25			13"		4-6-6	12
5 / 30		G3 FF El 1.5	9"		2-1-1	2
0 / 35						

SPT Blows/Foot Curve: 10 30 50

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-6

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/2/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/2/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-5 — 40	I	Dark Gray, wet, medium stiff CLAY with trace fine sand and organics (CL)		18"		3-3-3	6	
-10 — 45	I	Dark Gray, moist, medium stiff organic SILT with trace fine sand (OL)		18"		2-3-3	6	
-15 — 50	I	Gray to Brown to Orange Brown, wet, loose to medium dense fine to medium SAND with trace silt, clay (SP)		15"		4-3-4	7	
-20 — 55	I			16"		4-3-2	5	
-25 — 60	I			16"		4-8-7	15	
-30 — 65	I			16"		5-7-8	15	
		Brown, moist, very dense coarse		18"		10-29-34	63	63 →

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-6

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/2/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/2/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
-35 / 70	I	SAND and GRAVEL, cobbles (SP)						
	I	Gray, moist, very stiff silty CLAY, trace fine sand (CL)		14"		10-8-12	20	
-40 / 75		Bottom of boring at 75 ft	Boring backfilled with grout at completion					
-45 / 80								
-50 / 85								
-55 / 90								
-60 / 95								
-65 / 100								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-7

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35.5 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/1/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/1/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
30 (5)	I	Brown/Gray to Brown, damp, dense to medium dense, SAND and GRAVEL, some cobbles, trace silt (GM-SM) Possible FILL	4" Asphalt 7" Stone	12"		11-13-27	40	
	I			11"		7-11-11	22	
	I			12"		4-6-8	14	
25 (10)	I	Light Brown, moist, medium dense to dense medium SAND with trace gravel (SP)	Groundwater encountered at 23 ft while drilling	13"		7-15-15	30	
20 (15)	I			16"		4-5-6	11	
15 (20)	I			12"		12-12-29	41	
10 (25)	I	Dark Brown to Orange-Brown to Gray, moist, medium dense to loose medium SAND (SP)		15"		4-6-5	11	
5 (30)	I			15"		6-6-6	12	
	I		G3 FF El 1.5	17"		6-6-10	16	
35								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-7

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35.5 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/1/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/1/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
0	I			18"		5-4-3	7	
-5 / 40	I			18"		7-8-7	15	
-10 / 45	I			16"		4-5-9	14	
-15 / 50	I	Orange-Brown, wet, medium dense SAND and clay/Silt seams with organics (SP)		18"		5-6-9	15	
-20 / 55	I			18"		5-6-7	13	
-25 / 60	I	Brown, wet, medium dense coarse SAND with trace gravel (SP)		10"		5-6-9	15	
-30 / 65	I	Brown, wet, very dense to medium		13"		44-36-17	53	

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-7

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 35.5 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 10/1/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 10/1/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
70 / -35	I	dense coarse SAND and GRAVEL with cobbles (GM-SM)		7"		36-16-10	26	
75 / -40	I	Bottom of boring at 75 ft	Boring backfilled with grout at completion					
80 / -45								
85 / -50								
90 / -55								
95 / -60								
100 / -65								

Curve: 10 30 50

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-8

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 36 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 9/29/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 9/29/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
35 / 0	I	Brown, damp, medium dense coarse SAND and GRAVEL (GP-SP) Possible FILL	4" Asphalt 1" Stone	15"		4-16-13	29	
	I			14"		10-11-13	24	
30 / 5	I			13"		6-10-9	19	
	I	Light Brown, moist, loose fine SAND (SP)	Groundwater encounteredat 23 ft while drilling	13"		14-15-13	28	
25 / 10	I							
	I			17"		3-2-3	5	
20 / 15	I	Brown to Orange-Brown, moist to wet, dense to medium dense, medium SAND with trace gravel (SP)		11"		18-20-29	49	
	I							
15 / 20	I			18"		5-7-9	16	
	I							
10 / 25	I			18"		4-3-3	6	
	I		G3 FF El 1.5	12"		5-6-7	13	
5 / 30								
35								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-8

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 36 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 9/29/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 9/29/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
0 / 40 / -5	I	Dark Gray, wet, medium dense SAND with trace clay and organics in seams (SP)		18"		3-3-9	12	
45 / -10	I	Dark Gray, wet, loose clayey fine SAND (SC)		18"		2-2-4	6	
50 / -15	I	Dark Gray, stiff, clayey SILT with organics (ML)		18"		4-4-7	11	
55 / -20	I	Brown to Orange-Brown, wet, loose to medium dense SAND and silty clay in seams (SP)		18"		4-4-5	9	
60 / -25	I			16"		4-11-10	21	
65 / -30	I			18"		5-7-7	14	
	L	Dark Brown, wet, very dense to		4"		50/4"	50+	

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-8

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 36 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 9/29/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 9/29/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
70 / -35	I	medium dense clayey coarse SAND and GRAVEL with cobbles (SC)		4"		17-12-15	27	
75 / -40		Bottom of boring at 75 ft	Boring backfilled with grout at completion					
80 / -45								
85 / -50								
90 / -55								
95 / -60								
100 / -65								

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** | Boring No.: B-9

Location: NE, Washington DC | Job #: 14441A

SAMPLER

Datum: | Hammer Wt.: 140 lbs. | Hole Diameter: 6" | Foreman: M. Stawas

Surf. Elev.: 38 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 9/26/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 9/26/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
38 / 0	D	Brown, damp, medium dense silty SAND and GRAVEL, with some cobbles (GM-SM) Possible FILL	5" Asphalt 1" Stone	11"		6-6-7	13	
35 / 5	I			15"		8-6-4	10	
	I	Brown, damp, stiff sandy CLAY with trace silt (CL)		16"		4-4-5	9	
30 / 10	I		Groundwater encountered at 24 ft while drilling	18"		4-5-6	11	
25 / 15	I	Brown, damp, medium dense fine sand with trace gravel (SP)		16"		4-5-7	12	
20 / 20	I			18"		3-6-9	15	
15 / 25	I			18"		7-8-10	18	
10 / 30	I	Brown to Gray, medium dense to loose, medium to fine SAND with trace silty CLAY with organics in seams		5"		16-18-14	32	
5 / 35	I			15"		8-6-6	12	

Curve: 10 30 50

SAMPLER TYPE

DRIVEN SPLIT SPOON UNLESS OTHERWISE
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS

D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD

HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

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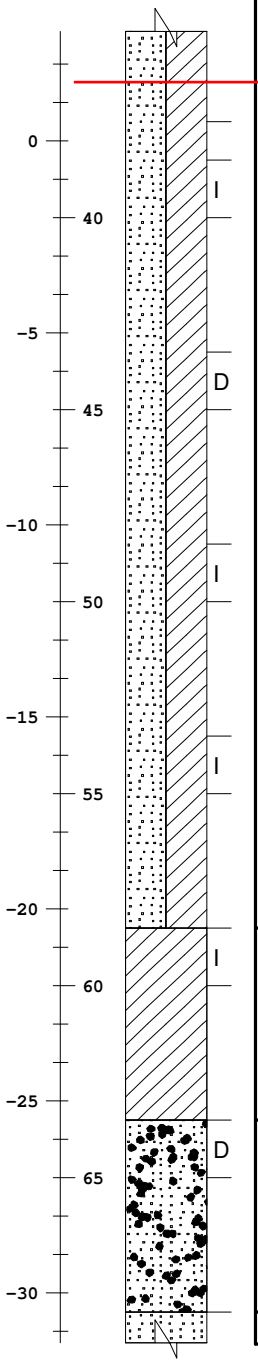

Elevation/ Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve
		G3 FF El 1.5					
			18"		4-3-6	9	
			5"		3-4-9	13	
			18"		3-5-8	13	
			14"		5-7-8	15	
	Dark Gray, moist, stiff, sandy CLAY with trace organics (CL)		18"		6-5-6	11	
	Brown, wet, medium dense coarse SAND and GRAVEL (GP-SP)		17"		6-7-10	17	
	Brown, wet, medium dense, fine to		18"		10-11-12	23	

SPT Blows/Foot Curve: 10 30 50

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RC - ROCK CORE

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L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

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Location: NE, Washington DC | Job #: 14441A

SAMPLER

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Surf. Elev.: 38 ft | Hammer Drop: 30 in. | Rock Core Diameter: N/A | Inspector: R. Pushman

Date Started: 9/26/14 | Pipe Size: 2.0 in. | Boring Method: HSA | Date Completed: 9/26/14

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	SPT Blows/Foot Curve (10 30 50)
70	D	medium SAND (SP)						
-35		Auger Refusal at 72 ft	Boring backfilled with grout at completion					
75								
-40								
80								
-45								
85								
-50								
90								
-55								
95								
-60								
100								
-65								

SAMPLER TYPE
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SAMPLE CONDITIONS
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I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES
ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: **901 H Street, NE** — Boring No.: MW-1

Location: NE, Washington DC — Job #: 14441A

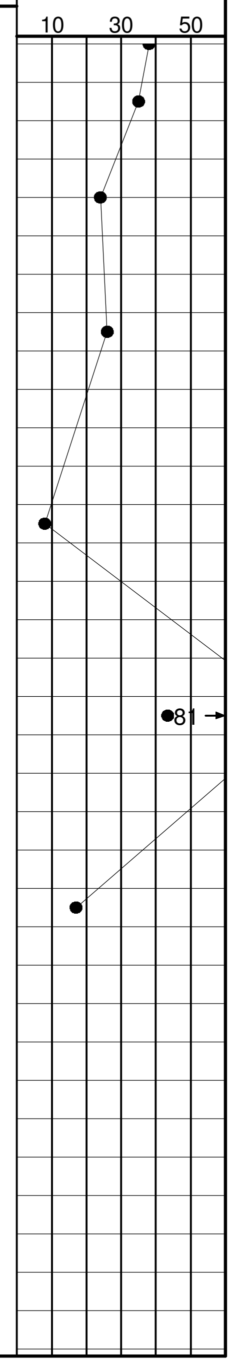
SAMPLER

Datum		Hammer Wt.	140 lbs.	Hole Diameter	6"	Foreman	M. Stawas
Surf. Elev.	35.5 ft	Hammer Drop	30 in.	Rock Core Diameter	N/A	Inspector	R. Pushman
Date Started	9/30/14	Pipe Size	2.0 in.	Boring Method	HSA	Date Completed	9/30/14

Soil Symbols/ Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
I	Brown/Gray to Brown, damp, dense to medium dense, coarse to medium SAND and GRAVEL, trace cobbles (GP-SP) Possible FILL	4" Asphalt 7" Stone	14"		15-15-23	38
I			14"		15-16-19	35
I			15"		7-11-13	24
I	Orange-Brown, damp, medium dense, medium SAND with trace gravel (SP)	Groundwater encountered at 23 ft while drilling	18"		8-11-15	26
I	Orange-Brown, moist, loose clayey fine SAND (SC)		18"		3-3-5	8
L	Orange-Brown, moist, very dense coarse GRAVEL, with cobbles (GP)		0"		36-43-38	81
I	Orange-Brown, wet, medium dense, medium to coarse SAND (SP)	Boring backfilled with grout at completion	15"		9-9-8	17
	Bottom of boring at 28 ft					

Elevation: 30, 25, 20, 15, 10, 5
Depth: 5, 10, 15, 20, 25, 30, 35

SPT Blows/Foot Curve



G3 FF El 1.5

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CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

	GROUND WATER	CAVE IN DEPTH
AT COMPLETION	ft.	ft.
AFTER 24 HRS.	22.4 ft.	ft.
AFTER ___ HRS.	ft.	ft.

BORING METHOD
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CFA - CONTINUOUS FLIGHT AUGERS
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HILLIS-CARNES ENGINEERING ASSOCIATES, Inc.

10975 Guilford Road, Suite A • Annapolis Junction, Maryland 20701
Phone: (410)880-4788 • Fax: (410)880-4098

Description of Soils – per ASTM D2487

Major Component	Component Type	Component Description	Symbol	Group Name
Coarse-Grained Soils, More than 50% is retained on the No. 200 sieve	**Gravels** – More than 50% of the coarse fraction is retained on the No. 4 sieve. Coarse = 1" to 3" Medium = ½" to 1" Fine = ¼" to ½"	Clean Gravels <5% Passing No. 200 sieve	**GW**	Well Graded Gravel
			GP	Poorly Graded Gravel
		Gravels with fines, >12% Passing the No. 200 sieve	**GM**	Silty Gravel
			GC	Clayey Gravel
	Sands – More than 50% of the coarse fraction passes the No. 4 sieve. Coarse = No.10 to No.4 Medium = No. 10 to No. 40 Fine = No. 40 to No. 200	Clean Sands <5% Passing No. 200 sieve	**SW**	Well Graded Sand
			SP	Poorly Graded Sand
		Sands with fines, >12% Passing the No. 200 sieve	**SM**	Silty Sand
			SC	Clayey Sand
Fine Grained Soils, More than 50% passes the No. 200 sieve	Silts and Clays Liquid Limit is less than 50 Low to medium plasticity	Inorganic	**ML**	Silt
			CL	Lean Clay
		Organic	**OL**	Organic silt
				Organic Clay
	Silts and Clays Liquid Limit of 50 or greater Medium to high plasticity	Inorganic	**MH**	Elastic Silt
			CH	Fat Clay
		Organic	**OH**	Organic Silt
				Organic Clay
Highly Organic Soils	Primarily Organic matter, dark color, organic odor		**PT**	Peat

Proportions of Soil Components

Component Form	Description	Approximate percent by weight
Noun	Sand, Gravel, Silt, Clay, etc.	50% or more
Adjective	Sandy, silty, clayey, etc.	35% to 49%
Some	Some sand, some silt, etc.	12% to 34%
Trace	Trace sand, trace mica, etc.	1% to 11%
With	With sand, with mica, etc.	Presence only

Particle Size Identification

Particle Size	Particle dimension
Boulder	12" diameter or more
Cobble	3" to 12" diameter
Gravel	¼" to 3" diameter
Sand	0.005" to ¼" diameter
Silt/Clay (fines)	Cannot see particle

Cohesive Soils

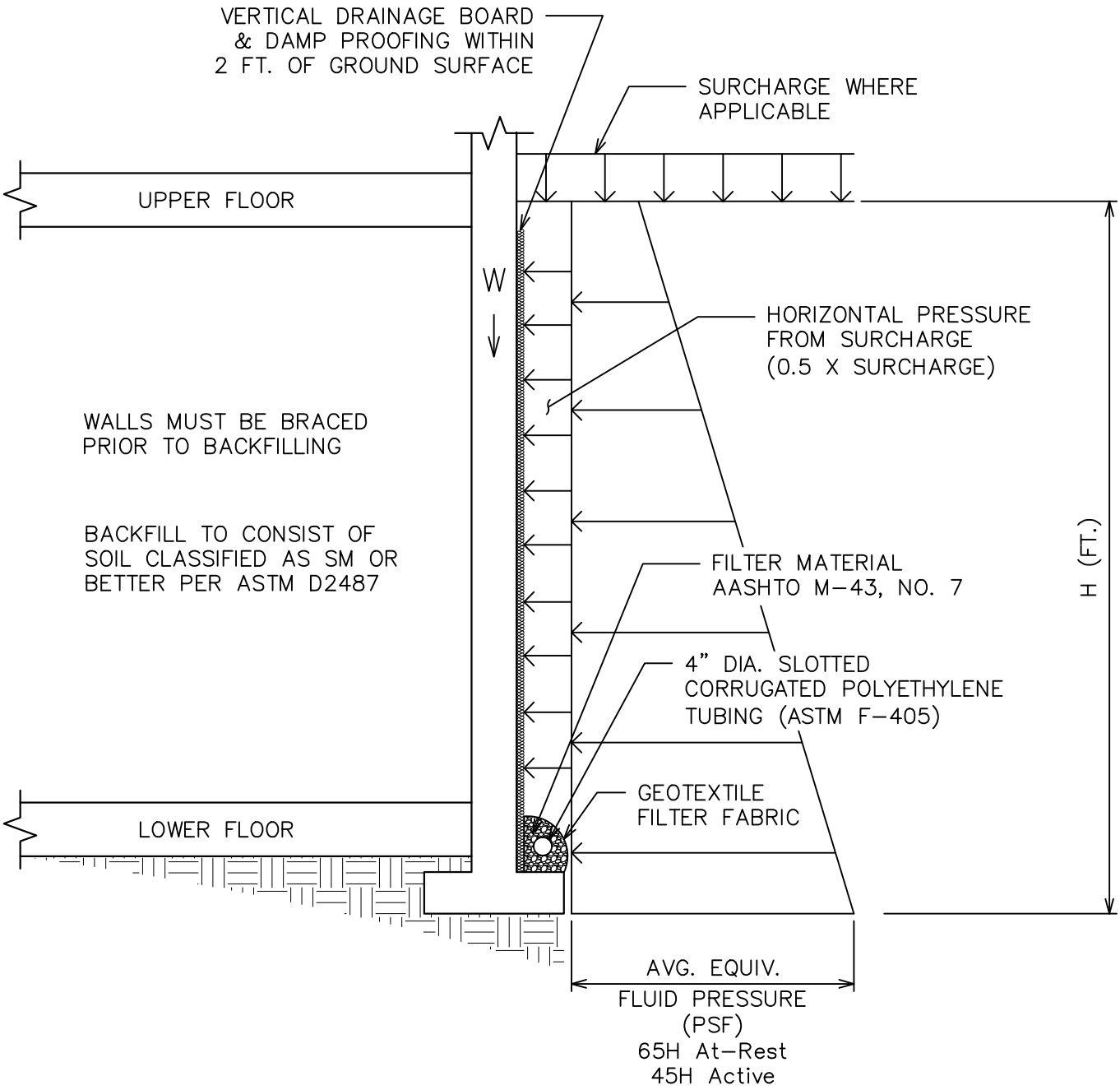
Field Description	No. of SPT Blows/ft	Consistency
Easily Molded in Hands	0 – 3	Very Soft
Easily penetrated several inches by thumb	4 – 5	Soft
Penetrated by thumb with moderate effort	6 – 10	Medium
Penetrated by thumb with great effort	11 – 30	Stiff
Indented by thumb only with great effort	Greater than 30	Hard

Granular Soils

No. of SPT Blows/ft	Relative Density
0 – 4	Very Loose
5 – 10	Loose
11 – 30	Medium Dense
31 – 50	Dense
Greater than 50	Very Dense

Other Definitions:

- **Fill:** Encountered soils that were placed by man. Fill soils may be controlled (engineered structural fill) or uncontrolled fills that may contain rubble and/or debris.
- **Saprolite**: Soil material derived from the in-place chemical and physical weathering of the parent rock material. May contain relic structure. Also called residual soils. Occurs in Piedmont soils, found west of the fall line.
- **Disintegrated Rock**: Residual soil material with rock-like properties, very dense, N = 60 to 51/0".
- **Karst:** Descriptive term which denotes the potential for solutioning of the limestone rock and the development of sinkholes.
- **Alluvium:** Recently deposited soils placed by water action, typically stream or river floodplain soils.
- **Groundwater Level**: Depth within borehole where water is encountered either during drilling, or after a set period of time to allow groundwater conditions to reach equilibrium.
- **Caved Depth:** Depth at which borehole collapsed after removal of augers/casing. Indicative of loose soils and/or groundwater conditions.



BASEMENT WALLS

Note: Drawing is illustrative and not structurally correct

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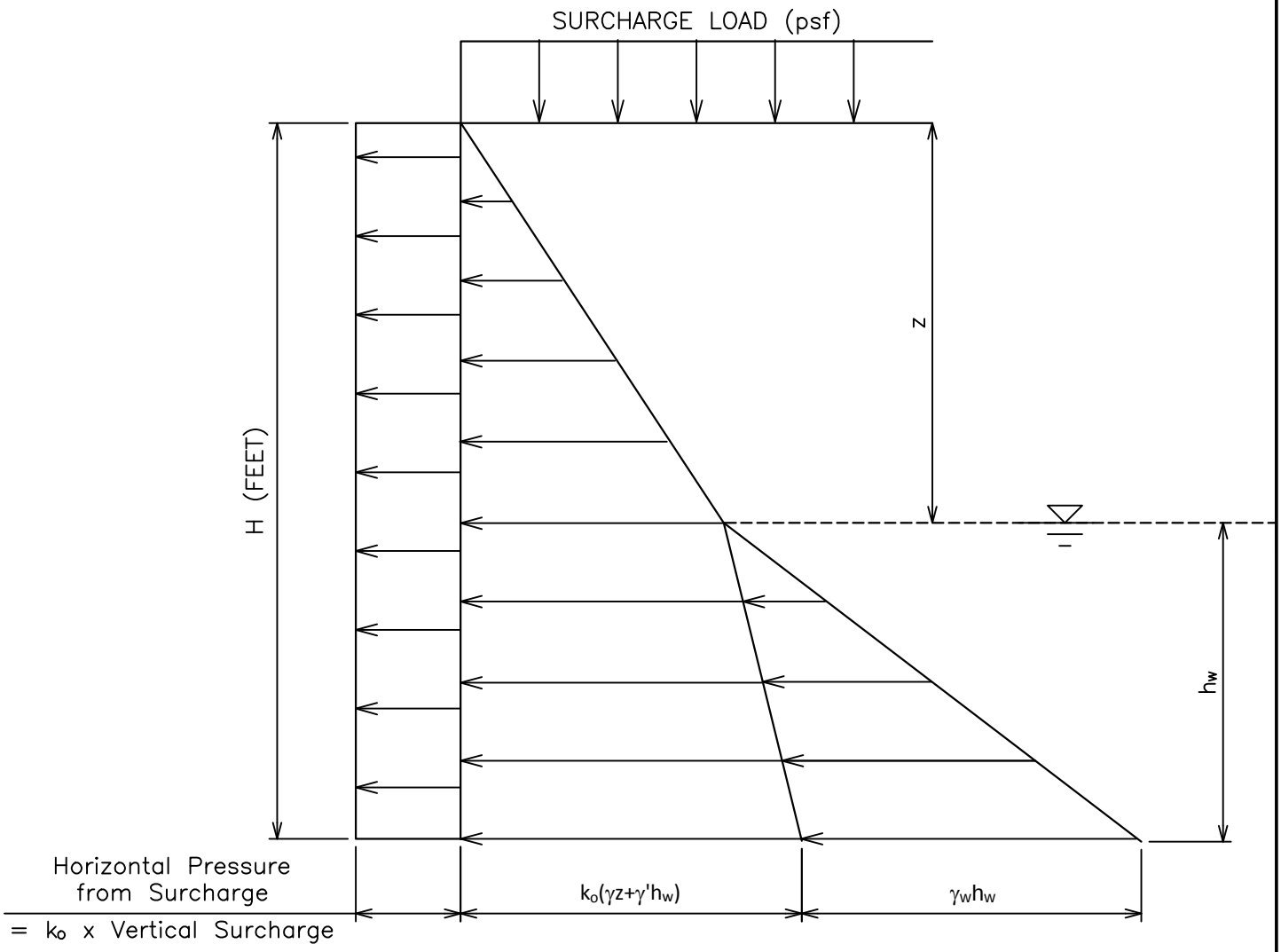
LATERAL EARTH PRESSURE - DRAINED CONDITIONS

901 H STREET, NE

WASHINGTON, DC

PROJECT NO.	14441A
DATE:	12/11/14
SCALE:	NTS
DRAWN BY:	AM
CHECKED BY:	MPJ



Unit Weight of Water, γ_w=62.4 pcf

Effective or Buoyant Soil Weight, γ'=67.6 pcf

At–Rest Earth Pressure Coefficient, k_o=0.5

Unit Weight of Soil, γ=130 pcf

Note: Drawing is illustrative and not structurally correct

LATERAL EARTH PRESSURE
MAT FOUNDATION - UNDRAINED CONDITION

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FIGURE - LATERAL EARTH PRESSURE

901 H STREET, NE

WASHINGTON, DC

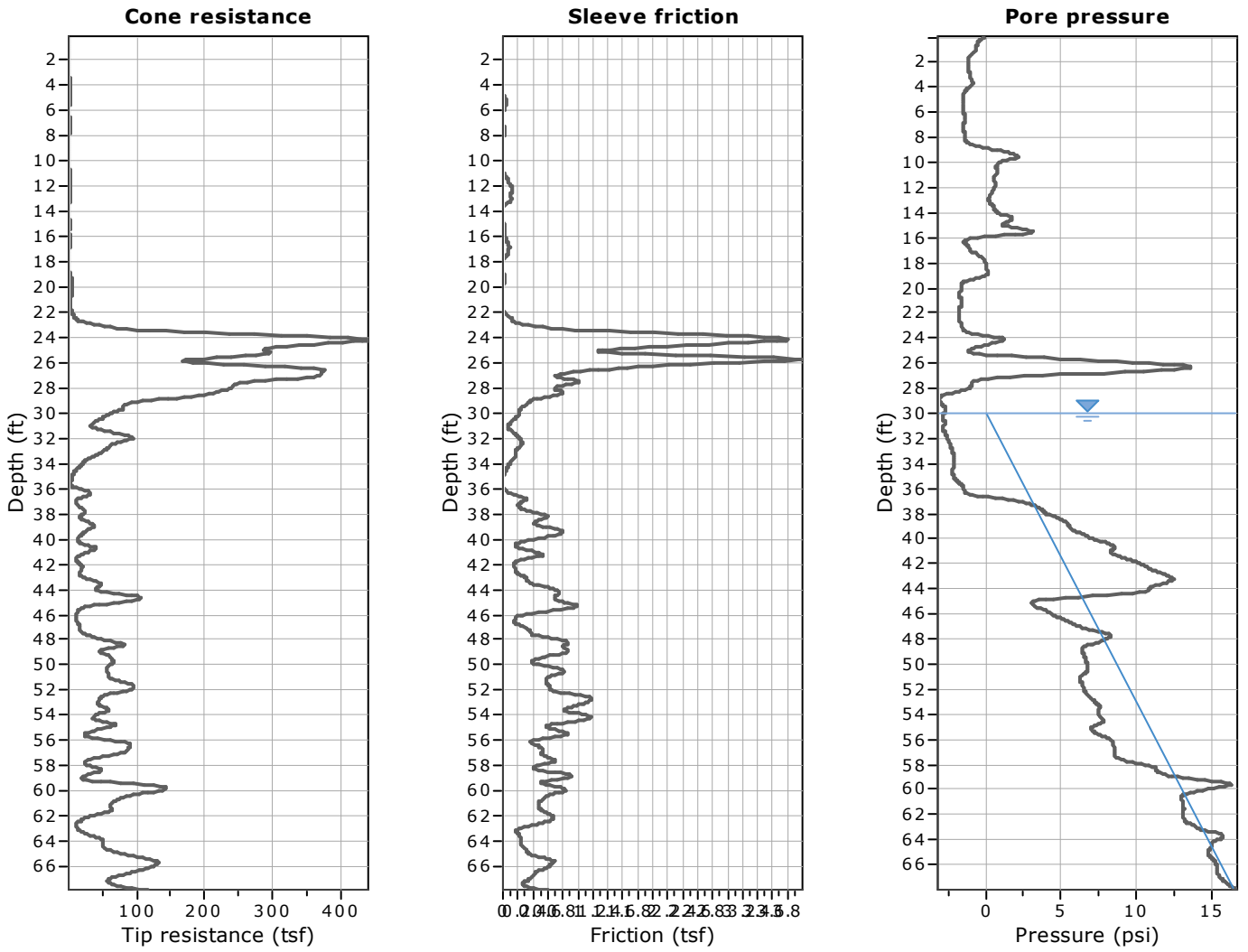
PROJECT NO.	14441A
DATE:	12/11/14
SCALE:	NTS
DRAWN BY:	AM
CHECKED BY:	MPJ

HILLIS-CARNES ENGINEERING ASSOCIATES

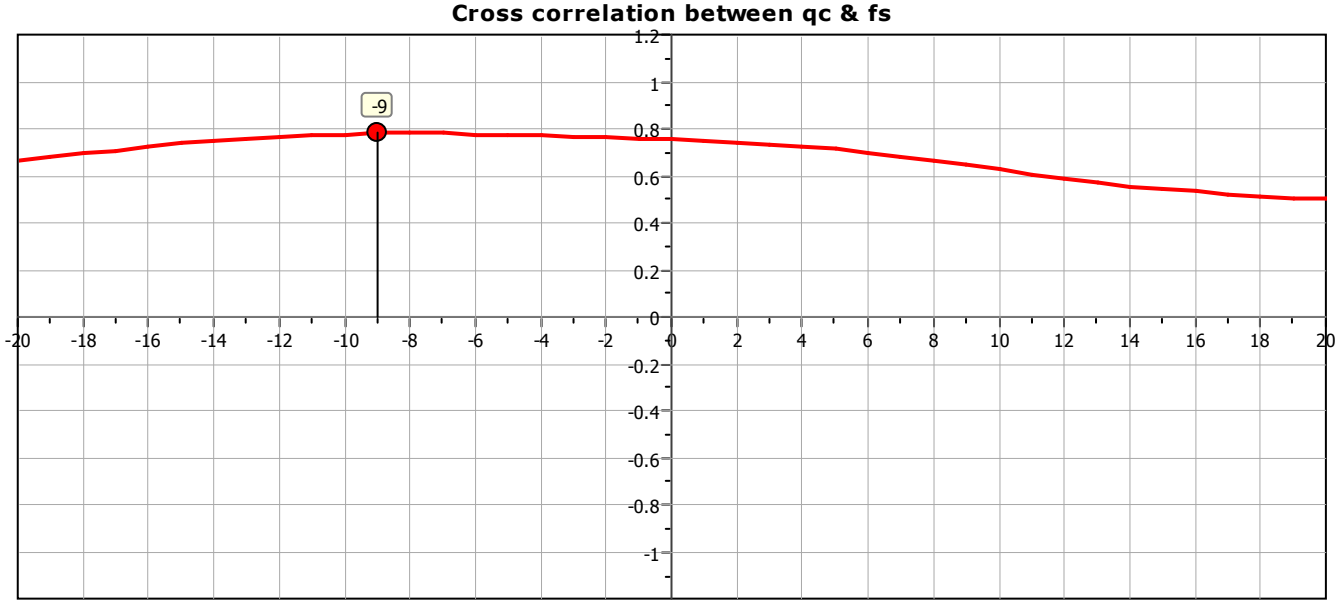
HILLIS CARNES ENGINEERING ASSOCIATES, INC.
503 Maryland Avenue, Unit 106
Delmar, Maryland 21865
http://www.HCEA.com

CPT: CPT-1 Near B-6
Total depth: 67.85 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

Project: **900 H Street NE**
Location: **Washington, DC**



The plot below presents the cross correlation coeficient 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 sucessive CPT measurements).



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Cone Type: Uknown
Cone Operator: Uknown

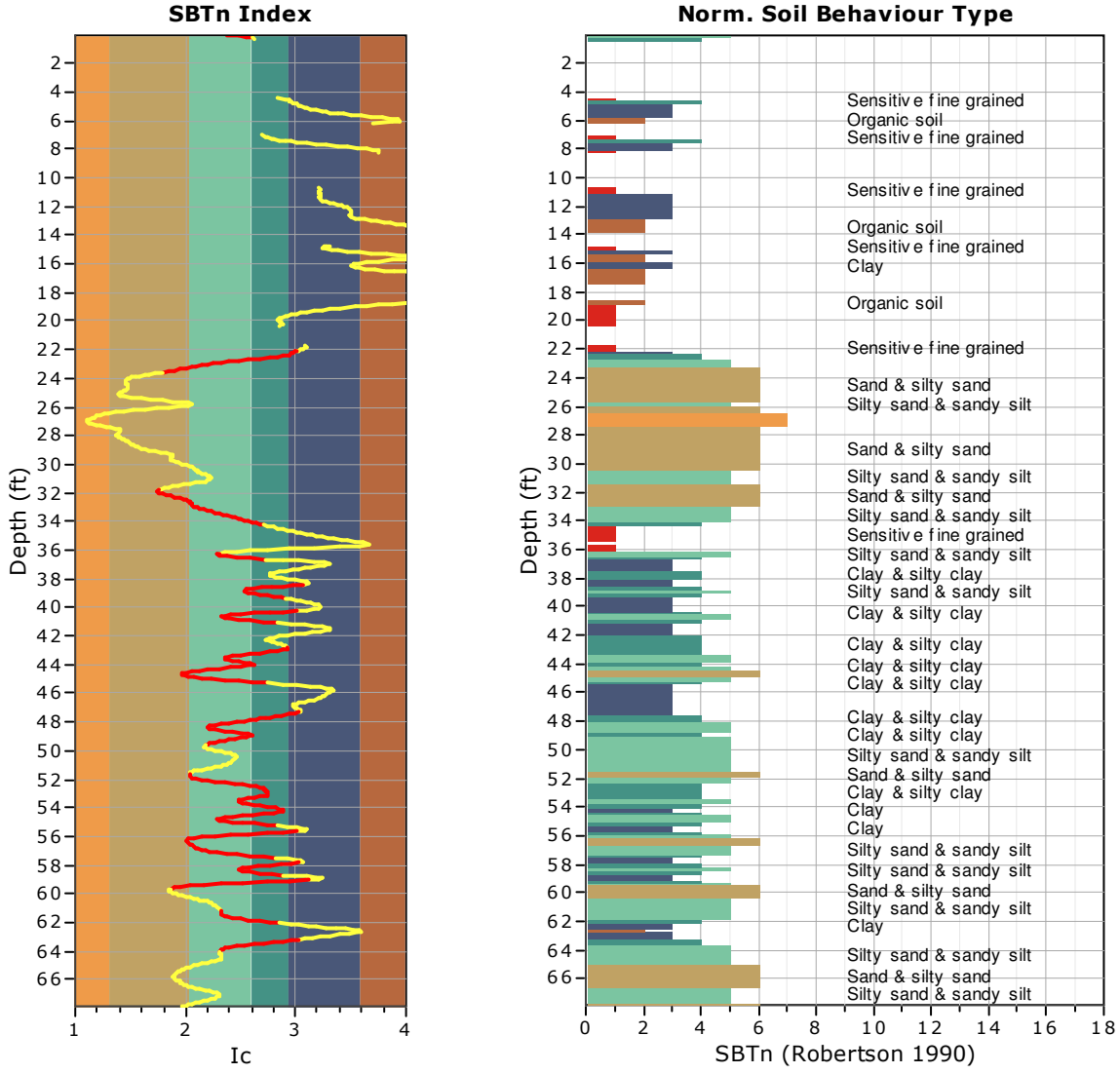
Project: **900 H Street NE**
Location: **Washington, DC**

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties

I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0010
Minimum number of points in layer:	4

General statistics

Total points in CPT file:	1034
Total points excluded:	325
Exclusion percentage:	31.43%
Number of layers detected:	27

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 1	5	Start depth: 0.07 (ft)	5	Silty sand & sandy silt
		End depth: 0.33 (ft)	4	Clay & silty clay
Transition layer 2	23	Start depth: 22.18 (ft)	3	Clay
		End depth: 23.62 (ft)	6	Sand & silty sand
Transition layer 3	38	Start depth: 31.89 (ft)	6	Sand & silty sand
		End depth: 34.32 (ft)	4	Clay & silty clay
Transition layer 4	7	Start depth: 36.29 (ft)	5	Silty sand & sandy silt
		End depth: 36.68 (ft)	4	Clay & silty clay
Transition layer 5	7	Start depth: 38.45 (ft)	3	Clay
		End depth: 38.85 (ft)	5	Silty sand & sandy silt
Transition layer 6	10	Start depth: 38.85 (ft)	5	Silty sand & sandy silt
		End depth: 39.44 (ft)	3	Clay
Transition layer 7	7	Start depth: 40.29 (ft)	4	Clay & silty clay
		End depth: 40.68 (ft)	5	Silty sand & sandy silt
Transition layer 8	8	Start depth: 40.68 (ft)	5	Silty sand & sandy silt
		End depth: 41.14 (ft)	3	Clay
Transition layer 9	11	Start depth: 42.85 (ft)	4	Clay & silty clay
		End depth: 43.50 (ft)	5	Silty sand & sandy silt
Transition layer 10	8	Start depth: 43.50 (ft)	5	Silty sand & sandy silt
		End depth: 43.96 (ft)	4	Clay & silty clay
Transition layer 11	12	Start depth: 43.96 (ft)	4	Clay & silty clay
		End depth: 44.69 (ft)	6	Sand & silty sand
Transition layer 12	11	Start depth: 44.69 (ft)	6	Sand & silty sand
		End depth: 45.34 (ft)	3	Clay
Transition layer 13	16	Start depth: 47.38 (ft)	3	Clay
		End depth: 48.36 (ft)	5	Silty sand & sandy silt
Transition layer 14	8	Start depth: 48.43 (ft)	5	Silty sand & sandy silt
		End depth: 48.88 (ft)	4	Clay & silty clay
Transition layer 15	14	Start depth: 48.88 (ft)	4	Clay & silty clay
		End depth: 49.74 (ft)	5	Silty sand & sandy silt
Transition layer 16	20	Start depth: 51.71 (ft)	6	Sand & silty sand
		End depth: 52.95 (ft)	4	Clay & silty clay
Transition layer 17	9	Start depth: 53.02 (ft)	4	Clay & silty clay
		End depth: 53.54 (ft)	5	Silty sand & sandy silt
Transition layer 18	11	Start depth: 53.54 (ft)	5	Silty sand & sandy silt
		End depth: 54.20 (ft)	3	Clay
Transition layer 19	10	Start depth: 54.20 (ft)	3	Clay
		End depth: 54.79 (ft)	5	Silty sand & sandy silt
Transition layer 20	9	Start depth: 54.79 (ft)	5	Silty sand & sandy silt
		End depth: 55.31 (ft)	3	Clay
Transition layer 21	10	Start depth: 55.71 (ft)	3	Clay
		End depth: 56.30 (ft)	6	Sand & silty sand
Transition layer 22	20	Start depth: 56.30 (ft)	6	Sand & silty sand
		End depth: 57.55 (ft)	3	Clay
Transition layer 23	7	Start depth: 57.87 (ft)	3	Clay
		End depth: 58.27 (ft)	5	Silty sand & sandy silt

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 24	8	Start depth: 58.27 (ft)	5	Silty sand & sandy silt
		End depth: 58.73 (ft)	3	Clay
Transition layer 25	10	Start depth: 59.12 (ft)	3	Clay
		End depth: 59.71 (ft)	6	Sand & silty sand
Transition layer 26	13	Start depth: 61.29 (ft)	5	Silty sand & sandy silt
		End depth: 62.07 (ft)	3	Clay
Transition layer 27	13	Start depth: 63.25 (ft)	4	Clay & silty clay
		End depth: 64.04 (ft)	5	Silty sand & sandy silt

Start depth: Depth where the transition layer begins
End depth: Depth where the transition layer ends

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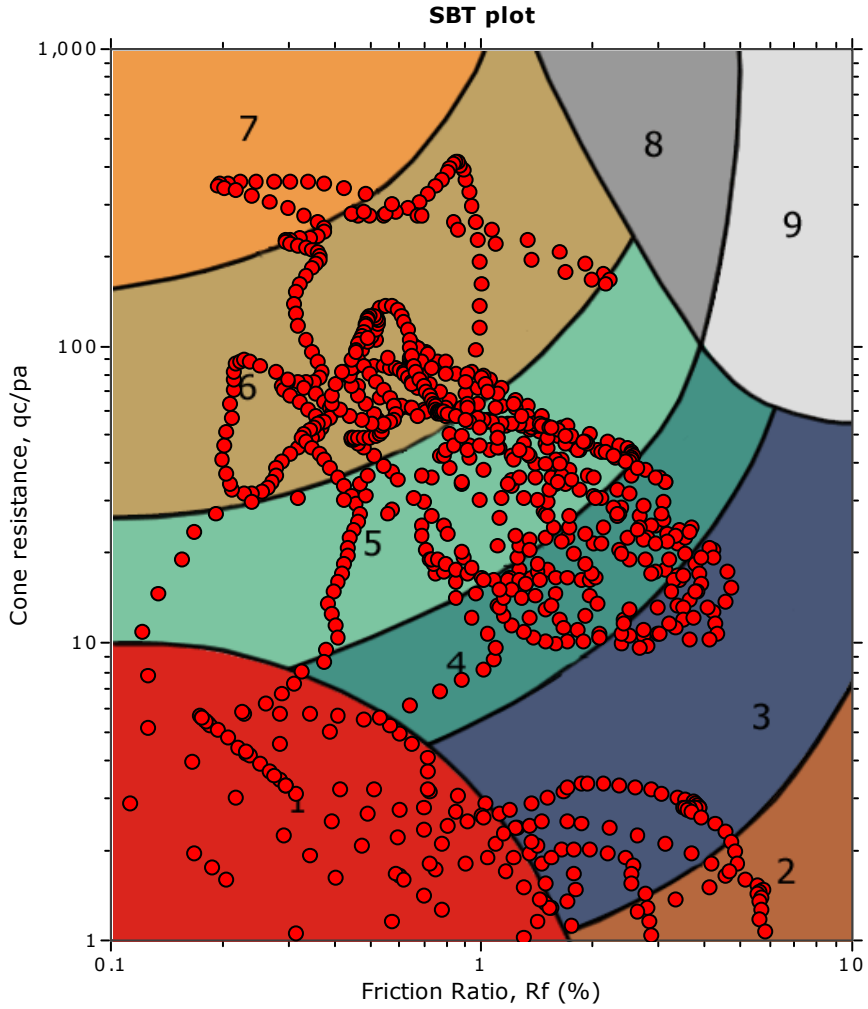
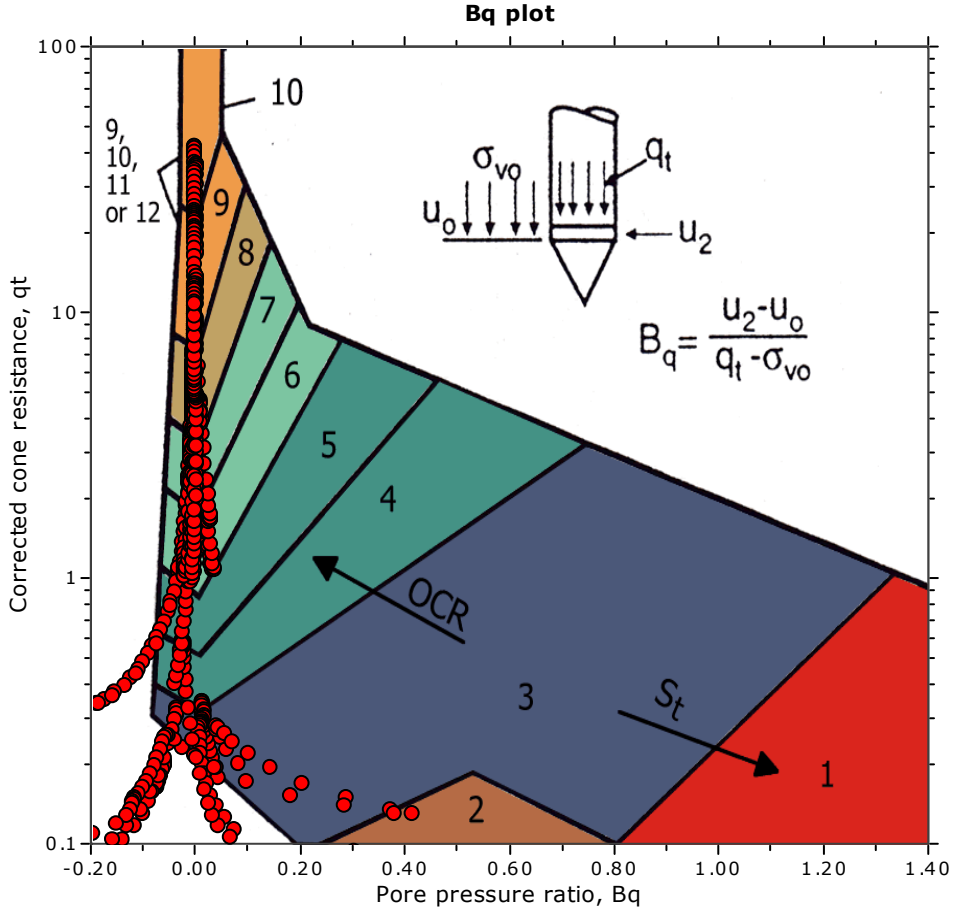
Location: **Washington, DC**

CPT: CPT-1 Near B-6
Total depth: 67.85 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

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

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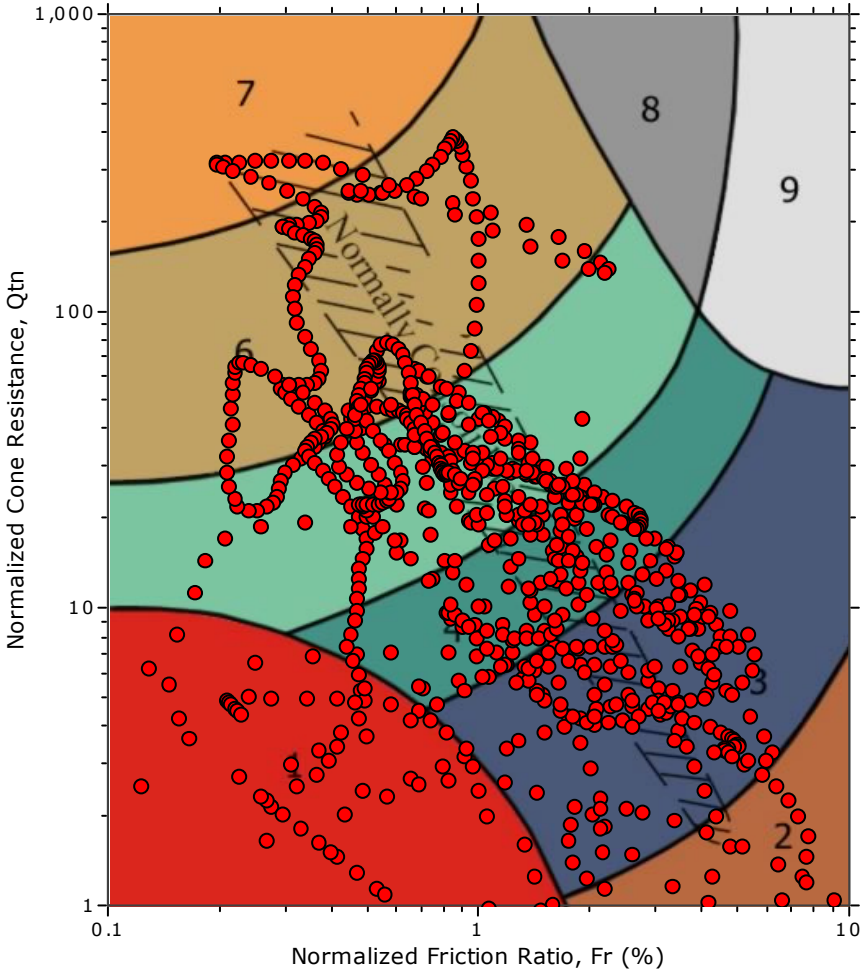
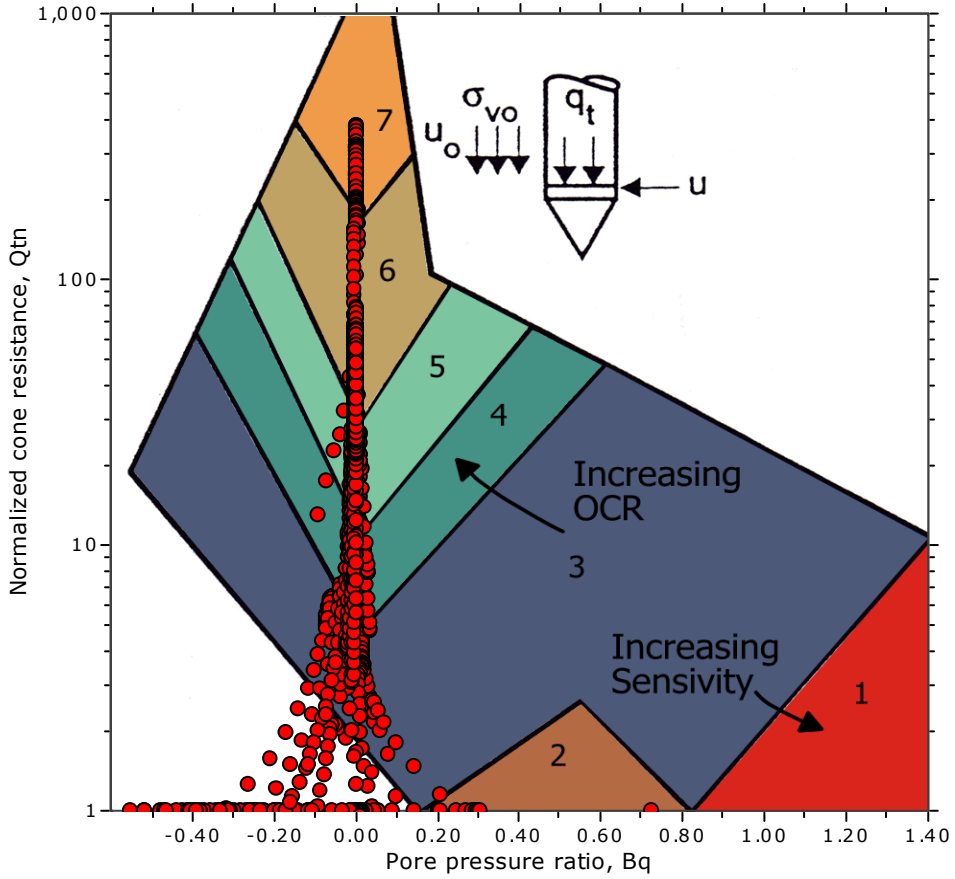
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

SBT - Bq plots (normalized)

SBTn plot



Normalized Bq plot



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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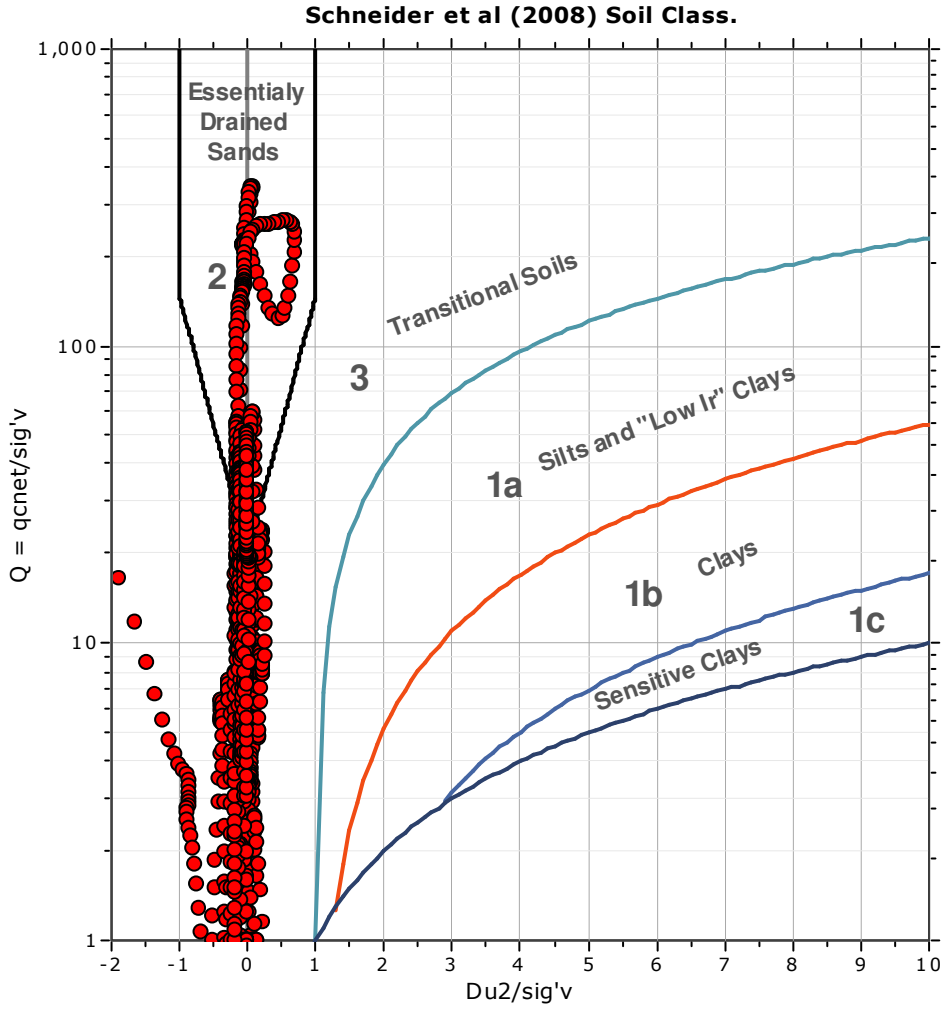
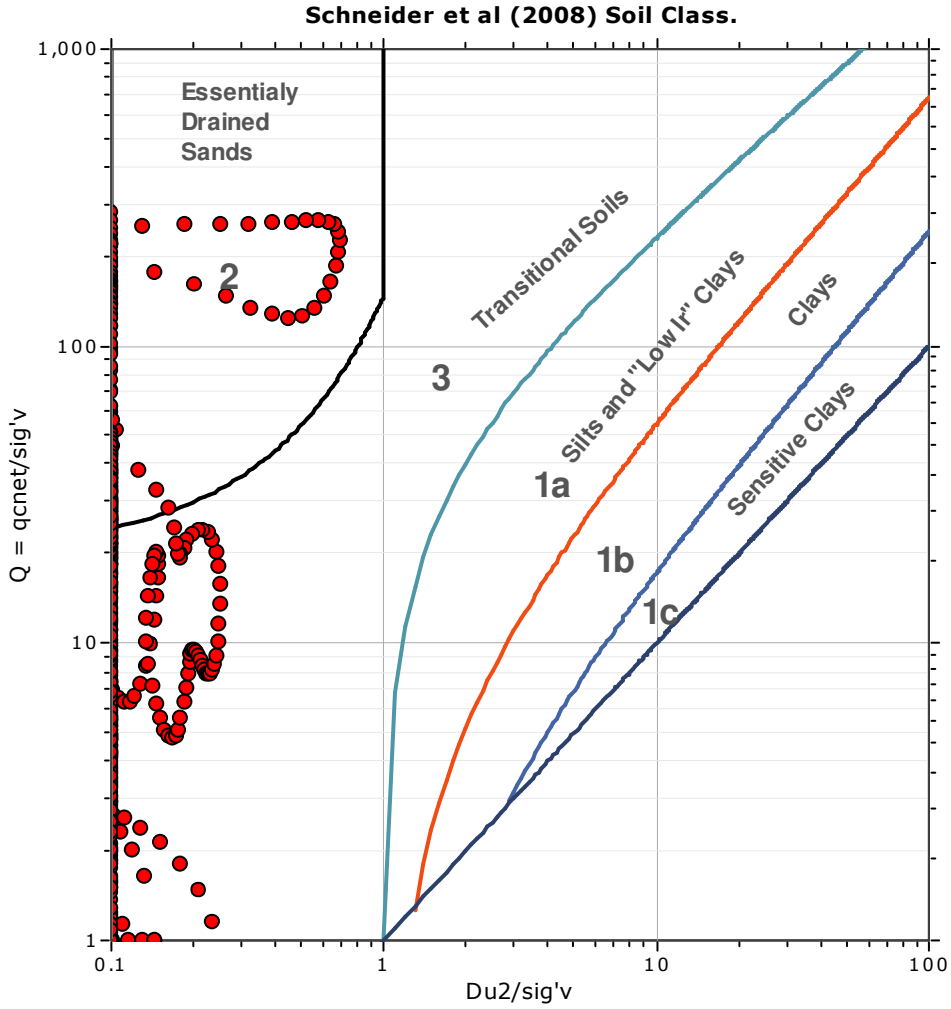
Location: **Washington, DC**

CPT: CPT-1 Near B-6
Total depth: 67.85 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

Bq plots (Schneider)





HILLIS CARNES ENGINEERING ASSOCIATES, INC.
503 Maryland Avenue, Unit 106
Delmar, Maryland 21865
http://www.HCEA.com

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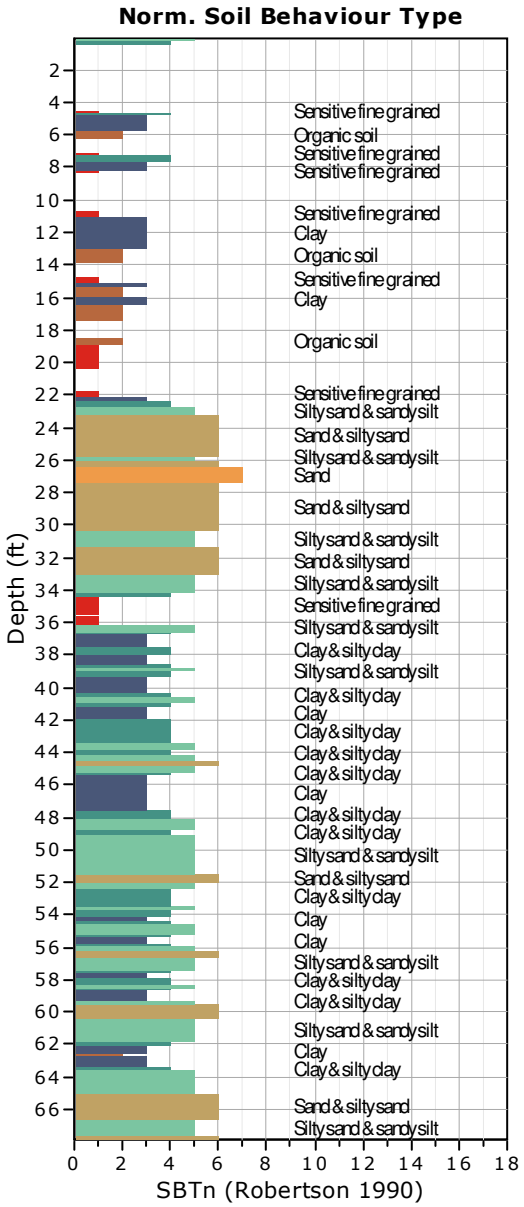

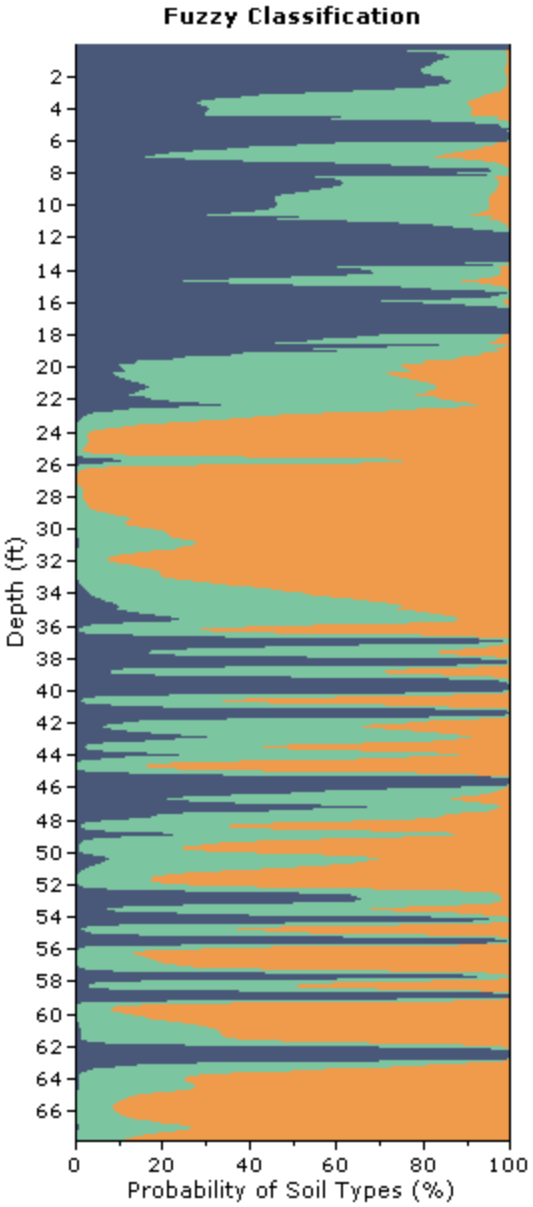

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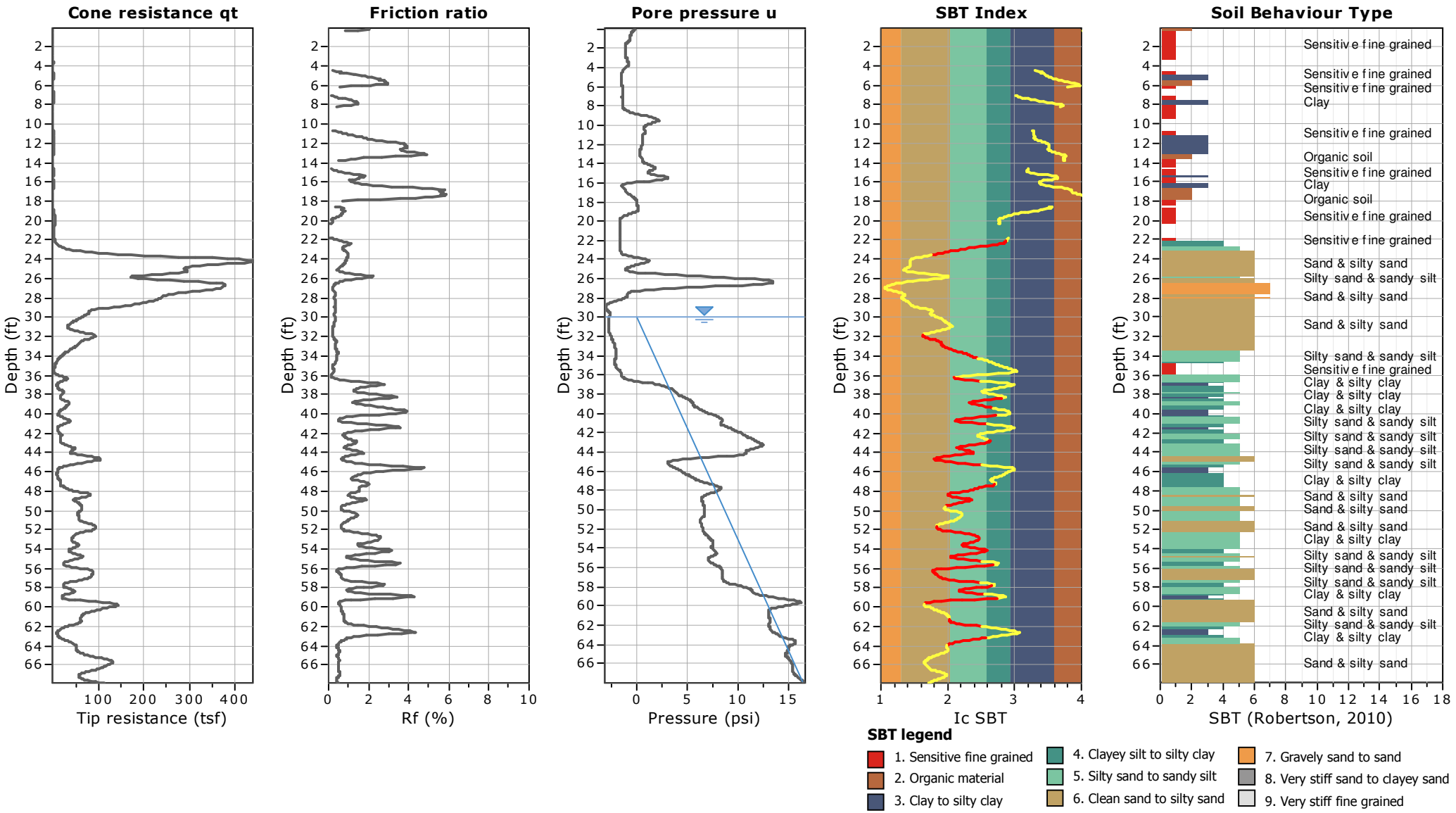

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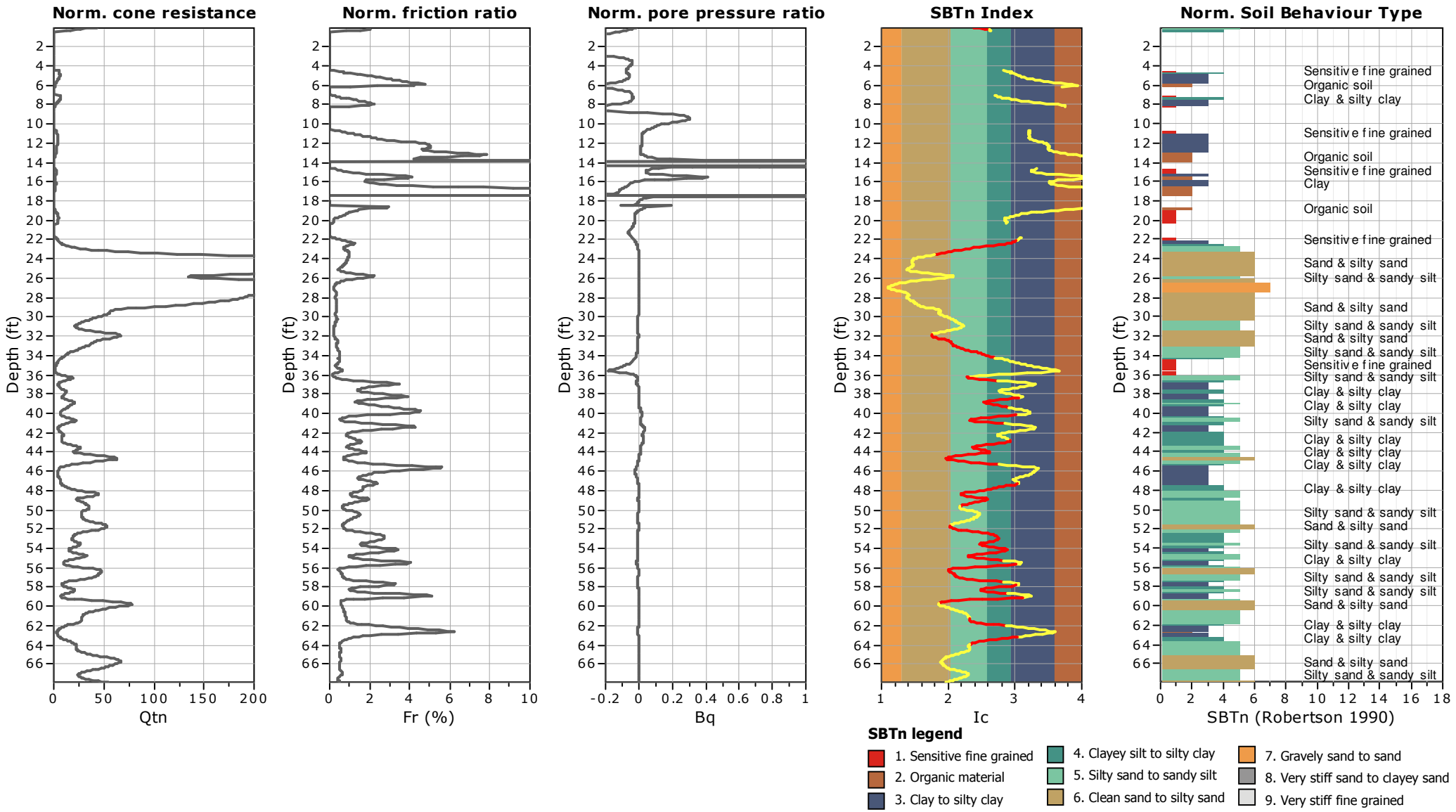

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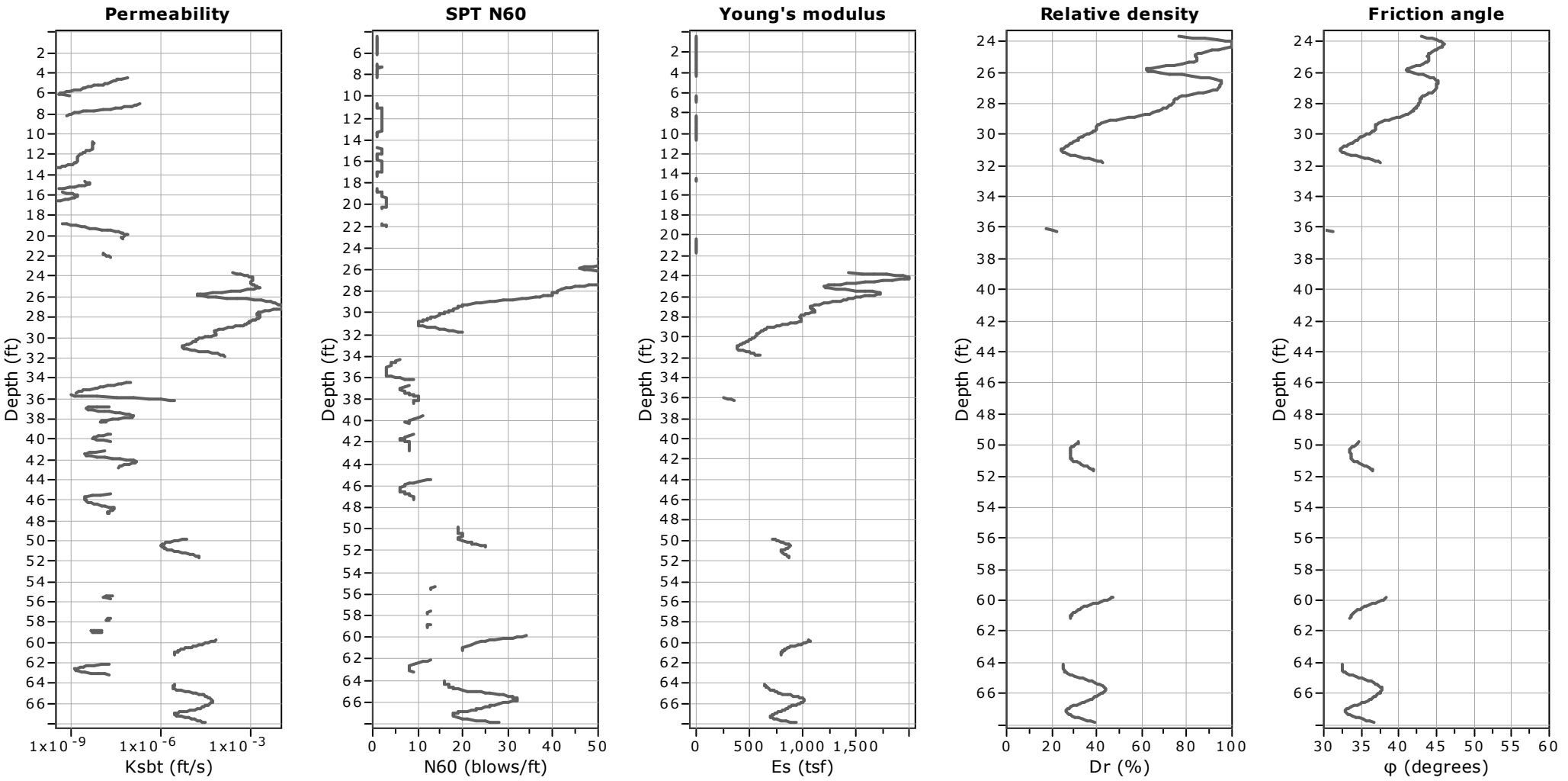

Calculation parameters

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 desnisty constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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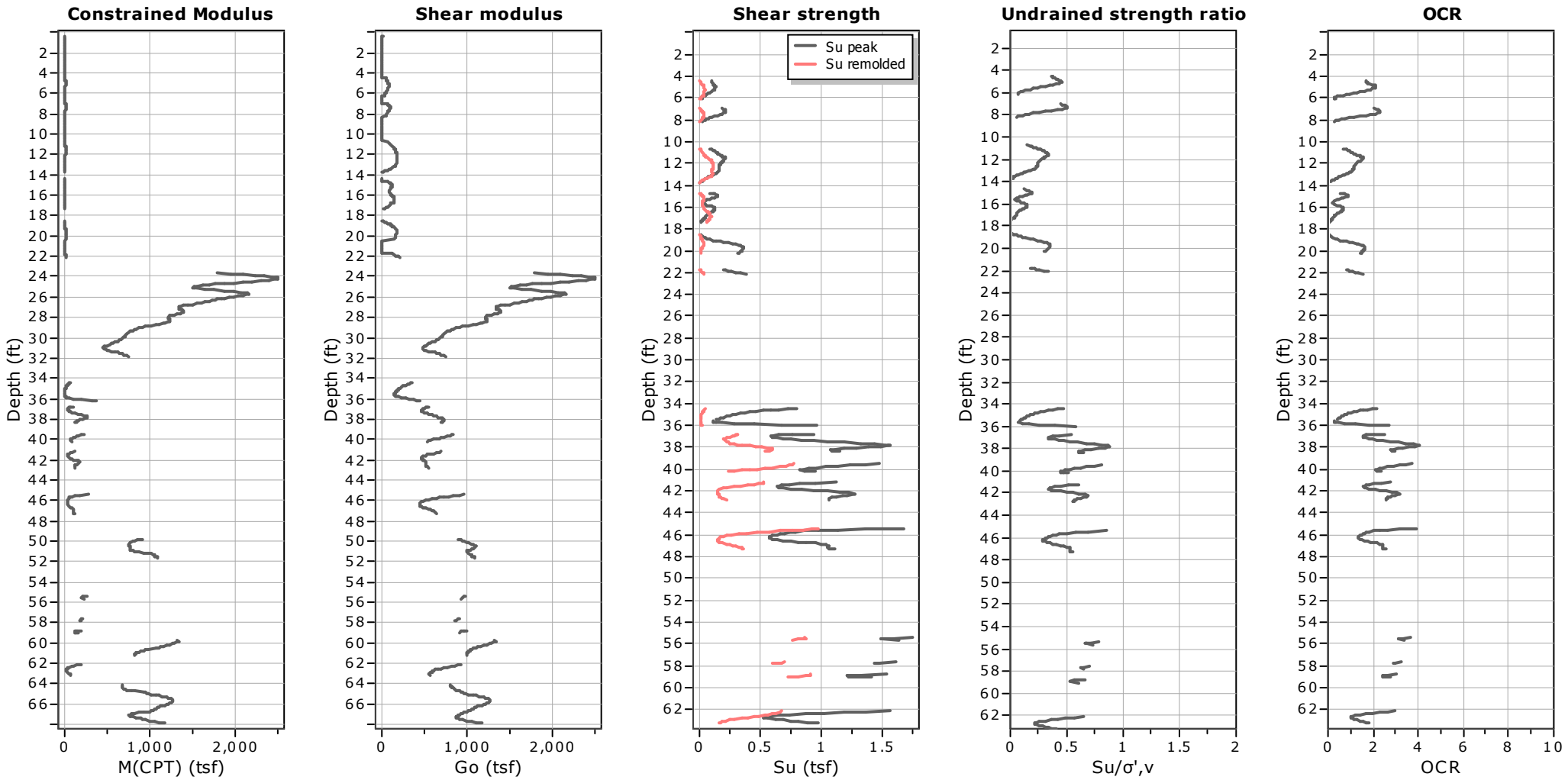
Location: Washington, DC



Calculation parameters

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

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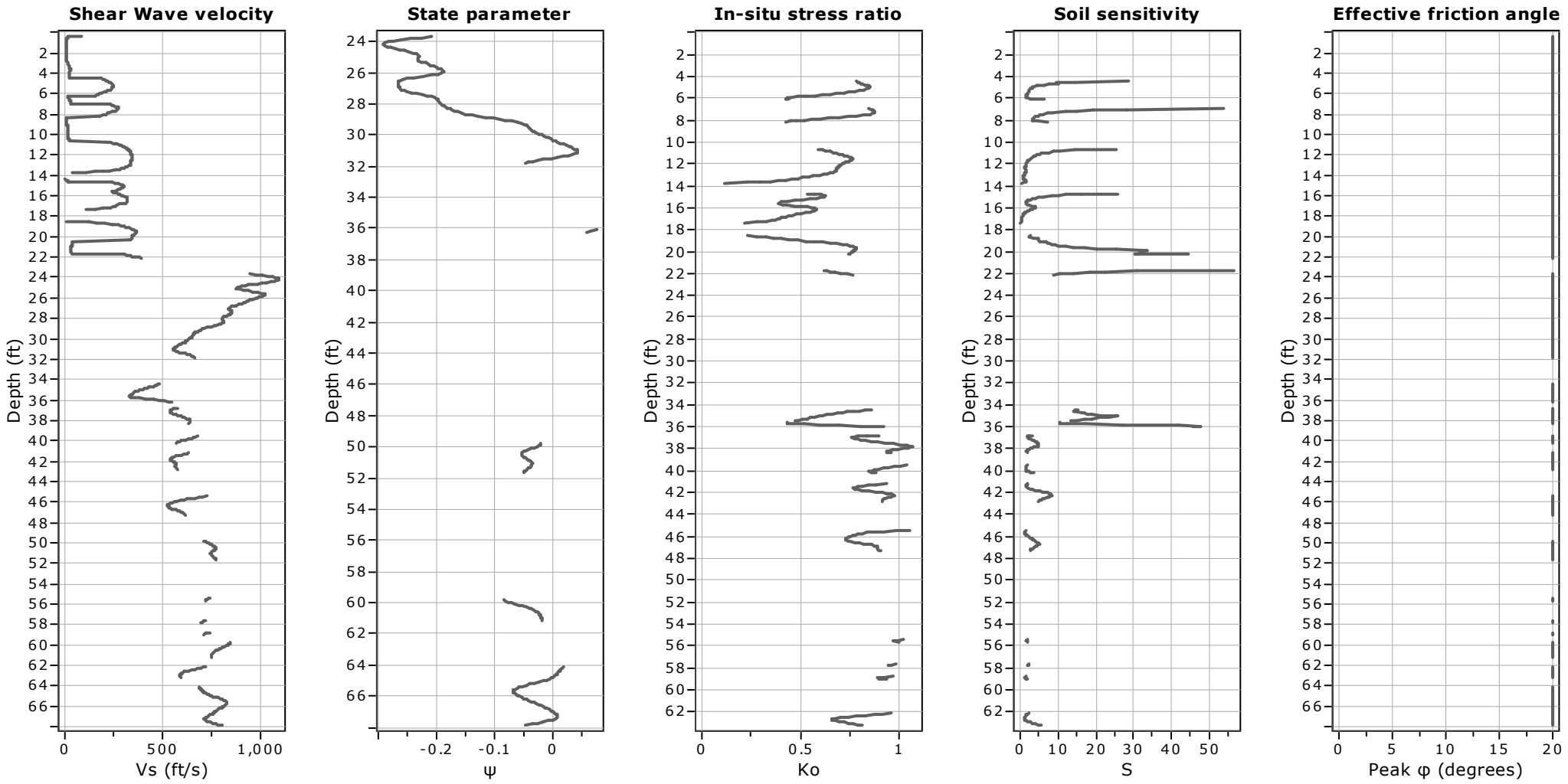

Calculation parameters

Soil Sensitivity factor, N_S: 7.00

User defined estimation data

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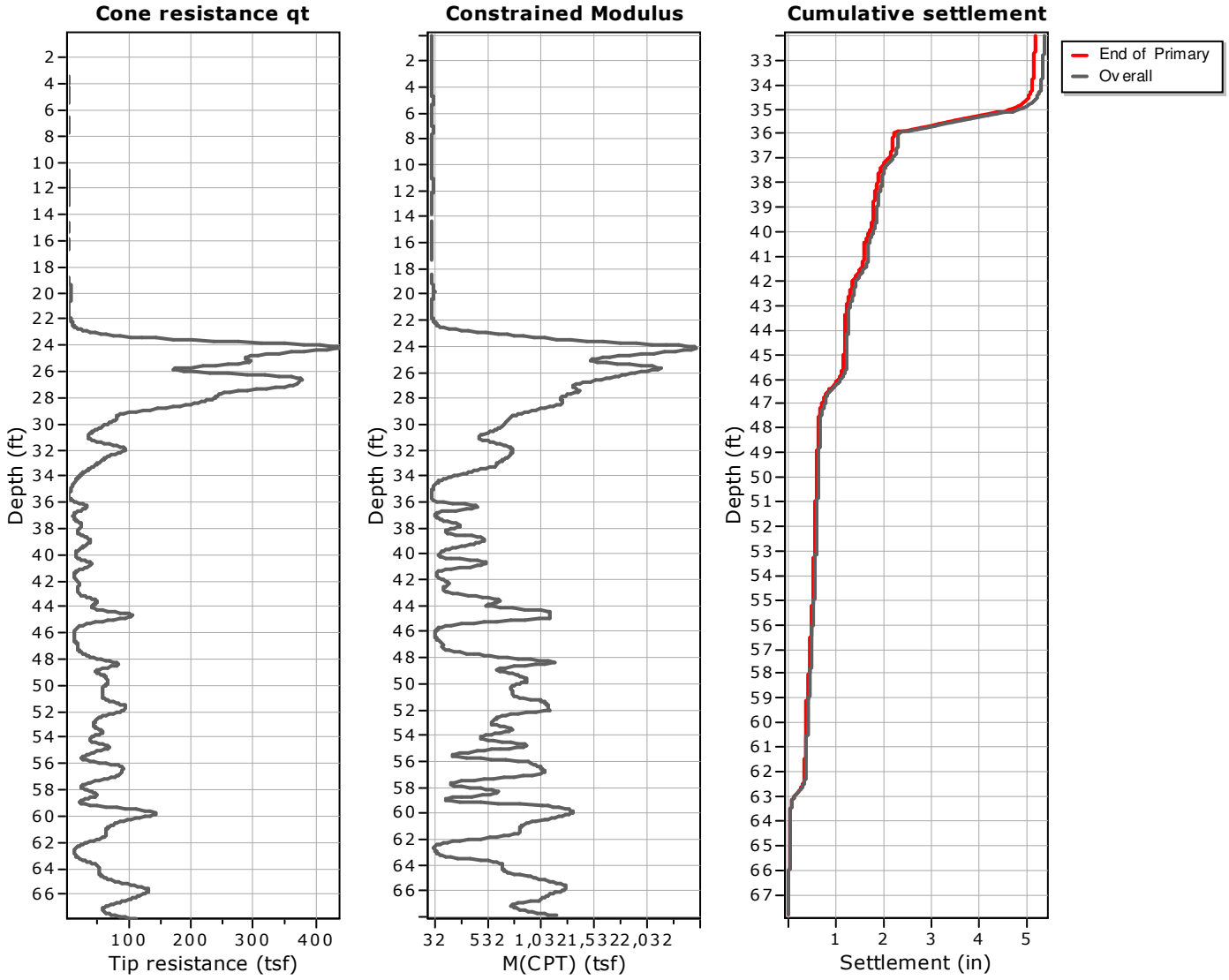
Project: 900 H Street NE
Location: Washington, DC

Settlements calculation according to theory of elasticity*



Caclulation properties

Footing type: Rectangular
Footing width: 100.00 (ft)
L/B: 1.0
Footing pressure: 3.50 (tsf)
Embedment depth: 32.00 (ft)
Footing is rigid: Yes
Remove excavation load: Yes
Apply 20% rule: No
Calculate secondary settlements: Yes
Time period for primary consolidation: 6 months
Time period for second. settlements: 12 months

* Primary settlements calculation is performed according to the following formula:

$$S = \sum \frac{\Delta \sigma_v}{M_{CPT}} \Delta z$$

* Secondary (creep) settlements calculation is performed according to the following formula:

$$S = C_a \cdot \Delta z \cdot \log(t)$$

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
1	31.96	32.02	0.07	0.01	1.58	760.87	1.00	0.001	0.000	0.001
2	32.02	32.09	0.07	0.05	1.58	763.51	1.00	0.002	0.000	0.002
3	32.09	32.15	0.07	0.12	1.58	762.88	1.00	0.002	0.000	0.002
4	32.15	32.22	0.07	0.19	1.58	762.13	1.00	0.002	0.000	0.002
5	32.22	32.28	0.07	0.25	1.58	757.34	1.00	0.002	0.000	0.002
6	32.28	32.35	0.07	0.32	1.58	751.90	1.00	0.002	0.000	0.002
7	32.35	32.41	0.07	0.38	1.58	744.32	1.00	0.002	0.000	0.002
8	32.41	32.48	0.07	0.45	1.58	735.30	1.00	0.002	0.000	0.002
9	32.48	32.55	0.07	0.51	1.58	725.23	1.00	0.002	0.000	0.002
10	32.55	32.61	0.07	0.58	1.58	714.14	1.00	0.002	0.000	0.002
11	32.61	32.68	0.07	0.64	1.58	701.77	1.00	0.002	0.000	0.002
12	32.68	32.74	0.07	0.71	1.58	687.68	1.00	0.002	0.000	0.002
13	32.74	32.81	0.07	0.78	1.58	673.88	1.00	0.002	0.000	0.002
14	32.81	32.87	0.07	0.84	1.58	662.62	1.00	0.002	0.000	0.002
15	32.87	32.94	0.07	0.91	1.58	651.10	1.00	0.002	0.000	0.002
16	32.94	33.01	0.07	0.97	1.58	639.08	1.00	0.002	0.000	0.002
17	33.01	33.07	0.07	1.04	1.58	629.13	1.00	0.002	0.000	0.002
18	33.07	33.14	0.07	1.10	1.58	621.23	1.00	0.002	0.000	0.002
19	33.14	33.20	0.07	1.17	1.58	615.34	1.00	0.002	0.000	0.002
20	33.20	33.27	0.07	1.23	1.58	608.66	1.00	0.002	0.000	0.002
21	33.27	33.33	0.07	1.30	1.58	598.38	1.00	0.002	0.000	0.002
22	33.33	33.40	0.07	1.37	1.58	544.80	1.00	0.002	0.000	0.002
23	33.40	33.46	0.07	1.43	1.58	509.04	1.00	0.002	0.000	0.002
24	33.46	33.53	0.07	1.50	1.58	473.56	1.00	0.003	0.000	0.003
25	33.53	33.60	0.07	1.56	1.58	439.40	1.00	0.003	0.000	0.003
26	33.60	33.66	0.07	1.63	1.58	407.38	1.00	0.003	0.000	0.003
27	33.66	33.73	0.07	1.69	1.58	377.95	1.00	0.003	0.000	0.003
28	33.73	33.79	0.07	1.76	1.58	351.24	1.00	0.004	0.000	0.004
29	33.79	33.86	0.07	1.83	1.58	327.07	1.00	0.004	0.000	0.004
30	33.86	33.92	0.07	1.89	1.58	293.29	1.00	0.004	0.000	0.004
31	33.92	33.99	0.07	1.96	1.58	253.75	1.00	0.005	0.000	0.005
32	33.99	34.06	0.07	2.02	1.58	219.06	1.00	0.006	0.000	0.006
33	34.06	34.12	0.07	2.09	1.58	188.04	1.00	0.007	0.000	0.007
34	34.12	34.19	0.07	2.15	1.58	159.99	1.00	0.008	0.000	0.008
35	34.19	34.25	0.07	2.22	1.58	134.64	1.00	0.009	0.000	0.010
36	34.25	34.32	0.07	2.28	1.58	111.91	1.00	0.011	0.000	0.011
37	34.32	34.38	0.07	2.35	1.58	91.91	1.00	0.014	0.000	0.014
38	34.38	34.45	0.07	2.42	1.58	74.49	1.00	0.017	0.001	0.017
39	34.45	34.51	0.07	2.48	1.58	60.22	1.00	0.021	0.001	0.021
40	34.51	34.58	0.07	2.55	1.58	48.43	1.00	0.026	0.001	0.026
41	34.58	34.65	0.07	2.61	1.58	38.79	1.00	0.032	0.001	0.033
42	34.65	34.71	0.07	2.68	1.57	31.04	1.00	0.040	0.001	0.041
43	34.71	34.78	0.07	2.74	1.57	24.87	1.00	0.050	0.002	0.051
44	34.78	34.84	0.07	2.81	1.57	19.98	1.00	0.062	0.002	0.064
45	34.84	34.91	0.07	2.88	1.57	16.13	1.00	0.077	0.003	0.079

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
46	34.91	34.97	0.07	2.94	1.57	13.07	1.00	0.095	0.003	0.098
47	34.97	35.04	0.07	3.01	1.57	10.63	1.00	0.117	0.004	0.120
48	35.04	35.10	0.07	3.07	1.57	8.64	1.00	0.143	0.005	0.148
49	35.10	35.17	0.07	3.14	1.57	7.01	0.99	0.176	0.006	0.182
50	35.17	35.24	0.07	3.20	1.57	6.92	0.99	0.179	0.006	0.185
51	35.24	35.30	0.07	3.27	1.57	6.92	0.99	0.179	0.006	0.185
52	35.30	35.37	0.07	3.33	1.57	6.92	0.99	0.179	0.006	0.185
53	35.37	35.43	0.07	3.40	1.57	6.93	0.99	0.178	0.006	0.184
54	35.43	35.50	0.07	3.47	1.57	6.93	0.99	0.178	0.006	0.184
55	35.50	35.56	0.07	3.53	1.57	6.93	0.99	0.178	0.000	0.178
56	35.56	35.63	0.07	3.60	1.57	6.94	0.99	0.178	0.006	0.184
57	35.63	35.70	0.07	3.66	1.57	6.94	0.99	0.178	0.006	0.184
58	35.70	35.76	0.07	3.73	1.57	6.94	0.99	0.178	0.006	0.184
59	35.76	35.83	0.07	3.79	1.57	6.95	0.99	0.178	0.006	0.183
60	35.83	35.89	0.07	3.86	1.57	9.24	0.99	0.133	0.004	0.138
61	35.89	35.96	0.07	3.93	1.56	22.68	0.99	0.054	0.002	0.056
62	35.96	36.02	0.07	3.99	1.56	52.39	0.99	0.024	0.001	0.024
63	36.02	36.09	0.07	4.06	1.56	110.34	0.99	0.011	0.000	0.012
64	36.09	36.15	0.07	4.12	1.56	202.93	0.99	0.006	0.000	0.006
65	36.15	36.22	0.07	4.19	1.56	319.81	0.99	0.004	0.000	0.004
66	36.22	36.29	0.07	4.25	1.56	375.87	0.99	0.003	0.000	0.003
67	36.29	36.35	0.07	4.32	1.56	414.43	0.99	0.003	0.000	0.003
68	36.35	36.42	0.07	4.38	1.56	429.51	0.99	0.003	0.000	0.003
69	36.42	36.48	0.07	4.45	1.56	419.45	0.99	0.003	0.000	0.003
70	36.48	36.55	0.07	4.52	1.56	387.09	0.99	0.003	0.000	0.003
71	36.55	36.61	0.07	4.58	1.56	339.14	0.98	0.004	0.000	0.004
72	36.61	36.68	0.07	4.65	1.56	238.46	0.98	0.005	0.000	0.005
73	36.68	36.75	0.07	4.71	1.55	154.84	0.98	0.008	0.000	0.008
74	36.75	36.81	0.07	4.78	1.55	99.34	0.98	0.012	0.000	0.013
75	36.81	36.88	0.07	4.84	1.55	65.69	0.98	0.019	0.001	0.019
76	36.88	36.94	0.07	4.91	1.55	47.69	0.98	0.026	0.001	0.026
77	36.94	37.01	0.07	4.98	1.55	39.73	0.98	0.031	0.001	0.032
78	37.01	37.07	0.07	5.04	1.55	38.07	0.98	0.032	0.001	0.033
79	37.07	37.14	0.07	5.11	1.55	40.48	0.98	0.030	0.001	0.031
80	37.14	37.20	0.07	5.17	1.55	45.74	0.98	0.027	0.001	0.028
81	37.20	37.27	0.07	5.24	1.55	53.37	0.98	0.023	0.001	0.024
82	37.27	37.34	0.07	5.30	1.54	63.64	0.98	0.019	0.001	0.020
83	37.34	37.40	0.07	5.37	1.54	77.64	0.98	0.016	0.001	0.016
84	37.40	37.47	0.07	5.43	1.54	96.94	0.98	0.013	0.000	0.013
85	37.47	37.53	0.07	5.50	1.54	123.01	0.98	0.010	0.000	0.010
86	37.53	37.60	0.07	5.57	1.54	155.92	0.97	0.008	0.000	0.008
87	37.60	37.66	0.07	5.63	1.54	193.35	0.97	0.006	0.000	0.006
88	37.66	37.73	0.07	5.70	1.54	230.78	0.97	0.005	0.000	0.005
89	37.73	37.80	0.07	5.76	1.54	259.24	0.97	0.005	0.000	0.005
90	37.80	37.86	0.07	5.83	1.53	270.89	0.97	0.004	0.000	0.005

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91	37.86	37.93	0.07	5.89	1.53	264.31	0.97	0.005	0.000	0.005
92	37.93	37.99	0.07	5.96	1.53	243.40	0.97	0.005	0.000	0.005
93	37.99	38.06	0.07	6.02	1.53	213.58	0.97	0.006	0.000	0.006
94	38.06	38.12	0.07	6.09	1.53	182.20	0.97	0.007	0.000	0.007
95	38.12	38.19	0.07	6.16	1.53	155.16	0.97	0.008	0.000	0.008
96	38.19	38.25	0.07	6.22	1.53	136.14	0.97	0.009	0.000	0.009
97	38.25	38.32	0.07	6.29	1.52	127.21	0.97	0.009	0.000	0.010
98	38.32	38.39	0.07	6.35	1.52	129.90	0.96	0.009	0.000	0.010
99	38.39	38.45	0.07	6.42	1.52	146.49	0.96	0.008	0.000	0.008
100	38.45	38.52	0.07	6.48	1.52	180.36	0.96	0.007	0.000	0.007
101	38.52	38.58	0.07	6.55	1.52	235.45	0.96	0.005	0.000	0.005
102	38.58	38.65	0.07	6.62	1.52	314.44	0.96	0.004	0.000	0.004
103	38.65	38.71	0.07	6.68	1.52	381.31	0.96	0.003	0.000	0.003
104	38.71	38.78	0.07	6.75	1.51	428.45	0.96	0.003	0.000	0.003
105	38.78	38.85	0.07	6.81	1.51	467.59	0.96	0.003	0.000	0.003
106	38.85	38.91	0.07	6.88	1.51	493.52	0.96	0.002	0.000	0.002
107	38.91	38.98	0.07	6.94	1.51	503.51	0.96	0.002	0.000	0.002
108	38.98	39.04	0.07	7.01	1.51	497.76	0.95	0.002	0.000	0.002
109	39.04	39.11	0.07	7.07	1.51	479.24	0.95	0.002	0.000	0.003
110	39.11	39.17	0.07	7.14	1.50	452.59	0.95	0.003	0.000	0.003
111	39.17	39.24	0.07	7.21	1.50	422.53	0.95	0.003	0.000	0.003
112	39.24	39.30	0.07	7.27	1.50	392.52	0.95	0.003	0.000	0.003
113	39.30	39.37	0.07	7.34	1.50	364.32	0.95	0.003	0.000	0.003
114	39.37	39.44	0.07	7.40	1.50	321.07	0.95	0.004	0.000	0.004
115	39.44	39.50	0.07	7.47	1.50	275.72	0.95	0.004	0.000	0.004
116	39.50	39.57	0.07	7.53	1.49	235.05	0.95	0.005	0.000	0.005
117	39.57	39.63	0.07	7.60	1.49	198.53	0.94	0.006	0.000	0.006
118	39.63	39.70	0.07	7.67	1.49	166.39	0.94	0.007	0.000	0.007
119	39.70	39.76	0.07	7.73	1.49	139.16	0.94	0.008	0.000	0.009
120	39.76	39.83	0.07	7.80	1.49	117.06	0.94	0.010	0.000	0.010
121	39.83	39.90	0.07	7.86	1.49	99.89	0.94	0.012	0.000	0.012
122	39.90	39.96	0.07	7.93	1.48	87.11	0.94	0.013	0.000	0.014
123	39.96	40.03	0.07	7.99	1.48	78.23	0.94	0.015	0.001	0.015
124	40.03	40.09	0.07	8.06	1.48	73.23	0.94	0.016	0.001	0.017
125	40.09	40.16	0.07	8.12	1.48	72.97	0.94	0.016	0.001	0.017
126	40.16	40.22	0.07	8.19	1.48	79.31	0.93	0.015	0.001	0.015
127	40.22	40.29	0.07	8.26	1.47	95.73	0.93	0.012	0.000	0.013
128	40.29	40.35	0.07	8.32	1.47	127.54	0.93	0.009	0.000	0.009
129	40.35	40.42	0.07	8.39	1.47	182.95	0.93	0.006	0.000	0.007
130	40.42	40.49	0.07	8.45	1.47	273.90	0.93	0.004	0.000	0.004
131	40.49	40.55	0.07	8.52	1.47	368.44	0.93	0.003	0.000	0.003
132	40.55	40.62	0.07	8.58	1.46	427.38	0.93	0.003	0.000	0.003
133	40.62	40.68	0.07	8.65	1.46	477.19	0.93	0.002	0.000	0.002
134	40.68	40.75	0.07	8.72	1.46	510.09	0.92	0.002	0.000	0.002
135	40.75	40.81	0.07	8.78	1.46	520.81	0.92	0.002	0.000	0.002

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
136	40.81	40.88	0.07	8.85	1.46	507.98	0.92	0.002	0.000	0.002
137	40.88	40.94	0.07	8.91	1.45	474.44	0.92	0.002	0.000	0.002
138	40.94	41.01	0.07	8.98	1.45	426.08	0.92	0.003	0.000	0.003
139	41.01	41.08	0.07	9.04	1.45	370.37	0.92	0.003	0.000	0.003
140	41.08	41.14	0.07	9.11	1.45	271.22	0.92	0.004	0.000	0.004
141	41.14	41.21	0.07	9.17	1.45	190.29	0.92	0.006	0.000	0.006
142	41.21	41.27	0.07	9.24	1.44	133.63	0.91	0.009	0.000	0.009
143	41.27	41.34	0.07	9.31	1.44	96.27	0.91	0.012	0.000	0.012
144	41.34	41.40	0.07	9.37	1.44	72.54	0.91	0.016	0.001	0.016
145	41.40	41.47	0.07	9.44	1.44	57.72	0.91	0.020	0.001	0.020
146	41.47	41.54	0.07	9.50	1.44	48.72	0.91	0.023	0.001	0.024
147	41.54	41.60	0.07	9.57	1.43	43.79	0.91	0.026	0.001	0.027
148	41.60	41.67	0.07	9.63	1.43	42.15	0.91	0.027	0.001	0.028
149	41.67	41.73	0.07	9.70	1.43	43.80	0.90	0.026	0.001	0.027
150	41.73	41.80	0.07	9.77	1.43	49.20	0.90	0.023	0.001	0.024
151	41.80	41.86	0.07	9.83	1.43	59.05	0.90	0.019	0.001	0.020
152	41.86	41.93	0.07	9.90	1.42	73.83	0.90	0.015	0.001	0.016
153	41.93	41.99	0.07	9.96	1.42	93.27	0.90	0.012	0.000	0.012
154	41.99	42.06	0.07	10.03	1.42	115.83	0.90	0.010	0.000	0.010
155	42.06	42.13	0.07	10.09	1.42	138.42	0.90	0.008	0.000	0.008
156	42.13	42.19	0.07	10.16	1.41	157.94	0.90	0.007	0.000	0.007
157	42.19	42.26	0.07	10.22	1.41	170.19	0.89	0.007	0.000	0.007
158	42.26	42.32	0.07	10.29	1.41	172.62	0.89	0.006	0.000	0.007
159	42.32	42.39	0.07	10.36	1.41	166.54	0.89	0.007	0.000	0.007
160	42.39	42.45	0.07	10.42	1.41	154.97	0.89	0.007	0.000	0.007
161	42.45	42.52	0.07	10.49	1.40	142.43	0.89	0.008	0.000	0.008
162	42.52	42.59	0.07	10.55	1.40	131.35	0.89	0.008	0.000	0.009
163	42.59	42.65	0.07	10.62	1.40	123.07	0.89	0.009	0.000	0.009
164	42.65	42.72	0.07	10.68	1.40	118.07	0.88	0.009	0.000	0.010
165	42.72	42.78	0.07	10.75	1.39	116.20	0.88	0.009	0.000	0.010
166	42.78	42.85	0.07	10.81	1.39	117.51	0.88	0.009	0.000	0.010
167	42.85	42.91	0.07	10.88	1.39	122.94	0.88	0.009	0.000	0.009
168	42.91	42.98	0.07	10.95	1.39	134.62	0.88	0.008	0.000	0.008
169	42.98	43.04	0.07	11.01	1.39	156.52	0.88	0.007	0.000	0.007
170	43.04	43.11	0.07	11.08	1.38	194.20	0.88	0.006	0.000	0.006
171	43.11	43.18	0.07	11.14	1.38	255.76	0.87	0.004	0.000	0.004
172	43.18	43.24	0.07	11.21	1.38	353.04	0.87	0.003	0.000	0.003
173	43.24	43.31	0.07	11.27	1.38	417.68	0.87	0.003	0.000	0.003
174	43.31	43.37	0.07	11.34	1.37	480.39	0.87	0.002	0.000	0.002
175	43.37	43.44	0.07	11.41	1.37	540.51	0.87	0.002	0.000	0.002
176	43.44	43.50	0.07	11.47	1.37	591.35	0.87	0.002	0.000	0.002
177	43.50	43.57	0.07	11.54	1.37	627.17	0.87	0.002	0.000	0.002
178	43.57	43.64	0.07	11.60	1.37	644.38	0.86	0.002	0.000	0.002
179	43.64	43.70	0.07	11.67	1.36	642.18	0.86	0.002	0.000	0.002
180	43.70	43.77	0.07	11.73	1.36	623.03	0.86	0.002	0.000	0.002

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
181	43.77	43.83	0.07	11.80	1.36	592.48	0.86	0.002	0.000	0.002
182	43.83	43.90	0.07	11.86	1.36	558.63	0.86	0.002	0.000	0.002
183	43.90	43.96	0.07	11.93	1.35	531.27	0.86	0.002	0.000	0.002
184	43.96	44.03	0.07	12.00	1.35	520.30	0.86	0.002	0.000	0.002
185	44.03	44.09	0.07	12.06	1.35	534.38	0.85	0.002	0.000	0.002
186	44.09	44.16	0.07	12.13	1.35	579.15	0.85	0.002	0.000	0.002
187	44.16	44.23	0.07	12.19	1.35	656.27	0.85	0.002	0.000	0.002
188	44.23	44.29	0.07	12.26	1.34	762.42	0.85	0.001	0.000	0.001
189	44.29	44.36	0.07	12.32	1.34	889.67	0.85	0.001	0.000	0.001
190	44.36	44.42	0.07	12.39	1.34	1026.64	0.85	0.001	0.000	0.001
191	44.42	44.49	0.07	12.46	1.34	1095.62	0.85	0.001	0.000	0.001
192	44.49	44.55	0.07	12.52	1.33	1108.74	0.84	0.001	0.000	0.001
193	44.55	44.62	0.07	12.59	1.33	1116.67	0.84	0.001	0.000	0.001
194	44.62	44.69	0.07	12.65	1.33	1119.19	0.84	0.001	0.000	0.001
195	44.69	44.75	0.07	12.72	1.33	1119.92	0.84	0.001	0.000	0.001
196	44.75	44.82	0.07	12.78	1.32	1119.06	0.84	0.001	0.000	0.001
197	44.82	44.88	0.07	12.85	1.32	1120.29	0.84	0.001	0.000	0.001
198	44.88	44.95	0.07	12.91	1.32	1121.79	0.84	0.001	0.000	0.001
199	44.95	45.01	0.07	12.98	1.32	1123.33	0.83	0.001	0.000	0.001
200	45.01	45.08	0.07	13.05	1.32	1023.53	0.83	0.001	0.000	0.001
201	45.08	45.14	0.07	13.11	1.31	886.57	0.83	0.001	0.000	0.001
202	45.14	45.21	0.07	13.18	1.31	750.01	0.83	0.001	0.000	0.001
203	45.21	45.28	0.07	13.24	1.31	621.11	0.83	0.002	0.000	0.002
204	45.28	45.34	0.07	13.31	1.31	505.77	0.83	0.002	0.000	0.002
205	45.34	45.41	0.07	13.37	1.30	407.67	0.83	0.003	0.000	0.003
206	45.41	45.47	0.07	13.44	1.30	279.91	0.82	0.004	0.000	0.004
207	45.47	45.54	0.07	13.51	1.30	185.35	0.82	0.006	0.000	0.006
208	45.54	45.60	0.07	13.57	1.30	128.30	0.82	0.008	0.000	0.008
209	45.60	45.67	0.07	13.64	1.30	94.37	0.82	0.011	0.000	0.011
210	45.67	45.73	0.07	13.70	1.29	74.15	0.82	0.014	0.001	0.014
211	45.73	45.80	0.07	13.77	1.29	61.78	0.82	0.016	0.001	0.017
212	45.80	45.87	0.07	13.83	1.29	53.74	0.82	0.019	0.001	0.020
213	45.87	45.93	0.07	13.90	1.29	47.96	0.81	0.021	0.001	0.022
214	45.93	46.00	0.07	13.96	1.28	43.39	0.81	0.023	0.001	0.024
215	46.00	46.06	0.07	14.03	1.28	39.59	0.81	0.025	0.001	0.027
216	46.06	46.13	0.07	14.10	1.28	36.46	0.81	0.028	0.001	0.029
217	46.13	46.19	0.07	14.16	1.28	34.13	0.81	0.029	0.001	0.031
218	46.19	46.26	0.07	14.23	1.28	32.78	0.81	0.031	0.001	0.032
219	46.26	46.33	0.07	14.29	1.27	32.57	0.81	0.031	0.001	0.032
220	46.33	46.39	0.07	14.36	1.27	33.65	0.80	0.030	0.001	0.031
221	46.39	46.46	0.07	14.42	1.27	36.18	0.80	0.028	0.001	0.029
222	46.46	46.52	0.07	14.49	1.27	40.38	0.80	0.025	0.001	0.026
223	46.52	46.59	0.07	14.56	1.26	46.48	0.80	0.021	0.001	0.022
224	46.59	46.65	0.07	14.62	1.26	54.67	0.80	0.018	0.001	0.019
225	46.65	46.72	0.07	14.69	1.26	64.85	0.80	0.015	0.001	0.016

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
226	46.72	46.78	0.07	14.75	1.26	76.50	0.80	0.013	0.001	0.014
227	46.78	46.85	0.07	14.82	1.26	88.40	0.79	0.011	0.001	0.012
228	46.85	46.92	0.07	14.88	1.25	98.84	0.79	0.010	0.000	0.010
229	46.92	46.98	0.07	14.95	1.25	106.21	0.79	0.009	0.000	0.010
230	46.98	47.05	0.07	15.01	1.25	109.64	0.79	0.009	0.000	0.009
231	47.05	47.11	0.07	15.08	1.25	109.69	0.79	0.009	0.000	0.009
232	47.11	47.18	0.07	15.15	1.24	108.10	0.79	0.009	0.000	0.010
233	47.18	47.24	0.07	15.21	1.24	107.65	0.79	0.009	0.000	0.010
234	47.24	47.31	0.07	15.28	1.24	111.06	0.78	0.009	0.000	0.009
235	47.31	47.38	0.07	15.34	1.24	121.13	0.78	0.008	0.000	0.008
236	47.38	47.44	0.07	15.41	1.24	140.23	0.78	0.007	0.000	0.007
237	47.44	47.51	0.07	15.47	1.23	170.29	0.78	0.006	0.000	0.006
238	47.51	47.57	0.07	15.54	1.23	212.29	0.78	0.005	0.000	0.005
239	47.57	47.64	0.07	15.60	1.23	266.00	0.78	0.004	0.000	0.004
240	47.64	47.70	0.07	15.67	1.23	330.74	0.78	0.003	0.000	0.003
241	47.70	47.77	0.07	15.74	1.22	401.20	0.78	0.002	0.000	0.003
242	47.77	47.83	0.07	15.80	1.22	444.42	0.77	0.002	0.000	0.002
243	47.83	47.90	0.07	15.87	1.22	494.41	0.77	0.002	0.000	0.002
244	47.90	47.97	0.07	15.93	1.22	555.40	0.77	0.002	0.000	0.002
245	47.97	48.03	0.07	16.00	1.22	630.91	0.77	0.002	0.000	0.002
246	48.03	48.10	0.07	16.06	1.21	721.67	0.77	0.001	0.000	0.001
247	48.10	48.16	0.07	16.13	1.21	823.78	0.77	0.001	0.000	0.001
248	48.16	48.23	0.07	16.20	1.21	928.23	0.77	0.001	0.000	0.001
249	48.23	48.29	0.07	16.26	1.21	1022.05	0.76	0.001	0.000	0.001
250	48.29	48.36	0.07	16.33	1.21	1091.20	0.76	0.001	0.000	0.001
251	48.36	48.43	0.07	16.39	1.20	1166.74	0.76	0.001	0.000	0.001
252	48.43	48.49	0.07	16.46	1.20	1157.28	0.76	0.001	0.000	0.001
253	48.49	48.56	0.07	16.52	1.20	1063.10	0.76	0.001	0.000	0.001
254	48.56	48.62	0.07	16.59	1.20	980.37	0.76	0.001	0.000	0.001
255	48.62	48.69	0.07	16.65	1.20	880.83	0.76	0.001	0.000	0.001
256	48.69	48.75	0.07	16.72	1.19	781.73	0.76	0.001	0.000	0.001
257	48.75	48.82	0.07	16.79	1.19	698.87	0.75	0.001	0.000	0.001
258	48.82	48.88	0.07	16.85	1.19	643.21	0.75	0.001	0.000	0.002
259	48.88	48.95	0.07	16.92	1.19	619.03	0.75	0.002	0.000	0.002
260	48.95	49.02	0.07	16.98	1.19	623.95	0.75	0.001	0.000	0.002
261	49.02	49.08	0.07	17.05	1.18	650.51	0.75	0.001	0.000	0.002
262	49.08	49.15	0.07	17.11	1.18	688.76	0.75	0.001	0.000	0.001
263	49.15	49.21	0.07	17.18	1.18	729.26	0.75	0.001	0.000	0.001
264	49.21	49.28	0.07	17.25	1.18	765.13	0.74	0.001	0.000	0.001
265	49.28	49.34	0.07	17.31	1.17	793.30	0.74	0.001	0.000	0.001
266	49.34	49.41	0.07	17.38	1.17	814.01	0.74	0.001	0.000	0.001
267	49.41	49.48	0.07	17.44	1.17	829.70	0.74	0.001	0.000	0.001
268	49.48	49.54	0.07	17.51	1.17	843.20	0.74	0.001	0.000	0.001
269	49.54	49.61	0.07	17.57	1.17	856.36	0.74	0.001	0.000	0.001
270	49.61	49.67	0.07	17.64	1.16	902.06	0.74	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
271	49.67	49.74	0.07	17.70	1.16	893.23	0.74	0.001	0.000	0.001
272	49.74	49.80	0.07	17.77	1.16	890.02	0.73	0.001	0.000	0.001
273	49.80	49.87	0.07	17.84	1.16	894.37	0.73	0.001	0.000	0.001
274	49.87	49.93	0.07	17.90	1.16	905.86	0.73	0.001	0.000	0.001
275	49.93	50.00	0.07	17.97	1.15	850.70	0.73	0.001	0.000	0.001
276	50.00	50.07	0.07	18.03	1.15	825.55	0.73	0.001	0.000	0.001
277	50.07	50.13	0.07	18.10	1.15	799.23	0.73	0.001	0.000	0.001
278	50.13	50.20	0.07	18.16	1.15	776.08	0.73	0.001	0.000	0.001
279	50.20	50.26	0.07	18.23	1.15	759.22	0.73	0.001	0.000	0.001
280	50.26	50.33	0.07	18.30	1.15	750.10	0.72	0.001	0.000	0.001
281	50.33	50.39	0.07	18.36	1.14	748.24	0.72	0.001	0.000	0.001
282	50.39	50.46	0.07	18.43	1.14	751.69	0.72	0.001	0.000	0.001
283	50.46	50.52	0.07	18.49	1.14	757.83	0.72	0.001	0.000	0.001
284	50.52	50.59	0.07	18.56	1.14	764.06	0.72	0.001	0.000	0.001
285	50.59	50.66	0.07	18.62	1.14	768.53	0.72	0.001	0.000	0.001
286	50.66	50.72	0.07	18.69	1.13	770.46	0.72	0.001	0.000	0.001
287	50.72	50.79	0.07	18.75	1.13	770.30	0.72	0.001	0.000	0.001
288	50.79	50.85	0.07	18.82	1.13	769.79	0.72	0.001	0.000	0.001
289	50.85	50.92	0.07	18.89	1.13	771.82	0.71	0.001	0.000	0.001
290	50.92	50.98	0.07	18.95	1.13	780.14	0.71	0.001	0.000	0.001
291	50.98	51.05	0.07	19.02	1.12	798.49	0.71	0.001	0.000	0.001
292	51.05	51.12	0.07	19.08	1.12	829.57	0.71	0.001	0.000	0.001
293	51.12	51.18	0.07	19.15	1.12	874.10	0.71	0.001	0.000	0.001
294	51.18	51.25	0.07	19.21	1.12	930.29	0.71	0.001	0.000	0.001
295	51.25	51.31	0.07	19.28	1.12	1025.74	0.71	0.001	0.000	0.001
296	51.31	51.38	0.07	19.35	1.11	1036.98	0.71	0.001	0.000	0.001
297	51.38	51.44	0.07	19.41	1.11	1049.18	0.70	0.001	0.000	0.001
298	51.44	51.51	0.07	19.48	1.11	1059.87	0.70	0.001	0.000	0.001
299	51.51	51.57	0.07	19.54	1.11	1070.83	0.70	0.001	0.000	0.001
300	51.57	51.64	0.07	19.61	1.11	1080.07	0.70	0.001	0.000	0.001
301	51.64	51.71	0.07	19.67	1.11	1089.66	0.70	0.001	0.000	0.001
302	51.71	51.77	0.07	19.74	1.10	1095.71	0.70	0.001	0.000	0.001
303	51.77	51.84	0.07	19.80	1.10	1100.07	0.70	0.001	0.000	0.001
304	51.84	51.90	0.07	19.87	1.10	1102.47	0.70	0.001	0.000	0.001
305	51.90	51.97	0.07	19.94	1.10	1104.49	0.70	0.001	0.000	0.001
306	51.97	52.03	0.07	20.00	1.10	1107.64	0.69	0.001	0.000	0.001
307	52.03	52.10	0.07	20.07	1.09	1111.63	0.69	0.001	0.000	0.001
308	52.10	52.17	0.07	20.13	1.09	1068.04	0.69	0.001	0.000	0.001
309	52.17	52.23	0.07	20.20	1.09	984.56	0.69	0.001	0.000	0.001
310	52.23	52.30	0.07	20.26	1.09	900.35	0.69	0.001	0.000	0.001
311	52.30	52.36	0.07	20.33	1.09	822.18	0.69	0.001	0.000	0.001
312	52.36	52.43	0.07	20.40	1.09	755.42	0.69	0.001	0.000	0.001
313	52.43	52.49	0.07	20.46	1.08	703.08	0.69	0.001	0.000	0.001
314	52.49	52.56	0.07	20.53	1.08	665.51	0.68	0.001	0.000	0.001
315	52.56	52.62	0.07	20.59	1.08	640.57	0.68	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
316	52.62	52.69	0.07	20.66	1.08	624.40	0.68	0.001	0.000	0.001
317	52.69	52.76	0.07	20.72	1.08	612.66	0.68	0.001	0.000	0.001
318	52.76	52.82	0.07	20.79	1.08	601.70	0.68	0.001	0.000	0.001
319	52.82	52.89	0.07	20.85	1.07	589.62	0.68	0.001	0.000	0.002
320	52.89	52.95	0.07	20.92	1.07	576.81	0.68	0.001	0.000	0.002
321	52.95	53.02	0.07	20.99	1.07	565.80	0.68	0.001	0.000	0.002
322	53.02	53.08	0.07	21.05	1.07	560.59	0.68	0.002	0.000	0.002
323	53.08	53.15	0.07	21.12	1.07	565.23	0.68	0.001	0.000	0.002
324	53.15	53.22	0.07	21.18	1.06	582.24	0.67	0.001	0.000	0.002
325	53.22	53.28	0.07	21.25	1.06	611.39	0.67	0.001	0.000	0.001
326	53.28	53.35	0.07	21.31	1.06	649.40	0.67	0.001	0.000	0.001
327	53.35	53.41	0.07	21.38	1.06	690.39	0.67	0.001	0.000	0.001
328	53.41	53.48	0.07	21.44	1.06	727.32	0.67	0.001	0.000	0.001
329	53.48	53.54	0.07	21.51	1.06	753.49	0.67	0.001	0.000	0.001
330	53.54	53.61	0.07	21.58	1.05	764.20	0.67	0.001	0.000	0.001
331	53.61	53.67	0.07	21.64	1.05	757.51	0.67	0.001	0.000	0.001
332	53.67	53.74	0.07	21.71	1.05	734.54	0.67	0.001	0.000	0.001
333	53.74	53.81	0.07	21.77	1.05	698.71	0.66	0.001	0.000	0.001
334	53.81	53.87	0.07	21.84	1.05	654.80	0.66	0.001	0.000	0.001
335	53.87	53.94	0.07	21.90	1.05	607.76	0.66	0.001	0.000	0.001
336	53.94	54.00	0.07	21.97	1.04	562.15	0.66	0.001	0.000	0.002
337	54.00	54.07	0.07	22.04	1.04	521.94	0.66	0.002	0.000	0.002
338	54.07	54.13	0.07	22.10	1.04	490.75	0.66	0.002	0.000	0.002
339	54.13	54.20	0.07	22.17	1.04	472.29	0.66	0.002	0.000	0.002
340	54.20	54.27	0.07	22.23	1.04	470.29	0.66	0.002	0.000	0.002
341	54.27	54.33	0.07	22.30	1.04	488.24	0.66	0.002	0.000	0.002
342	54.33	54.40	0.07	22.36	1.04	527.86	0.66	0.002	0.000	0.002
343	54.40	54.46	0.07	22.43	1.03	588.06	0.65	0.001	0.000	0.001
344	54.46	54.53	0.07	22.49	1.03	663.40	0.65	0.001	0.000	0.001
345	54.53	54.59	0.07	22.56	1.03	744.63	0.65	0.001	0.000	0.001
346	54.59	54.66	0.07	22.63	1.03	819.61	0.65	0.001	0.000	0.001
347	54.66	54.72	0.07	22.69	1.03	876.12	0.65	0.001	0.000	0.001
348	54.72	54.79	0.07	22.76	1.03	904.50	0.65	0.001	0.000	0.001
349	54.79	54.86	0.07	22.82	1.02	900.13	0.65	0.001	0.000	0.001
350	54.86	54.92	0.07	22.89	1.02	864.38	0.65	0.001	0.000	0.001
351	54.92	54.99	0.07	22.95	1.02	803.87	0.65	0.001	0.000	0.001
352	54.99	55.05	0.07	23.02	1.02	728.27	0.65	0.001	0.000	0.001
353	55.05	55.12	0.07	23.09	1.02	647.69	0.64	0.001	0.000	0.001
354	55.12	55.18	0.07	23.15	1.02	570.05	0.64	0.001	0.000	0.001
355	55.18	55.25	0.07	23.22	1.01	500.07	0.64	0.002	0.000	0.002
356	55.25	55.31	0.07	23.28	1.01	439.10	0.64	0.002	0.000	0.002
357	55.31	55.38	0.07	23.35	1.01	342.53	0.64	0.002	0.000	0.002
358	55.38	55.45	0.07	23.41	1.01	269.85	0.64	0.003	0.000	0.003
359	55.45	55.51	0.07	23.48	1.01	220.63	0.64	0.004	0.000	0.004
360	55.51	55.58	0.07	23.54	1.01	195.44	0.64	0.004	0.000	0.004

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
361	55.58	55.64	0.07	23.61	1.01	197.99	0.64	0.004	0.000	0.004
362	55.64	55.71	0.07	23.68	1.00	236.64	0.64	0.003	0.000	0.004
363	55.71	55.77	0.07	23.74	1.00	326.55	0.63	0.002	0.000	0.003
364	55.77	55.84	0.07	23.81	1.00	463.50	0.63	0.002	0.000	0.002
365	55.84	55.91	0.07	23.87	1.00	571.47	0.63	0.001	0.000	0.001
366	55.91	55.97	0.07	23.94	1.00	693.81	0.63	0.001	0.000	0.001
367	55.97	56.04	0.07	24.00	1.00	819.40	0.63	0.001	0.000	0.001
368	56.04	56.10	0.07	24.07	1.00	921.56	0.63	0.001	0.000	0.001
369	56.10	56.17	0.07	24.14	0.99	926.00	0.63	0.001	0.000	0.001
370	56.17	56.23	0.07	24.20	0.99	940.50	0.63	0.001	0.000	0.001
371	56.23	56.30	0.07	24.27	0.99	958.22	0.63	0.001	0.000	0.001
372	56.30	56.36	0.07	24.33	0.99	981.89	0.63	0.001	0.000	0.001
373	56.36	56.43	0.07	24.40	0.99	1004.83	0.63	0.001	0.000	0.001
374	56.43	56.50	0.07	24.46	0.99	1025.50	0.62	0.001	0.000	0.001
375	56.50	56.56	0.07	24.53	0.98	1040.32	0.62	0.001	0.000	0.001
376	56.56	56.63	0.07	24.59	0.98	1050.10	0.62	0.001	0.000	0.001
377	56.63	56.69	0.07	24.66	0.98	1057.44	0.62	0.001	0.000	0.001
378	56.69	56.76	0.07	24.73	0.98	1060.32	0.62	0.001	0.000	0.001
379	56.76	56.82	0.07	24.79	0.98	1060.68	0.62	0.001	0.000	0.001
380	56.82	56.89	0.07	24.86	0.98	1056.03	0.62	0.001	0.000	0.001
381	56.89	56.96	0.07	24.92	0.98	1050.07	0.62	0.001	0.000	0.001
382	56.96	57.02	0.07	24.99	0.97	1040.12	0.62	0.001	0.000	0.001
383	57.02	57.09	0.07	25.05	0.97	1029.91	0.62	0.001	0.000	0.001
384	57.09	57.15	0.07	25.12	0.97	951.99	0.62	0.001	0.000	0.001
385	57.15	57.22	0.07	25.19	0.97	869.87	0.61	0.001	0.000	0.001
386	57.22	57.28	0.07	25.25	0.97	777.76	0.61	0.001	0.000	0.001
387	57.28	57.35	0.07	25.32	0.97	680.69	0.61	0.001	0.000	0.001
388	57.35	57.41	0.07	25.38	0.97	584.73	0.61	0.001	0.000	0.001
389	57.41	57.48	0.07	25.45	0.97	496.00	0.61	0.002	0.000	0.002
390	57.48	57.55	0.07	25.51	0.96	392.68	0.61	0.002	0.000	0.002
391	57.55	57.61	0.07	25.58	0.96	287.38	0.61	0.003	0.000	0.003
392	57.61	57.68	0.07	25.64	0.96	222.44	0.61	0.003	0.000	0.004
393	57.68	57.74	0.07	25.71	0.96	187.99	0.61	0.004	0.000	0.004
394	57.74	57.81	0.07	25.78	0.96	177.29	0.61	0.004	0.000	0.005
395	57.81	57.87	0.07	25.84	0.96	187.52	0.61	0.004	0.000	0.004
396	57.87	57.94	0.07	25.91	0.96	219.33	0.60	0.003	0.000	0.004
397	57.94	58.01	0.07	25.97	0.95	275.70	0.60	0.003	0.000	0.003
398	58.01	58.07	0.07	26.04	0.95	359.63	0.60	0.002	0.000	0.002
399	58.07	58.14	0.07	26.10	0.95	460.73	0.60	0.002	0.000	0.002
400	58.14	58.20	0.07	26.17	0.95	520.08	0.60	0.001	0.000	0.002
401	58.20	58.27	0.07	26.23	0.95	572.98	0.60	0.001	0.000	0.001
402	58.27	58.33	0.07	26.30	0.95	611.64	0.60	0.001	0.000	0.001
403	58.33	58.40	0.07	26.37	0.95	629.72	0.60	0.001	0.000	0.001
404	58.40	58.46	0.07	26.43	0.95	624.02	0.60	0.001	0.000	0.001
405	58.46	58.53	0.07	26.50	0.94	595.12	0.60	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
406	58.53	58.60	0.07	26.56	0.94	547.12	0.60	0.001	0.000	0.001
407	58.60	58.66	0.07	26.63	0.94	486.56	0.60	0.002	0.000	0.002
408	58.66	58.73	0.07	26.69	0.94	389.82	0.59	0.002	0.000	0.002
409	58.73	58.79	0.07	26.76	0.94	280.90	0.59	0.003	0.000	0.003
410	58.79	58.86	0.07	26.83	0.94	200.91	0.59	0.004	0.000	0.004
411	58.86	58.92	0.07	26.89	0.94	149.74	0.59	0.005	0.000	0.005
412	58.92	58.99	0.07	26.96	0.93	125.25	0.59	0.006	0.000	0.006
413	58.99	59.06	0.07	27.02	0.93	127.99	0.59	0.006	0.000	0.006
414	59.06	59.12	0.07	27.09	0.93	167.04	0.59	0.004	0.000	0.005
415	59.12	59.19	0.07	27.15	0.93	267.17	0.59	0.003	0.000	0.003
416	59.19	59.25	0.07	27.22	0.93	466.31	0.59	0.002	0.000	0.002
417	59.25	59.32	0.07	27.28	0.93	627.57	0.59	0.001	0.000	0.001
418	59.32	59.38	0.07	27.35	0.93	827.57	0.59	0.001	0.000	0.001
419	59.38	59.45	0.07	27.42	0.93	1046.19	0.59	0.001	0.000	0.001
420	59.45	59.51	0.07	27.48	0.92	1094.96	0.59	0.001	0.000	0.001
421	59.51	59.58	0.07	27.55	0.92	1150.45	0.58	0.001	0.000	0.001
422	59.58	59.65	0.07	27.61	0.92	1207.21	0.58	0.001	0.000	0.001
423	59.65	59.71	0.07	27.68	0.92	1258.60	0.58	0.001	0.000	0.001
424	59.71	59.78	0.07	27.74	0.92	1299.02	0.58	0.001	0.000	0.001
425	59.78	59.84	0.07	27.81	0.92	1323.72	0.58	0.001	0.000	0.001
426	59.84	59.91	0.07	27.88	0.92	1335.77	0.58	0.001	0.000	0.001
427	59.91	59.97	0.07	27.94	0.92	1332.58	0.58	0.001	0.000	0.001
428	59.97	60.04	0.07	28.01	0.91	1317.05	0.58	0.001	0.000	0.001
429	60.04	60.10	0.07	28.07	0.91	1291.84	0.58	0.001	0.000	0.001
430	60.10	60.17	0.07	28.14	0.91	1261.37	0.58	0.001	0.000	0.001
431	60.17	60.24	0.07	28.20	0.91	1228.12	0.58	0.001	0.000	0.001
432	60.24	60.30	0.07	28.27	0.91	1192.55	0.58	0.001	0.000	0.001
433	60.30	60.37	0.07	28.33	0.91	1158.95	0.58	0.001	0.000	0.001
434	60.37	60.43	0.07	28.40	0.91	1129.77	0.57	0.001	0.000	0.001
435	60.43	60.50	0.07	28.47	0.91	1105.37	0.57	0.001	0.000	0.001
436	60.50	60.56	0.07	28.53	0.91	1086.00	0.57	0.001	0.000	0.001
437	60.56	60.63	0.07	28.60	0.90	1067.58	0.57	0.001	0.000	0.001
438	60.63	60.70	0.07	28.66	0.90	990.11	0.57	0.001	0.000	0.001
439	60.70	60.76	0.07	28.73	0.90	952.19	0.57	0.001	0.000	0.001
440	60.76	60.83	0.07	28.79	0.90	920.75	0.57	0.001	0.000	0.001
441	60.83	60.89	0.07	28.86	0.90	894.73	0.57	0.001	0.000	0.001
442	60.89	60.96	0.07	28.93	0.90	873.33	0.57	0.001	0.000	0.001
443	60.96	61.02	0.07	28.99	0.90	856.08	0.57	0.001	0.000	0.001
444	61.02	61.09	0.07	29.06	0.90	842.83	0.57	0.001	0.000	0.001
445	61.09	61.15	0.07	29.12	0.89	833.76	0.57	0.001	0.000	0.001
446	61.15	61.22	0.07	29.19	0.89	829.03	0.57	0.001	0.000	0.001
447	61.22	61.29	0.07	29.25	0.89	828.45	0.56	0.001	0.000	0.001
448	61.29	61.35	0.07	29.32	0.89	830.98	0.56	0.001	0.000	0.001
449	61.35	61.42	0.07	29.38	0.89	834.34	0.56	0.001	0.000	0.001
450	61.42	61.48	0.07	29.45	0.89	835.21	0.56	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
451	61.48	61.55	0.07	29.52	0.89	829.46	0.56	0.001	0.000	0.001
452	61.55	61.61	0.07	29.58	0.89	813.08	0.56	0.001	0.000	0.001
453	61.61	61.68	0.07	29.65	0.89	783.06	0.56	0.001	0.000	0.001
454	61.68	61.75	0.07	29.71	0.88	738.41	0.56	0.001	0.000	0.001
455	61.75	61.81	0.07	29.78	0.88	680.61	0.56	0.001	0.000	0.001
456	61.81	61.88	0.07	29.84	0.88	613.59	0.56	0.001	0.000	0.001
457	61.88	61.94	0.07	29.91	0.88	542.63	0.56	0.001	0.000	0.001
458	61.94	62.01	0.07	29.98	0.88	473.28	0.56	0.001	0.000	0.002
459	62.01	62.07	0.07	30.04	0.88	355.55	0.56	0.002	0.000	0.002
460	62.07	62.14	0.07	30.11	0.88	266.00	0.56	0.003	0.000	0.003
461	62.14	62.20	0.07	30.17	0.88	200.17	0.55	0.003	0.000	0.004
462	62.20	62.27	0.07	30.24	0.88	151.39	0.55	0.005	0.000	0.005
463	62.27	62.34	0.07	30.30	0.87	114.13	0.55	0.006	0.001	0.007
464	62.34	62.40	0.07	30.37	0.87	84.81	0.55	0.008	0.001	0.009
465	62.40	62.47	0.07	30.43	0.87	61.77	0.55	0.011	0.001	0.012
466	62.47	62.53	0.07	30.50	0.87	44.42	0.55	0.015	0.001	0.017
467	62.53	62.60	0.07	30.57	0.87	32.51	0.55	0.021	0.002	0.023
468	62.60	62.66	0.07	30.63	0.87	25.41	0.55	0.027	0.002	0.029
469	62.66	62.73	0.07	30.70	0.87	22.39	0.55	0.031	0.003	0.033
470	62.73	62.80	0.07	30.76	0.87	22.70	0.55	0.030	0.003	0.033
471	62.80	62.86	0.07	30.83	0.87	25.79	0.55	0.026	0.002	0.029
472	62.86	62.93	0.07	30.89	0.86	31.09	0.55	0.022	0.002	0.024
473	62.93	62.99	0.07	30.96	0.86	37.80	0.55	0.018	0.002	0.020
474	62.99	63.06	0.07	31.02	0.86	45.26	0.55	0.015	0.001	0.016
475	63.06	63.12	0.07	31.09	0.86	53.29	0.55	0.013	0.001	0.014
476	63.12	63.19	0.07	31.16	0.86	62.85	0.54	0.011	0.001	0.012
477	63.19	63.25	0.07	31.22	0.86	76.13	0.54	0.009	0.001	0.010
478	63.25	63.32	0.07	31.29	0.86	96.75	0.54	0.007	0.001	0.008
479	63.32	63.39	0.07	31.35	0.86	129.54	0.54	0.005	0.000	0.006
480	63.39	63.45	0.07	31.42	0.86	179.93	0.54	0.004	0.000	0.004
481	63.45	63.52	0.07	31.48	0.86	252.28	0.54	0.003	0.000	0.003
482	63.52	63.58	0.07	31.55	0.85	358.36	0.54	0.002	0.000	0.002
483	63.58	63.65	0.07	31.62	0.85	470.23	0.54	0.001	0.000	0.001
484	63.65	63.71	0.07	31.68	0.85	528.44	0.54	0.001	0.000	0.001
485	63.71	63.78	0.07	31.75	0.85	578.11	0.54	0.001	0.000	0.001
486	63.78	63.85	0.07	31.81	0.85	616.36	0.54	0.001	0.000	0.001
487	63.85	63.91	0.07	31.88	0.85	642.51	0.54	0.001	0.000	0.001
488	63.91	63.98	0.07	31.94	0.85	658.03	0.54	0.001	0.000	0.001
489	63.98	64.04	0.07	32.01	0.85	665.65	0.54	0.001	0.000	0.001
490	64.04	64.11	0.07	32.07	0.85	668.55	0.54	0.001	0.000	0.001
491	64.11	64.17	0.07	32.14	0.85	669.40	0.53	0.001	0.000	0.001
492	64.17	64.24	0.07	32.21	0.84	669.87	0.53	0.001	0.000	0.001
493	64.24	64.30	0.07	32.27	0.84	670.88	0.53	0.001	0.000	0.001
494	64.30	64.37	0.07	32.34	0.84	672.77	0.53	0.001	0.000	0.001
495	64.37	64.44	0.07	32.40	0.84	676.28	0.53	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
496	64.44	64.50	0.07	32.47	0.84	682.56	0.53	0.001	0.000	0.001
497	64.50	64.57	0.07	32.53	0.84	693.57	0.53	0.001	0.000	0.001
498	64.57	64.63	0.07	32.60	0.84	711.60	0.53	0.001	0.000	0.001
499	64.63	64.70	0.07	32.67	0.84	738.74	0.53	0.001	0.000	0.001
500	64.70	64.76	0.07	32.73	0.84	776.45	0.53	0.001	0.000	0.001
501	64.76	64.83	0.07	32.80	0.84	825.22	0.53	0.001	0.000	0.001
502	64.83	64.90	0.07	32.86	0.83	921.71	0.53	0.001	0.000	0.001
503	64.90	64.96	0.07	32.93	0.83	938.61	0.53	0.001	0.000	0.001
504	64.96	65.03	0.07	32.99	0.83	961.28	0.53	0.001	0.000	0.001
505	65.03	65.09	0.07	33.06	0.83	989.09	0.53	0.001	0.000	0.001
506	65.09	65.16	0.07	33.12	0.83	1023.88	0.53	0.001	0.000	0.001
507	65.16	65.22	0.07	33.19	0.83	1064.82	0.52	0.001	0.000	0.001
508	65.22	65.29	0.07	33.26	0.83	1108.81	0.52	0.001	0.000	0.001
509	65.29	65.35	0.07	33.32	0.83	1150.93	0.52	0.001	0.000	0.001
510	65.35	65.42	0.07	33.39	0.83	1189.02	0.52	0.001	0.000	0.001
511	65.42	65.49	0.07	33.45	0.83	1221.08	0.52	0.001	0.000	0.001
512	65.49	65.55	0.07	33.52	0.82	1247.25	0.52	0.001	0.000	0.001
513	65.55	65.62	0.07	33.58	0.82	1265.52	0.52	0.001	0.000	0.001
514	65.62	65.68	0.07	33.65	0.82	1273.85	0.52	0.001	0.000	0.001
515	65.68	65.75	0.07	33.72	0.82	1274.23	0.52	0.001	0.000	0.001
516	65.75	65.81	0.07	33.78	0.82	1268.60	0.52	0.001	0.000	0.001
517	65.81	65.88	0.07	33.85	0.82	1259.05	0.52	0.001	0.000	0.001
518	65.88	65.94	0.07	33.91	0.82	1245.75	0.52	0.001	0.000	0.001
519	65.94	66.01	0.07	33.98	0.82	1228.97	0.52	0.001	0.000	0.001
520	66.01	66.08	0.07	34.04	0.82	1211.18	0.52	0.001	0.000	0.001
521	66.08	66.14	0.07	34.11	0.82	1190.58	0.52	0.001	0.000	0.001
522	66.14	66.21	0.07	34.17	0.82	1169.56	0.52	0.001	0.000	0.001
523	66.21	66.27	0.07	34.24	0.81	1145.99	0.52	0.001	0.000	0.001
524	66.27	66.34	0.07	34.31	0.81	1124.28	0.51	0.001	0.000	0.001
525	66.34	66.40	0.07	34.37	0.81	1102.04	0.51	0.001	0.000	0.001
526	66.40	66.47	0.07	34.44	0.81	1083.76	0.51	0.001	0.000	0.001
527	66.47	66.54	0.07	34.50	0.81	1066.98	0.51	0.001	0.000	0.001
528	66.54	66.60	0.07	34.57	0.81	1054.03	0.51	0.001	0.000	0.001
529	66.60	66.67	0.07	34.63	0.81	1040.13	0.51	0.001	0.000	0.001
530	66.67	66.73	0.07	34.70	0.81	1025.43	0.51	0.001	0.000	0.001
531	66.73	66.80	0.07	34.77	0.81	1007.81	0.51	0.001	0.000	0.001
532	66.80	66.86	0.07	34.83	0.81	927.72	0.51	0.001	0.000	0.001
533	66.86	66.93	0.07	34.90	0.81	868.36	0.51	0.001	0.000	0.001
534	66.93	66.99	0.07	34.96	0.80	819.68	0.51	0.001	0.000	0.001
535	66.99	67.06	0.07	35.03	0.80	783.92	0.51	0.001	0.000	0.001
536	67.06	67.13	0.07	35.09	0.80	762.04	0.51	0.001	0.000	0.001
537	67.13	67.19	0.07	35.16	0.80	753.96	0.51	0.001	0.000	0.001
538	67.19	67.26	0.07	35.22	0.80	758.60	0.51	0.001	0.000	0.001
539	67.26	67.32	0.07	35.29	0.80	774.79	0.51	0.001	0.000	0.001
540	67.32	67.39	0.07	35.36	0.80	801.61	0.51	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
541	67.39	67.45	0.07	35.42	0.80	839.39	0.51	0.001	0.000	0.001
542	67.45	67.52	0.07	35.49	0.80	889.08	0.50	0.001	0.000	0.001
543	67.52	67.59	0.07	35.55	0.80	914.25	0.50	0.001	0.000	0.001
544	67.59	67.65	0.07	35.62	0.80	952.13	0.50	0.001	0.000	0.001
545	67.65	67.72	0.07	35.68	0.79	1001.81	0.50	0.001	0.000	0.001
546	67.72	67.78	0.07	35.75	0.79	1061.10	0.50	0.001	0.000	0.001
547	67.78	67.85	0.07	35.81	0.79	1103.70	0.50	0.001	0.000	0.001

Total primary settlement: 5.19
Total secondary settlement: 0.19

Total calculated settlement: 5.38

Abbreviations

Start depth:	Start depth of soil layer (penetration depth measured from ground free surface)
End depth:	End depth of soil layer (penetration depth measured from ground free surface)
Thickness:	Thickness of soil layer
Relative depth:	Depth of calculation relative to footing
Iz:	Stress influence factor
Delta P:	Footing impossed stress:
Eff. stress:	Effective stress
$M_{(CPT)}$:	Constrained modulus from CPT
Settlement:	Primary settlement
Second. settlement:	Secondary settlemends due to creep

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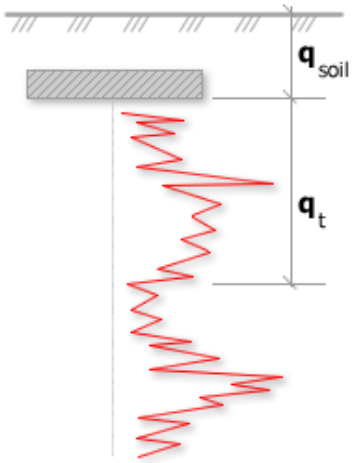
CPT: CPT-1 Near B-6
Total depth: 67.85 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

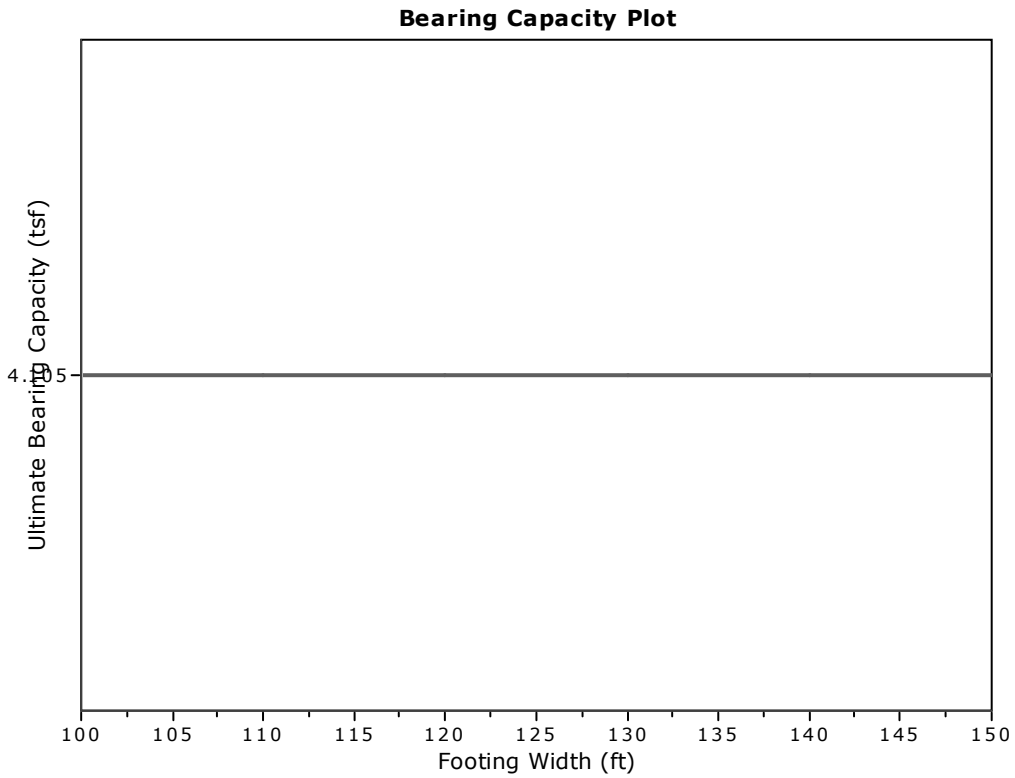
Project: 900 H Street NE
Location: Washington, DC



Bearing Capacity calculation is perfromed 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	100.00	32.00	182.00	20.52	0.20	0.00	4.10
2	110.00	32.00	197.00	20.52	0.20	0.00	4.10
3	120.00	32.00	212.00	20.52	0.20	0.00	4.10
4	130.00	32.00	227.00	20.52	0.20	0.00	4.10
5	140.00	32.00	242.00	20.52	0.20	0.00	4.10
6	150.00	32.00	257.00	20.52	0.20	0.00	4.10

HILLIS CARNES ENGINEERING ASSOCIATES, INC.
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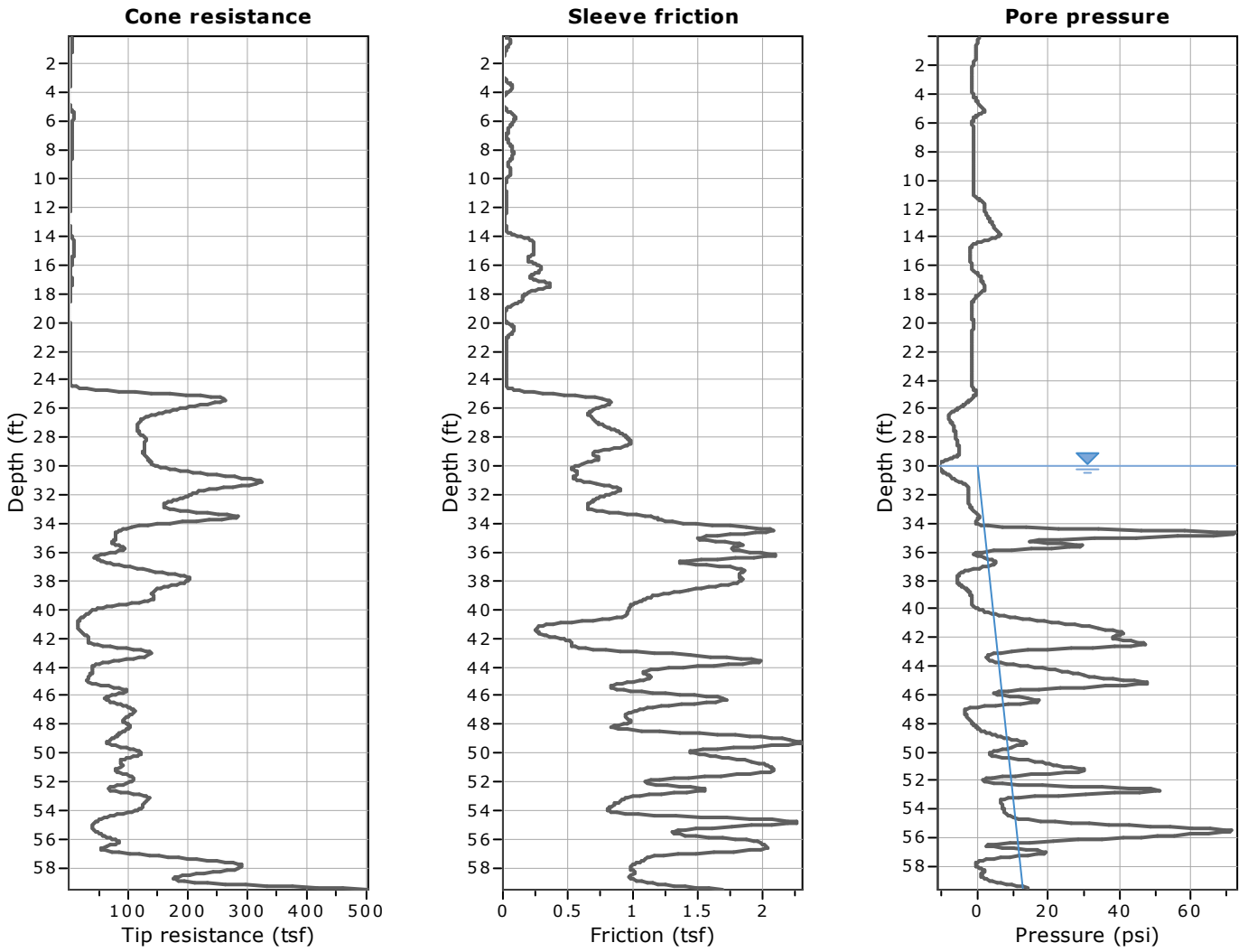
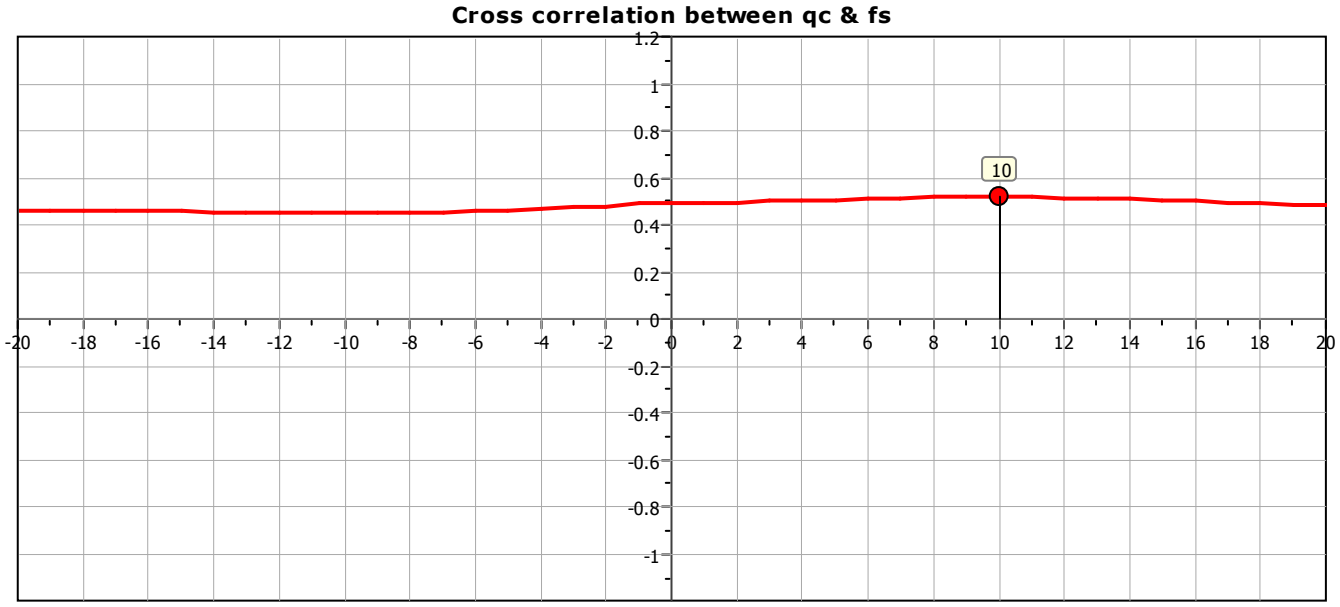
CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

Project: 900 H Street NE
Location: Washington, DC



The plot below presents the cross correlation coeficient 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 sucessive CPT measurements).



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CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

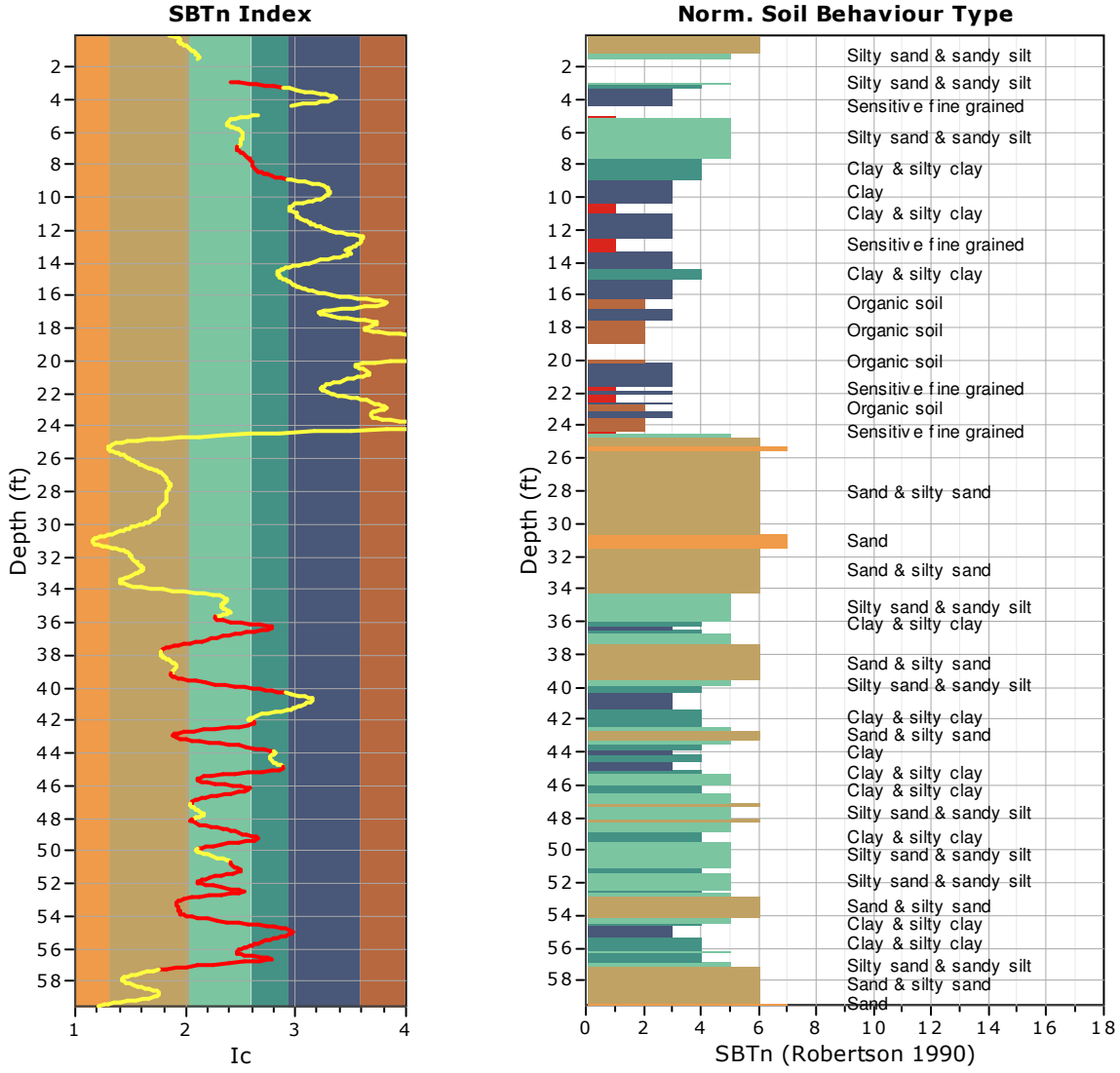
Project: **900 H Street NE**
Location: **Washington, DC**

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	907
I_c maximum check value:	3.00	Total points excluded:	297
I_c change ratio value:	0.0010	Exclusion percentage:	32.75%
Minimum number of points in layer:	4	Number of layers detected:	20

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 1	8	Start depth: 2.89 (ft)	5	Silty sand & sandy silt
		End depth: 3.35 (ft)	3	Clay
Transition layer 2	31	Start depth: 6.96 (ft)	5	Silty sand & sandy silt
		End depth: 8.92 (ft)	3	Clay
Transition layer 3	10	Start depth: 35.76 (ft)	5	Silty sand & sandy silt
		End depth: 36.35 (ft)	3	Clay
Transition layer 4	24	Start depth: 36.35 (ft)	3	Clay
		End depth: 37.86 (ft)	6	Sand & silty sand
Transition layer 5	20	Start depth: 39.17 (ft)	6	Sand & silty sand
		End depth: 40.42 (ft)	3	Clay
Transition layer 6	12	Start depth: 42.19 (ft)	4	Clay & silty clay
		End depth: 42.91 (ft)	6	Sand & silty sand
Transition layer 7	17	Start depth: 42.91 (ft)	6	Sand & silty sand
		End depth: 43.96 (ft)	3	Clay
Transition layer 8	12	Start depth: 44.88 (ft)	3	Clay
		End depth: 45.60 (ft)	5	Silty sand & sandy silt
Transition layer 9	10	Start depth: 45.60 (ft)	5	Silty sand & sandy silt
		End depth: 46.19 (ft)	4	Clay & silty clay
Transition layer 10	16	Start depth: 46.19 (ft)	4	Clay & silty clay
		End depth: 47.18 (ft)	6	Sand & silty sand
Transition layer 11	17	Start depth: 48.16 (ft)	6	Sand & silty sand
		End depth: 49.21 (ft)	4	Clay & silty clay
Transition layer 12	12	Start depth: 49.21 (ft)	4	Clay & silty clay
		End depth: 49.93 (ft)	5	Silty sand & sandy silt
Transition layer 13	7	Start depth: 50.79 (ft)	5	Silty sand & sandy silt
		End depth: 51.18 (ft)	4	Clay & silty clay
Transition layer 14	12	Start depth: 51.18 (ft)	4	Clay & silty clay
		End depth: 51.90 (ft)	5	Silty sand & sandy silt
Transition layer 15	10	Start depth: 51.90 (ft)	5	Silty sand & sandy silt
		End depth: 52.49 (ft)	4	Clay & silty clay
Transition layer 16	12	Start depth: 52.49 (ft)	4	Clay & silty clay
		End depth: 53.22 (ft)	6	Sand & silty sand
Transition layer 17	28	Start depth: 53.22 (ft)	6	Sand & silty sand
		End depth: 54.99 (ft)	3	Clay
Transition layer 18	19	Start depth: 54.99 (ft)	3	Clay
		End depth: 56.17 (ft)	5	Silty sand & sandy silt
Transition layer 19	8	Start depth: 56.17 (ft)	5	Silty sand & sandy silt
		End depth: 56.63 (ft)	4	Clay & silty clay
Transition layer 20	12	Start depth: 56.63 (ft)	4	Clay & silty clay
		End depth: 57.35 (ft)	6	Sand & silty sand

Start depth: Depth where the transition layer begins
End depth: Depth where the transition layer ends

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503 Maryland Avenue, Unit 106
Delmar, Maryland 21865
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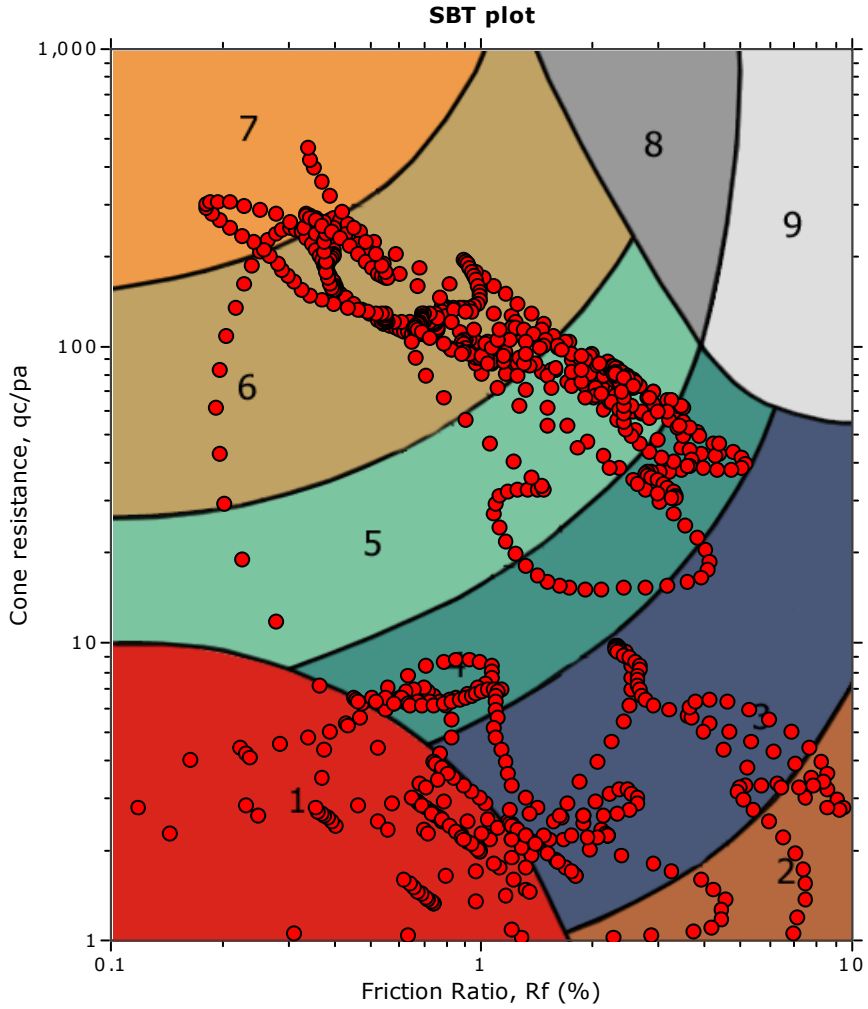
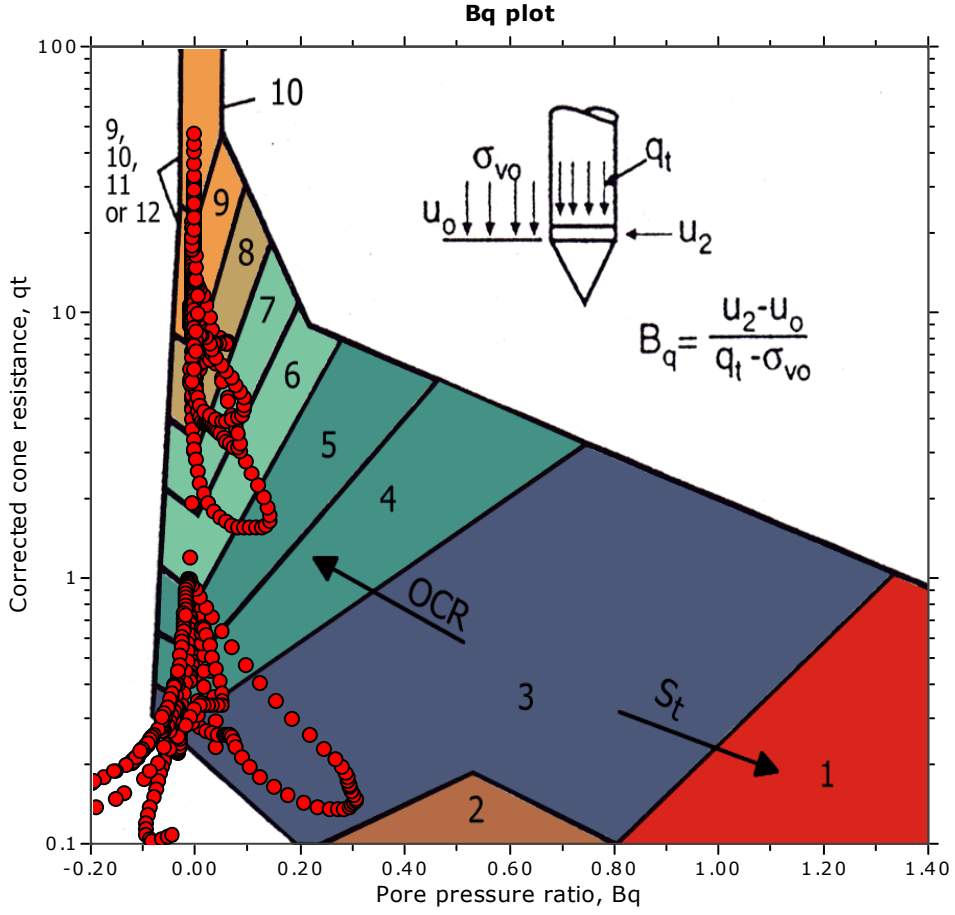
Project: **900 H Street NE**
Location: **Washington, DC**

CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

SBT - Bq plots





SBT legend

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

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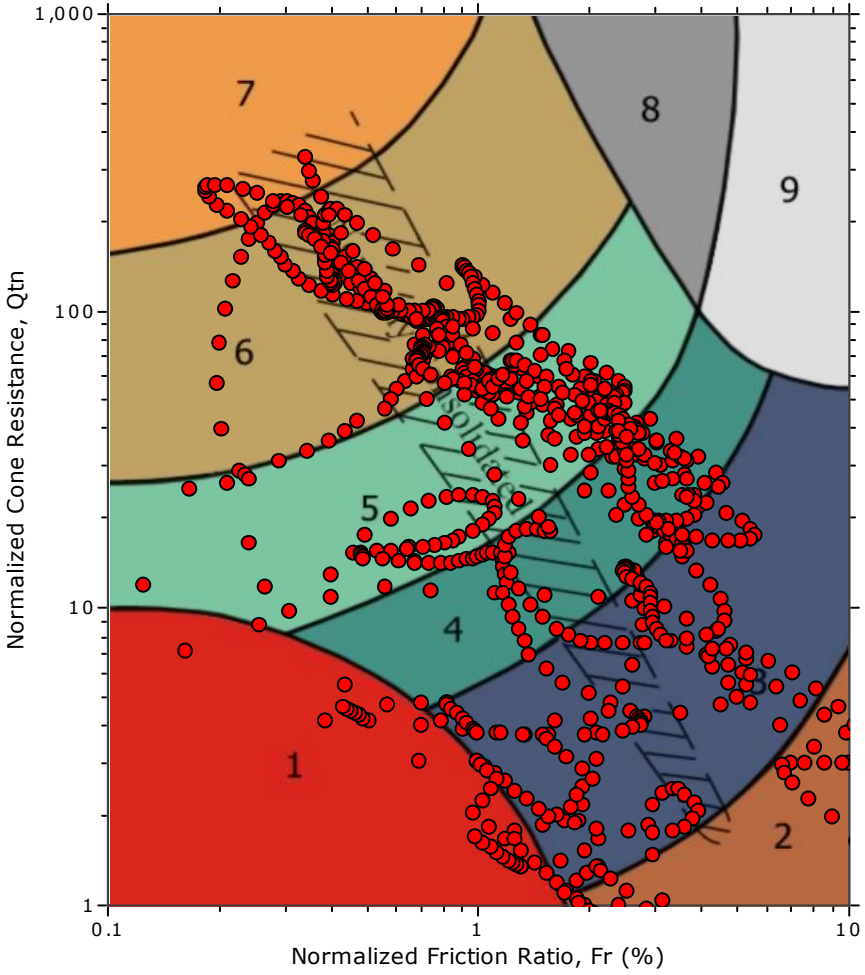
Location: **Washington, DC**

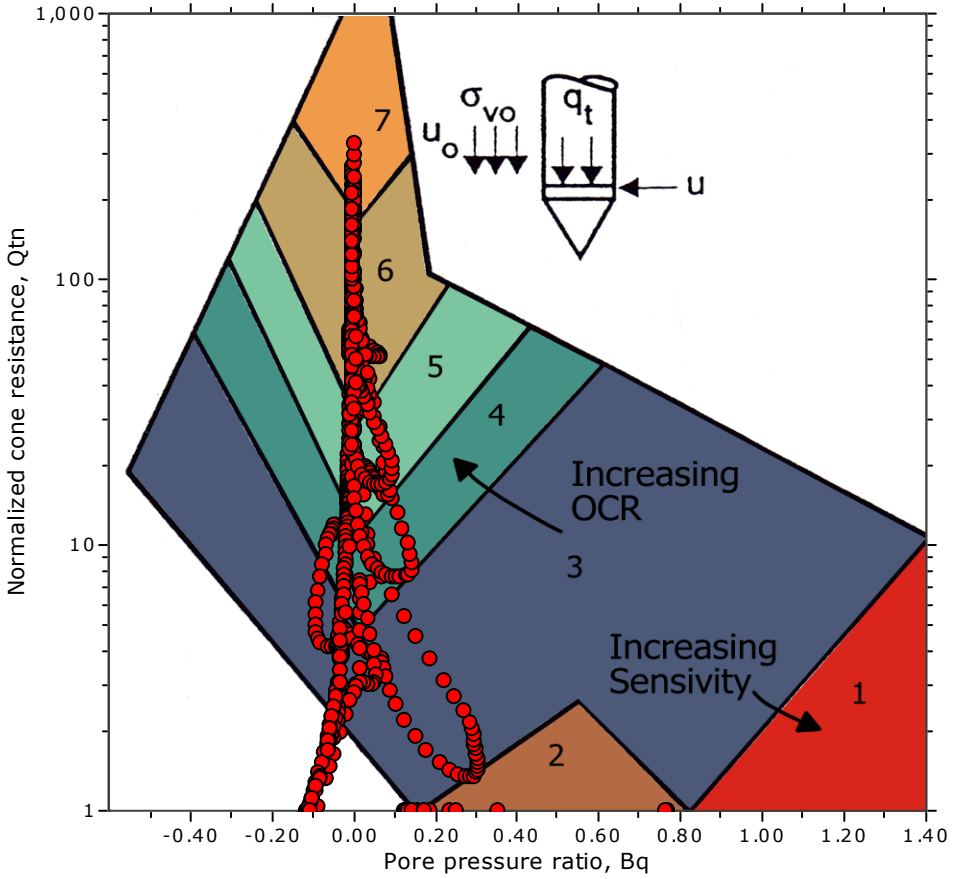
CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

SBT - Bq plots (normalized)

SBTn plot



Normalized Bq plot



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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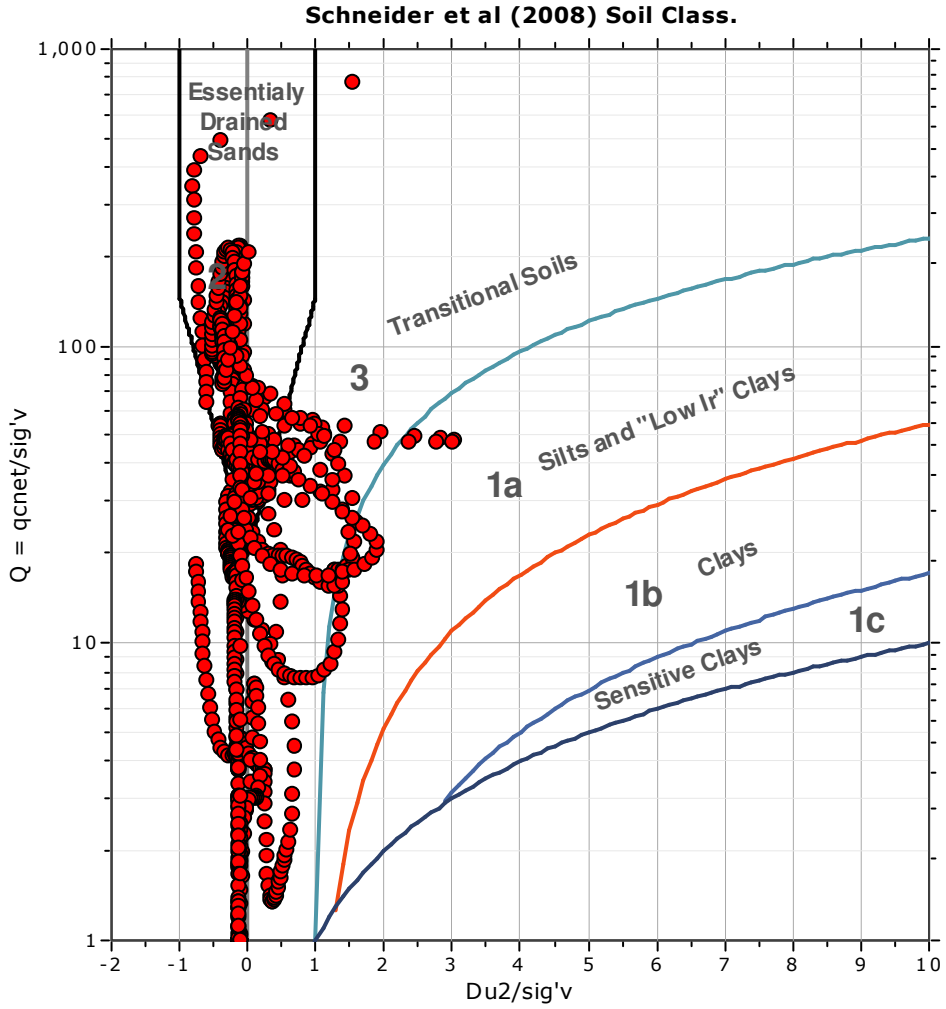
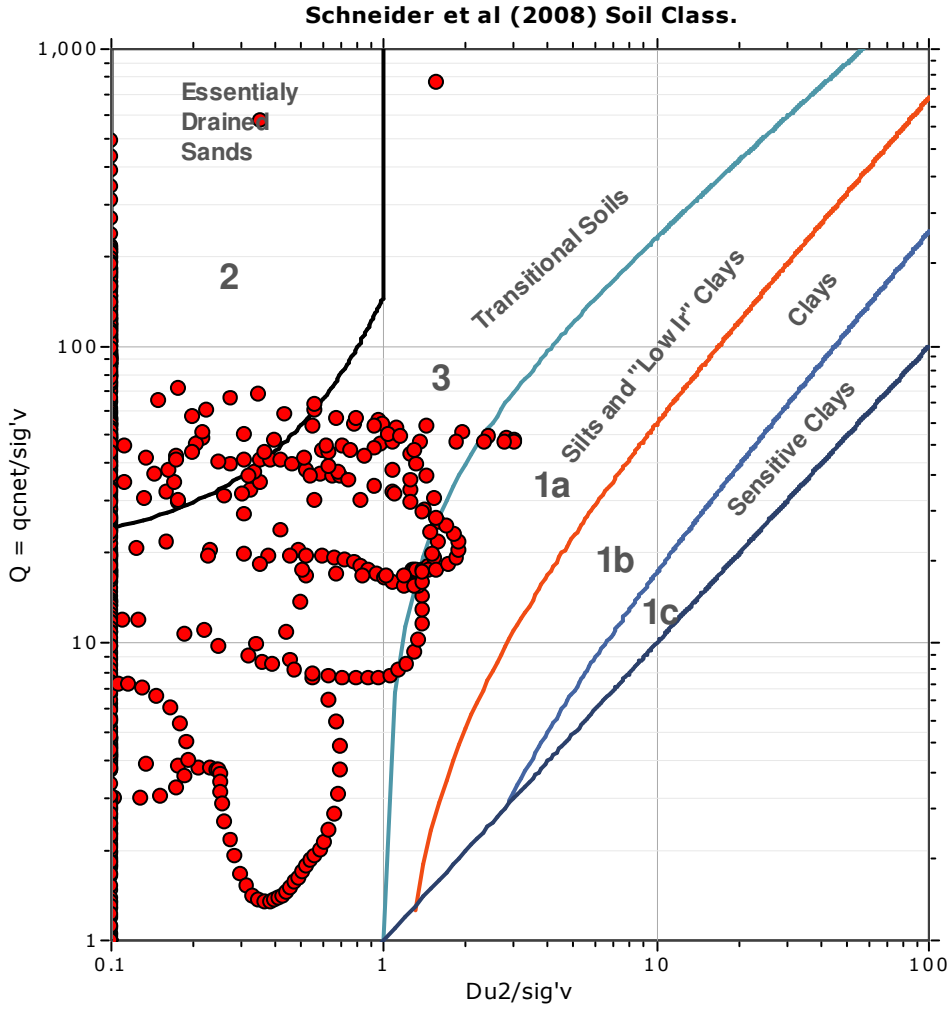
Location: **Washington, DC**

CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

Bq plots (Schneider)





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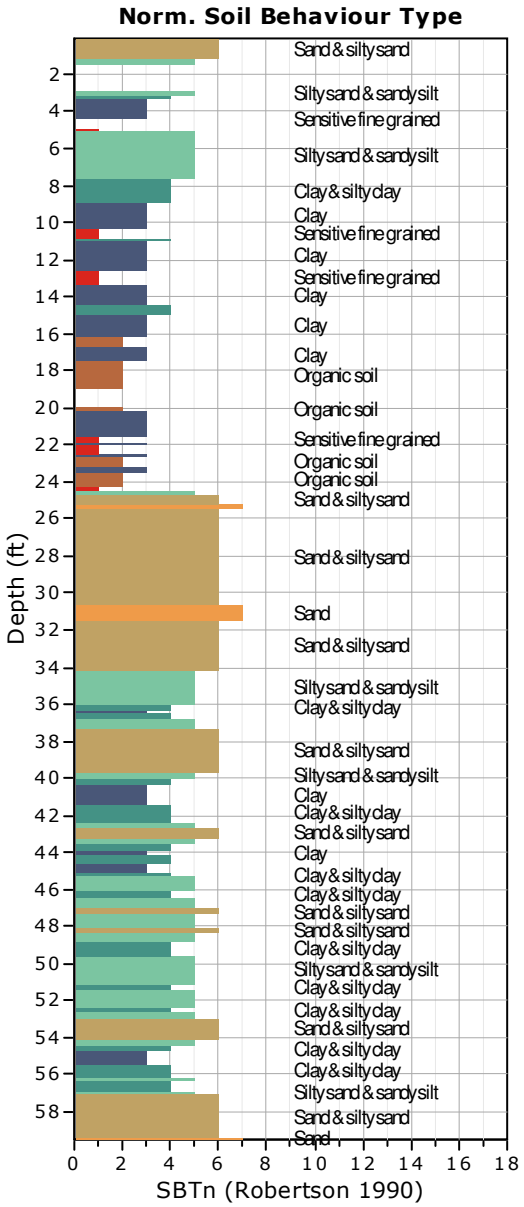
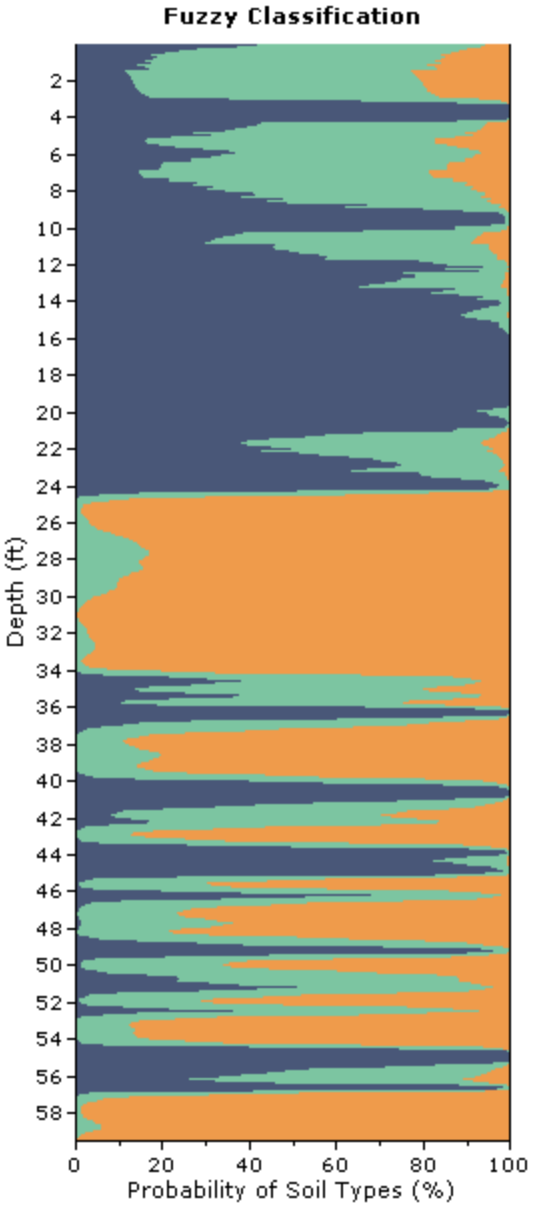
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

Project: **900 H Street NE**
Location: **Washington, DC**





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Total depth: 59.51 ft, Date: 2/5/2015
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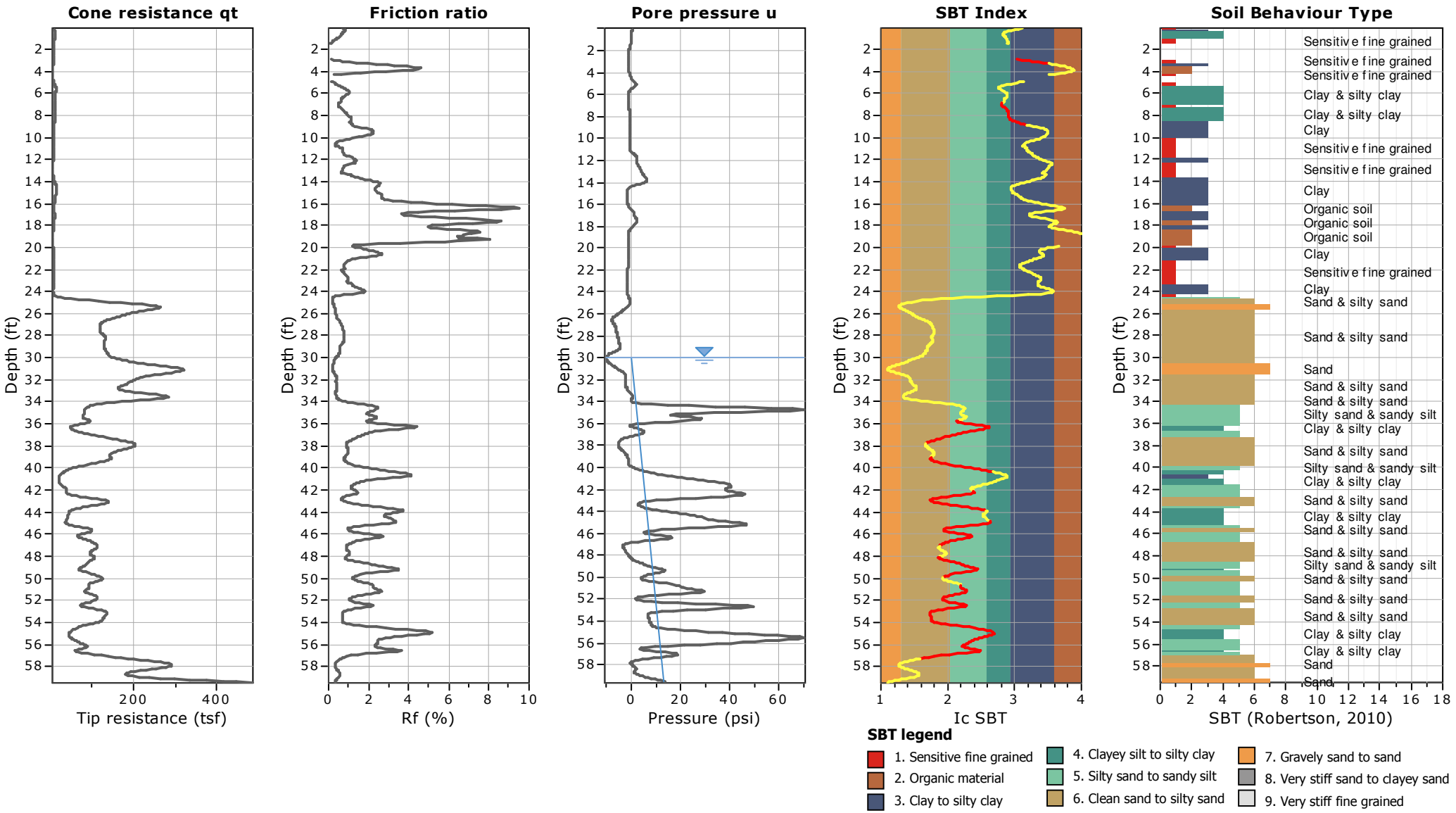
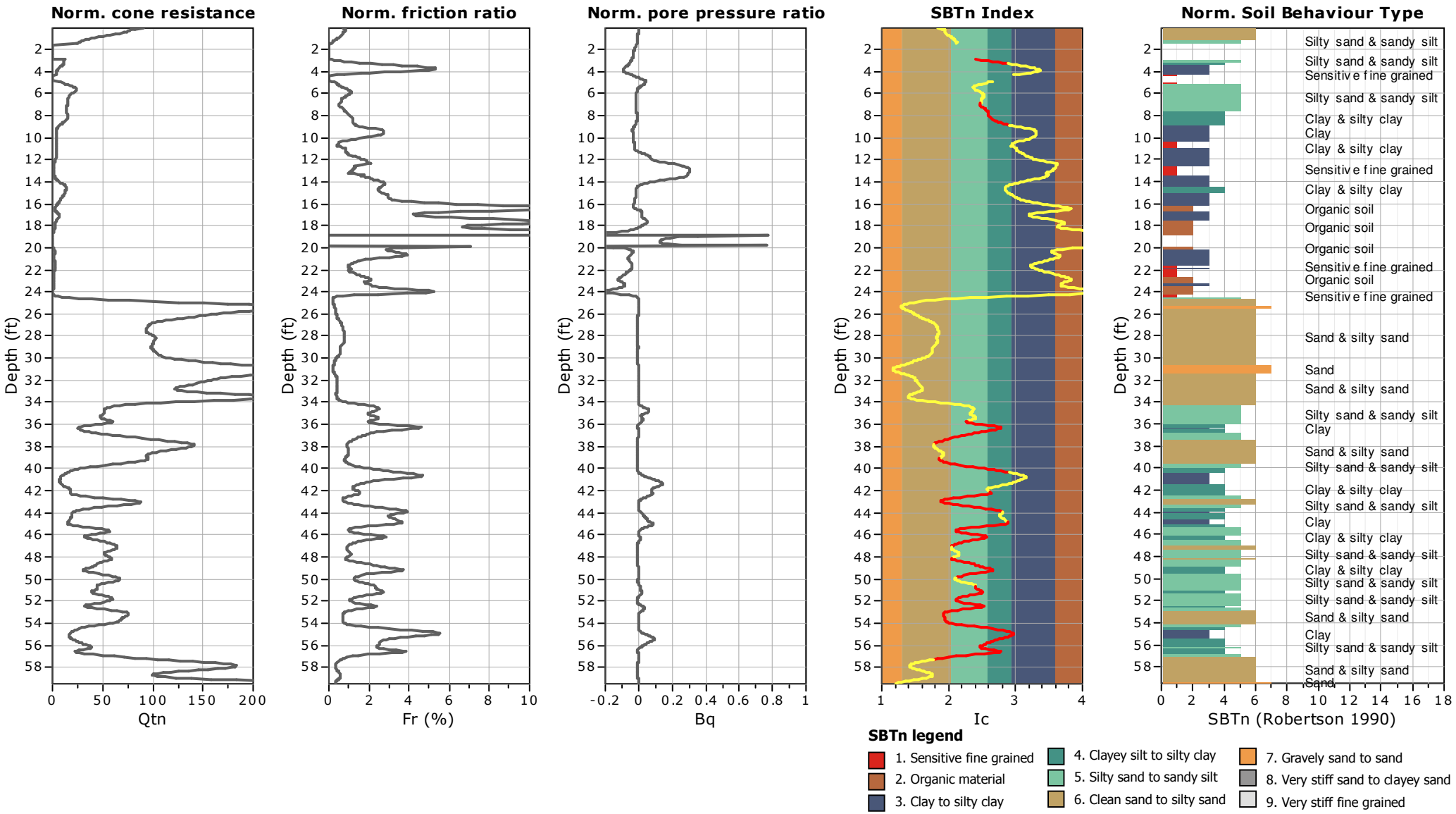
Cone Type: Uknown
Cone Operator: Uknown



HILLIS CARNES ENGINEERING ASSOCIATES, INC.
503 Maryland Avenue, Unit 106
Delmar, Maryland 21865
http://www.HCEA.com

Project: 900 H Street NE
Location: Washington, DC

CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown



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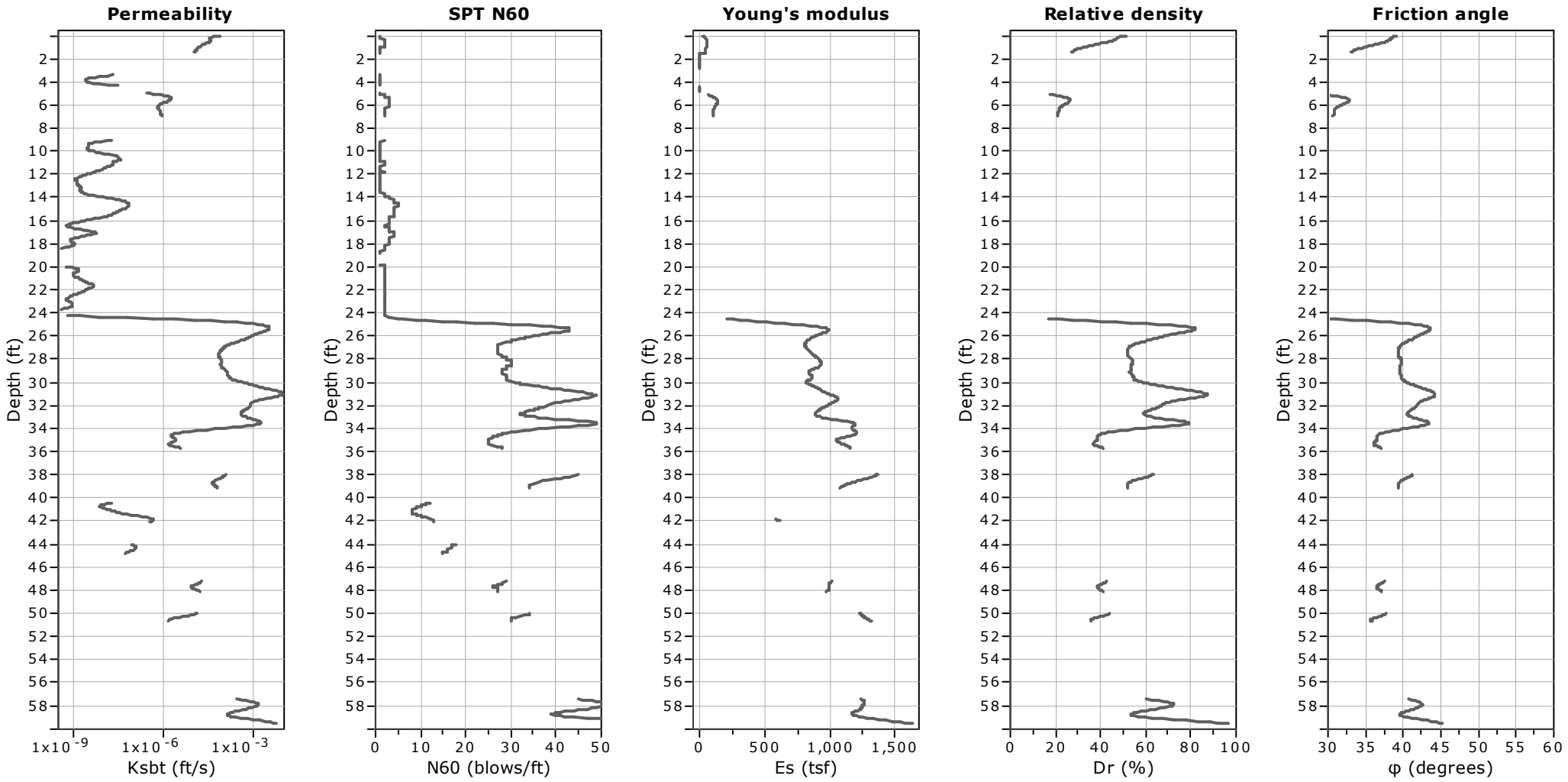

Calculation parameters

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 desnisty constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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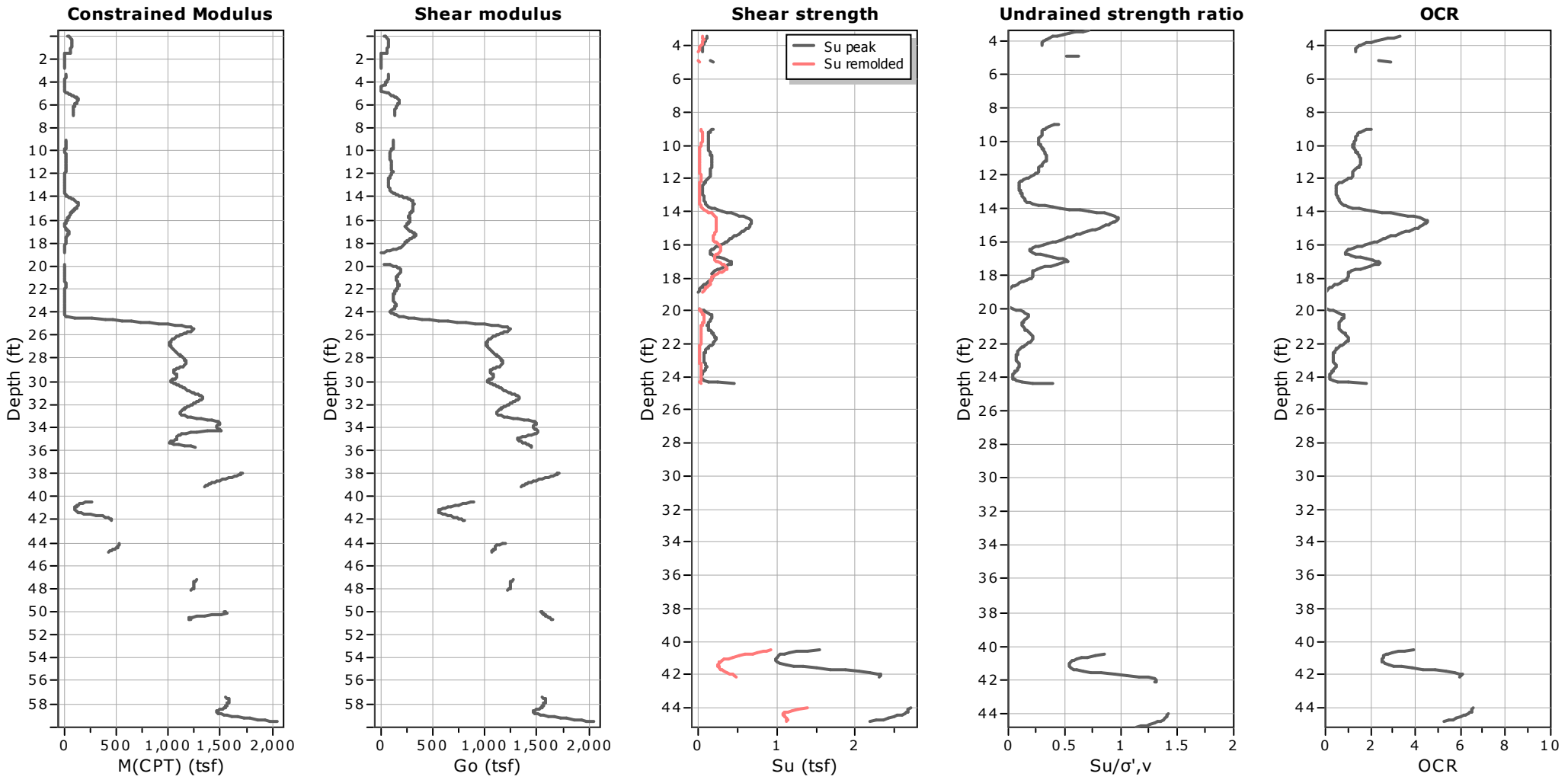

Calculation parameters

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

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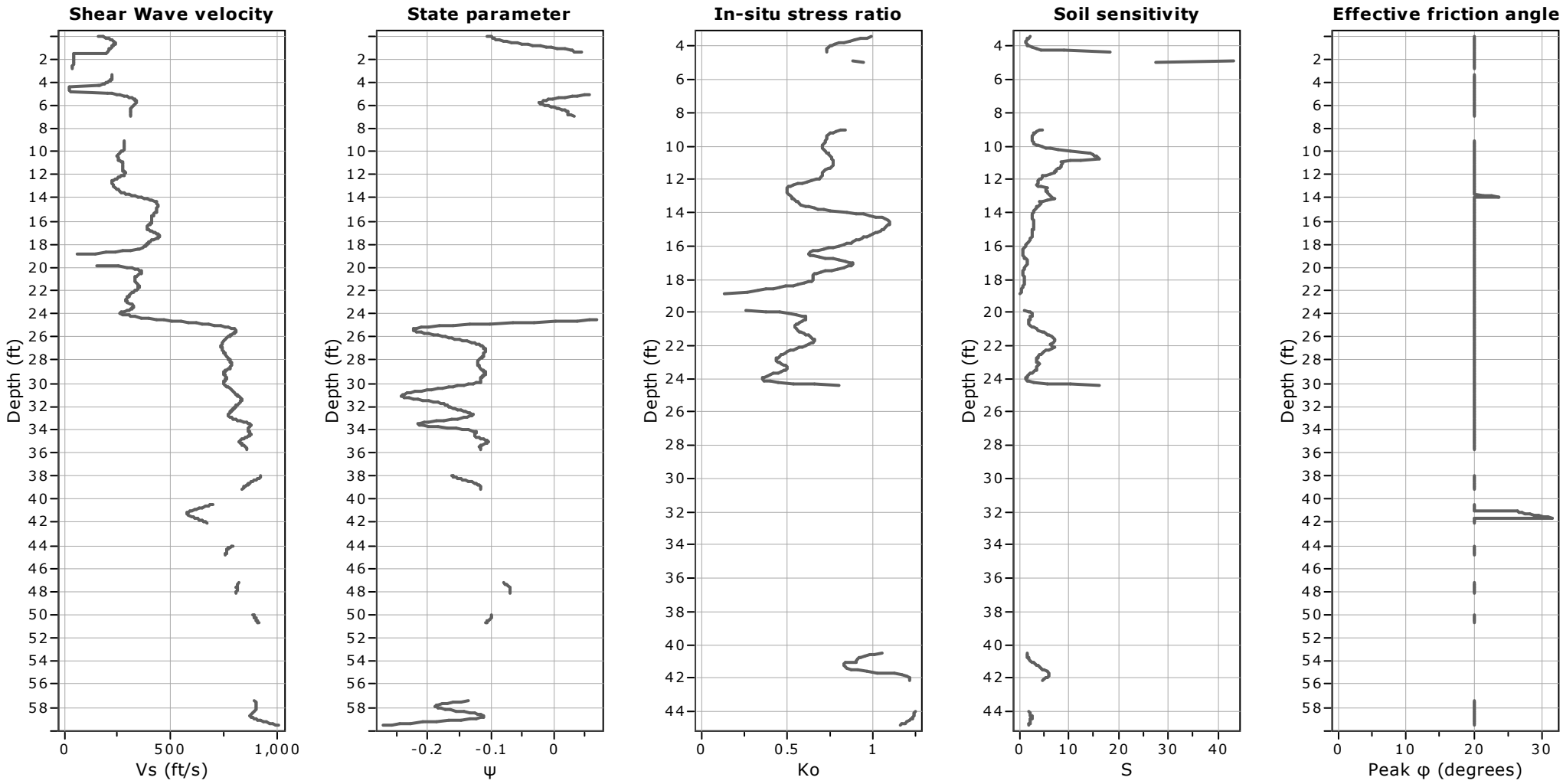

Calculation parameters

Soil Sensitivity factor, N_S: 7.00

User defined estimation data

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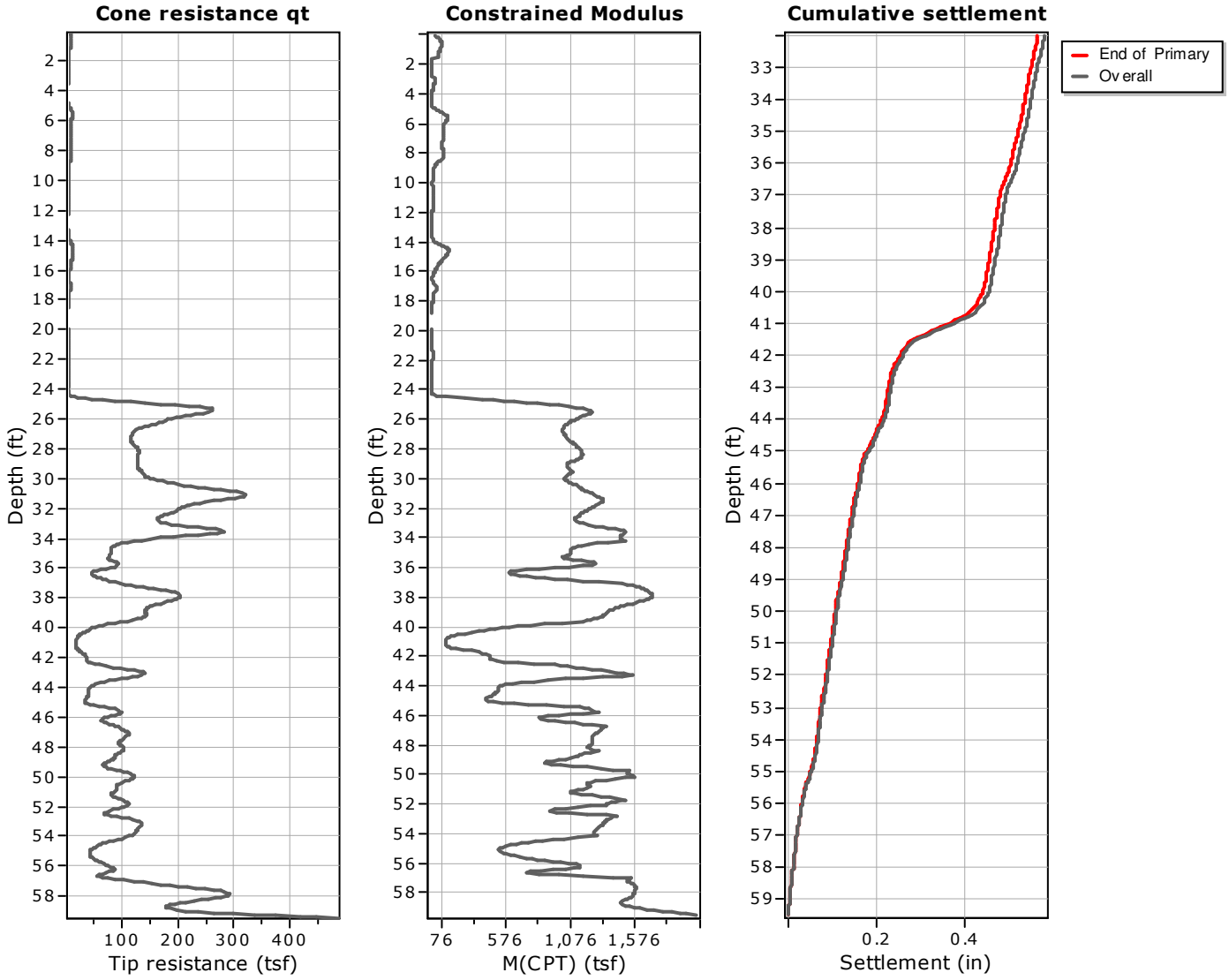
Settlements calculation according to theory of elasticity*



Caclulation properties

Footing type: Rectangular
Footing width: 100.00 (ft)
L/B: 1.0
Footing pressure: 3.50 (tsf)
Embedment depth: 32.00 (ft)
Footing is rigid: Yes
Remove excavation load: Yes
Apply 20% rule: No
Calculate secondary settlements: Yes
Time period for primary consolidation: 6 months
Time period for second. settlements: 12 months

* Primary settlements calculation is performed according to the following formula:

$$S = \sum \frac{\Delta \sigma_v}{M_{CPT}} \Delta z$$

* Secondary (creep) settlements calculation is performed according to the following formula:

$$S = C_a \cdot \Delta z \cdot \log(t)$$

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
1	31.96	32.02	0.07	0.01	1.58	1245.28	1.00	0.000	0.000	0.000
2	32.02	32.09	0.07	0.05	1.58	1229.89	1.00	0.001	0.000	0.001
3	32.09	32.15	0.07	0.12	1.58	1215.80	1.00	0.001	0.000	0.001
4	32.15	32.22	0.07	0.19	1.58	1201.03	1.00	0.001	0.000	0.001
5	32.22	32.28	0.07	0.25	1.58	1187.23	1.00	0.001	0.000	0.001
6	32.28	32.35	0.07	0.32	1.58	1174.54	1.00	0.001	0.000	0.001
7	32.35	32.41	0.07	0.38	1.58	1163.21	1.00	0.001	0.000	0.001
8	32.41	32.48	0.07	0.45	1.58	1151.84	1.00	0.001	0.000	0.001
9	32.48	32.55	0.07	0.51	1.58	1140.77	1.00	0.001	0.000	0.001
10	32.55	32.61	0.07	0.58	1.58	1130.37	1.00	0.001	0.000	0.001
11	32.61	32.68	0.07	0.64	1.58	1120.99	1.00	0.001	0.000	0.001
12	32.68	32.74	0.07	0.71	1.58	1113.01	1.00	0.001	0.000	0.001
13	32.74	32.81	0.07	0.78	1.58	1108.57	1.00	0.001	0.000	0.001
14	32.81	32.87	0.07	0.84	1.58	1108.12	1.00	0.001	0.000	0.001
15	32.87	32.94	0.07	0.91	1.58	1113.90	1.00	0.001	0.000	0.001
16	32.94	33.01	0.07	0.97	1.58	1126.34	1.00	0.001	0.000	0.001
17	33.01	33.07	0.07	1.04	1.58	1149.23	1.00	0.001	0.000	0.001
18	33.07	33.14	0.07	1.10	1.58	1180.70	1.00	0.001	0.000	0.001
19	33.14	33.20	0.07	1.17	1.58	1221.89	1.00	0.001	0.000	0.001
20	33.20	33.27	0.07	1.23	1.58	1268.23	1.00	0.001	0.000	0.001
21	33.27	33.33	0.07	1.30	1.58	1319.85	1.00	0.001	0.000	0.001
22	33.33	33.40	0.07	1.37	1.58	1371.55	1.00	0.001	0.000	0.001
23	33.40	33.46	0.07	1.43	1.58	1419.82	1.00	0.001	0.000	0.001
24	33.46	33.53	0.07	1.50	1.58	1458.21	1.00	0.001	0.000	0.001
25	33.53	33.60	0.07	1.56	1.58	1483.96	1.00	0.001	0.000	0.001
26	33.60	33.66	0.07	1.63	1.58	1496.36	1.00	0.001	0.000	0.001
27	33.66	33.73	0.07	1.69	1.58	1496.81	1.00	0.001	0.000	0.001
28	33.73	33.79	0.07	1.76	1.58	1488.79	1.00	0.001	0.000	0.001
29	33.79	33.86	0.07	1.83	1.58	1476.18	1.00	0.001	0.000	0.001
30	33.86	33.92	0.07	1.89	1.58	1464.52	1.00	0.001	0.000	0.001
31	33.92	33.99	0.07	1.96	1.58	1457.68	1.00	0.001	0.000	0.001
32	33.99	34.06	0.07	2.02	1.58	1457.70	1.00	0.001	0.000	0.001
33	34.06	34.12	0.07	2.09	1.58	1464.89	1.00	0.001	0.000	0.001
34	34.12	34.19	0.07	2.15	1.58	1476.95	1.00	0.001	0.000	0.001
35	34.19	34.25	0.07	2.22	1.58	1490.93	1.00	0.001	0.000	0.001
36	34.25	34.32	0.07	2.28	1.58	1503.45	1.00	0.001	0.000	0.001
37	34.32	34.38	0.07	2.35	1.58	1370.60	1.00	0.001	0.000	0.001
38	34.38	34.45	0.07	2.42	1.58	1278.68	1.00	0.001	0.000	0.001
39	34.45	34.51	0.07	2.48	1.58	1212.50	1.00	0.001	0.000	0.001
40	34.51	34.58	0.07	2.55	1.58	1165.71	1.00	0.001	0.000	0.001
41	34.58	34.65	0.07	2.61	1.58	1132.58	1.00	0.001	0.000	0.001
42	34.65	34.71	0.07	2.68	1.57	1109.37	1.00	0.001	0.000	0.001
43	34.71	34.78	0.07	2.74	1.57	1093.72	1.00	0.001	0.000	0.001
44	34.78	34.84	0.07	2.81	1.57	1084.80	1.00	0.001	0.000	0.001
45	34.84	34.91	0.07	2.88	1.57	1081.91	1.00	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
46	34.91	34.97	0.07	2.94	1.57	1082.94	1.00	0.001	0.000	0.001
47	34.97	35.04	0.07	3.01	1.57	1083.41	1.00	0.001	0.000	0.001
48	35.04	35.10	0.07	3.07	1.57	1078.83	1.00	0.001	0.000	0.001
49	35.10	35.17	0.07	3.14	1.57	1066.41	0.99	0.001	0.000	0.001
50	35.17	35.24	0.07	3.20	1.57	1047.26	0.99	0.001	0.000	0.001
51	35.24	35.30	0.07	3.27	1.57	1026.98	0.99	0.001	0.000	0.001
52	35.30	35.37	0.07	3.33	1.57	1014.91	0.99	0.001	0.000	0.001
53	35.37	35.43	0.07	3.40	1.57	1020.28	0.99	0.001	0.000	0.001
54	35.43	35.50	0.07	3.47	1.57	1048.59	0.99	0.001	0.000	0.001
55	35.50	35.56	0.07	3.53	1.57	1098.33	0.99	0.001	0.000	0.001
56	35.56	35.63	0.07	3.60	1.57	1160.64	0.99	0.001	0.000	0.001
57	35.63	35.70	0.07	3.66	1.57	1220.75	0.99	0.001	0.000	0.001
58	35.70	35.76	0.07	3.73	1.57	1262.02	0.99	0.001	0.000	0.001
59	35.76	35.83	0.07	3.79	1.57	1270.49	0.99	0.001	0.000	0.001
60	35.83	35.89	0.07	3.86	1.57	1238.96	0.99	0.001	0.000	0.001
61	35.89	35.96	0.07	3.93	1.56	1168.56	0.99	0.001	0.000	0.001
62	35.96	36.02	0.07	3.99	1.56	1068.27	0.99	0.001	0.000	0.001
63	36.02	36.09	0.07	4.06	1.56	952.35	0.99	0.001	0.000	0.001
64	36.09	36.15	0.07	4.12	1.56	836.84	0.99	0.001	0.000	0.002
65	36.15	36.22	0.07	4.19	1.56	736.25	0.99	0.002	0.000	0.002
66	36.22	36.29	0.07	4.25	1.56	660.73	0.99	0.002	0.000	0.002
67	36.29	36.35	0.07	4.32	1.56	615.45	0.99	0.002	0.000	0.002
68	36.35	36.42	0.07	4.38	1.56	600.23	0.99	0.002	0.000	0.002
69	36.42	36.48	0.07	4.45	1.56	611.15	0.99	0.002	0.000	0.002
70	36.48	36.55	0.07	4.52	1.56	642.09	0.99	0.002	0.000	0.002
71	36.55	36.61	0.07	4.58	1.56	687.03	0.98	0.002	0.000	0.002
72	36.61	36.68	0.07	4.65	1.56	741.73	0.98	0.002	0.000	0.002
73	36.68	36.75	0.07	4.71	1.55	804.63	0.98	0.002	0.000	0.002
74	36.75	36.81	0.07	4.78	1.55	876.69	0.98	0.001	0.000	0.001
75	36.81	36.88	0.07	4.84	1.55	960.33	0.98	0.001	0.000	0.001
76	36.88	36.94	0.07	4.91	1.55	1057.85	0.98	0.001	0.000	0.001
77	36.94	37.01	0.07	4.98	1.55	1169.98	0.98	0.001	0.000	0.001
78	37.01	37.07	0.07	5.04	1.55	1295.30	0.98	0.001	0.000	0.001
79	37.07	37.14	0.07	5.11	1.55	1478.02	0.98	0.001	0.000	0.001
80	37.14	37.20	0.07	5.17	1.55	1521.84	0.98	0.001	0.000	0.001
81	37.20	37.27	0.07	5.24	1.55	1557.93	0.98	0.001	0.000	0.001
82	37.27	37.34	0.07	5.30	1.54	1586.02	0.98	0.001	0.000	0.001
83	37.34	37.40	0.07	5.37	1.54	1608.28	0.98	0.001	0.000	0.001
84	37.40	37.47	0.07	5.43	1.54	1625.69	0.98	0.001	0.000	0.001
85	37.47	37.53	0.07	5.50	1.54	1641.52	0.98	0.001	0.000	0.001
86	37.53	37.60	0.07	5.57	1.54	1656.54	0.97	0.001	0.000	0.001
87	37.60	37.66	0.07	5.63	1.54	1670.25	0.97	0.001	0.000	0.001
88	37.66	37.73	0.07	5.70	1.54	1683.43	0.97	0.001	0.000	0.001
89	37.73	37.80	0.07	5.76	1.54	1694.55	0.97	0.001	0.000	0.001
90	37.80	37.86	0.07	5.83	1.53	1702.34	0.97	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
91	37.86	37.93	0.07	5.89	1.53	1707.07	0.97	0.001	0.000	0.001
92	37.93	37.99	0.07	5.96	1.53	1706.63	0.97	0.001	0.000	0.001
93	37.99	38.06	0.07	6.02	1.53	1702.74	0.97	0.001	0.000	0.001
94	38.06	38.12	0.07	6.09	1.53	1693.21	0.97	0.001	0.000	0.001
95	38.12	38.19	0.07	6.16	1.53	1679.49	0.97	0.001	0.000	0.001
96	38.19	38.25	0.07	6.22	1.53	1660.40	0.97	0.001	0.000	0.001
97	38.25	38.32	0.07	6.29	1.52	1636.02	0.97	0.001	0.000	0.001
98	38.32	38.39	0.07	6.35	1.52	1609.12	0.96	0.001	0.000	0.001
99	38.39	38.45	0.07	6.42	1.52	1580.25	0.96	0.001	0.000	0.001
100	38.45	38.52	0.07	6.48	1.52	1551.45	0.96	0.001	0.000	0.001
101	38.52	38.58	0.07	6.55	1.52	1522.22	0.96	0.001	0.000	0.001
102	38.58	38.65	0.07	6.62	1.52	1494.49	0.96	0.001	0.000	0.001
103	38.65	38.71	0.07	6.68	1.52	1467.29	0.96	0.001	0.000	0.001
104	38.71	38.78	0.07	6.75	1.51	1441.90	0.96	0.001	0.000	0.001
105	38.78	38.85	0.07	6.81	1.51	1419.43	0.96	0.001	0.000	0.001
106	38.85	38.91	0.07	6.88	1.51	1400.90	0.96	0.001	0.000	0.001
107	38.91	38.98	0.07	6.94	1.51	1384.64	0.96	0.001	0.000	0.001
108	38.98	39.04	0.07	7.01	1.51	1370.28	0.95	0.001	0.000	0.001
109	39.04	39.11	0.07	7.07	1.51	1358.82	0.95	0.001	0.000	0.001
110	39.11	39.17	0.07	7.14	1.50	1349.74	0.95	0.001	0.000	0.001
111	39.17	39.24	0.07	7.21	1.50	1340.90	0.95	0.001	0.000	0.001
112	39.24	39.30	0.07	7.27	1.50	1331.52	0.95	0.001	0.000	0.001
113	39.30	39.37	0.07	7.34	1.50	1320.84	0.95	0.001	0.000	0.001
114	39.37	39.44	0.07	7.40	1.50	1306.75	0.95	0.001	0.000	0.001
115	39.44	39.50	0.07	7.47	1.50	1287.38	0.95	0.001	0.000	0.001
116	39.50	39.57	0.07	7.53	1.49	1262.59	0.95	0.001	0.000	0.001
117	39.57	39.63	0.07	7.60	1.49	1235.56	0.94	0.001	0.000	0.001
118	39.63	39.70	0.07	7.67	1.49	1206.77	0.94	0.001	0.000	0.001
119	39.70	39.76	0.07	7.73	1.49	1176.97	0.94	0.001	0.000	0.001
120	39.76	39.83	0.07	7.80	1.49	1012.01	0.94	0.001	0.000	0.001
121	39.83	39.90	0.07	7.86	1.49	879.46	0.94	0.001	0.000	0.001
122	39.90	39.96	0.07	7.93	1.48	766.38	0.94	0.002	0.000	0.002
123	39.96	40.03	0.07	7.99	1.48	674.23	0.94	0.002	0.000	0.002
124	40.03	40.09	0.07	8.06	1.48	601.16	0.94	0.002	0.000	0.002
125	40.09	40.16	0.07	8.12	1.48	543.26	0.94	0.002	0.000	0.002
126	40.16	40.22	0.07	8.19	1.48	495.46	0.93	0.002	0.000	0.002
127	40.22	40.29	0.07	8.26	1.47	453.18	0.93	0.003	0.000	0.003
128	40.29	40.35	0.07	8.32	1.47	413.21	0.93	0.003	0.000	0.003
129	40.35	40.42	0.07	8.39	1.47	374.29	0.93	0.003	0.000	0.003
130	40.42	40.49	0.07	8.45	1.47	320.64	0.93	0.004	0.000	0.004
131	40.49	40.55	0.07	8.52	1.47	257.84	0.93	0.004	0.000	0.005
132	40.55	40.62	0.07	8.58	1.46	208.67	0.93	0.006	0.000	0.006
133	40.62	40.68	0.07	8.65	1.46	172.36	0.93	0.007	0.000	0.007
134	40.68	40.75	0.07	8.72	1.46	146.95	0.92	0.008	0.000	0.008
135	40.75	40.81	0.07	8.78	1.46	129.96	0.92	0.009	0.000	0.009

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
136	40.81	40.88	0.07	8.85	1.46	119.07	0.92	0.010	0.000	0.010
137	40.88	40.94	0.07	8.91	1.45	112.37	0.92	0.010	0.000	0.011
138	40.94	41.01	0.07	8.98	1.45	108.45	0.92	0.011	0.000	0.011
139	41.01	41.08	0.07	9.04	1.45	106.31	0.92	0.011	0.000	0.011
140	41.08	41.14	0.07	9.11	1.45	105.32	0.92	0.011	0.000	0.011
141	41.14	41.21	0.07	9.17	1.45	105.34	0.92	0.011	0.000	0.011
142	41.21	41.27	0.07	9.24	1.44	106.70	0.91	0.011	0.000	0.011
143	41.27	41.34	0.07	9.31	1.44	110.50	0.91	0.010	0.000	0.011
144	41.34	41.40	0.07	9.37	1.44	118.36	0.91	0.010	0.000	0.010
145	41.40	41.47	0.07	9.44	1.44	132.77	0.91	0.009	0.000	0.009
146	41.47	41.54	0.07	9.50	1.44	156.45	0.91	0.007	0.000	0.008
147	41.54	41.60	0.07	9.57	1.43	192.19	0.91	0.006	0.000	0.006
148	41.60	41.67	0.07	9.63	1.43	243.76	0.91	0.005	0.000	0.005
149	41.67	41.73	0.07	9.70	1.43	310.75	0.90	0.004	0.000	0.004
150	41.73	41.80	0.07	9.77	1.43	367.80	0.90	0.003	0.000	0.003
151	41.80	41.86	0.07	9.83	1.43	401.59	0.90	0.003	0.000	0.003
152	41.86	41.93	0.07	9.90	1.42	428.57	0.90	0.003	0.000	0.003
153	41.93	41.99	0.07	9.96	1.42	446.27	0.90	0.003	0.000	0.003
154	41.99	42.06	0.07	10.03	1.42	454.26	0.90	0.002	0.000	0.003
155	42.06	42.13	0.07	10.09	1.42	454.52	0.90	0.002	0.000	0.003
156	42.13	42.19	0.07	10.16	1.41	451.70	0.90	0.002	0.000	0.003
157	42.19	42.26	0.07	10.22	1.41	452.80	0.89	0.002	0.000	0.003
158	42.26	42.32	0.07	10.29	1.41	466.49	0.89	0.002	0.000	0.002
159	42.32	42.39	0.07	10.36	1.41	501.57	0.89	0.002	0.000	0.002
160	42.39	42.45	0.07	10.42	1.41	565.59	0.89	0.002	0.000	0.002
161	42.45	42.52	0.07	10.49	1.40	662.86	0.89	0.002	0.000	0.002
162	42.52	42.59	0.07	10.55	1.40	793.42	0.89	0.001	0.000	0.001
163	42.59	42.65	0.07	10.62	1.40	953.88	0.89	0.001	0.000	0.001
164	42.65	42.72	0.07	10.68	1.40	1002.72	0.88	0.001	0.000	0.001
165	42.72	42.78	0.07	10.75	1.39	1056.51	0.88	0.001	0.000	0.001
166	42.78	42.85	0.07	10.81	1.39	1117.07	0.88	0.001	0.000	0.001
167	42.85	42.91	0.07	10.88	1.39	1180.98	0.88	0.001	0.000	0.001
168	42.91	42.98	0.07	10.95	1.39	1248.45	0.88	0.001	0.000	0.001
169	42.98	43.04	0.07	11.01	1.39	1316.40	0.88	0.001	0.000	0.001
170	43.04	43.11	0.07	11.08	1.38	1380.66	0.88	0.001	0.000	0.001
171	43.11	43.18	0.07	11.14	1.38	1439.12	0.87	0.001	0.000	0.001
172	43.18	43.24	0.07	11.21	1.38	1488.73	0.87	0.001	0.000	0.001
173	43.24	43.31	0.07	11.27	1.38	1528.43	0.87	0.001	0.000	0.001
174	43.31	43.37	0.07	11.34	1.37	1556.37	0.87	0.001	0.000	0.001
175	43.37	43.44	0.07	11.41	1.37	1481.08	0.87	0.001	0.000	0.001
176	43.44	43.50	0.07	11.47	1.37	1329.34	0.87	0.001	0.000	0.001
177	43.50	43.57	0.07	11.54	1.37	1178.75	0.87	0.001	0.000	0.001
178	43.57	43.64	0.07	11.60	1.37	1036.34	0.86	0.001	0.000	0.001
179	43.64	43.70	0.07	11.67	1.36	907.14	0.86	0.001	0.000	0.001
180	43.70	43.77	0.07	11.73	1.36	794.77	0.86	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
181	43.77	43.83	0.07	11.80	1.36	701.85	0.86	0.002	0.000	0.002
182	43.83	43.90	0.07	11.86	1.36	629.86	0.86	0.002	0.000	0.002
183	43.90	43.96	0.07	11.93	1.35	578.81	0.86	0.002	0.000	0.002
184	43.96	44.03	0.07	12.00	1.35	546.89	0.86	0.002	0.000	0.002
185	44.03	44.09	0.07	12.06	1.35	530.38	0.85	0.002	0.000	0.002
186	44.09	44.16	0.07	12.13	1.35	524.10	0.85	0.002	0.000	0.002
187	44.16	44.23	0.07	12.19	1.35	522.73	0.85	0.002	0.000	0.002
188	44.23	44.29	0.07	12.26	1.34	522.04	0.85	0.002	0.000	0.002
189	44.29	44.36	0.07	12.32	1.34	519.49	0.85	0.002	0.000	0.002
190	44.36	44.42	0.07	12.39	1.34	514.24	0.85	0.002	0.000	0.002
191	44.42	44.49	0.07	12.46	1.34	506.73	0.85	0.002	0.000	0.002
192	44.49	44.55	0.07	12.52	1.33	497.63	0.84	0.002	0.000	0.002
193	44.55	44.62	0.07	12.59	1.33	487.19	0.84	0.002	0.000	0.002
194	44.62	44.69	0.07	12.65	1.33	474.99	0.84	0.002	0.000	0.002
195	44.69	44.75	0.07	12.72	1.33	460.68	0.84	0.002	0.000	0.002
196	44.75	44.82	0.07	12.78	1.32	444.68	0.84	0.002	0.000	0.002
197	44.82	44.88	0.07	12.85	1.32	429.05	0.84	0.002	0.000	0.003
198	44.88	44.95	0.07	12.91	1.32	417.94	0.84	0.002	0.000	0.003
199	44.95	45.01	0.07	12.98	1.32	417.26	0.83	0.002	0.000	0.003
200	45.01	45.08	0.07	13.05	1.32	433.80	0.83	0.002	0.000	0.002
201	45.08	45.14	0.07	13.11	1.31	473.90	0.83	0.002	0.000	0.002
202	45.14	45.21	0.07	13.18	1.31	541.61	0.83	0.002	0.000	0.002
203	45.21	45.28	0.07	13.24	1.31	637.47	0.83	0.002	0.000	0.002
204	45.28	45.34	0.07	13.31	1.31	757.06	0.83	0.001	0.000	0.001
205	45.34	45.41	0.07	13.37	1.30	891.42	0.83	0.001	0.000	0.001
206	45.41	45.47	0.07	13.44	1.30	1027.74	0.82	0.001	0.000	0.001
207	45.47	45.54	0.07	13.51	1.30	1153.92	0.82	0.001	0.000	0.001
208	45.54	45.60	0.07	13.57	1.30	1184.62	0.82	0.001	0.000	0.001
209	45.60	45.67	0.07	13.64	1.30	1216.84	0.82	0.001	0.000	0.001
210	45.67	45.73	0.07	13.70	1.29	1248.30	0.82	0.001	0.000	0.001
211	45.73	45.80	0.07	13.77	1.29	1277.06	0.82	0.001	0.000	0.001
212	45.80	45.87	0.07	13.83	1.29	1304.46	0.82	0.001	0.000	0.001
213	45.87	45.93	0.07	13.90	1.29	1168.68	0.81	0.001	0.000	0.001
214	45.93	46.00	0.07	13.96	1.28	1072.87	0.81	0.001	0.000	0.001
215	46.00	46.06	0.07	14.03	1.28	979.45	0.81	0.001	0.000	0.001
216	46.06	46.13	0.07	14.10	1.28	902.26	0.81	0.001	0.000	0.001
217	46.13	46.19	0.07	14.16	1.28	852.20	0.81	0.001	0.000	0.001
218	46.19	46.26	0.07	14.23	1.28	835.14	0.81	0.001	0.000	0.001
219	46.26	46.33	0.07	14.29	1.27	851.24	0.81	0.001	0.000	0.001
220	46.33	46.39	0.07	14.36	1.27	895.35	0.80	0.001	0.000	0.001
221	46.39	46.46	0.07	14.42	1.27	959.00	0.80	0.001	0.000	0.001
222	46.46	46.52	0.07	14.49	1.27	1032.69	0.80	0.001	0.000	0.001
223	46.52	46.59	0.07	14.56	1.26	1108.37	0.80	0.001	0.000	0.001
224	46.59	46.65	0.07	14.62	1.26	1180.87	0.80	0.001	0.000	0.001
225	46.65	46.72	0.07	14.69	1.26	1247.85	0.80	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
226	46.72	46.78	0.07	14.75	1.26	1348.30	0.80	0.001	0.000	0.001
227	46.78	46.85	0.07	14.82	1.26	1334.87	0.79	0.001	0.000	0.001
228	46.85	46.92	0.07	14.88	1.25	1323.87	0.79	0.001	0.000	0.001
229	46.92	46.98	0.07	14.95	1.25	1315.53	0.79	0.001	0.000	0.001
230	46.98	47.05	0.07	15.01	1.25	1308.44	0.79	0.001	0.000	0.001
231	47.05	47.11	0.07	15.08	1.25	1301.02	0.79	0.001	0.000	0.001
232	47.11	47.18	0.07	15.15	1.24	1293.21	0.79	0.001	0.000	0.001
233	47.18	47.24	0.07	15.21	1.24	1283.45	0.79	0.001	0.000	0.001
234	47.24	47.31	0.07	15.28	1.24	1271.80	0.78	0.001	0.000	0.001
235	47.31	47.38	0.07	15.34	1.24	1260.01	0.78	0.001	0.000	0.001
236	47.38	47.44	0.07	15.41	1.24	1250.01	0.78	0.001	0.000	0.001
237	47.44	47.51	0.07	15.47	1.23	1243.93	0.78	0.001	0.000	0.001
238	47.51	47.57	0.07	15.54	1.23	1240.90	0.78	0.001	0.000	0.001
239	47.57	47.64	0.07	15.60	1.23	1240.26	0.78	0.001	0.000	0.001
240	47.64	47.70	0.07	15.67	1.23	1241.37	0.78	0.001	0.000	0.001
241	47.70	47.77	0.07	15.74	1.22	1244.97	0.78	0.001	0.000	0.001
242	47.77	47.83	0.07	15.80	1.22	1248.20	0.77	0.001	0.000	0.001
243	47.83	47.90	0.07	15.87	1.22	1249.14	0.77	0.001	0.000	0.001
244	47.90	47.97	0.07	15.93	1.22	1245.27	0.77	0.001	0.000	0.001
245	47.97	48.03	0.07	16.00	1.22	1236.79	0.77	0.001	0.000	0.001
246	48.03	48.10	0.07	16.06	1.21	1225.61	0.77	0.001	0.000	0.001
247	48.10	48.16	0.07	16.13	1.21	1214.05	0.77	0.001	0.000	0.001
248	48.16	48.23	0.07	16.20	1.21	1208.38	0.77	0.001	0.000	0.001
249	48.23	48.29	0.07	16.26	1.21	1211.90	0.76	0.001	0.000	0.001
250	48.29	48.36	0.07	16.33	1.21	1227.78	0.76	0.001	0.000	0.001
251	48.36	48.43	0.07	16.39	1.20	1257.14	0.76	0.001	0.000	0.001
252	48.43	48.49	0.07	16.46	1.20	1297.61	0.76	0.001	0.000	0.001
253	48.49	48.56	0.07	16.52	1.20	1225.71	0.76	0.001	0.000	0.001
254	48.56	48.62	0.07	16.59	1.20	1188.94	0.76	0.001	0.000	0.001
255	48.62	48.69	0.07	16.65	1.20	1163.06	0.76	0.001	0.000	0.001
256	48.69	48.75	0.07	16.72	1.19	1145.96	0.76	0.001	0.000	0.001
257	48.75	48.82	0.07	16.79	1.19	1131.88	0.75	0.001	0.000	0.001
258	48.82	48.88	0.07	16.85	1.19	1113.32	0.75	0.001	0.000	0.001
259	48.88	48.95	0.07	16.92	1.19	1084.03	0.75	0.001	0.000	0.001
260	48.95	49.02	0.07	16.98	1.19	1041.65	0.75	0.001	0.000	0.001
261	49.02	49.08	0.07	17.05	1.18	989.44	0.75	0.001	0.000	0.001
262	49.08	49.15	0.07	17.11	1.18	935.95	0.75	0.001	0.000	0.001
263	49.15	49.21	0.07	17.18	1.18	892.96	0.75	0.001	0.000	0.001
264	49.21	49.28	0.07	17.25	1.18	872.19	0.74	0.001	0.000	0.001
265	49.28	49.34	0.07	17.31	1.17	882.20	0.74	0.001	0.000	0.001
266	49.34	49.41	0.07	17.38	1.17	925.83	0.74	0.001	0.000	0.001
267	49.41	49.48	0.07	17.44	1.17	999.76	0.74	0.001	0.000	0.001
268	49.48	49.54	0.07	17.51	1.17	1095.72	0.74	0.001	0.000	0.001
269	49.54	49.61	0.07	17.57	1.17	1202.82	0.74	0.001	0.000	0.001
270	49.61	49.67	0.07	17.64	1.16	1310.37	0.74	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
271	49.67	49.74	0.07	17.70	1.16	1409.83	0.74	0.001	0.000	0.001
272	49.74	49.80	0.07	17.77	1.16	1534.01	0.73	0.001	0.000	0.001
273	49.80	49.87	0.07	17.84	1.16	1518.80	0.73	0.001	0.000	0.001
274	49.87	49.93	0.07	17.90	1.16	1514.90	0.73	0.001	0.000	0.001
275	49.93	50.00	0.07	17.97	1.15	1520.36	0.73	0.001	0.000	0.001
276	50.00	50.07	0.07	18.03	1.15	1532.53	0.73	0.001	0.000	0.001
277	50.07	50.13	0.07	18.10	1.15	1545.61	0.73	0.001	0.000	0.001
278	50.13	50.20	0.07	18.16	1.15	1557.87	0.73	0.001	0.000	0.001
279	50.20	50.26	0.07	18.23	1.15	1566.47	0.73	0.001	0.000	0.001
280	50.26	50.33	0.07	18.30	1.15	1507.21	0.72	0.001	0.000	0.001
281	50.33	50.39	0.07	18.36	1.14	1426.47	0.72	0.001	0.000	0.001
282	50.39	50.46	0.07	18.43	1.14	1345.89	0.72	0.001	0.000	0.001
283	50.46	50.52	0.07	18.49	1.14	1276.56	0.72	0.001	0.000	0.001
284	50.52	50.59	0.07	18.56	1.14	1227.43	0.72	0.001	0.000	0.001
285	50.59	50.66	0.07	18.62	1.14	1202.57	0.72	0.001	0.000	0.001
286	50.66	50.72	0.07	18.69	1.13	1199.46	0.72	0.001	0.000	0.001
287	50.72	50.79	0.07	18.75	1.13	1209.65	0.72	0.001	0.000	0.001
288	50.79	50.85	0.07	18.82	1.13	1221.21	0.72	0.001	0.000	0.001
289	50.85	50.92	0.07	18.89	1.13	1222.76	0.71	0.001	0.000	0.001
290	50.92	50.98	0.07	18.95	1.13	1207.36	0.71	0.001	0.000	0.001
291	50.98	51.05	0.07	19.02	1.12	1175.26	0.71	0.001	0.000	0.001
292	51.05	51.12	0.07	19.08	1.12	1133.98	0.71	0.001	0.000	0.001
293	51.12	51.18	0.07	19.15	1.12	1095.80	0.71	0.001	0.000	0.001
294	51.18	51.25	0.07	19.21	1.12	1073.72	0.71	0.001	0.000	0.001
295	51.25	51.31	0.07	19.28	1.12	1077.27	0.71	0.001	0.000	0.001
296	51.31	51.38	0.07	19.35	1.11	1109.44	0.71	0.001	0.000	0.001
297	51.38	51.44	0.07	19.41	1.11	1166.30	0.70	0.001	0.000	0.001
298	51.44	51.51	0.07	19.48	1.11	1238.54	0.70	0.001	0.000	0.001
299	51.51	51.57	0.07	19.54	1.11	1314.80	0.70	0.001	0.000	0.001
300	51.57	51.64	0.07	19.61	1.11	1384.69	0.70	0.001	0.000	0.001
301	51.64	51.71	0.07	19.67	1.11	1441.09	0.70	0.001	0.000	0.001
302	51.71	51.77	0.07	19.74	1.10	1502.80	0.70	0.001	0.000	0.001
303	51.77	51.84	0.07	19.80	1.10	1460.50	0.70	0.001	0.000	0.001
304	51.84	51.90	0.07	19.87	1.10	1421.03	0.70	0.001	0.000	0.001
305	51.90	51.97	0.07	19.94	1.10	1388.16	0.70	0.001	0.000	0.001
306	51.97	52.03	0.07	20.00	1.10	1367.15	0.69	0.001	0.000	0.001
307	52.03	52.10	0.07	20.07	1.09	1356.69	0.69	0.001	0.000	0.001
308	52.10	52.17	0.07	20.13	1.09	1357.93	0.69	0.001	0.000	0.001
309	52.17	52.23	0.07	20.20	1.09	1234.32	0.69	0.001	0.000	0.001
310	52.23	52.30	0.07	20.26	1.09	1132.01	0.69	0.001	0.000	0.001
311	52.30	52.36	0.07	20.33	1.09	1034.05	0.69	0.001	0.000	0.001
312	52.36	52.43	0.07	20.40	1.09	956.22	0.69	0.001	0.000	0.001
313	52.43	52.49	0.07	20.46	1.08	913.75	0.69	0.001	0.000	0.001
314	52.49	52.56	0.07	20.53	1.08	917.58	0.68	0.001	0.000	0.001
315	52.56	52.62	0.07	20.59	1.08	971.56	0.68	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
316	52.62	52.69	0.07	20.66	1.08	1070.99	0.68	0.001	0.000	0.001
317	52.69	52.76	0.07	20.72	1.08	1203.68	0.68	0.001	0.000	0.001
318	52.76	52.82	0.07	20.79	1.08	1352.53	0.68	0.001	0.000	0.001
319	52.82	52.89	0.07	20.85	1.07	1429.53	0.68	0.001	0.000	0.001
320	52.89	52.95	0.07	20.92	1.07	1408.20	0.68	0.001	0.000	0.001
321	52.95	53.02	0.07	20.99	1.07	1388.26	0.68	0.001	0.000	0.001
322	53.02	53.08	0.07	21.05	1.07	1370.86	0.68	0.001	0.000	0.001
323	53.08	53.15	0.07	21.12	1.07	1359.05	0.68	0.001	0.000	0.001
324	53.15	53.22	0.07	21.18	1.06	1349.10	0.67	0.001	0.000	0.001
325	53.22	53.28	0.07	21.25	1.06	1342.06	0.67	0.001	0.000	0.001
326	53.28	53.35	0.07	21.31	1.06	1333.65	0.67	0.001	0.000	0.001
327	53.35	53.41	0.07	21.38	1.06	1326.25	0.67	0.001	0.000	0.001
328	53.41	53.48	0.07	21.44	1.06	1318.62	0.67	0.001	0.000	0.001
329	53.48	53.54	0.07	21.51	1.06	1309.39	0.67	0.001	0.000	0.001
330	53.54	53.61	0.07	21.58	1.05	1300.48	0.67	0.001	0.000	0.001
331	53.61	53.67	0.07	21.64	1.05	1290.17	0.67	0.001	0.000	0.001
332	53.67	53.74	0.07	21.71	1.05	1281.85	0.67	0.001	0.000	0.001
333	53.74	53.81	0.07	21.77	1.05	1273.43	0.66	0.001	0.000	0.001
334	53.81	53.87	0.07	21.84	1.05	1266.21	0.66	0.001	0.000	0.001
335	53.87	53.94	0.07	21.90	1.05	1259.55	0.66	0.001	0.000	0.001
336	53.94	54.00	0.07	21.97	1.04	1254.63	0.66	0.001	0.000	0.001
337	54.00	54.07	0.07	22.04	1.04	1252.62	0.66	0.001	0.000	0.001
338	54.07	54.13	0.07	22.10	1.04	1254.82	0.66	0.001	0.000	0.001
339	54.13	54.20	0.07	22.17	1.04	1262.57	0.66	0.001	0.000	0.001
340	54.20	54.27	0.07	22.23	1.04	1280.48	0.66	0.001	0.000	0.001
341	54.27	54.33	0.07	22.30	1.04	1130.11	0.66	0.001	0.000	0.001
342	54.33	54.40	0.07	22.36	1.04	1028.38	0.66	0.001	0.000	0.001
343	54.40	54.46	0.07	22.43	1.03	938.71	0.65	0.001	0.000	0.001
344	54.46	54.53	0.07	22.49	1.03	862.91	0.65	0.001	0.000	0.001
345	54.53	54.59	0.07	22.56	1.03	799.44	0.65	0.001	0.000	0.001
346	54.59	54.66	0.07	22.63	1.03	744.93	0.65	0.001	0.000	0.001
347	54.66	54.72	0.07	22.69	1.03	695.95	0.65	0.001	0.000	0.001
348	54.72	54.79	0.07	22.76	1.03	650.92	0.65	0.001	0.000	0.001
349	54.79	54.86	0.07	22.82	1.02	610.19	0.65	0.001	0.000	0.001
350	54.86	54.92	0.07	22.89	1.02	575.66	0.65	0.001	0.000	0.001
351	54.92	54.99	0.07	22.95	1.02	549.40	0.65	0.001	0.000	0.002
352	54.99	55.05	0.07	23.02	1.02	532.39	0.65	0.002	0.000	0.002
353	55.05	55.12	0.07	23.09	1.02	524.21	0.64	0.002	0.000	0.002
354	55.12	55.18	0.07	23.15	1.02	523.34	0.64	0.002	0.000	0.002
355	55.18	55.25	0.07	23.22	1.01	528.45	0.64	0.002	0.000	0.002
356	55.25	55.31	0.07	23.28	1.01	539.07	0.64	0.001	0.000	0.002
357	55.31	55.38	0.07	23.35	1.01	555.70	0.64	0.001	0.000	0.002
358	55.38	55.45	0.07	23.41	1.01	579.21	0.64	0.001	0.000	0.001
359	55.45	55.51	0.07	23.48	1.01	609.87	0.64	0.001	0.000	0.001
360	55.51	55.58	0.07	23.54	1.01	646.75	0.64	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
361	55.58	55.64	0.07	23.61	1.01	687.83	0.64	0.001	0.000	0.001
362	55.64	55.71	0.07	23.68	1.00	731.20	0.64	0.001	0.000	0.001
363	55.71	55.77	0.07	23.74	1.00	776.26	0.63	0.001	0.000	0.001
364	55.77	55.84	0.07	23.81	1.00	824.17	0.63	0.001	0.000	0.001
365	55.84	55.91	0.07	23.87	1.00	877.31	0.63	0.001	0.000	0.001
366	55.91	55.97	0.07	23.94	1.00	937.17	0.63	0.001	0.000	0.001
367	55.97	56.04	0.07	24.00	1.00	1002.28	0.63	0.001	0.000	0.001
368	56.04	56.10	0.07	24.07	1.00	1066.63	0.63	0.001	0.000	0.001
369	56.10	56.17	0.07	24.14	0.99	1120.22	0.63	0.001	0.000	0.001
370	56.17	56.23	0.07	24.20	0.99	1151.16	0.63	0.001	0.000	0.001
371	56.23	56.30	0.07	24.27	0.99	1149.38	0.63	0.001	0.000	0.001
372	56.30	56.36	0.07	24.33	0.99	1110.34	0.63	0.001	0.000	0.001
373	56.36	56.43	0.07	24.40	0.99	1037.64	0.63	0.001	0.000	0.001
374	56.43	56.50	0.07	24.46	0.99	943.38	0.62	0.001	0.000	0.001
375	56.50	56.56	0.07	24.53	0.98	846.57	0.62	0.001	0.000	0.001
376	56.56	56.63	0.07	24.59	0.98	769.62	0.62	0.001	0.000	0.001
377	56.63	56.69	0.07	24.66	0.98	733.82	0.62	0.001	0.000	0.001
378	56.69	56.76	0.07	24.73	0.98	754.89	0.62	0.001	0.000	0.001
379	56.76	56.82	0.07	24.79	0.98	839.77	0.62	0.001	0.000	0.001
380	56.82	56.89	0.07	24.86	0.98	985.04	0.62	0.001	0.000	0.001
381	56.89	56.96	0.07	24.92	0.98	1178.27	0.62	0.001	0.000	0.001
382	56.96	57.02	0.07	24.99	0.97	1401.48	0.62	0.001	0.000	0.001
383	57.02	57.09	0.07	25.05	0.97	1539.28	0.62	0.000	0.000	0.000
384	57.09	57.15	0.07	25.12	0.97	1523.68	0.62	0.001	0.000	0.001
385	57.15	57.22	0.07	25.19	0.97	1515.84	0.61	0.001	0.000	0.001
386	57.22	57.28	0.07	25.25	0.97	1516.81	0.61	0.001	0.000	0.001
387	57.28	57.35	0.07	25.32	0.97	1525.42	0.61	0.000	0.000	0.000
388	57.35	57.41	0.07	25.38	0.97	1539.57	0.61	0.000	0.000	0.000
389	57.41	57.48	0.07	25.45	0.97	1554.60	0.61	0.000	0.000	0.000
390	57.48	57.55	0.07	25.51	0.96	1568.54	0.61	0.000	0.000	0.000
391	57.55	57.61	0.07	25.58	0.96	1577.34	0.61	0.000	0.000	0.000
392	57.61	57.68	0.07	25.64	0.96	1582.02	0.61	0.000	0.000	0.000
393	57.68	57.74	0.07	25.71	0.96	1582.12	0.61	0.000	0.000	0.000
394	57.74	57.81	0.07	25.78	0.96	1580.98	0.61	0.000	0.000	0.000
395	57.81	57.87	0.07	25.84	0.96	1576.81	0.61	0.000	0.000	0.000
396	57.87	57.94	0.07	25.91	0.96	1573.37	0.60	0.000	0.000	0.000
397	57.94	58.01	0.07	25.97	0.95	1568.98	0.60	0.000	0.000	0.000
398	58.01	58.07	0.07	26.04	0.95	1567.39	0.60	0.000	0.000	0.000
399	58.07	58.14	0.07	26.10	0.95	1565.05	0.60	0.000	0.000	0.000
400	58.14	58.20	0.07	26.17	0.95	1562.12	0.60	0.000	0.000	0.000
401	58.20	58.27	0.07	26.23	0.95	1555.30	0.60	0.000	0.000	0.000
402	58.27	58.33	0.07	26.30	0.95	1545.13	0.60	0.000	0.000	0.000
403	58.33	58.40	0.07	26.37	0.95	1532.33	0.60	0.000	0.000	0.000
404	58.40	58.46	0.07	26.43	0.95	1515.92	0.60	0.000	0.000	0.000
405	58.46	58.53	0.07	26.50	0.94	1498.50	0.60	0.000	0.000	0.000

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
406	58.53	58.60	0.07	26.56	0.94	1480.80	0.60	0.001	0.000	0.001
407	58.60	58.66	0.07	26.63	0.94	1468.82	0.60	0.001	0.000	0.001
408	58.66	58.73	0.07	26.69	0.94	1463.23	0.59	0.001	0.000	0.001
409	58.73	58.79	0.07	26.76	0.94	1466.50	0.59	0.001	0.000	0.001
410	58.79	58.86	0.07	26.83	0.94	1479.39	0.59	0.000	0.000	0.000
411	58.86	58.92	0.07	26.89	0.94	1500.83	0.59	0.000	0.000	0.000
412	58.92	58.99	0.07	26.96	0.93	1531.26	0.59	0.000	0.000	0.000
413	58.99	59.06	0.07	27.02	0.93	1568.89	0.59	0.000	0.000	0.000
414	59.06	59.12	0.07	27.09	0.93	1614.74	0.59	0.000	0.000	0.000
415	59.12	59.19	0.07	27.15	0.93	1665.90	0.59	0.000	0.000	0.000
416	59.19	59.25	0.07	27.22	0.93	1722.50	0.59	0.000	0.000	0.000
417	59.25	59.32	0.07	27.28	0.93	1784.79	0.59	0.000	0.000	0.000
418	59.32	59.38	0.07	27.35	0.93	1853.01	0.59	0.000	0.000	0.000
419	59.38	59.45	0.07	27.42	0.93	1924.75	0.59	0.000	0.000	0.000
420	59.45	59.51	0.07	27.48	0.92	1972.74	0.59	0.000	0.000	0.000

Total primary settlement: 0.56
Total secondary settlement: 0.01

Total calculated settlement: 0.58

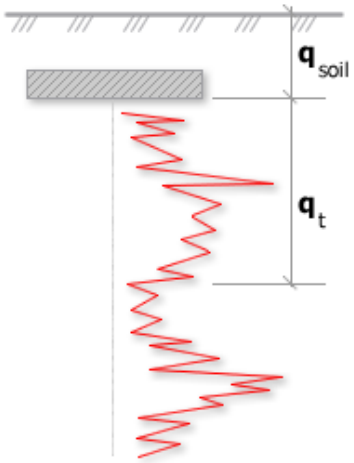
Abbreviations

Start depth:	Start depth of soil layer (penetration depth measured from ground free surface)
End depth:	End depth of soil layer (penetration depth measured from ground free surface)
Thickness:	Thickness of soil layer
Relative depth:	Depth of calculation relative to footing
Iz:	Stress influence factor
Delta P:	Footing impossed stress:
Eff. stress:	Effective stress
$M_{(CPT)}$:	Constrained modulus from CPT
Settlement:	Primary settlement
Second. settlement:	Secondary settlemends due to creep

HILLIS CARNES ENGINEERING ASSOCIATES, INC.
503 Maryland Avenue, Unit 106
Delmar, Maryland 21865
http://www.HCEA.com

CPT: CPT-2 Near B-7
Total depth: 59.51 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

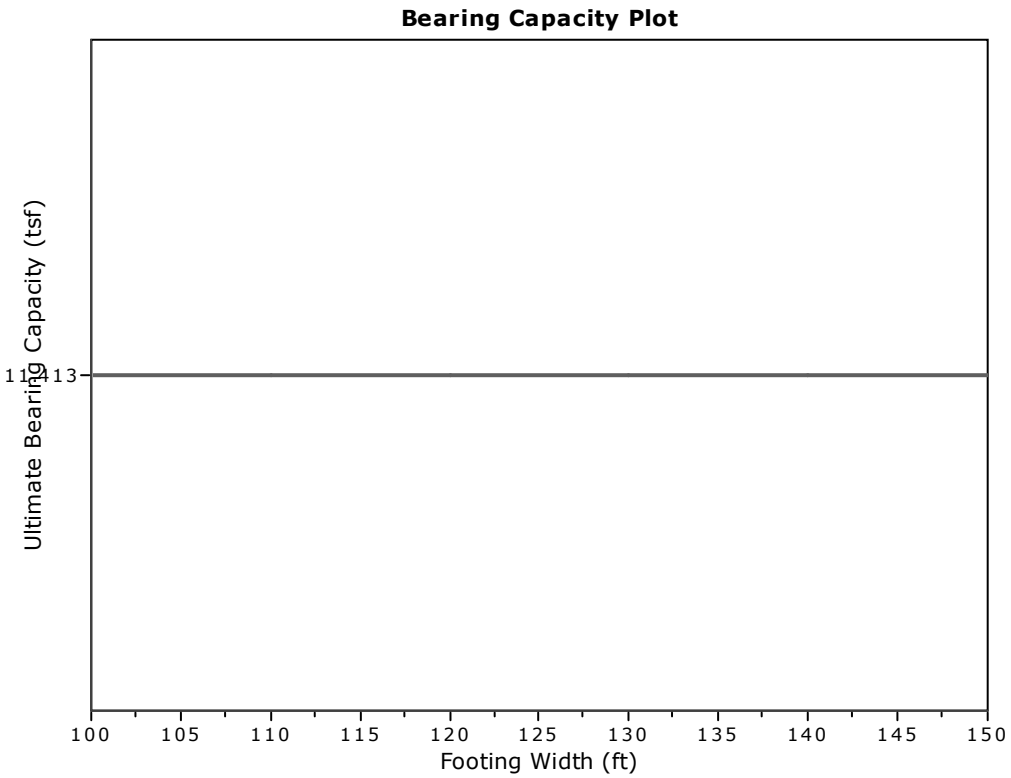
Project: 900 H Street NE
Location: Washington, DC



Bearing Capacity calculation is perfromed 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	100.00	32.00	182.00	57.06	0.20	0.00	11.41
2	110.00	32.00	197.00	57.06	0.20	0.00	11.41
3	120.00	32.00	212.00	57.06	0.20	0.00	11.41
4	130.00	32.00	227.00	57.06	0.20	0.00	11.41
5	140.00	32.00	242.00	57.06	0.20	0.00	11.41
6	150.00	32.00	257.00	57.06	0.20	0.00	11.41

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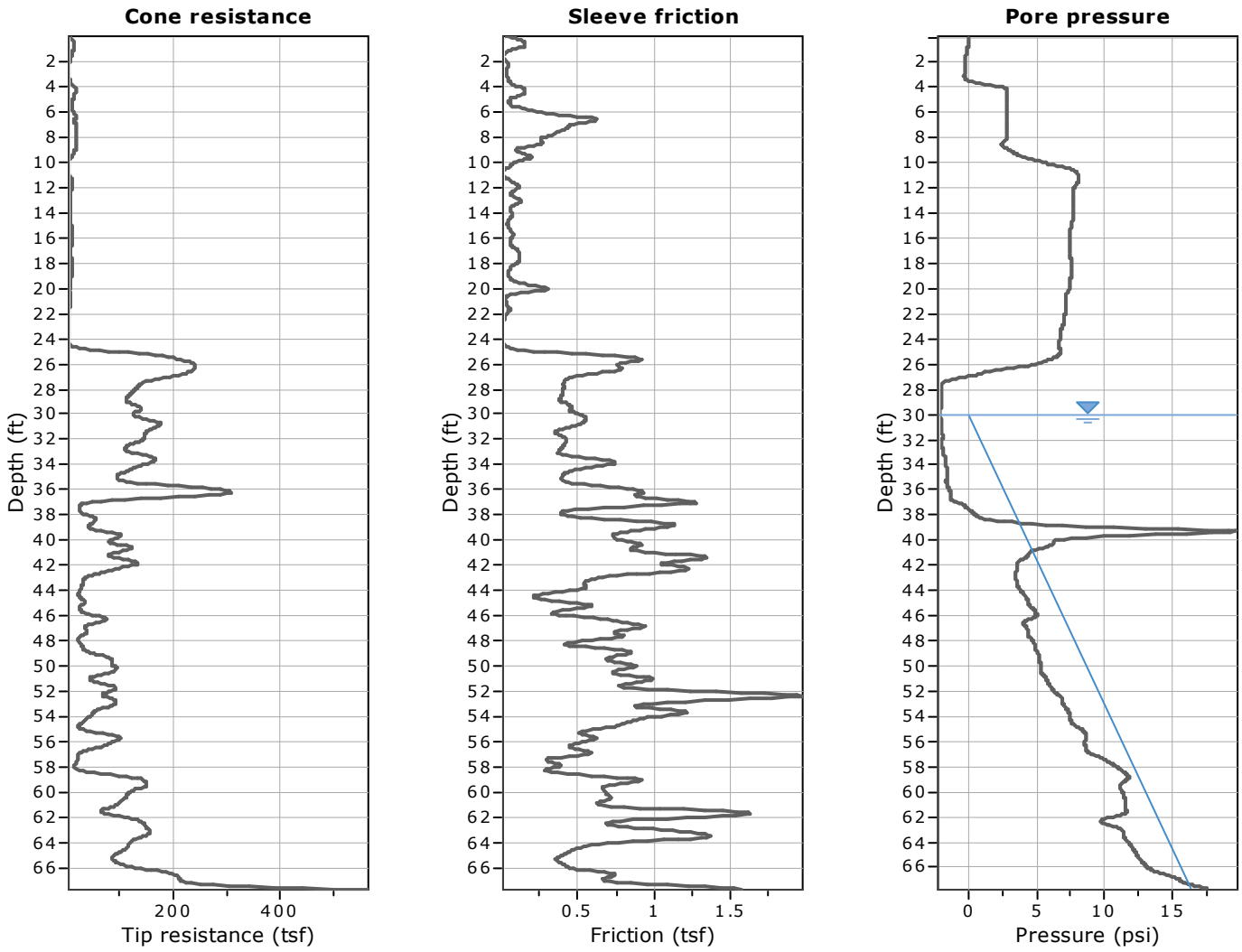
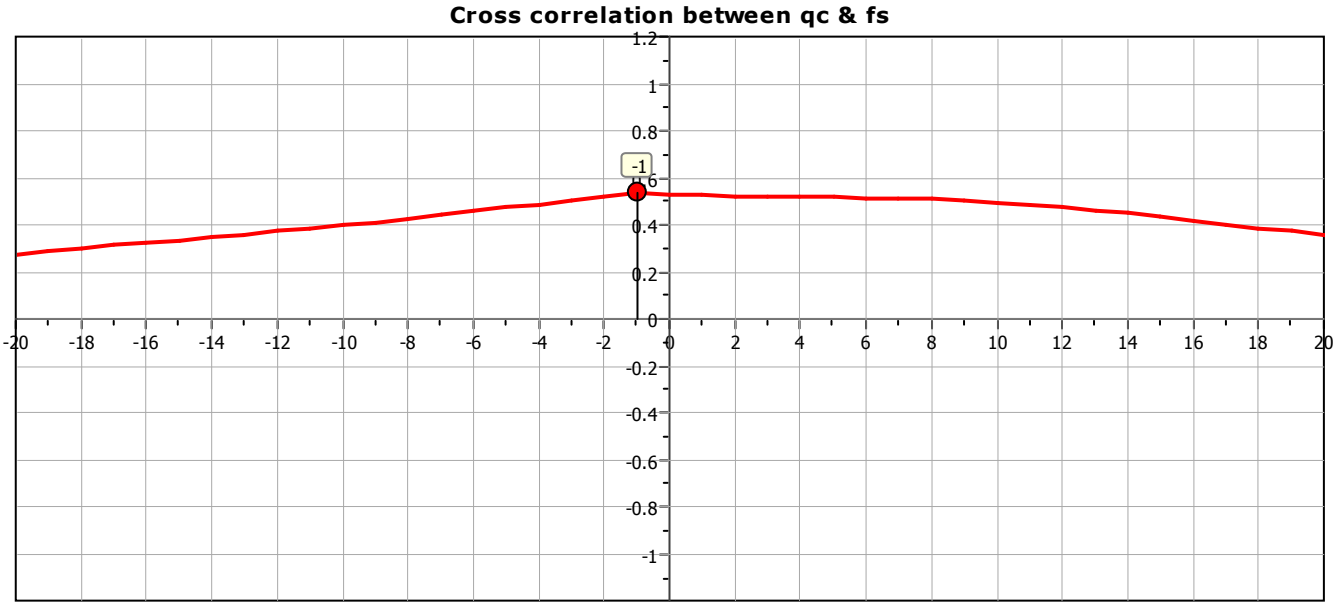
CPT: CPT-3 NearB-8
Total depth: 67.65 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

Project: 900 H Street NE
Location: Washington, DC



The plot below presents the cross correlation coeficient 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 sucessive CPT measurements).



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CPT: CPT-3 NearB-8
Total depth: 67.65 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

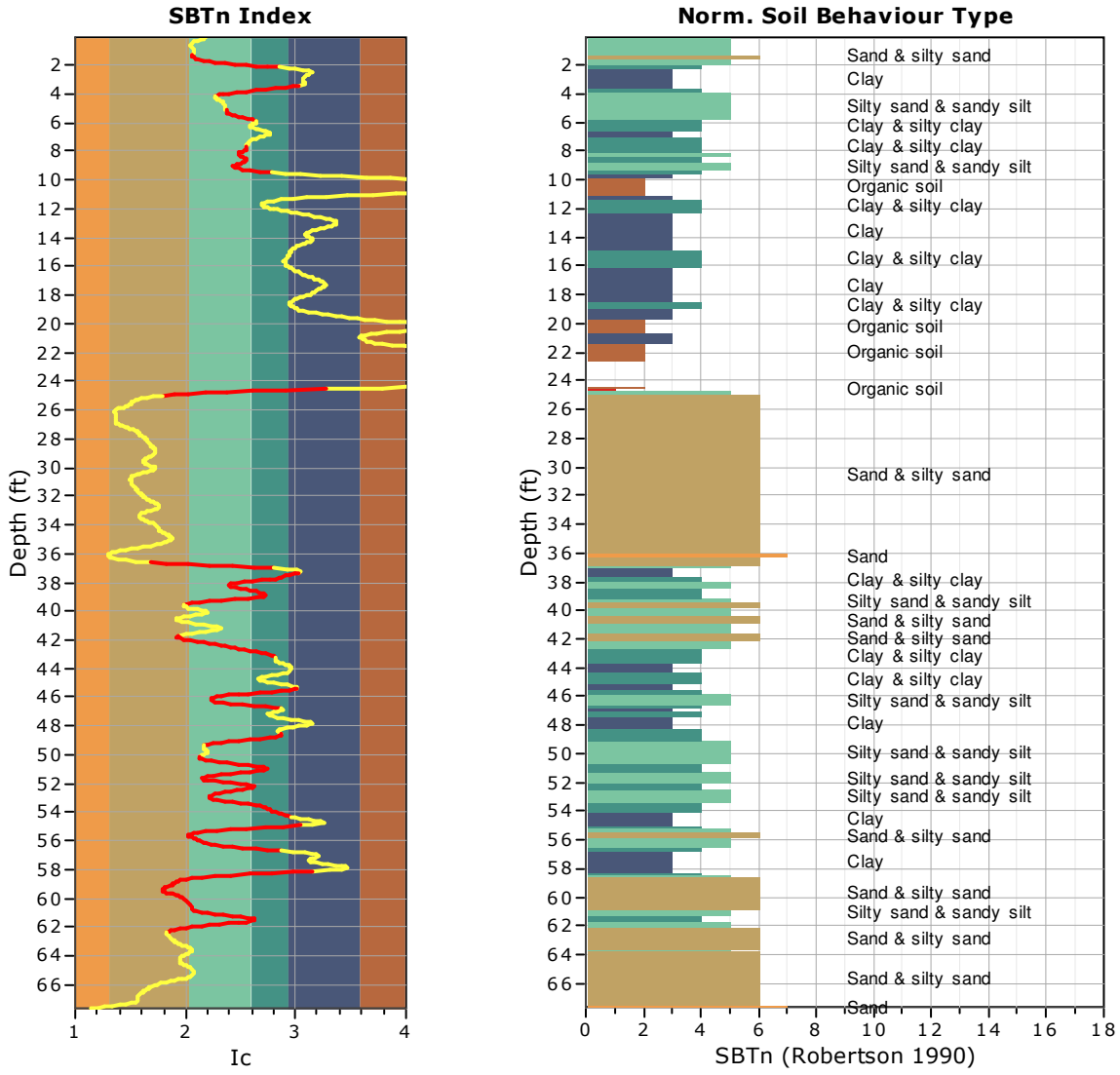
Project: **900 H Street NE**
Location: **Washington, DC**

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties

I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0010
Minimum number of points in layer:	4

General statistics

Total points in CPT file:	1031
Total points excluded:	349
Exclusion percentage:	33.85%
Number of layers detected:	26

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 1	15	Start depth: 1.31 (ft)	6	Sand & silty sand
		End depth: 2.23 (ft)	3	Clay
Transition layer 2	13	Start depth: 3.48 (ft)	3	Clay
		End depth: 4.27 (ft)	5	Silty sand & sandy silt
Transition layer 3	13	Start depth: 5.18 (ft)	5	Silty sand & sandy silt
		End depth: 5.97 (ft)	4	Clay & silty clay
Transition layer 4	8	Start depth: 7.74 (ft)	4	Clay & silty clay
		End depth: 8.20 (ft)	5	Silty sand & sandy silt
Transition layer 5	7	Start depth: 8.20 (ft)	5	Silty sand & sandy silt
		End depth: 8.60 (ft)	4	Clay & silty clay
Transition layer 6	8	Start depth: 8.60 (ft)	4	Clay & silty clay
		End depth: 9.06 (ft)	5	Silty sand & sandy silt
Transition layer 7	8	Start depth: 9.06 (ft)	5	Silty sand & sandy silt
		End depth: 9.51 (ft)	3	Clay
Transition layer 8	8	Start depth: 24.61 (ft)	4	Clay & silty clay
		End depth: 25.07 (ft)	6	Sand & silty sand
Transition layer 9	7	Start depth: 36.68 (ft)	6	Sand & silty sand
		End depth: 37.07 (ft)	3	Clay
Transition layer 10	13	Start depth: 37.40 (ft)	3	Clay
		End depth: 38.19 (ft)	5	Silty sand & sandy silt
Transition layer 11	12	Start depth: 38.19 (ft)	5	Silty sand & sandy silt
		End depth: 38.91 (ft)	4	Clay & silty clay
Transition layer 12	12	Start depth: 38.91 (ft)	4	Clay & silty clay
		End depth: 39.63 (ft)	6	Sand & silty sand
Transition layer 13	23	Start depth: 41.80 (ft)	6	Sand & silty sand
		End depth: 43.24 (ft)	4	Clay & silty clay
Transition layer 14	13	Start depth: 45.41 (ft)	3	Clay
		End depth: 46.19 (ft)	5	Silty sand & sandy silt
Transition layer 15	11	Start depth: 46.19 (ft)	5	Silty sand & sandy silt
		End depth: 46.85 (ft)	3	Clay
Transition layer 16	13	Start depth: 48.62 (ft)	3	Clay
		End depth: 49.41 (ft)	5	Silty sand & sandy silt
Transition layer 17	13	Start depth: 50.20 (ft)	5	Silty sand & sandy silt
		End depth: 50.98 (ft)	4	Clay & silty clay
Transition layer 18	11	Start depth: 50.98 (ft)	4	Clay & silty clay
		End depth: 51.64 (ft)	5	Silty sand & sandy silt
Transition layer 19	10	Start depth: 51.64 (ft)	5	Silty sand & sandy silt
		End depth: 52.23 (ft)	4	Clay & silty clay
Transition layer 20	12	Start depth: 52.23 (ft)	4	Clay & silty clay
		End depth: 52.95 (ft)	5	Silty sand & sandy silt
Transition layer 21	23	Start depth: 52.95 (ft)	5	Silty sand & sandy silt
		End depth: 54.40 (ft)	3	Clay
Transition layer 22	10	Start depth: 54.99 (ft)	3	Clay
		End depth: 55.58 (ft)	6	Sand & silty sand
Transition layer 23	18	Start depth: 55.64 (ft)	6	Sand & silty sand
		End depth: 56.76 (ft)	3	Clay

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 24	19	Start depth: 58.20 (ft)	3	Clay
		End depth: 59.38 (ft)	6	Sand & silty sand
Transition layer 25	33	Start depth: 59.38 (ft)	6	Sand & silty sand
		End depth: 61.48 (ft)	4	Clay & silty clay
Transition layer 26	16	Start depth: 61.48 (ft)	4	Clay & silty clay
		End depth: 62.47 (ft)	6	Sand & silty sand

Start depth: Depth where the transition layer begins
End depth: Depth where the transition layer ends

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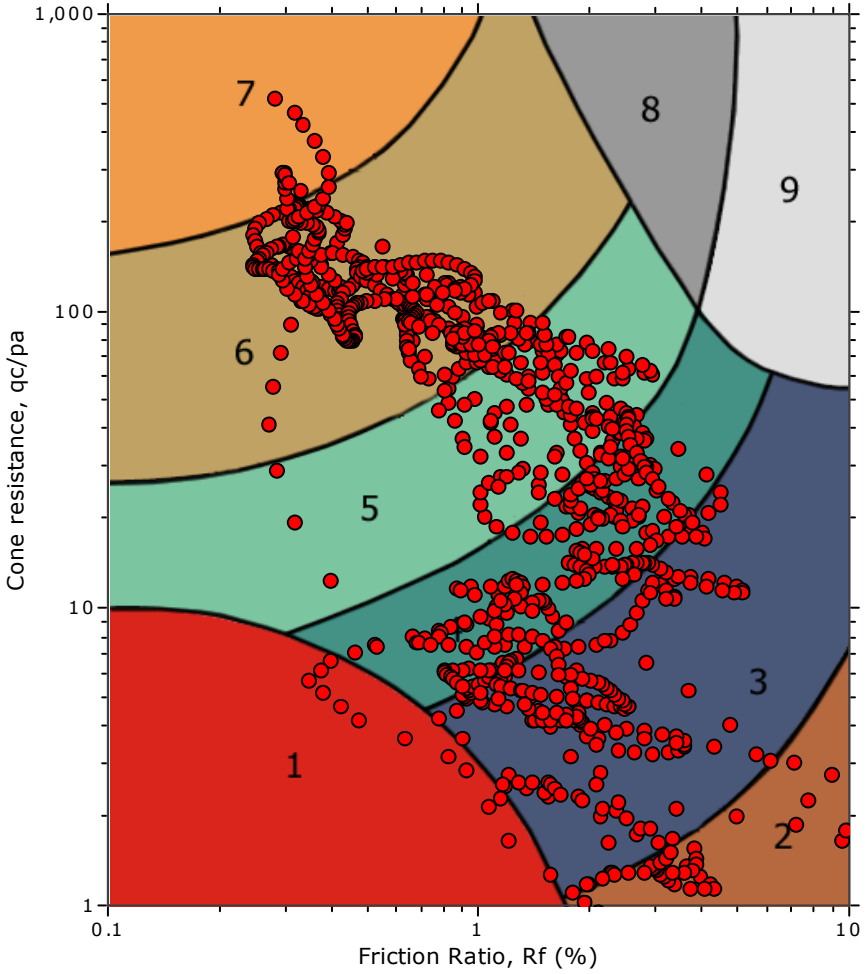
Project: **900 H Street NE**
Location: **Washington, DC**

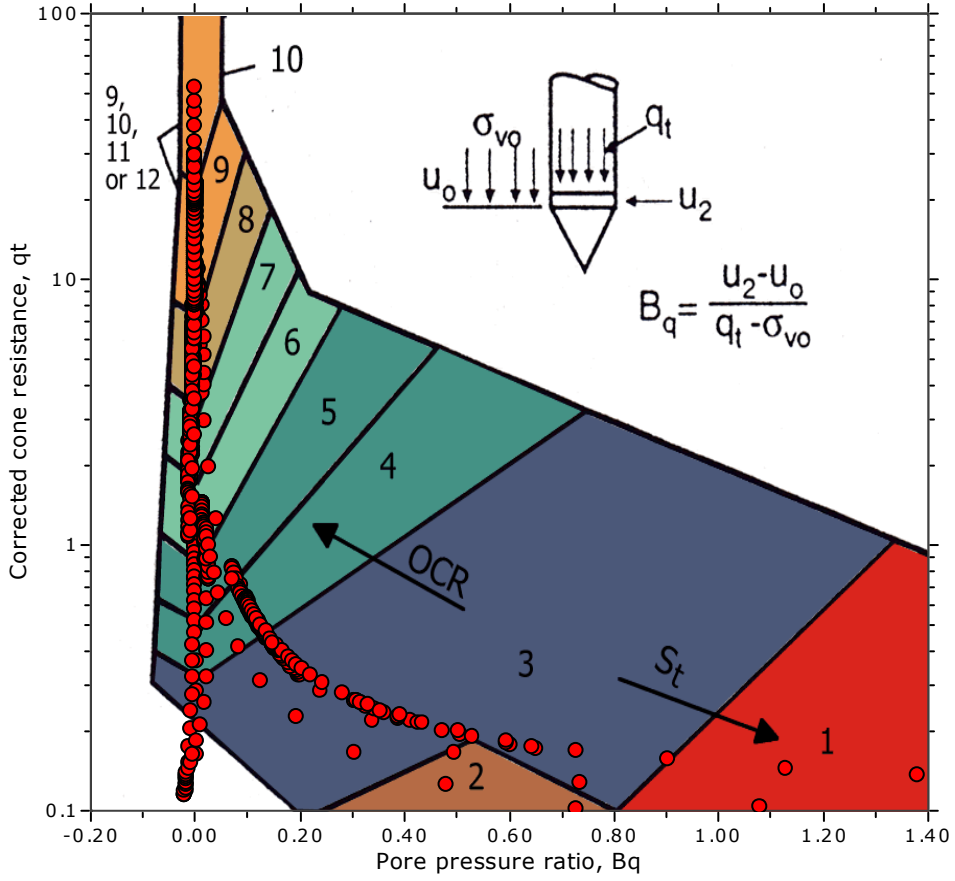
CPT: CPT-3 NearB-8
Total depth: 67.65 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

SBT - Bq plots

SBT plot



Bq plot



SBT legend

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

HILLIS-CARNES ENGINEERING ASSOCIATES
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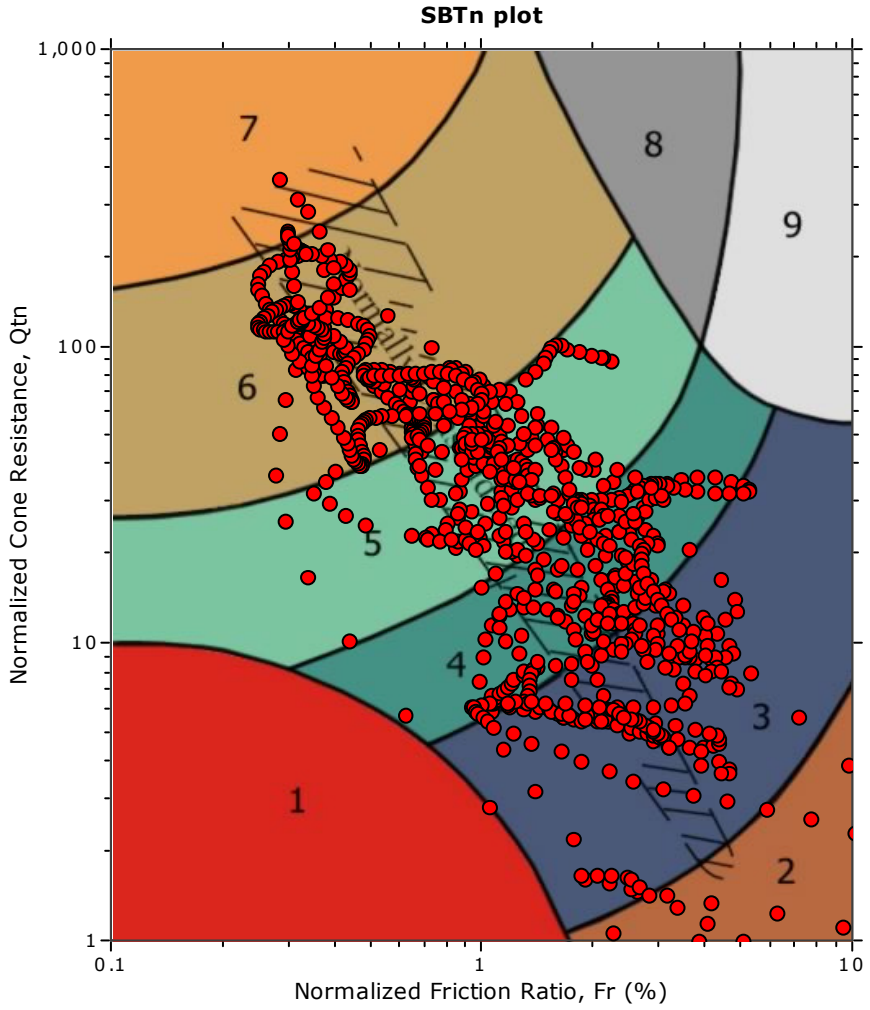
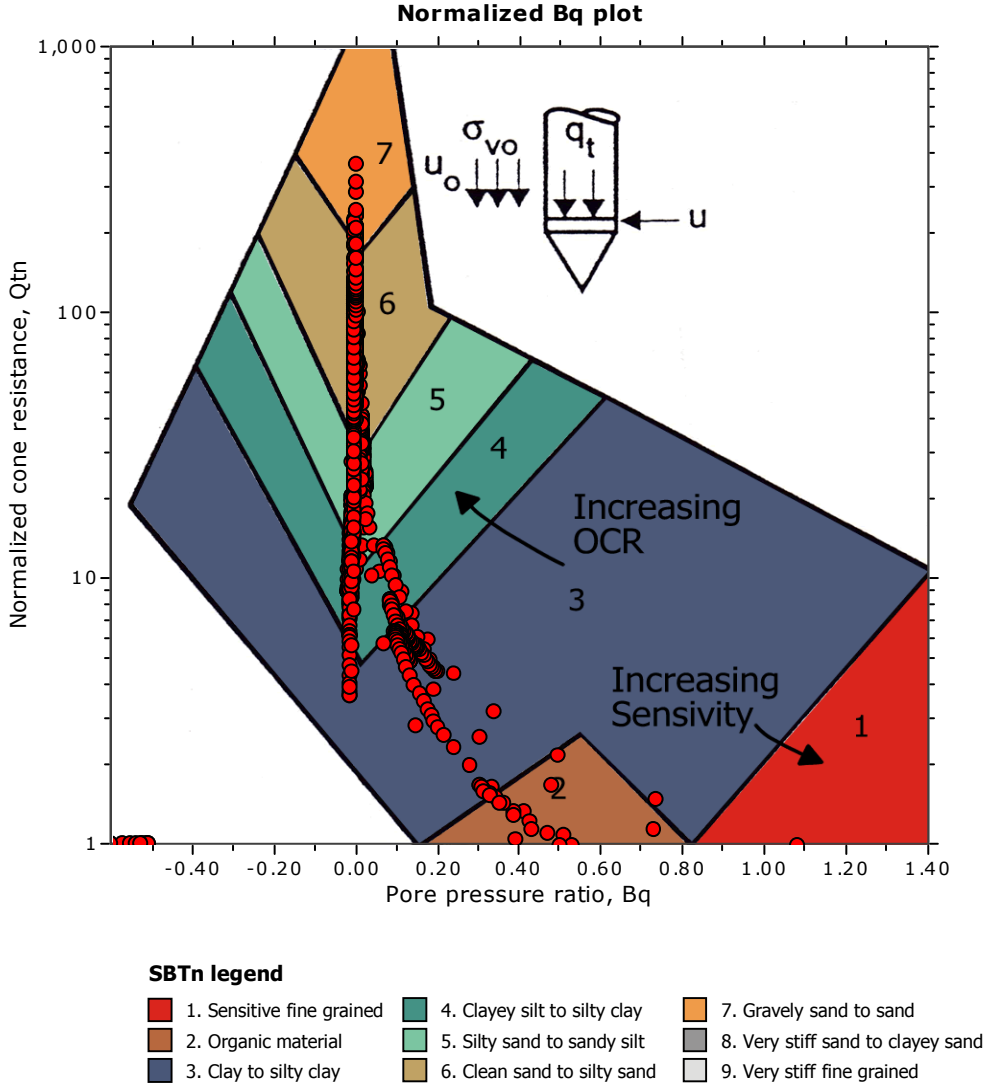
Delmar, Maryland 21865
http://www.HCEA.com

Project: **900 H Street NE**
Location: **Washington, DC**

CPT: CPT-3 NearB-8
Total depth: 67.65 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

SBT - Bq plots (normalized)





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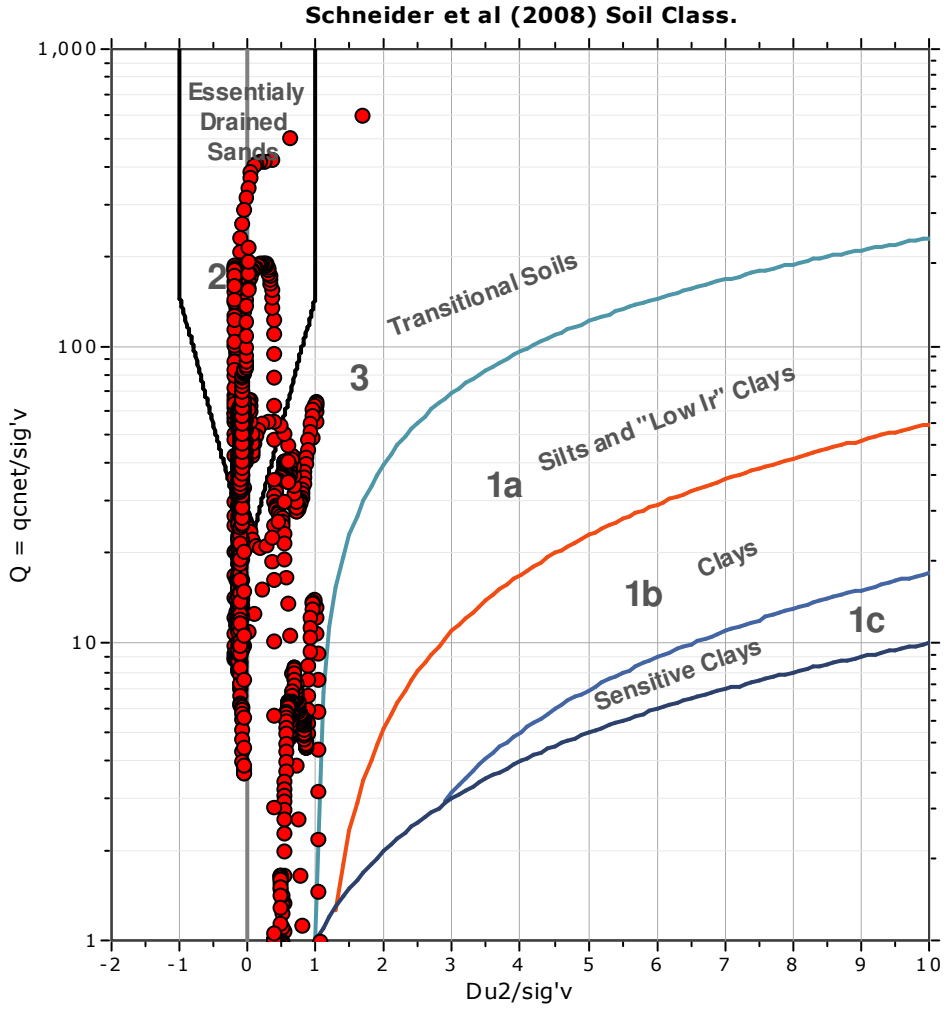
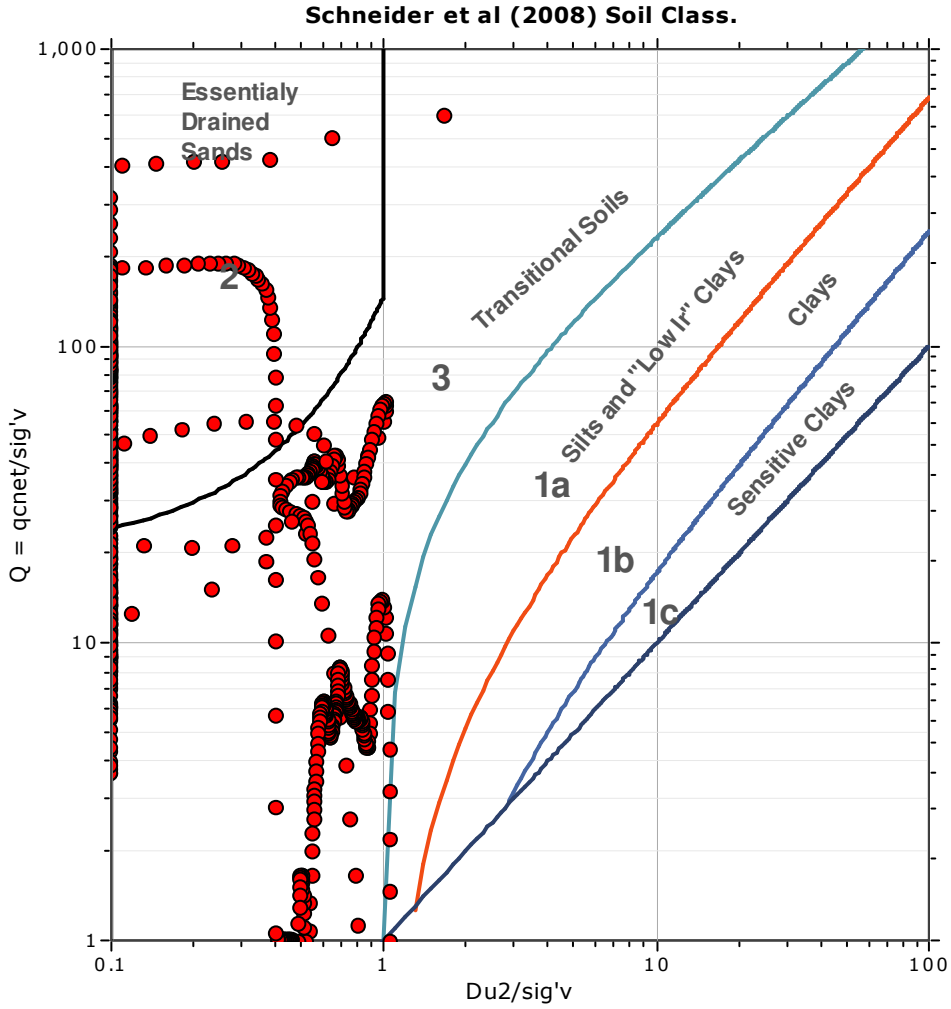
Bq plots (Schneider)





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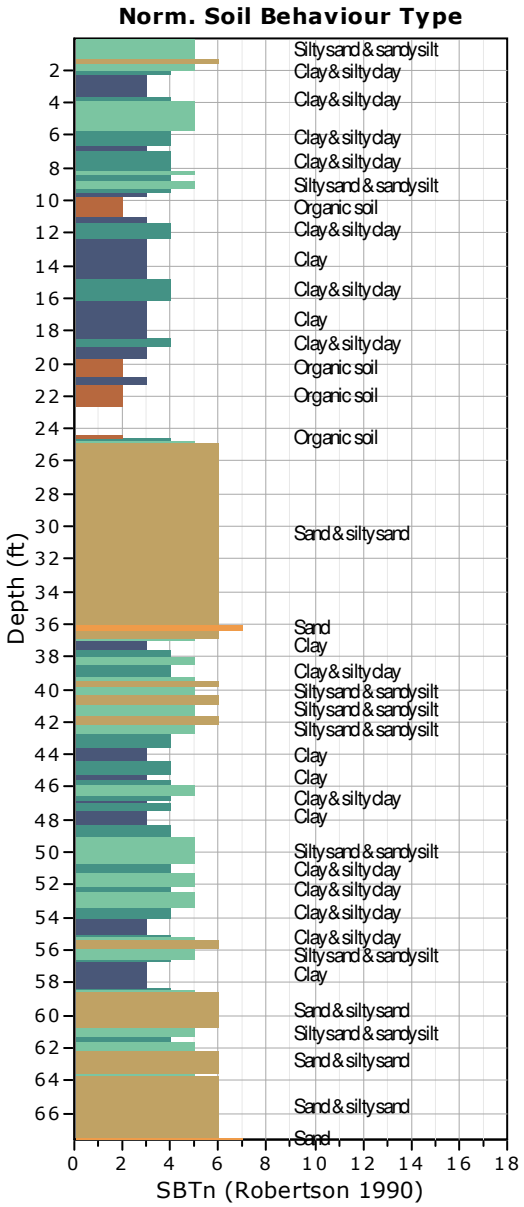

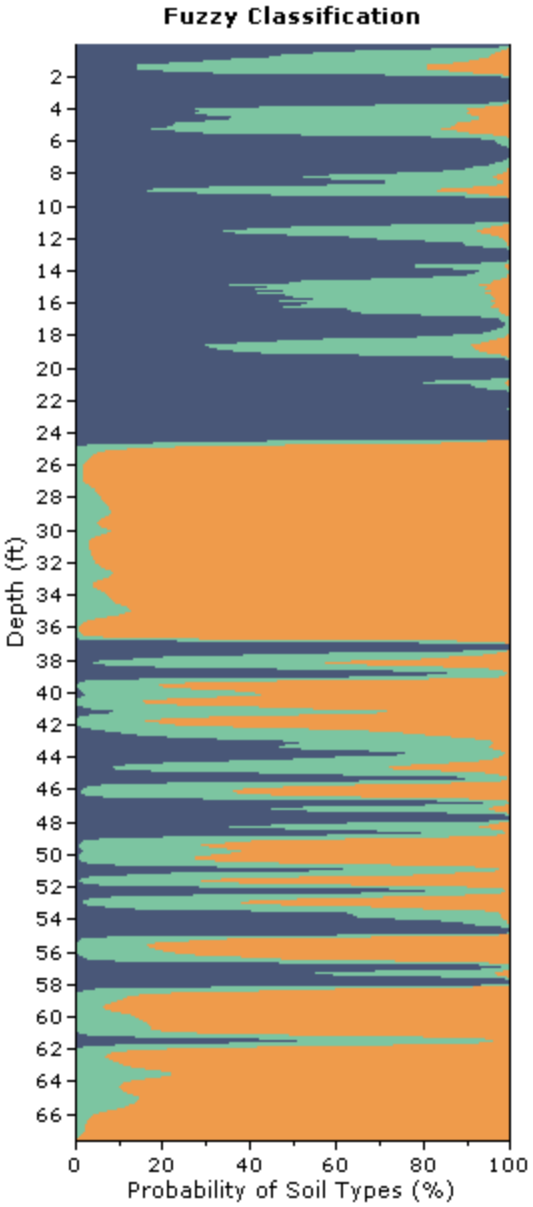

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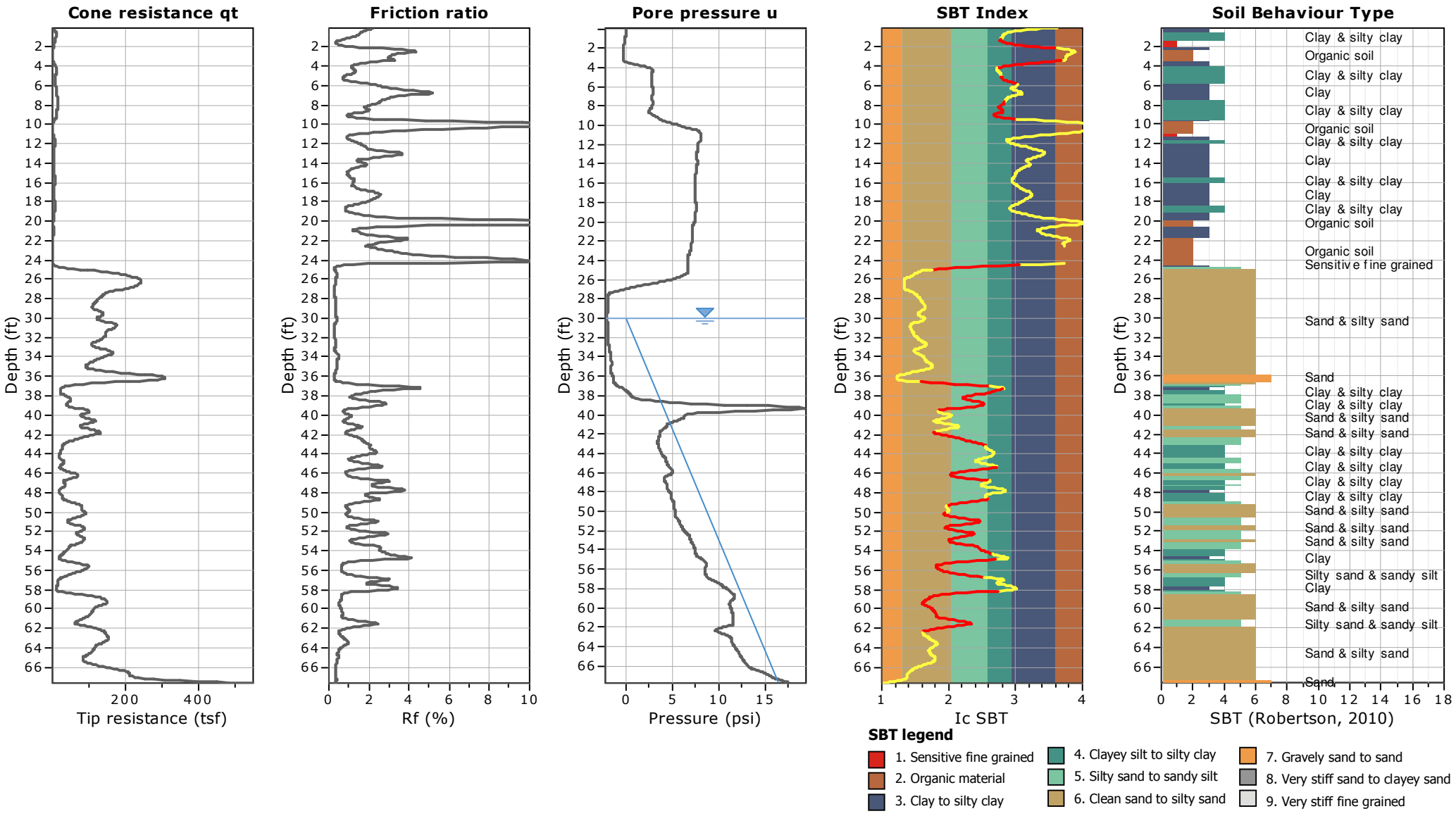

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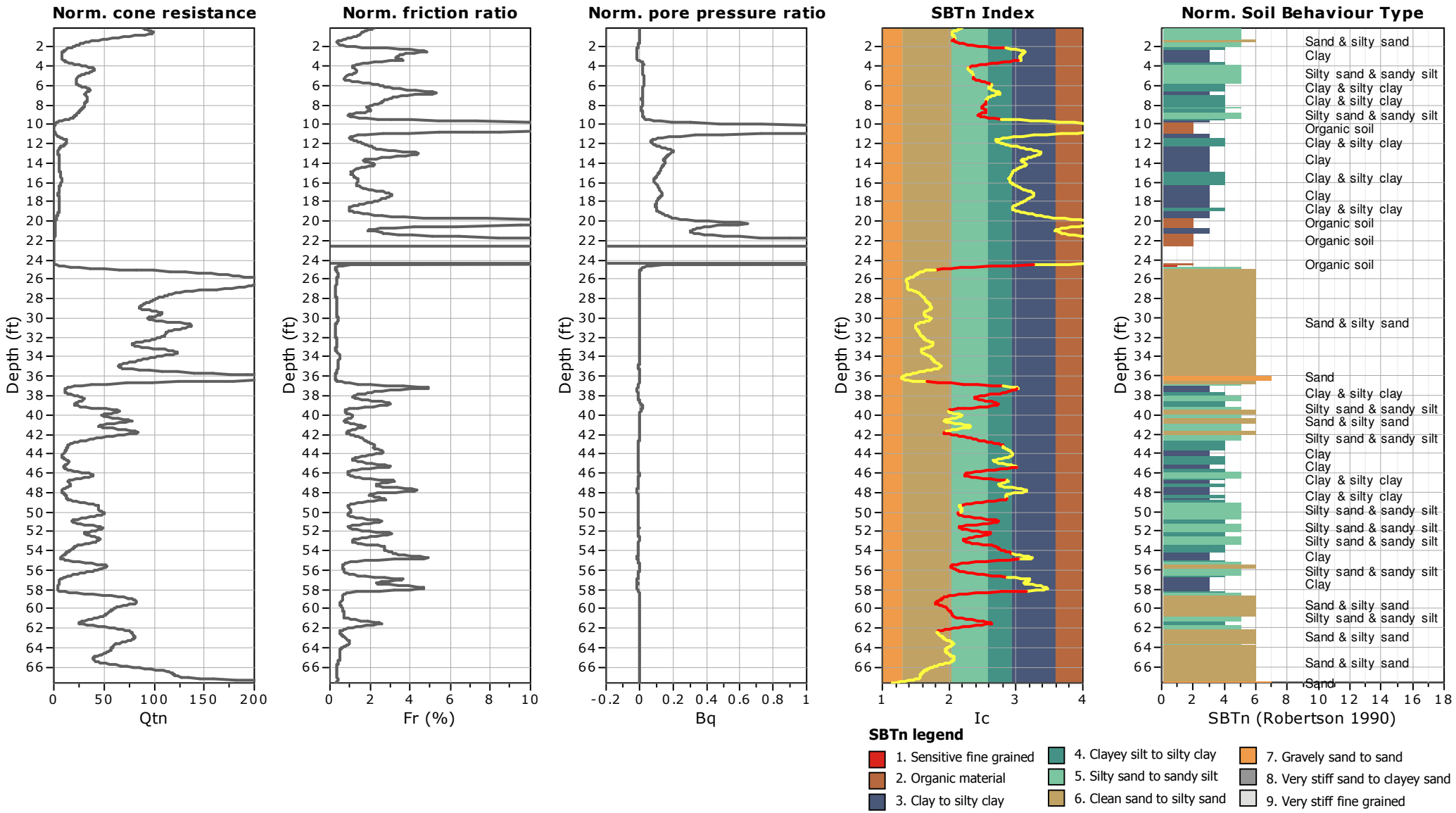

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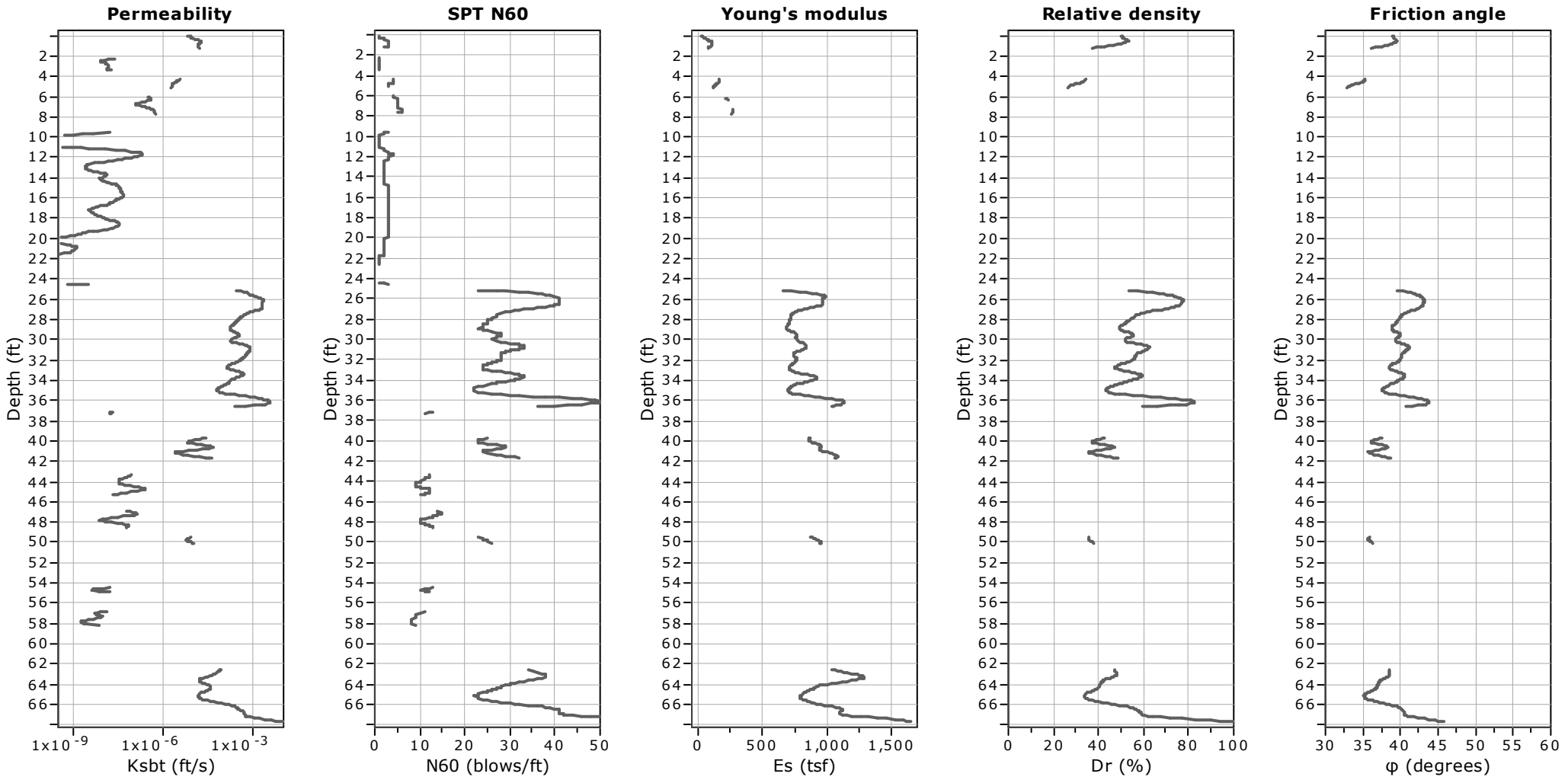

Calculation parameters

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 desnisty constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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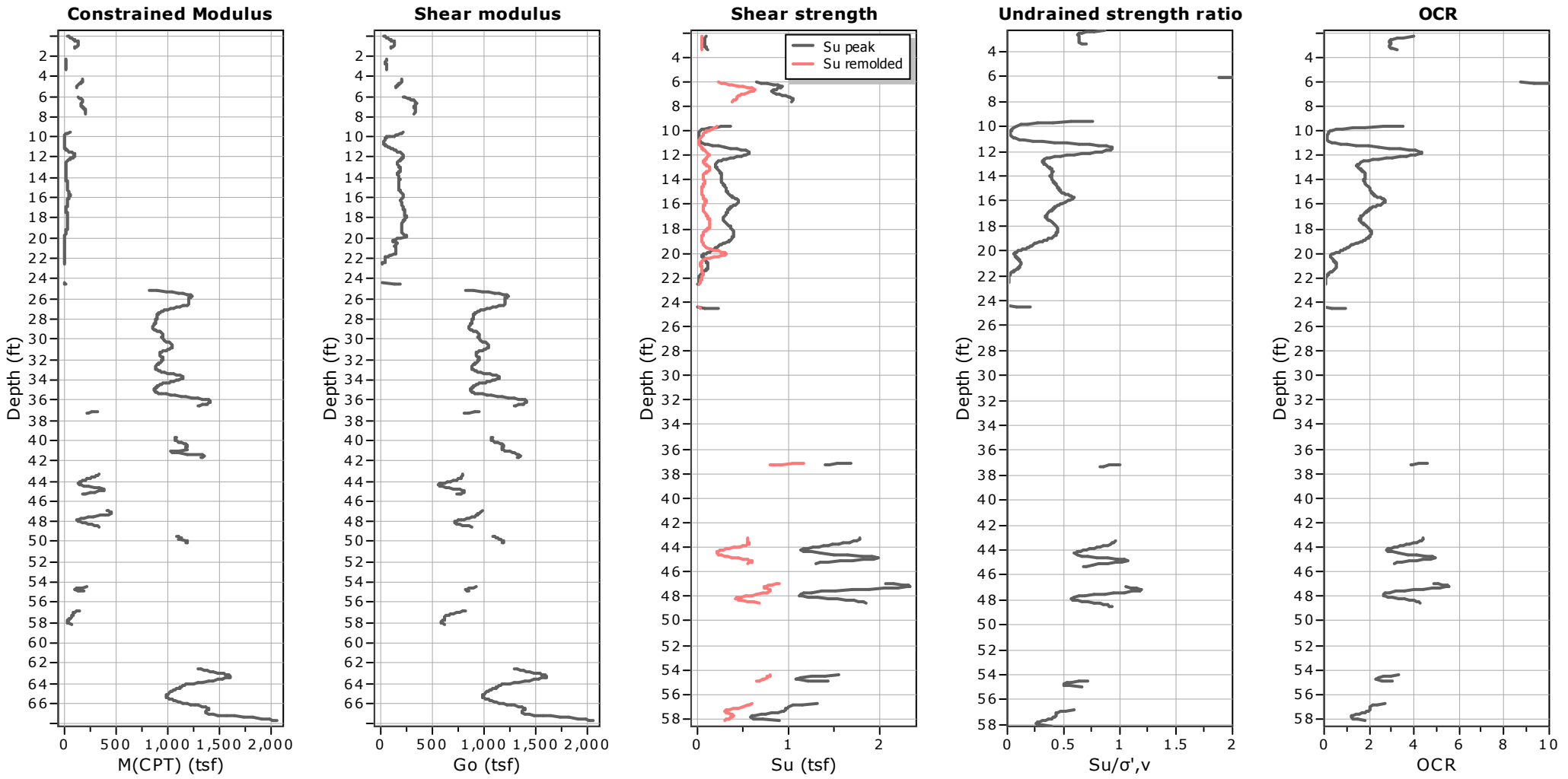

Calculation parameters

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

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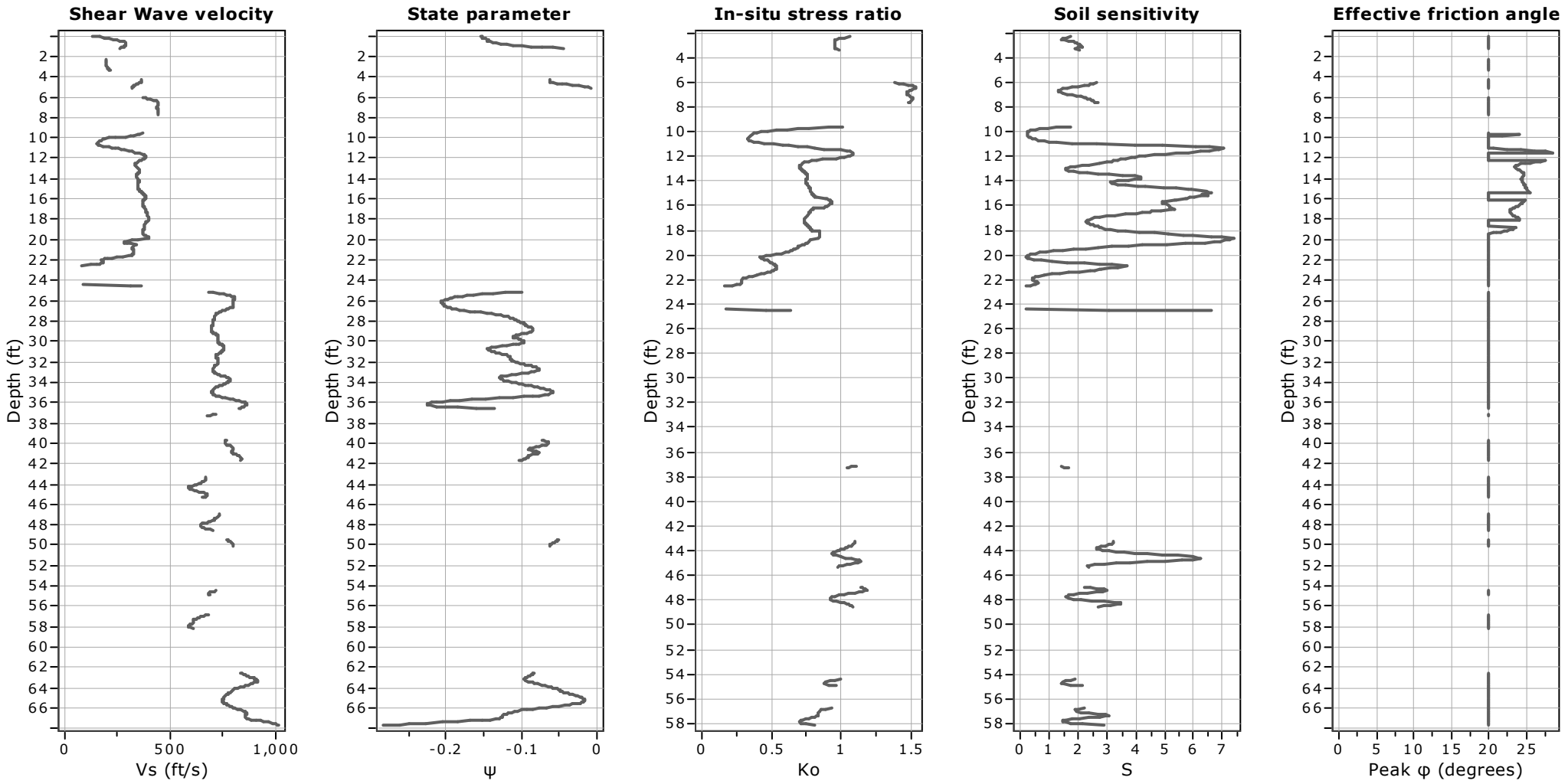
Project: **900 H Street NE**
Location: **Washington, DC**



Calculation parameters

Soil Sensitivity factor, N_S: 7.00

User defined estimation data

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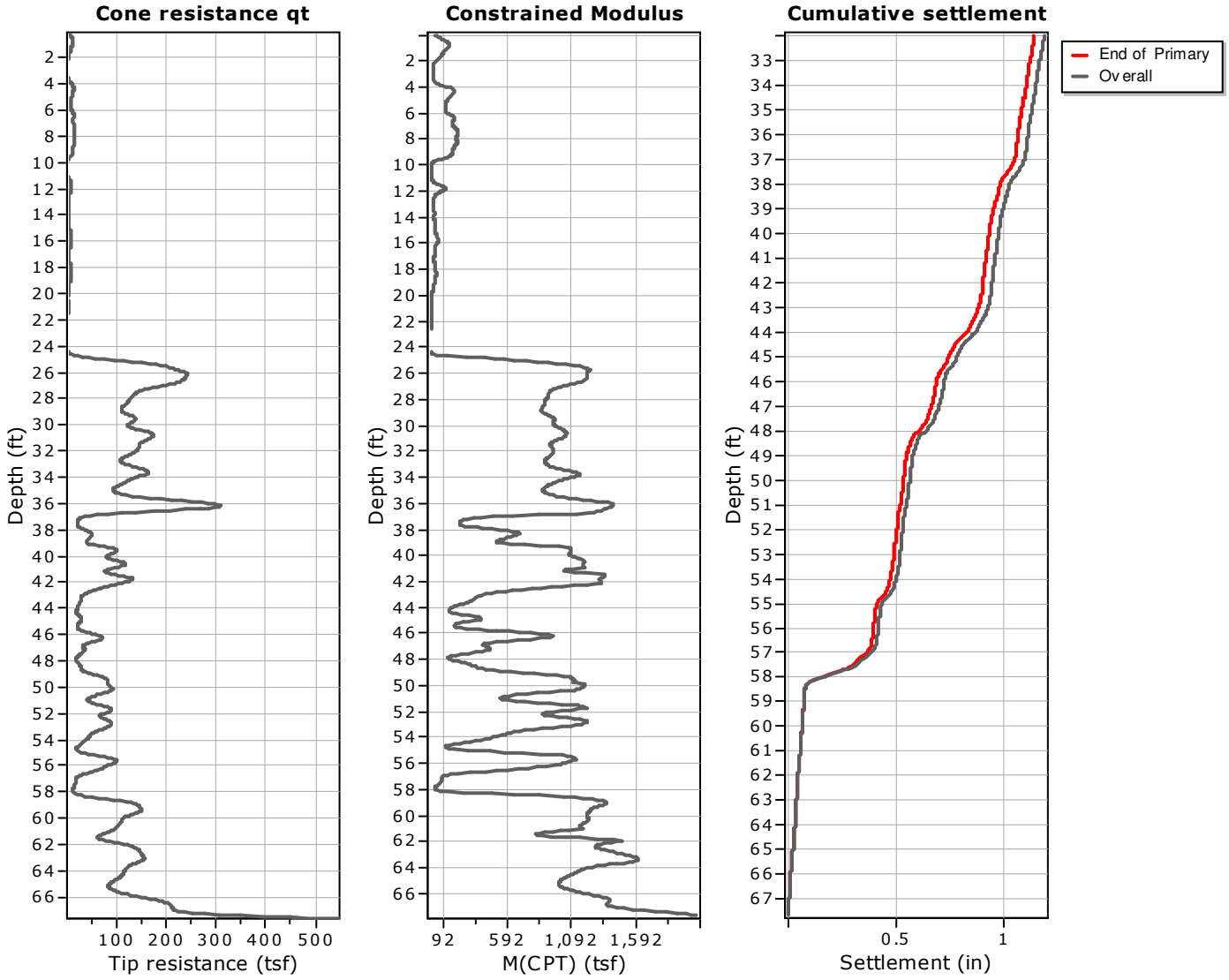
Cone Operator: Uknown

Project: 900 H Street NE
Location: Washington, DC

Settlements calculation according to theory of elasticity*



Caclulation properties

Footing type: Rectangular
Footing width: 100.00 (ft)
L/B: 1.0
Footing pressure: 3.50 (tsf)
Embedment depth: 32.00 (ft)
Footing is rigid: Yes
Remove excavation load: Yes
Apply 20% rule: No
Calculate secondary settlements: Yes
Time period for primary consolidation: 6 months
Time period for second. settlements: 12 months

* Primary settlements calculation is performed according to the following formula:

$$S = \sum \frac{\Delta \sigma_v}{M_{CPT}} \Delta z$$

* Secondary (creep) settlements calculation is performed according to the following formula:

$$S = C_a \cdot \Delta z \cdot \log(t)$$

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
1	31.96	32.02	0.07	0.01	1.58	956.32	1.00	0.000	0.000	0.000
2	32.02	32.09	0.07	0.05	1.58	953.34	1.00	0.001	0.000	0.001
3	32.09	32.15	0.07	0.12	1.58	949.49	1.00	0.001	0.000	0.001
4	32.15	32.22	0.07	0.19	1.58	944.86	1.00	0.001	0.000	0.001
5	32.22	32.28	0.07	0.25	1.58	939.56	1.00	0.001	0.000	0.001
6	32.28	32.35	0.07	0.32	1.58	931.75	1.00	0.001	0.000	0.001
7	32.35	32.41	0.07	0.38	1.58	923.61	1.00	0.001	0.000	0.001
8	32.41	32.48	0.07	0.45	1.58	915.40	1.00	0.001	0.000	0.001
9	32.48	32.55	0.07	0.51	1.58	907.45	1.00	0.001	0.000	0.001
10	32.55	32.61	0.07	0.58	1.58	900.18	1.00	0.001	0.000	0.001
11	32.61	32.68	0.07	0.64	1.58	892.01	1.00	0.001	0.000	0.001
12	32.68	32.74	0.07	0.71	1.58	887.46	1.00	0.001	0.000	0.001
13	32.74	32.81	0.07	0.78	1.58	882.89	1.00	0.001	0.000	0.001
14	32.81	32.87	0.07	0.84	1.58	882.71	1.00	0.001	0.000	0.001
15	32.87	32.94	0.07	0.91	1.58	885.05	1.00	0.001	0.000	0.001
16	32.94	33.01	0.07	0.97	1.58	889.84	1.00	0.001	0.000	0.001
17	33.01	33.07	0.07	1.04	1.58	898.85	1.00	0.001	0.000	0.001
18	33.07	33.14	0.07	1.10	1.58	909.43	1.00	0.001	0.000	0.001
19	33.14	33.20	0.07	1.17	1.58	927.09	1.00	0.001	0.000	0.001
20	33.20	33.27	0.07	1.23	1.58	946.79	1.00	0.001	0.000	0.001
21	33.27	33.33	0.07	1.30	1.58	973.75	1.00	0.001	0.000	0.001
22	33.33	33.40	0.07	1.37	1.58	1002.99	1.00	0.001	0.000	0.001
23	33.40	33.46	0.07	1.43	1.58	1035.75	1.00	0.001	0.000	0.001
24	33.46	33.53	0.07	1.50	1.58	1067.59	1.00	0.001	0.000	0.001
25	33.53	33.60	0.07	1.56	1.58	1098.28	1.00	0.001	0.000	0.001
26	33.60	33.66	0.07	1.63	1.58	1124.15	1.00	0.001	0.000	0.001
27	33.66	33.73	0.07	1.69	1.58	1143.76	1.00	0.001	0.000	0.001
28	33.73	33.79	0.07	1.76	1.58	1154.17	1.00	0.001	0.000	0.001
29	33.79	33.86	0.07	1.83	1.58	1156.05	1.00	0.001	0.000	0.001
30	33.86	33.92	0.07	1.89	1.58	1148.27	1.00	0.001	0.000	0.001
31	33.92	33.99	0.07	1.96	1.58	1133.02	1.00	0.001	0.000	0.001
32	33.99	34.06	0.07	2.02	1.58	1112.28	1.00	0.001	0.000	0.001
33	34.06	34.12	0.07	2.09	1.58	1087.90	1.00	0.001	0.000	0.001
34	34.12	34.19	0.07	2.15	1.58	1063.41	1.00	0.001	0.000	0.001
35	34.19	34.25	0.07	2.22	1.58	1037.01	1.00	0.001	0.000	0.001
36	34.25	34.32	0.07	2.28	1.58	1012.24	1.00	0.001	0.000	0.001
37	34.32	34.38	0.07	2.35	1.58	987.20	1.00	0.001	0.000	0.001
38	34.38	34.45	0.07	2.42	1.58	965.64	1.00	0.001	0.000	0.001
39	34.45	34.51	0.07	2.48	1.58	945.71	1.00	0.001	0.000	0.001
40	34.51	34.58	0.07	2.55	1.58	929.47	1.00	0.001	0.000	0.001
41	34.58	34.65	0.07	2.61	1.58	915.10	1.00	0.001	0.000	0.001
42	34.65	34.71	0.07	2.68	1.57	902.83	1.00	0.001	0.000	0.001
43	34.71	34.78	0.07	2.74	1.57	892.97	1.00	0.001	0.000	0.001
44	34.78	34.84	0.07	2.81	1.57	883.88	1.00	0.001	0.000	0.001
45	34.84	34.91	0.07	2.88	1.57	878.05	1.00	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
46	34.91	34.97	0.07	2.94	1.57	873.83	1.00	0.001	0.000	0.001
47	34.97	35.04	0.07	3.01	1.57	871.54	1.00	0.001	0.000	0.001
48	35.04	35.10	0.07	3.07	1.57	871.34	1.00	0.001	0.000	0.001
49	35.10	35.17	0.07	3.14	1.57	875.42	0.99	0.001	0.000	0.001
50	35.17	35.24	0.07	3.20	1.57	884.02	0.99	0.001	0.000	0.001
51	35.24	35.30	0.07	3.27	1.57	899.57	0.99	0.001	0.000	0.001
52	35.30	35.37	0.07	3.33	1.57	918.49	0.99	0.001	0.000	0.001
53	35.37	35.43	0.07	3.40	1.57	947.31	0.99	0.001	0.000	0.001
54	35.43	35.50	0.07	3.47	1.57	981.97	0.99	0.001	0.000	0.001
55	35.50	35.56	0.07	3.53	1.57	1025.80	0.99	0.001	0.000	0.001
56	35.56	35.63	0.07	3.60	1.57	1075.49	0.99	0.001	0.000	0.001
57	35.63	35.70	0.07	3.66	1.57	1129.34	0.99	0.001	0.000	0.001
58	35.70	35.76	0.07	3.73	1.57	1185.60	0.99	0.001	0.000	0.001
59	35.76	35.83	0.07	3.79	1.57	1240.98	0.99	0.001	0.000	0.001
60	35.83	35.89	0.07	3.86	1.57	1292.77	0.99	0.001	0.000	0.001
61	35.89	35.96	0.07	3.93	1.56	1337.07	0.99	0.001	0.000	0.001
62	35.96	36.02	0.07	3.99	1.56	1372.24	0.99	0.001	0.000	0.001
63	36.02	36.09	0.07	4.06	1.56	1398.51	0.99	0.001	0.000	0.001
64	36.09	36.15	0.07	4.12	1.56	1416.01	0.99	0.001	0.000	0.001
65	36.15	36.22	0.07	4.19	1.56	1422.90	0.99	0.001	0.000	0.001
66	36.22	36.29	0.07	4.25	1.56	1418.66	0.99	0.001	0.000	0.001
67	36.29	36.35	0.07	4.32	1.56	1405.84	0.99	0.001	0.000	0.001
68	36.35	36.42	0.07	4.38	1.56	1386.88	0.99	0.001	0.000	0.001
69	36.42	36.48	0.07	4.45	1.56	1366.04	0.99	0.001	0.000	0.001
70	36.48	36.55	0.07	4.52	1.56	1342.62	0.99	0.001	0.000	0.001
71	36.55	36.61	0.07	4.58	1.56	1319.49	0.98	0.001	0.000	0.001
72	36.61	36.68	0.07	4.65	1.56	1296.21	0.98	0.001	0.000	0.001
73	36.68	36.75	0.07	4.71	1.55	1272.41	0.98	0.001	0.000	0.001
74	36.75	36.81	0.07	4.78	1.55	1245.16	0.98	0.001	0.000	0.001
75	36.81	36.88	0.07	4.84	1.55	1134.40	0.98	0.001	0.000	0.001
76	36.88	36.94	0.07	4.91	1.55	843.28	0.98	0.001	0.000	0.001
77	36.94	37.01	0.07	4.98	1.55	628.63	0.98	0.002	0.000	0.002
78	37.01	37.07	0.07	5.04	1.55	481.19	0.98	0.003	0.000	0.003
79	37.07	37.14	0.07	5.11	1.55	386.86	0.98	0.003	0.000	0.003
80	37.14	37.20	0.07	5.17	1.55	329.03	0.98	0.004	0.000	0.004
81	37.20	37.27	0.07	5.24	1.55	269.54	0.98	0.005	0.000	0.005
82	37.27	37.34	0.07	5.30	1.54	241.13	0.98	0.005	0.000	0.005
83	37.34	37.40	0.07	5.37	1.54	228.40	0.98	0.005	0.000	0.005
84	37.40	37.47	0.07	5.43	1.54	223.22	0.98	0.005	0.000	0.006
85	37.47	37.53	0.07	5.50	1.54	221.59	0.98	0.005	0.000	0.006
86	37.53	37.60	0.07	5.57	1.54	222.03	0.97	0.005	0.000	0.006
87	37.60	37.66	0.07	5.63	1.54	225.43	0.97	0.005	0.000	0.006
88	37.66	37.73	0.07	5.70	1.54	235.25	0.97	0.005	0.000	0.005
89	37.73	37.80	0.07	5.76	1.54	257.61	0.97	0.005	0.000	0.005
90	37.80	37.86	0.07	5.83	1.53	303.20	0.97	0.004	0.000	0.004

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91	37.86	37.93	0.07	5.89	1.53	354.77	0.97	0.003	0.000	0.004
92	37.93	37.99	0.07	5.96	1.53	405.17	0.97	0.003	0.000	0.003
93	37.99	38.06	0.07	6.02	1.53	465.86	0.97	0.003	0.000	0.003
94	38.06	38.12	0.07	6.09	1.53	530.34	0.97	0.002	0.000	0.002
95	38.12	38.19	0.07	6.16	1.53	590.49	0.97	0.002	0.000	0.002
96	38.19	38.25	0.07	6.22	1.53	638.57	0.97	0.002	0.000	0.002
97	38.25	38.32	0.07	6.29	1.52	669.55	0.97	0.002	0.000	0.002
98	38.32	38.39	0.07	6.35	1.52	682.27	0.96	0.002	0.000	0.002
99	38.39	38.45	0.07	6.42	1.52	679.21	0.96	0.002	0.000	0.002
100	38.45	38.52	0.07	6.48	1.52	665.17	0.96	0.002	0.000	0.002
101	38.52	38.58	0.07	6.55	1.52	644.85	0.96	0.002	0.000	0.002
102	38.58	38.65	0.07	6.62	1.52	621.33	0.96	0.002	0.000	0.002
103	38.65	38.71	0.07	6.68	1.52	595.73	0.96	0.002	0.000	0.002
104	38.71	38.78	0.07	6.75	1.51	568.65	0.96	0.002	0.000	0.002
105	38.78	38.85	0.07	6.81	1.51	541.55	0.96	0.002	0.000	0.002
106	38.85	38.91	0.07	6.88	1.51	518.61	0.96	0.002	0.000	0.002
107	38.91	38.98	0.07	6.94	1.51	506.90	0.96	0.002	0.000	0.002
108	38.98	39.04	0.07	7.01	1.51	515.58	0.95	0.002	0.000	0.002
109	39.04	39.11	0.07	7.07	1.51	553.02	0.95	0.002	0.000	0.002
110	39.11	39.17	0.07	7.14	1.50	624.04	0.95	0.002	0.000	0.002
111	39.17	39.24	0.07	7.21	1.50	727.71	0.95	0.002	0.000	0.002
112	39.24	39.30	0.07	7.27	1.50	856.30	0.95	0.001	0.000	0.001
113	39.30	39.37	0.07	7.34	1.50	996.41	0.95	0.001	0.000	0.001
114	39.37	39.44	0.07	7.40	1.50	1076.81	0.95	0.001	0.000	0.001
115	39.44	39.50	0.07	7.47	1.50	1082.90	0.95	0.001	0.000	0.001
116	39.50	39.57	0.07	7.53	1.49	1087.40	0.95	0.001	0.000	0.001
117	39.57	39.63	0.07	7.60	1.49	1088.94	0.94	0.001	0.000	0.001
118	39.63	39.70	0.07	7.67	1.49	1088.10	0.94	0.001	0.000	0.001
119	39.70	39.76	0.07	7.73	1.49	1085.81	0.94	0.001	0.000	0.001
120	39.76	39.83	0.07	7.80	1.49	1081.48	0.94	0.001	0.000	0.001
121	39.83	39.90	0.07	7.86	1.49	1076.49	0.94	0.001	0.000	0.001
122	39.90	39.96	0.07	7.93	1.48	1074.16	0.94	0.001	0.000	0.001
123	39.96	40.03	0.07	7.99	1.48	1076.35	0.94	0.001	0.000	0.001
124	40.03	40.09	0.07	8.06	1.48	1085.12	0.94	0.001	0.000	0.001
125	40.09	40.16	0.07	8.12	1.48	1099.18	0.94	0.001	0.000	0.001
126	40.16	40.22	0.07	8.19	1.48	1118.03	0.93	0.001	0.000	0.001
127	40.22	40.29	0.07	8.26	1.47	1139.73	0.93	0.001	0.000	0.001
128	40.29	40.35	0.07	8.32	1.47	1160.87	0.93	0.001	0.000	0.001
129	40.35	40.42	0.07	8.39	1.47	1178.71	0.93	0.001	0.000	0.001
130	40.42	40.49	0.07	8.45	1.47	1190.39	0.93	0.001	0.000	0.001
131	40.49	40.55	0.07	8.52	1.47	1195.15	0.93	0.001	0.000	0.001
132	40.55	40.62	0.07	8.58	1.46	1194.63	0.93	0.001	0.000	0.001
133	40.62	40.68	0.07	8.65	1.46	1189.74	0.93	0.001	0.000	0.001
134	40.68	40.75	0.07	8.72	1.46	1183.71	0.92	0.001	0.000	0.001
135	40.75	40.81	0.07	8.78	1.46	1178.65	0.92	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
136	40.81	40.88	0.07	8.85	1.46	1178.58	0.92	0.001	0.000	0.001
137	40.88	40.94	0.07	8.91	1.45	1182.99	0.92	0.001	0.000	0.001
138	40.94	41.01	0.07	8.98	1.45	1191.99	0.92	0.001	0.000	0.001
139	41.01	41.08	0.07	9.04	1.45	1099.70	0.92	0.001	0.000	0.001
140	41.08	41.14	0.07	9.11	1.45	1043.25	0.92	0.001	0.000	0.001
141	41.14	41.21	0.07	9.17	1.45	1025.98	0.92	0.001	0.000	0.001
142	41.21	41.27	0.07	9.24	1.44	1049.31	0.91	0.001	0.000	0.001
143	41.27	41.34	0.07	9.31	1.44	1109.96	0.91	0.001	0.000	0.001
144	41.34	41.40	0.07	9.37	1.44	1201.07	0.91	0.001	0.000	0.001
145	41.40	41.47	0.07	9.44	1.44	1345.03	0.91	0.001	0.000	0.001
146	41.47	41.54	0.07	9.50	1.44	1352.55	0.91	0.001	0.000	0.001
147	41.54	41.60	0.07	9.57	1.43	1350.93	0.91	0.001	0.000	0.001
148	41.60	41.67	0.07	9.63	1.43	1342.54	0.91	0.001	0.000	0.001
149	41.67	41.73	0.07	9.70	1.43	1332.18	0.90	0.001	0.000	0.001
150	41.73	41.80	0.07	9.77	1.43	1321.14	0.90	0.001	0.000	0.001
151	41.80	41.86	0.07	9.83	1.43	1312.61	0.90	0.001	0.000	0.001
152	41.86	41.93	0.07	9.90	1.42	1309.96	0.90	0.001	0.000	0.001
153	41.93	41.99	0.07	9.96	1.42	1311.99	0.90	0.001	0.000	0.001
154	41.99	42.06	0.07	10.03	1.42	1316.00	0.90	0.001	0.000	0.001
155	42.06	42.13	0.07	10.09	1.42	1316.66	0.90	0.001	0.000	0.001
156	42.13	42.19	0.07	10.16	1.41	1314.82	0.90	0.001	0.000	0.001
157	42.19	42.26	0.07	10.22	1.41	1305.88	0.89	0.001	0.000	0.001
158	42.26	42.32	0.07	10.29	1.41	1206.39	0.89	0.001	0.000	0.001
159	42.32	42.39	0.07	10.36	1.41	1108.33	0.89	0.001	0.000	0.001
160	42.39	42.45	0.07	10.42	1.41	1017.72	0.89	0.001	0.000	0.001
161	42.45	42.52	0.07	10.49	1.40	933.65	0.89	0.001	0.000	0.001
162	42.52	42.59	0.07	10.55	1.40	854.59	0.89	0.001	0.000	0.001
163	42.59	42.65	0.07	10.62	1.40	779.34	0.89	0.001	0.000	0.001
164	42.65	42.72	0.07	10.68	1.40	707.20	0.88	0.002	0.000	0.002
165	42.72	42.78	0.07	10.75	1.39	638.38	0.88	0.002	0.000	0.002
166	42.78	42.85	0.07	10.81	1.39	573.75	0.88	0.002	0.000	0.002
167	42.85	42.91	0.07	10.88	1.39	514.83	0.88	0.002	0.000	0.002
168	42.91	42.98	0.07	10.95	1.39	463.46	0.88	0.002	0.000	0.002
169	42.98	43.04	0.07	11.01	1.39	421.50	0.88	0.003	0.000	0.003
170	43.04	43.11	0.07	11.08	1.38	390.17	0.88	0.003	0.000	0.003
171	43.11	43.18	0.07	11.14	1.38	369.46	0.87	0.003	0.000	0.003
172	43.18	43.24	0.07	11.21	1.38	350.28	0.87	0.003	0.000	0.003
173	43.24	43.31	0.07	11.27	1.38	340.12	0.87	0.003	0.000	0.003
174	43.31	43.37	0.07	11.34	1.37	336.07	0.87	0.003	0.000	0.003
175	43.37	43.44	0.07	11.41	1.37	331.95	0.87	0.003	0.000	0.003
176	43.44	43.50	0.07	11.47	1.37	323.46	0.87	0.003	0.000	0.003
177	43.50	43.57	0.07	11.54	1.37	309.33	0.87	0.003	0.000	0.004
178	43.57	43.64	0.07	11.60	1.37	290.75	0.86	0.004	0.000	0.004
179	43.64	43.70	0.07	11.67	1.36	270.41	0.86	0.004	0.000	0.004
180	43.70	43.77	0.07	11.73	1.36	250.51	0.86	0.004	0.000	0.004

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
181	43.77	43.83	0.07	11.80	1.36	232.24	0.86	0.005	0.000	0.005
182	43.83	43.90	0.07	11.86	1.36	215.42	0.86	0.005	0.000	0.005
183	43.90	43.96	0.07	11.93	1.35	199.40	0.86	0.005	0.000	0.006
184	43.96	44.03	0.07	12.00	1.35	183.46	0.86	0.006	0.000	0.006
185	44.03	44.09	0.07	12.06	1.35	167.74	0.85	0.006	0.000	0.007
186	44.09	44.16	0.07	12.13	1.35	153.18	0.85	0.007	0.000	0.007
187	44.16	44.23	0.07	12.19	1.35	141.40	0.85	0.007	0.000	0.008
188	44.23	44.29	0.07	12.26	1.34	134.23	0.85	0.008	0.000	0.008
189	44.29	44.36	0.07	12.32	1.34	133.61	0.85	0.008	0.000	0.008
190	44.36	44.42	0.07	12.39	1.34	141.52	0.85	0.007	0.000	0.008
191	44.42	44.49	0.07	12.46	1.34	159.91	0.85	0.007	0.000	0.007
192	44.49	44.55	0.07	12.52	1.33	190.25	0.84	0.006	0.000	0.006
193	44.55	44.62	0.07	12.59	1.33	235.06	0.84	0.004	0.000	0.005
194	44.62	44.69	0.07	12.65	1.33	289.65	0.84	0.004	0.000	0.004
195	44.69	44.75	0.07	12.72	1.33	345.93	0.84	0.003	0.000	0.003
196	44.75	44.82	0.07	12.78	1.32	377.41	0.84	0.003	0.000	0.003
197	44.82	44.88	0.07	12.85	1.32	389.94	0.84	0.003	0.000	0.003
198	44.88	44.95	0.07	12.91	1.32	390.18	0.84	0.003	0.000	0.003
199	44.95	45.01	0.07	12.98	1.32	378.63	0.83	0.003	0.000	0.003
200	45.01	45.08	0.07	13.05	1.32	342.16	0.83	0.003	0.000	0.003
201	45.08	45.14	0.07	13.11	1.31	294.57	0.83	0.004	0.000	0.004
202	45.14	45.21	0.07	13.18	1.31	249.38	0.83	0.004	0.000	0.004
203	45.21	45.28	0.07	13.24	1.31	212.52	0.83	0.005	0.000	0.005
204	45.28	45.34	0.07	13.31	1.31	186.72	0.83	0.006	0.000	0.006
205	45.34	45.41	0.07	13.37	1.30	172.97	0.83	0.006	0.000	0.006
206	45.41	45.47	0.07	13.44	1.30	172.11	0.82	0.006	0.000	0.006
207	45.47	45.54	0.07	13.51	1.30	186.22	0.82	0.005	0.000	0.006
208	45.54	45.60	0.07	13.57	1.30	219.35	0.82	0.005	0.000	0.005
209	45.60	45.67	0.07	13.64	1.30	278.26	0.82	0.004	0.000	0.004
210	45.67	45.73	0.07	13.70	1.29	374.71	0.82	0.003	0.000	0.003
211	45.73	45.80	0.07	13.77	1.29	438.95	0.82	0.002	0.000	0.002
212	45.80	45.87	0.07	13.83	1.29	514.83	0.82	0.002	0.000	0.002
213	45.87	45.93	0.07	13.90	1.29	599.23	0.81	0.002	0.000	0.002
214	45.93	46.00	0.07	13.96	1.28	687.68	0.81	0.001	0.000	0.001
215	46.00	46.06	0.07	14.03	1.28	774.17	0.81	0.001	0.000	0.001
216	46.06	46.13	0.07	14.10	1.28	851.40	0.81	0.001	0.000	0.001
217	46.13	46.19	0.07	14.16	1.28	911.22	0.81	0.001	0.000	0.001
218	46.19	46.26	0.07	14.23	1.28	945.64	0.81	0.001	0.000	0.001
219	46.26	46.33	0.07	14.29	1.27	948.73	0.81	0.001	0.000	0.001
220	46.33	46.39	0.07	14.36	1.27	918.34	0.80	0.001	0.000	0.001
221	46.39	46.46	0.07	14.42	1.27	857.44	0.80	0.001	0.000	0.001
222	46.46	46.52	0.07	14.49	1.27	773.93	0.80	0.001	0.000	0.001
223	46.52	46.59	0.07	14.56	1.26	679.36	0.80	0.001	0.000	0.001
224	46.59	46.65	0.07	14.62	1.26	586.56	0.80	0.002	0.000	0.002
225	46.65	46.72	0.07	14.69	1.26	506.87	0.80	0.002	0.000	0.002

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
226	46.72	46.78	0.07	14.75	1.26	448.15	0.80	0.002	0.000	0.002
227	46.78	46.85	0.07	14.82	1.26	413.50	0.79	0.002	0.000	0.003
228	46.85	46.92	0.07	14.88	1.25	401.47	0.79	0.002	0.000	0.003
229	46.92	46.98	0.07	14.95	1.25	406.89	0.79	0.002	0.000	0.003
230	46.98	47.05	0.07	15.01	1.25	422.49	0.79	0.002	0.000	0.002
231	47.05	47.11	0.07	15.08	1.25	440.47	0.79	0.002	0.000	0.002
232	47.11	47.18	0.07	15.15	1.24	453.87	0.79	0.002	0.000	0.002
233	47.18	47.24	0.07	15.21	1.24	457.82	0.79	0.002	0.000	0.002
234	47.24	47.31	0.07	15.28	1.24	449.97	0.78	0.002	0.000	0.002
235	47.31	47.38	0.07	15.34	1.24	430.62	0.78	0.002	0.000	0.002
236	47.38	47.44	0.07	15.41	1.24	402.10	0.78	0.002	0.000	0.003
237	47.44	47.51	0.07	15.47	1.23	350.02	0.78	0.003	0.000	0.003
238	47.51	47.57	0.07	15.54	1.23	285.38	0.78	0.003	0.000	0.004
239	47.57	47.64	0.07	15.60	1.23	230.23	0.78	0.004	0.000	0.004
240	47.64	47.70	0.07	15.67	1.23	187.01	0.78	0.005	0.000	0.005
241	47.70	47.77	0.07	15.74	1.22	155.88	0.78	0.006	0.000	0.006
242	47.77	47.83	0.07	15.80	1.22	135.72	0.77	0.007	0.000	0.007
243	47.83	47.90	0.07	15.87	1.22	125.40	0.77	0.008	0.000	0.008
244	47.90	47.97	0.07	15.93	1.22	124.25	0.77	0.008	0.000	0.008
245	47.97	48.03	0.07	16.00	1.22	131.92	0.77	0.007	0.000	0.008
246	48.03	48.10	0.07	16.06	1.21	148.04	0.77	0.006	0.000	0.007
247	48.10	48.16	0.07	16.13	1.21	171.67	0.77	0.006	0.000	0.006
248	48.16	48.23	0.07	16.20	1.21	200.84	0.77	0.005	0.000	0.005
249	48.23	48.29	0.07	16.26	1.21	232.34	0.76	0.004	0.000	0.004
250	48.29	48.36	0.07	16.33	1.21	262.43	0.76	0.004	0.000	0.004
251	48.36	48.43	0.07	16.39	1.20	287.92	0.76	0.003	0.000	0.003
252	48.43	48.49	0.07	16.46	1.20	307.54	0.76	0.003	0.000	0.003
253	48.49	48.56	0.07	16.52	1.20	322.81	0.76	0.003	0.000	0.003
254	48.56	48.62	0.07	16.59	1.20	338.17	0.76	0.003	0.000	0.003
255	48.62	48.69	0.07	16.65	1.20	360.83	0.76	0.003	0.000	0.003
256	48.69	48.75	0.07	16.72	1.19	396.83	0.76	0.002	0.000	0.002
257	48.75	48.82	0.07	16.79	1.19	429.24	0.75	0.002	0.000	0.002
258	48.82	48.88	0.07	16.85	1.19	477.00	0.75	0.002	0.000	0.002
259	48.88	48.95	0.07	16.92	1.19	541.23	0.75	0.002	0.000	0.002
260	48.95	49.02	0.07	16.98	1.19	620.33	0.75	0.002	0.000	0.002
261	49.02	49.08	0.07	17.05	1.18	709.95	0.75	0.001	0.000	0.001
262	49.08	49.15	0.07	17.11	1.18	803.37	0.75	0.001	0.000	0.001
263	49.15	49.21	0.07	17.18	1.18	892.99	0.75	0.001	0.000	0.001
264	49.21	49.28	0.07	17.25	1.18	971.50	0.74	0.001	0.000	0.001
265	49.28	49.34	0.07	17.31	1.17	1033.58	0.74	0.001	0.000	0.001
266	49.34	49.41	0.07	17.38	1.17	1084.67	0.74	0.001	0.000	0.001
267	49.41	49.48	0.07	17.44	1.17	1087.22	0.74	0.001	0.000	0.001
268	49.48	49.54	0.07	17.51	1.17	1094.29	0.74	0.001	0.000	0.001
269	49.54	49.61	0.07	17.57	1.17	1104.94	0.74	0.001	0.000	0.001
270	49.61	49.67	0.07	17.64	1.16	1118.28	0.74	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
271	49.67	49.74	0.07	17.70	1.16	1135.25	0.74	0.001	0.000	0.001
272	49.74	49.80	0.07	17.77	1.16	1101.33	0.73	0.001	0.000	0.001
273	49.80	49.87	0.07	17.84	1.16	1116.14	0.73	0.001	0.000	0.001
274	49.87	49.93	0.07	17.90	1.16	1185.29	0.73	0.001	0.000	0.001
275	49.93	50.00	0.07	17.97	1.15	1195.63	0.73	0.001	0.000	0.001
276	50.00	50.07	0.07	18.03	1.15	1199.40	0.73	0.001	0.000	0.001
277	50.07	50.13	0.07	18.10	1.15	1195.43	0.73	0.001	0.000	0.001
278	50.13	50.20	0.07	18.16	1.15	1184.28	0.73	0.001	0.000	0.001
279	50.20	50.26	0.07	18.23	1.15	1168.49	0.73	0.001	0.000	0.001
280	50.26	50.33	0.07	18.30	1.15	1149.37	0.72	0.001	0.000	0.001
281	50.33	50.39	0.07	18.36	1.14	1130.30	0.72	0.001	0.000	0.001
282	50.39	50.46	0.07	18.43	1.14	1113.21	0.72	0.001	0.000	0.001
283	50.46	50.52	0.07	18.49	1.14	1010.59	0.72	0.001	0.000	0.001
284	50.52	50.59	0.07	18.56	1.14	921.94	0.72	0.001	0.000	0.001
285	50.59	50.66	0.07	18.62	1.14	830.52	0.72	0.001	0.000	0.001
286	50.66	50.72	0.07	18.69	1.13	743.00	0.72	0.001	0.000	0.001
287	50.72	50.79	0.07	18.75	1.13	665.57	0.72	0.001	0.000	0.001
288	50.79	50.85	0.07	18.82	1.13	603.25	0.72	0.001	0.000	0.002
289	50.85	50.92	0.07	18.89	1.13	559.63	0.71	0.002	0.000	0.002
290	50.92	50.98	0.07	18.95	1.13	536.64	0.71	0.002	0.000	0.002
291	50.98	51.05	0.07	19.02	1.12	535.03	0.71	0.002	0.000	0.002
292	51.05	51.12	0.07	19.08	1.12	554.72	0.71	0.002	0.000	0.002
293	51.12	51.18	0.07	19.15	1.12	595.36	0.71	0.001	0.000	0.002
294	51.18	51.25	0.07	19.21	1.12	655.74	0.71	0.001	0.000	0.001
295	51.25	51.31	0.07	19.28	1.12	733.47	0.71	0.001	0.000	0.001
296	51.31	51.38	0.07	19.35	1.11	824.17	0.71	0.001	0.000	0.001
297	51.38	51.44	0.07	19.41	1.11	921.34	0.70	0.001	0.000	0.001
298	51.44	51.51	0.07	19.48	1.11	1016.66	0.70	0.001	0.000	0.001
299	51.51	51.57	0.07	19.54	1.11	1143.19	0.70	0.001	0.000	0.001
300	51.57	51.64	0.07	19.61	1.11	1157.53	0.70	0.001	0.000	0.001
301	51.64	51.71	0.07	19.67	1.11	1179.43	0.70	0.001	0.000	0.001
302	51.71	51.77	0.07	19.74	1.10	1211.47	0.70	0.001	0.000	0.001
303	51.77	51.84	0.07	19.80	1.10	1193.95	0.70	0.001	0.000	0.001
304	51.84	51.90	0.07	19.87	1.10	1149.46	0.70	0.001	0.000	0.001
305	51.90	51.97	0.07	19.94	1.10	1087.72	0.70	0.001	0.000	0.001
306	51.97	52.03	0.07	20.00	1.10	1018.47	0.69	0.001	0.000	0.001
307	52.03	52.10	0.07	20.07	1.09	952.54	0.69	0.001	0.000	0.001
308	52.10	52.17	0.07	20.13	1.09	900.16	0.69	0.001	0.000	0.001
309	52.17	52.23	0.07	20.20	1.09	869.46	0.69	0.001	0.000	0.001
310	52.23	52.30	0.07	20.26	1.09	865.09	0.69	0.001	0.000	0.001
311	52.30	52.36	0.07	20.33	1.09	887.17	0.69	0.001	0.000	0.001
312	52.36	52.43	0.07	20.40	1.09	931.52	0.69	0.001	0.000	0.001
313	52.43	52.49	0.07	20.46	1.08	990.30	0.69	0.001	0.000	0.001
314	52.49	52.56	0.07	20.53	1.08	1053.90	0.68	0.001	0.000	0.001
315	52.56	52.62	0.07	20.59	1.08	1112.96	0.68	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
316	52.62	52.69	0.07	20.66	1.08	1160.27	0.68	0.001	0.000	0.001
317	52.69	52.76	0.07	20.72	1.08	1191.90	0.68	0.001	0.000	0.001
318	52.76	52.82	0.07	20.79	1.08	1207.00	0.68	0.001	0.000	0.001
319	52.82	52.89	0.07	20.85	1.07	1206.89	0.68	0.001	0.000	0.001
320	52.89	52.95	0.07	20.92	1.07	1193.49	0.68	0.001	0.000	0.001
321	52.95	53.02	0.07	20.99	1.07	1168.10	0.68	0.001	0.000	0.001
322	53.02	53.08	0.07	21.05	1.07	1130.82	0.68	0.001	0.000	0.001
323	53.08	53.15	0.07	21.12	1.07	1081.40	0.68	0.001	0.000	0.001
324	53.15	53.22	0.07	21.18	1.06	1020.10	0.67	0.001	0.000	0.001
325	53.22	53.28	0.07	21.25	1.06	949.24	0.67	0.001	0.000	0.001
326	53.28	53.35	0.07	21.31	1.06	873.61	0.67	0.001	0.000	0.001
327	53.35	53.41	0.07	21.38	1.06	799.98	0.67	0.001	0.000	0.001
328	53.41	53.48	0.07	21.44	1.06	735.26	0.67	0.001	0.000	0.001
329	53.48	53.54	0.07	21.51	1.06	684.54	0.67	0.001	0.000	0.001
330	53.54	53.61	0.07	21.58	1.05	649.11	0.67	0.001	0.000	0.001
331	53.61	53.67	0.07	21.64	1.05	626.15	0.67	0.001	0.000	0.001
332	53.67	53.74	0.07	21.71	1.05	609.73	0.67	0.001	0.000	0.001
333	53.74	53.81	0.07	21.77	1.05	593.26	0.66	0.001	0.000	0.001
334	53.81	53.87	0.07	21.84	1.05	571.86	0.66	0.001	0.000	0.002
335	53.87	53.94	0.07	21.90	1.05	544.03	0.66	0.002	0.000	0.002
336	53.94	54.00	0.07	21.97	1.04	511.62	0.66	0.002	0.000	0.002
337	54.00	54.07	0.07	22.04	1.04	478.53	0.66	0.002	0.000	0.002
338	54.07	54.13	0.07	22.10	1.04	448.50	0.66	0.002	0.000	0.002
339	54.13	54.20	0.07	22.17	1.04	422.08	0.66	0.002	0.000	0.002
340	54.20	54.27	0.07	22.23	1.04	380.35	0.66	0.002	0.000	0.002
341	54.27	54.33	0.07	22.30	1.04	342.93	0.66	0.002	0.000	0.003
342	54.33	54.40	0.07	22.36	1.04	304.25	0.66	0.003	0.000	0.003
343	54.40	54.46	0.07	22.43	1.03	261.85	0.65	0.003	0.000	0.003
344	54.46	54.53	0.07	22.49	1.03	217.34	0.65	0.004	0.000	0.004
345	54.53	54.59	0.07	22.56	1.03	175.25	0.65	0.005	0.000	0.005
346	54.59	54.66	0.07	22.63	1.03	140.28	0.65	0.006	0.000	0.006
347	54.66	54.72	0.07	22.69	1.03	115.97	0.65	0.007	0.000	0.007
348	54.72	54.79	0.07	22.76	1.03	104.42	0.65	0.008	0.000	0.008
349	54.79	54.86	0.07	22.82	1.02	107.94	0.65	0.007	0.000	0.008
350	54.86	54.92	0.07	22.89	1.02	131.49	0.65	0.006	0.000	0.007
351	54.92	54.99	0.07	22.95	1.02	185.62	0.65	0.004	0.000	0.005
352	54.99	55.05	0.07	23.02	1.02	288.88	0.65	0.003	0.000	0.003
353	55.05	55.12	0.07	23.09	1.02	447.88	0.64	0.002	0.000	0.002
354	55.12	55.18	0.07	23.15	1.02	567.63	0.64	0.001	0.000	0.002
355	55.18	55.25	0.07	23.22	1.01	705.50	0.64	0.001	0.000	0.001
356	55.25	55.31	0.07	23.28	1.01	852.25	0.64	0.001	0.000	0.001
357	55.31	55.38	0.07	23.35	1.01	1021.62	0.64	0.001	0.000	0.001
358	55.38	55.45	0.07	23.41	1.01	1054.44	0.64	0.001	0.000	0.001
359	55.45	55.51	0.07	23.48	1.01	1083.94	0.64	0.001	0.000	0.001
360	55.51	55.58	0.07	23.54	1.01	1108.05	0.64	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
361	55.58	55.64	0.07	23.61	1.01	1121.21	0.64	0.001	0.000	0.001
362	55.64	55.71	0.07	23.68	1.00	1126.19	0.64	0.001	0.000	0.001
363	55.71	55.77	0.07	23.74	1.00	1119.94	0.63	0.001	0.000	0.001
364	55.77	55.84	0.07	23.81	1.00	1107.31	0.63	0.001	0.000	0.001
365	55.84	55.91	0.07	23.87	1.00	1089.08	0.63	0.001	0.000	0.001
366	55.91	55.97	0.07	23.94	1.00	1067.83	0.63	0.001	0.000	0.001
367	55.97	56.04	0.07	24.00	1.00	1045.92	0.63	0.001	0.000	0.001
368	56.04	56.10	0.07	24.07	1.00	1023.46	0.63	0.001	0.000	0.001
369	56.10	56.17	0.07	24.14	0.99	1002.41	0.63	0.001	0.000	0.001
370	56.17	56.23	0.07	24.20	0.99	982.54	0.63	0.001	0.000	0.001
371	56.23	56.30	0.07	24.27	0.99	895.64	0.63	0.001	0.000	0.001
372	56.30	56.36	0.07	24.33	0.99	826.93	0.63	0.001	0.000	0.001
373	56.36	56.43	0.07	24.40	0.99	752.02	0.63	0.001	0.000	0.001
374	56.43	56.50	0.07	24.46	0.99	671.95	0.62	0.001	0.000	0.001
375	56.50	56.56	0.07	24.53	0.98	589.10	0.62	0.001	0.000	0.001
376	56.56	56.63	0.07	24.59	0.98	506.89	0.62	0.002	0.000	0.002
377	56.63	56.69	0.07	24.66	0.98	421.43	0.62	0.002	0.000	0.002
378	56.69	56.76	0.07	24.73	0.98	296.73	0.62	0.003	0.000	0.003
379	56.76	56.82	0.07	24.79	0.98	209.52	0.62	0.004	0.000	0.004
380	56.82	56.89	0.07	24.86	0.98	152.40	0.62	0.005	0.000	0.005
381	56.89	56.96	0.07	24.92	0.98	117.32	0.62	0.007	0.000	0.007
382	56.96	57.02	0.07	24.99	0.97	97.38	0.62	0.008	0.001	0.008
383	57.02	57.09	0.07	25.05	0.97	87.28	0.62	0.009	0.001	0.009
384	57.09	57.15	0.07	25.12	0.97	83.25	0.62	0.009	0.001	0.010
385	57.15	57.22	0.07	25.19	0.97	82.49	0.61	0.009	0.001	0.010
386	57.22	57.28	0.07	25.25	0.97	82.76	0.61	0.009	0.001	0.010
387	57.28	57.35	0.07	25.32	0.97	82.30	0.61	0.009	0.001	0.010
388	57.35	57.41	0.07	25.38	0.97	79.85	0.61	0.010	0.001	0.010
389	57.41	57.48	0.07	25.45	0.97	74.84	0.61	0.010	0.001	0.011
390	57.48	57.55	0.07	25.51	0.96	67.50	0.61	0.011	0.001	0.012
391	57.55	57.61	0.07	25.58	0.96	58.74	0.61	0.013	0.001	0.014
392	57.61	57.68	0.07	25.64	0.96	49.85	0.61	0.015	0.001	0.016
393	57.68	57.74	0.07	25.71	0.96	41.92	0.61	0.018	0.001	0.019
394	57.74	57.81	0.07	25.78	0.96	35.68	0.61	0.021	0.002	0.023
395	57.81	57.87	0.07	25.84	0.96	31.40	0.61	0.024	0.002	0.026
396	57.87	57.94	0.07	25.91	0.96	29.20	0.60	0.026	0.002	0.028
397	57.94	58.01	0.07	25.97	0.95	29.44	0.60	0.026	0.002	0.027
398	58.01	58.07	0.07	26.04	0.95	33.40	0.60	0.022	0.002	0.024
399	58.07	58.14	0.07	26.10	0.95	44.43	0.60	0.017	0.001	0.018
400	58.14	58.20	0.07	26.17	0.95	70.44	0.60	0.011	0.001	0.011
401	58.20	58.27	0.07	26.23	0.95	128.63	0.60	0.006	0.000	0.006
402	58.27	58.33	0.07	26.30	0.95	251.92	0.60	0.003	0.000	0.003
403	58.33	58.40	0.07	26.37	0.95	468.78	0.60	0.002	0.000	0.002
404	58.40	58.46	0.07	26.43	0.95	640.14	0.60	0.001	0.000	0.001
405	58.46	58.53	0.07	26.50	0.94	841.32	0.60	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
406	58.53	58.60	0.07	26.56	0.94	1036.32	0.60	0.001	0.000	0.001
407	58.60	58.66	0.07	26.63	0.94	1115.52	0.60	0.001	0.000	0.001
408	58.66	58.73	0.07	26.69	0.94	1188.87	0.59	0.001	0.000	0.001
409	58.73	58.79	0.07	26.76	0.94	1250.77	0.59	0.001	0.000	0.001
410	58.79	58.86	0.07	26.83	0.94	1300.47	0.59	0.001	0.000	0.001
411	58.86	58.92	0.07	26.89	0.94	1335.85	0.59	0.001	0.000	0.001
412	58.92	58.99	0.07	26.96	0.93	1358.62	0.59	0.001	0.000	0.001
413	58.99	59.06	0.07	27.02	0.93	1366.80	0.59	0.001	0.000	0.001
414	59.06	59.12	0.07	27.09	0.93	1363.19	0.59	0.001	0.000	0.001
415	59.12	59.19	0.07	27.15	0.93	1349.97	0.59	0.001	0.000	0.001
416	59.19	59.25	0.07	27.22	0.93	1332.36	0.59	0.001	0.000	0.001
417	59.25	59.32	0.07	27.28	0.93	1311.80	0.59	0.001	0.000	0.001
418	59.32	59.38	0.07	27.35	0.93	1291.58	0.59	0.001	0.000	0.001
419	59.38	59.45	0.07	27.42	0.93	1271.40	0.59	0.001	0.000	0.001
420	59.45	59.51	0.07	27.48	0.92	1255.09	0.59	0.001	0.000	0.001
421	59.51	59.58	0.07	27.55	0.92	1242.87	0.58	0.001	0.000	0.001
422	59.58	59.65	0.07	27.61	0.92	1235.15	0.58	0.001	0.000	0.001
423	59.65	59.71	0.07	27.68	0.92	1228.46	0.58	0.001	0.000	0.001
424	59.71	59.78	0.07	27.74	0.92	1223.44	0.58	0.001	0.000	0.001
425	59.78	59.84	0.07	27.81	0.92	1218.74	0.58	0.001	0.000	0.001
426	59.84	59.91	0.07	27.88	0.92	1216.87	0.58	0.001	0.000	0.001
427	59.91	59.97	0.07	27.94	0.92	1214.24	0.58	0.001	0.000	0.001
428	59.97	60.04	0.07	28.01	0.91	1212.91	0.58	0.001	0.000	0.001
429	60.04	60.10	0.07	28.07	0.91	1212.69	0.58	0.001	0.000	0.001
430	60.10	60.17	0.07	28.14	0.91	1215.20	0.58	0.001	0.000	0.001
431	60.17	60.24	0.07	28.20	0.91	1218.02	0.58	0.001	0.000	0.001
432	60.24	60.30	0.07	28.27	0.91	1220.78	0.58	0.001	0.000	0.001
433	60.30	60.37	0.07	28.33	0.91	1221.28	0.58	0.001	0.000	0.001
434	60.37	60.43	0.07	28.40	0.91	1221.34	0.57	0.001	0.000	0.001
435	60.43	60.50	0.07	28.47	0.91	1217.20	0.57	0.001	0.000	0.001
436	60.50	60.56	0.07	28.53	0.91	1210.95	0.57	0.001	0.000	0.001
437	60.56	60.63	0.07	28.60	0.90	1200.82	0.57	0.001	0.000	0.001
438	60.63	60.70	0.07	28.66	0.90	1188.74	0.57	0.001	0.000	0.001
439	60.70	60.76	0.07	28.73	0.90	1174.50	0.57	0.001	0.000	0.001
440	60.76	60.83	0.07	28.79	0.90	1161.73	0.57	0.001	0.000	0.001
441	60.83	60.89	0.07	28.86	0.90	1154.07	0.57	0.001	0.000	0.001
442	60.89	60.96	0.07	28.93	0.90	1153.16	0.57	0.001	0.000	0.001
443	60.96	61.02	0.07	28.99	0.90	1164.39	0.57	0.001	0.000	0.001
444	61.02	61.09	0.07	29.06	0.90	1186.73	0.57	0.001	0.000	0.001
445	61.09	61.15	0.07	29.12	0.89	1079.79	0.57	0.001	0.000	0.001
446	61.15	61.22	0.07	29.19	0.89	1010.53	0.57	0.001	0.000	0.001
447	61.22	61.29	0.07	29.25	0.89	942.89	0.56	0.001	0.000	0.001
448	61.29	61.35	0.07	29.32	0.89	883.23	0.56	0.001	0.000	0.001
449	61.35	61.42	0.07	29.38	0.89	838.78	0.56	0.001	0.000	0.001
450	61.42	61.48	0.07	29.45	0.89	816.95	0.56	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
451	61.48	61.55	0.07	29.52	0.89	824.20	0.56	0.001	0.000	0.001
452	61.55	61.61	0.07	29.58	0.89	864.50	0.56	0.001	0.000	0.001
453	61.61	61.68	0.07	29.65	0.89	937.93	0.56	0.001	0.000	0.001
454	61.68	61.75	0.07	29.71	0.88	1039.91	0.56	0.001	0.000	0.001
455	61.75	61.81	0.07	29.78	0.88	1161.96	0.56	0.001	0.000	0.001
456	61.81	61.88	0.07	29.84	0.88	1293.06	0.56	0.001	0.000	0.001
457	61.88	61.94	0.07	29.91	0.88	1422.20	0.56	0.000	0.000	0.000
458	61.94	62.01	0.07	29.98	0.88	1484.87	0.56	0.000	0.000	0.000
459	62.01	62.07	0.07	30.04	0.88	1442.61	0.56	0.000	0.000	0.000
460	62.07	62.14	0.07	30.11	0.88	1397.53	0.56	0.000	0.000	0.000
461	62.14	62.20	0.07	30.17	0.88	1354.16	0.55	0.001	0.000	0.001
462	62.20	62.27	0.07	30.24	0.88	1317.71	0.55	0.001	0.000	0.001
463	62.27	62.34	0.07	30.30	0.87	1291.85	0.55	0.001	0.000	0.001
464	62.34	62.40	0.07	30.37	0.87	1278.08	0.55	0.001	0.000	0.001
465	62.40	62.47	0.07	30.43	0.87	1275.32	0.55	0.001	0.000	0.001
466	62.47	62.53	0.07	30.50	0.87	1283.94	0.55	0.001	0.000	0.001
467	62.53	62.60	0.07	30.57	0.87	1301.93	0.55	0.001	0.000	0.001
468	62.60	62.66	0.07	30.63	0.87	1327.11	0.55	0.001	0.000	0.001
469	62.66	62.73	0.07	30.70	0.87	1355.50	0.55	0.001	0.000	0.001
470	62.73	62.80	0.07	30.76	0.87	1385.23	0.55	0.000	0.000	0.000
471	62.80	62.86	0.07	30.83	0.87	1416.36	0.55	0.000	0.000	0.000
472	62.86	62.93	0.07	30.89	0.86	1448.81	0.55	0.000	0.000	0.000
473	62.93	62.99	0.07	30.96	0.86	1482.33	0.55	0.000	0.000	0.000
474	62.99	63.06	0.07	31.02	0.86	1513.14	0.55	0.000	0.000	0.000
475	63.06	63.12	0.07	31.09	0.86	1542.54	0.55	0.000	0.000	0.000
476	63.12	63.19	0.07	31.16	0.86	1568.45	0.54	0.000	0.000	0.000
477	63.19	63.25	0.07	31.22	0.86	1590.63	0.54	0.000	0.000	0.000
478	63.25	63.32	0.07	31.29	0.86	1605.93	0.54	0.000	0.000	0.000
479	63.32	63.39	0.07	31.35	0.86	1613.21	0.54	0.000	0.000	0.000
480	63.39	63.45	0.07	31.42	0.86	1610.01	0.54	0.000	0.000	0.000
481	63.45	63.52	0.07	31.48	0.86	1595.56	0.54	0.000	0.000	0.000
482	63.52	63.58	0.07	31.55	0.85	1570.40	0.54	0.000	0.000	0.000
483	63.58	63.65	0.07	31.62	0.85	1536.24	0.54	0.000	0.000	0.000
484	63.65	63.71	0.07	31.68	0.85	1494.42	0.54	0.000	0.000	0.000
485	63.71	63.78	0.07	31.75	0.85	1445.89	0.54	0.000	0.000	0.000
486	63.78	63.85	0.07	31.81	0.85	1394.89	0.54	0.000	0.000	0.000
487	63.85	63.91	0.07	31.88	0.85	1342.58	0.54	0.000	0.000	0.000
488	63.91	63.98	0.07	31.94	0.85	1294.16	0.54	0.001	0.000	0.001
489	63.98	64.04	0.07	32.01	0.85	1249.94	0.54	0.001	0.000	0.001
490	64.04	64.11	0.07	32.07	0.85	1214.43	0.54	0.001	0.000	0.001
491	64.11	64.17	0.07	32.14	0.85	1186.35	0.53	0.001	0.000	0.001
492	64.17	64.24	0.07	32.21	0.84	1166.23	0.53	0.001	0.000	0.001
493	64.24	64.30	0.07	32.27	0.84	1150.08	0.53	0.001	0.000	0.001
494	64.30	64.37	0.07	32.34	0.84	1137.89	0.53	0.001	0.000	0.001
495	64.37	64.44	0.07	32.40	0.84	1127.37	0.53	0.001	0.000	0.001

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
496	64.44	64.50	0.07	32.47	0.84	1116.10	0.53	0.001	0.000	0.001
497	64.50	64.57	0.07	32.53	0.84	1103.90	0.53	0.001	0.000	0.001
498	64.57	64.63	0.07	32.60	0.84	1088.41	0.53	0.001	0.000	0.001
499	64.63	64.70	0.07	32.67	0.84	1074.28	0.53	0.001	0.000	0.001
500	64.70	64.76	0.07	32.73	0.84	1059.45	0.53	0.001	0.000	0.001
501	64.76	64.83	0.07	32.80	0.84	1046.63	0.53	0.001	0.000	0.001
502	64.83	64.90	0.07	32.86	0.83	1033.89	0.53	0.001	0.000	0.001
503	64.90	64.96	0.07	32.93	0.83	1021.67	0.53	0.001	0.000	0.001
504	64.96	65.03	0.07	32.99	0.83	1010.32	0.53	0.001	0.000	0.001
505	65.03	65.09	0.07	33.06	0.83	1000.10	0.53	0.001	0.000	0.001
506	65.09	65.16	0.07	33.12	0.83	993.61	0.53	0.001	0.000	0.001
507	65.16	65.22	0.07	33.19	0.83	988.46	0.52	0.001	0.000	0.001
508	65.22	65.29	0.07	33.26	0.83	987.07	0.52	0.001	0.000	0.001
509	65.29	65.35	0.07	33.32	0.83	989.42	0.52	0.001	0.000	0.001
510	65.35	65.42	0.07	33.39	0.83	995.44	0.52	0.001	0.000	0.001
511	65.42	65.49	0.07	33.45	0.83	1005.10	0.52	0.001	0.000	0.001
512	65.49	65.55	0.07	33.52	0.82	1015.93	0.52	0.001	0.000	0.001
513	65.55	65.62	0.07	33.58	0.82	1030.46	0.52	0.001	0.000	0.001
514	65.62	65.68	0.07	33.65	0.82	1046.31	0.52	0.001	0.000	0.001
515	65.68	65.75	0.07	33.72	0.82	1063.53	0.52	0.001	0.000	0.001
516	65.75	65.81	0.07	33.78	0.82	1082.09	0.52	0.001	0.000	0.001
517	65.81	65.88	0.07	33.85	0.82	1101.80	0.52	0.001	0.000	0.001
518	65.88	65.94	0.07	33.91	0.82	1127.00	0.52	0.001	0.000	0.001
519	65.94	66.01	0.07	33.98	0.82	1154.75	0.52	0.001	0.000	0.001
520	66.01	66.08	0.07	34.04	0.82	1188.94	0.52	0.001	0.000	0.001
521	66.08	66.14	0.07	34.11	0.82	1224.29	0.52	0.001	0.000	0.001
522	66.14	66.21	0.07	34.17	0.82	1264.60	0.52	0.001	0.000	0.001
523	66.21	66.27	0.07	34.24	0.81	1302.89	0.52	0.000	0.000	0.000
524	66.27	66.34	0.07	34.31	0.81	1337.05	0.51	0.000	0.000	0.000
525	66.34	66.40	0.07	34.37	0.81	1365.22	0.51	0.000	0.000	0.000
526	66.40	66.47	0.07	34.44	0.81	1383.66	0.51	0.000	0.000	0.000
527	66.47	66.54	0.07	34.50	0.81	1394.73	0.51	0.000	0.000	0.000
528	66.54	66.60	0.07	34.57	0.81	1394.62	0.51	0.000	0.000	0.000
529	66.60	66.67	0.07	34.63	0.81	1389.47	0.51	0.000	0.000	0.000
530	66.67	66.73	0.07	34.70	0.81	1379.34	0.51	0.000	0.000	0.000
531	66.73	66.80	0.07	34.77	0.81	1370.52	0.51	0.000	0.000	0.000
532	66.80	66.86	0.07	34.83	0.81	1365.45	0.51	0.000	0.000	0.000
533	66.86	66.93	0.07	34.90	0.81	1366.74	0.51	0.000	0.000	0.000
534	66.93	66.99	0.07	34.96	0.80	1377.18	0.51	0.000	0.000	0.000
535	66.99	67.06	0.07	35.03	0.80	1399.57	0.51	0.000	0.000	0.000
536	67.06	67.13	0.07	35.09	0.80	1438.61	0.51	0.000	0.000	0.000
537	67.13	67.19	0.07	35.16	0.80	1496.42	0.51	0.000	0.000	0.000
538	67.19	67.26	0.07	35.22	0.80	1570.71	0.51	0.000	0.000	0.000
539	67.26	67.32	0.07	35.29	0.80	1657.21	0.51	0.000	0.000	0.000
540	67.32	67.39	0.07	35.36	0.80	1746.52	0.51	0.000	0.000	0.000

:: Tabular results ::

Point No	Start depth (ft)	End depth (ft)	Thickness (ft)	Relative depth (ft)	Delta P (tsf)	$M_{(CPT)}$ (tsf)	Iz	Settlement (in)	Second. settlement (in)	Overall settlement (in)
541	67.39	67.45	0.07	35.42	0.80	1834.71	0.51	0.000	0.000	0.000
542	67.45	67.52	0.07	35.49	0.80	1914.54	0.50	0.000	0.000	0.000
543	67.52	67.59	0.07	35.55	0.80	1984.61	0.50	0.000	0.000	0.000
544	67.59	67.65	0.07	35.62	0.80	2026.42	0.50	0.000	0.000	0.000

Total primary settlement: 1.14
Total secondary settlement: 0.05

Total calculated settlement: 1.19

Abbreviations

Start depth:	Start depth of soil layer (penetration depth measured from ground free surface)
End depth:	End depth of soil layer (penetration depth measured from ground free surface)
Thickness:	Thickness of soil layer
Relative depth:	Depth of calculation relative to footing
Iz:	Stress influence factor
Delta P:	Footing impossed stress:
Eff. stress:	Effective stress
$M_{(CPT)}$:	Constrained modulus from CPT
Settlement:	Primary settlement
Second. settlement:	Secondary settlemends due to creep

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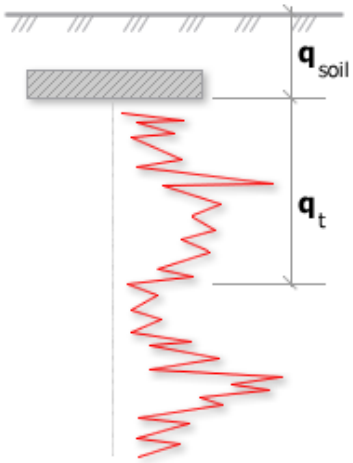
CPT: CPT-3 NearB-8
Total depth: 67.65 ft, Date: 2/5/2015
Surface Elevation: 5.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Uknown
Cone Operator: Uknown

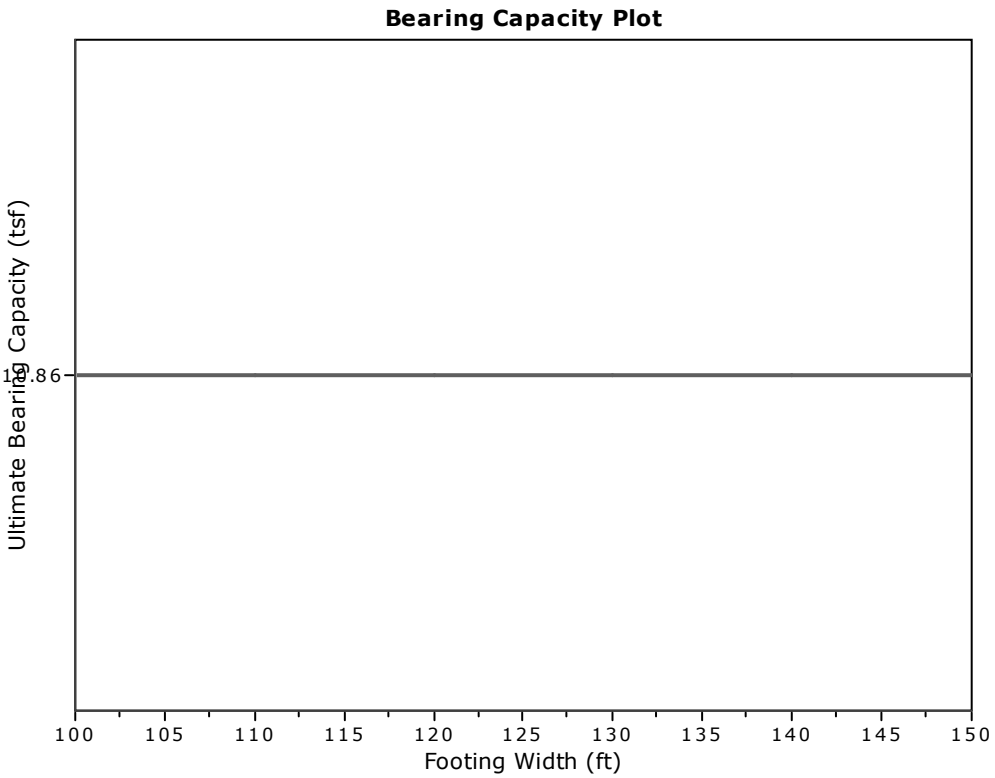
Project: 900 H Street NE
Location: Washington, DC



Bearing Capacity calculation is perfromed 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	100.00	32.00	182.00	54.30	0.20	0.00	10.86
2	110.00	32.00	197.00	54.30	0.20	0.00	10.86
3	120.00	32.00	212.00	54.30	0.20	0.00	10.86
4	130.00	32.00	227.00	54.30	0.20	0.00	10.86
5	140.00	32.00	242.00	54.30	0.20	0.00	10.86
6	150.00	32.00	257.00	54.30	0.20	0.00	10.86

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) ::

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

where g_w = water unit weight

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

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

$I_c \leq 4.00$ and $I_c > 3.27$ 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, Es (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 (%) ::

$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$ (applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

:: State Parameter, ψ ::

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

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

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

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

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

If $I_c > 2.20$

$\alpha = 14$ for $Q_{tn} > 14$

$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$

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

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, Go (MPa) ::

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

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

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

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

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ 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, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))} \right]^{1.25}$$ 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, Ko ::

$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$

(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' (°) ::

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

(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)

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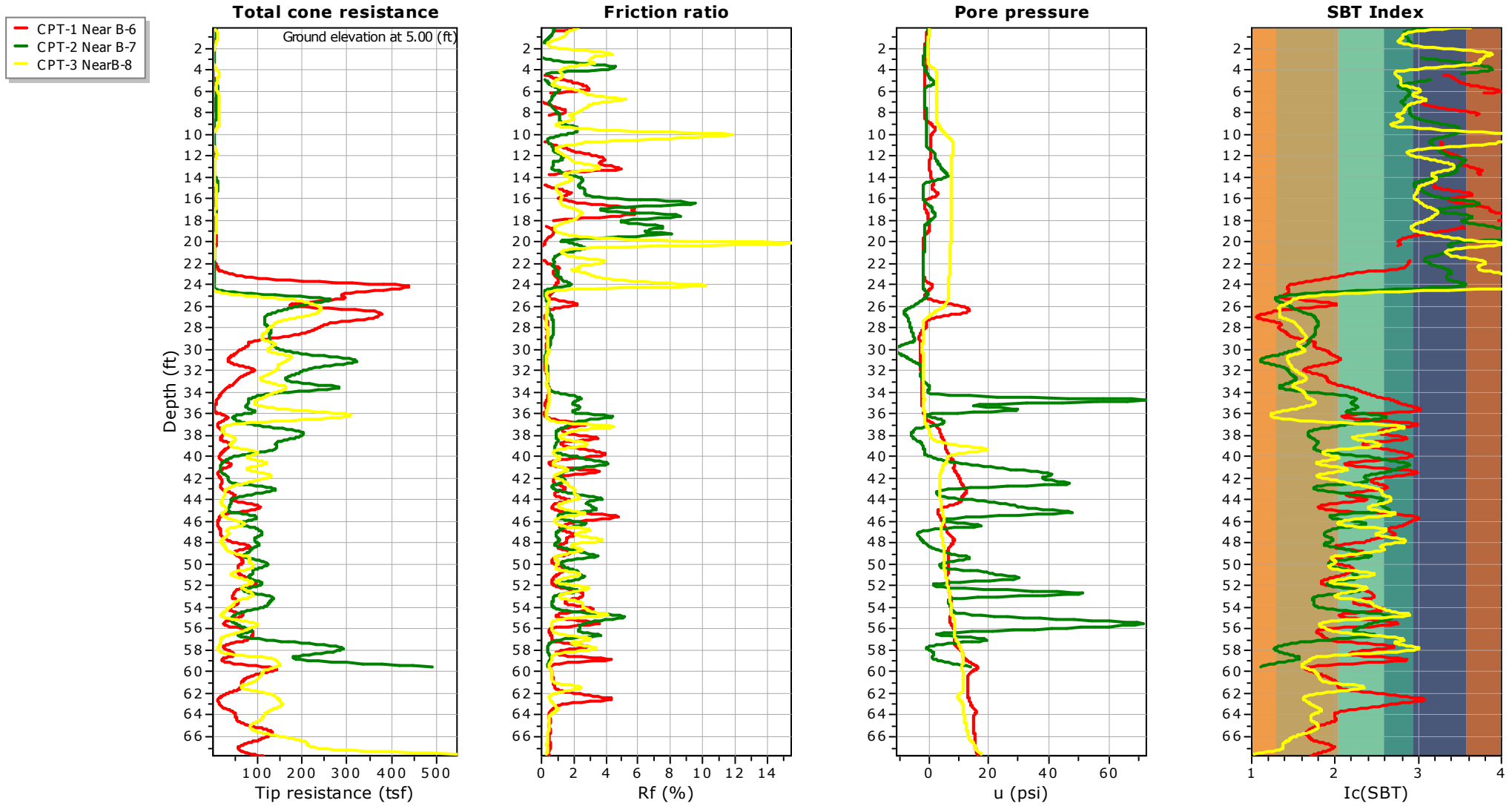
Location: **Washington, DC**

Overlay basic interpretation plots



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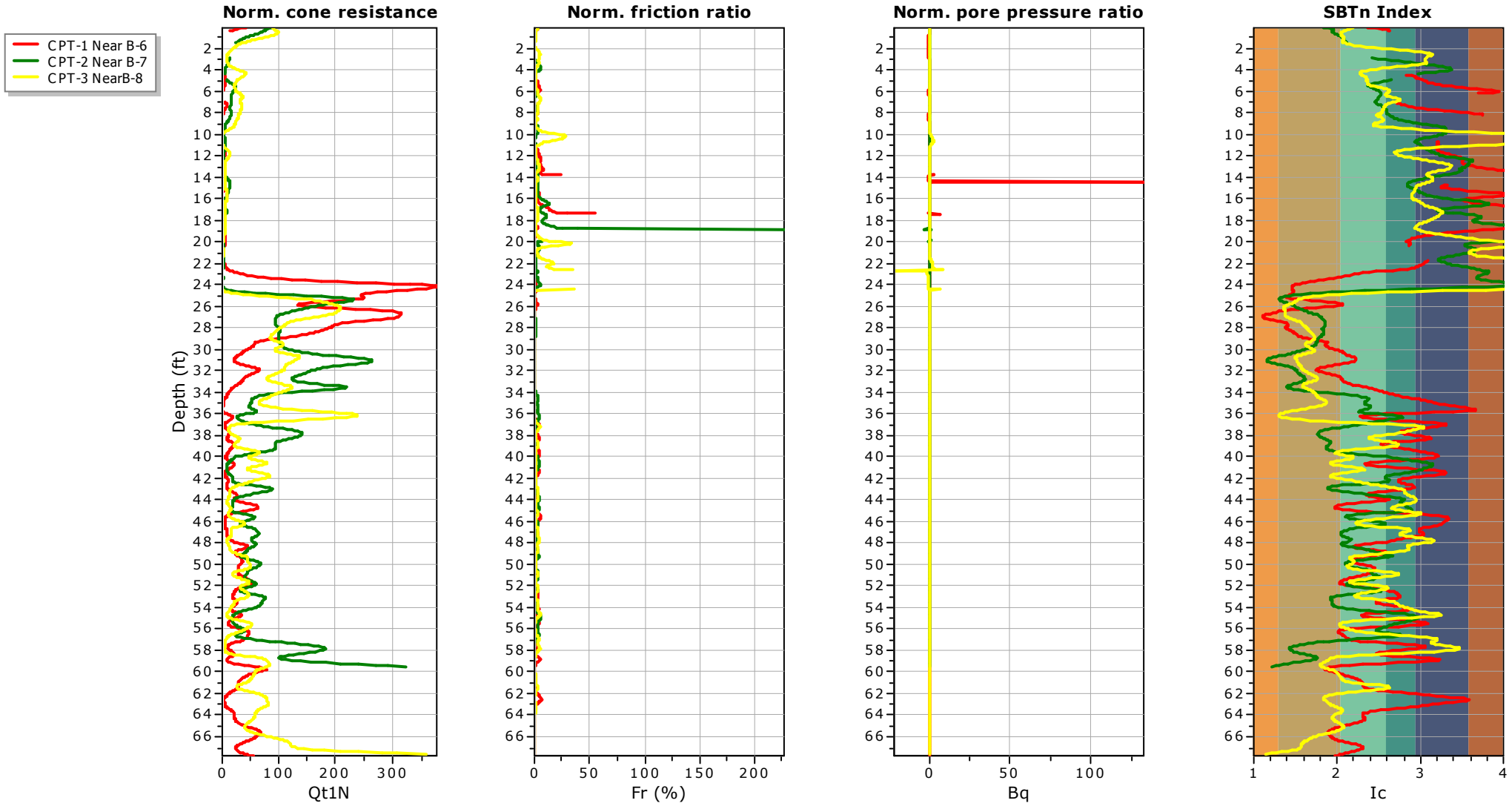
Normalized basic plots



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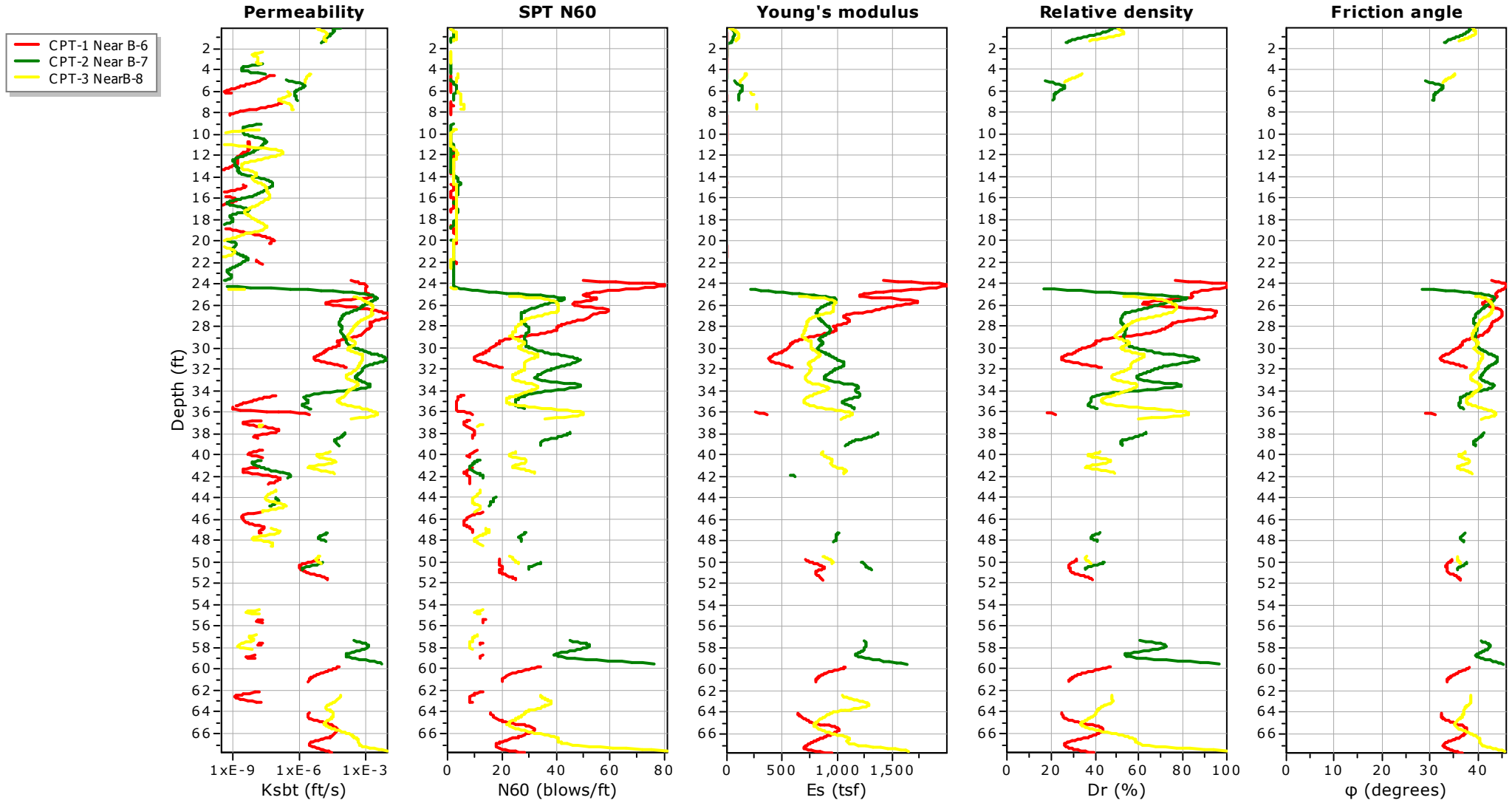
Location: **Washington, DC**

Overlay estimation plots (1)



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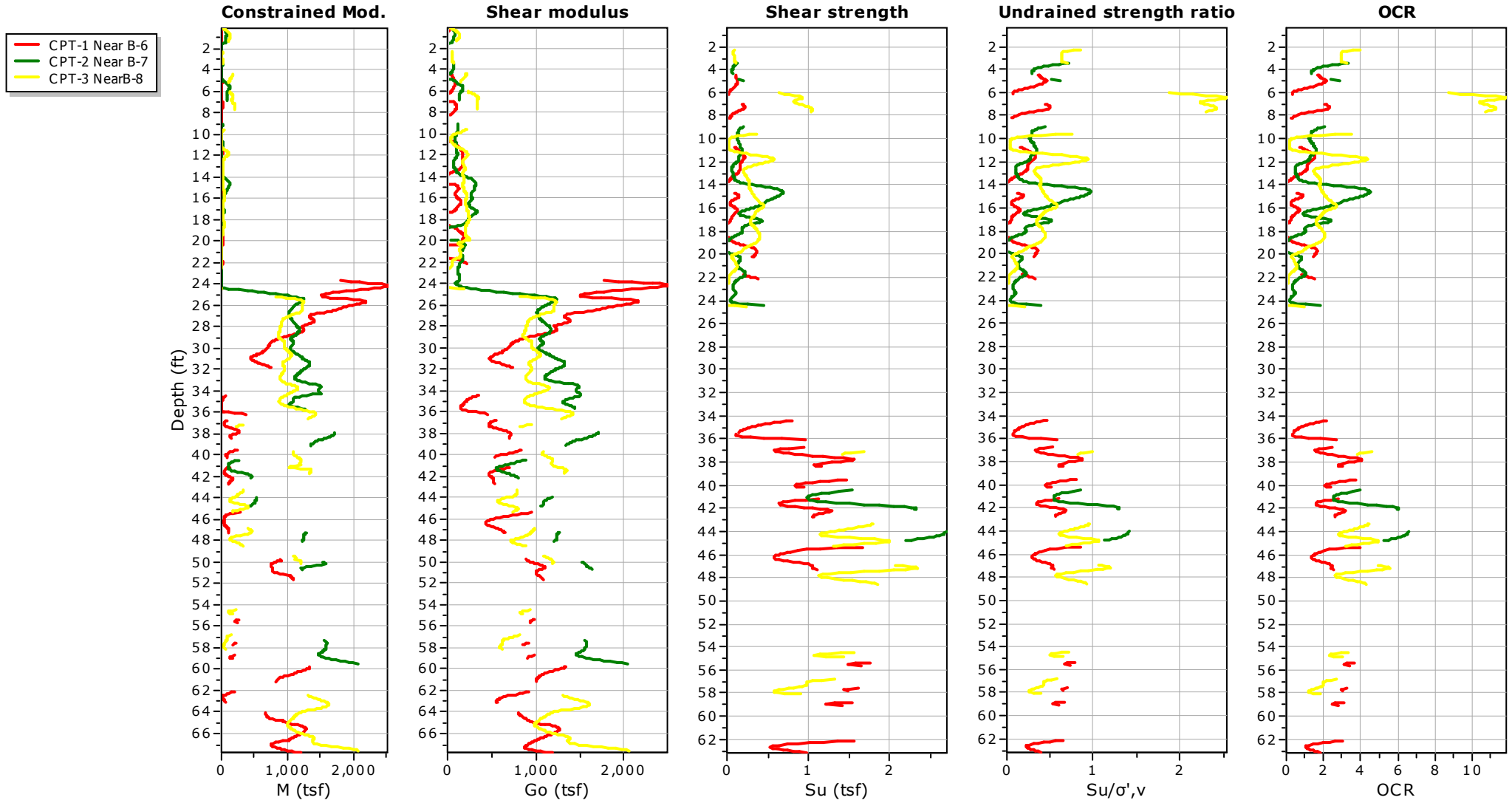
Overlay estimation plots (2)



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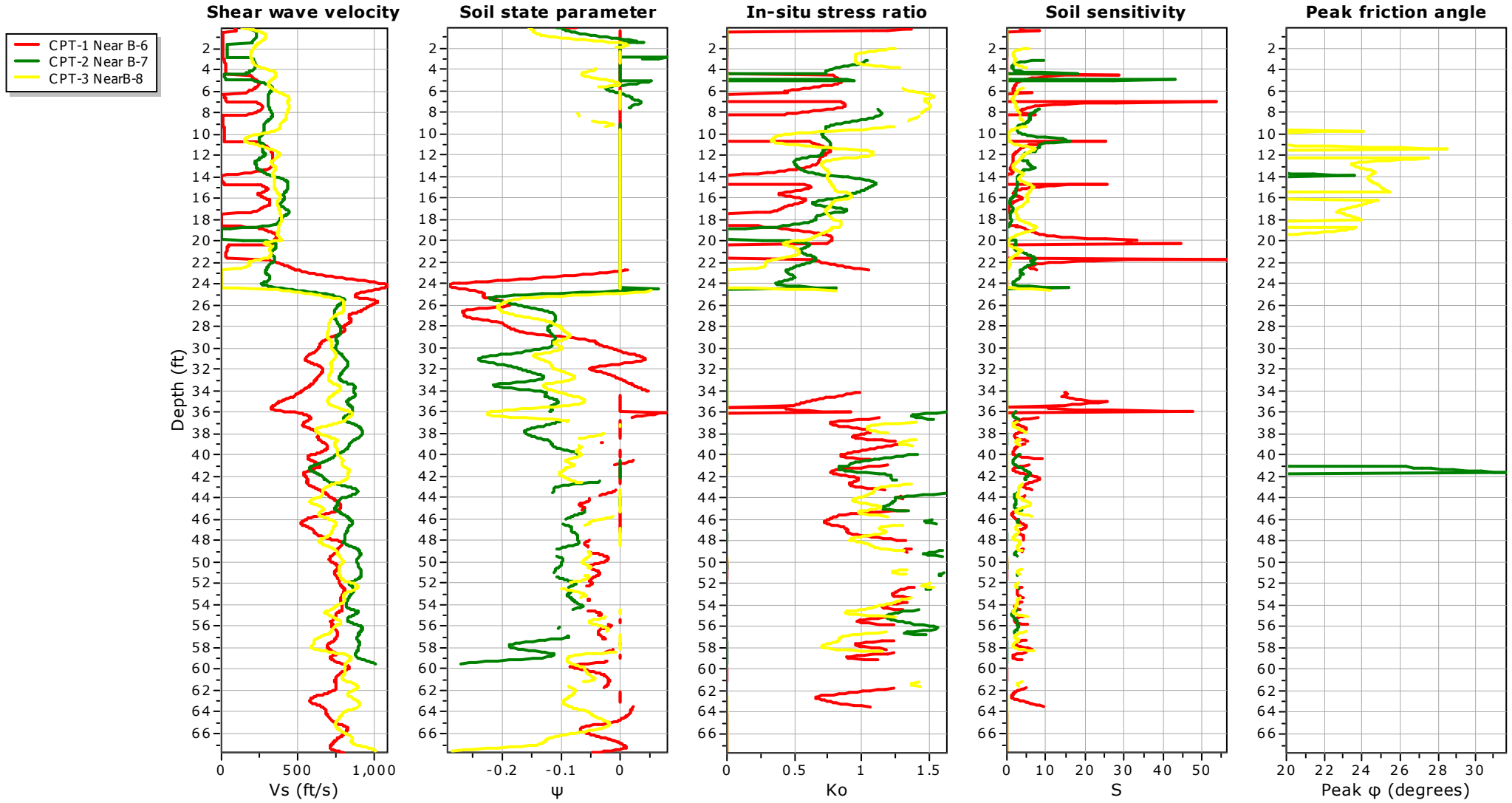
Location: **Washington, DC**

Overlay estimation plots (3)



Environmental Subsurface Investigation

HILLIS-CARNES
ENGINEERING ASSOCIATES

10975 Guilford Road, Suite A
Annapolis Jct., MD 20701
Baltimore 410-880-4788
DC Metro 301-470-4239
Fax 410-880-4098
www.hcea.com

December 30, 2014

Ms. Emily Struck
Parcel Seven Associated, LLC
c/o Rappaport Management Company
8405 Greensboro Drive, 8th Floor
McLean, Virginia 22102-5121

RE: Environmental Subsurface Investigation
901 H Street, NE Project
Washington, D.C. 20002
Hillis-Carnes Project No. 14441B

Dear Ms. Struck:

On behalf of Parcel Seven Associated, LLC (Client), Hillis-Carnes Engineering Associates, Inc. (Hillis-Carnes) has conducted an Environmental Subsurface Investigation at the above-referenced property, hereafter referred to as the Site. Hillis-Carnes' methodologies, findings, and resulting conclusions regarding this investigation are included in the attached report.

We appreciate the opportunity to be of service to you for this project. If you have any questions regarding information in this report or if we can be of further assistance, please contact the undersigned at (410) 880-4788.

Very truly yours,
HILLIS-CARNES ENGINEERING ASSOCIATES, INC.

Robert W. Pushman
Environmental Scientist

Gina L. Galimberti, REM
Environmental Services Manager

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APPENDIX

1.0 GENERAL INFORMATION

1.1 Site Location

The subject property is located south of H Street, NE between 8th and 10th Streets, NE in Washington, D.C. The property is identified by the District of Columbia as Lot 55 in Square 912. The property is improved with a one-story shopping center with approximately 37,000 square feet of leasable space. In addition, a stand-alone building, formerly occupied by a Bank of America, is located in the northeast area of the property. The structures were reportedly constructed in 1985. Addresses associated with the main shopping center include 801-957 H Street, NE and the address associated with the former bank is 961 H Street, NE. The main shopping center tenants generally consist of retail stores, commercial businesses and restaurants. In addition, one space is occupied by a drycleaner and one space is vacant (reportedly formerly occupied by Rent-A-Center). The Site and the site vicinity are both serviced by municipal water.

1.2 Background Information

ECS Mid-Atlantic, LLC conducted a Phase I Environmental Site Assessment (ESA) of the Site in April 2014. ECS concluded that two Recognized Environmental Conditions (RECs) were associated with the Site. The RECs were related to: a) the reported use of "perc" (a dry-cleaning solvent) at the on-site Smile Cleaners tenant space from a least the early 1990s to approximately 10 years ago; and b) a former/historic off-site dry-cleaning operation located adjoining the Site to the north, across H Street, NE. In addition, ECS concluded that "due to the urban nature of the area and long term storage and use of petroleum products and dry cleaning solvents in Washington, D.C., it would not be unusual to find low levels of environmentally-significant substances in soil or groundwater beneath the surface of the Site".

In addition, a heating oil underground storage tank (UST) was reportedly associated with the Site prior to the Sites current redevelopment and use. According to information provided to Hillis-Carnes, the former heating oil UST was located at a former structure, formerly identified as 817 H Street, NE. This former structure and associated UST were located at the northern portion of the Site, southwest of the intersection of H Street, NE and 9th Street, NE. It is presumed that the UST was removed prior to development; however, no written record of the removal of the UST was obtained.

Based on these findings, the Client contacted Hillis-Carnes regarding an environmental subsurface investigation. Therefore, Hillis-Carnes prepare a proposal for environmental services at the Site. The scope of work proposed by Hillis-Carnes is described in Section 2.0.

1.3 Geologic Information

Hillis-Carnes conducted a Geotechnical Engineering Study simultaneously with this Environmental Subsurface Investigation. The following geologic information was obtained from the report generated for that study.

The Geologic Map of Montgomery County and the District of Columbia (1953) indicates that the site is mapped in an area where the shallow subsurface materials appear to belong to the Wicomico formation of Pleistocene age. The soils in this formation are stream deposits typically consisting of gravel, sand, and silt and are typically underlain by deposits of the Potomac Group.

It is typical in the Washington, DC area to find man-placed fill materials associated with previous construction activities situated atop the above-mentioned natural soils.

1.4 Proposed Development Plan

The 87,053 square foot project site is located at 901 H Street, NE in Washington, DC as shown on the Site Location Map (Figure 1) in the Appendix. We understand that the proposed construction at the site is to include a structure that will contain a level of at-grade retail with seven stories of residential above and three levels of parking below. It is anticipated that the lowest level of the structure will extend approximately 30± feet below existing site grades.

2.0 SCOPE OF WORK

The Scope of Work for the Environmental Subsurface Investigation is as follows.

Project Preparation

- A Hillis-Carnes Environmental Project Manager was assigned to this project to manage and coordinate this project.

- Hillis-Carnes obtained a Soil Boring Permit from the District Department of Consumer and Regulatory Affairs.

- Hillis-Carnes notified Miss Utility to locate public utilities on the Site. In addition, Hillis-Carnes contracted a private utility locator on behalf of the Client to mark the locations of private utilities on the Site.

Environmental Subsurface Investigation

- The geotechnical borings were drilled (identified as B-1 through B-9 and MW-1) utilizing a hollow-stem auger drill rig. Per the request of the Client, an additional boring was drilled and converted to an additional groundwater monitoring well (MW-2), as described later in this section. Samples of the subsurface materials were obtained using a split-spoon sampler with 2.5 foot and 5 foot intervals. The split-spoon samplers were cleaned prior to the initiation of the project and between each bore hole in order to prevent cross-contamination. The sampling spoons were cleaned using brushes, a biodegradable soap solution and a distilled water rinse. In addition, as described later in this section, certain soil samples obtained during the field activities were collected for laboratory analyses.

- The split-spoon samples obtained and the soil cuttings produced from the augers during the drilling were inspected in the field (e.g., for odors, staining) and were screened in the field for volatile organic compounds (VOCs) with the utilization of a photoionization detector (PID), which produces field readings in relative units of parts per million (ppm), as calibrated against 100 ppm of calibration (i.e., isobutylene) gas. Soil samples in Borings B-1 through B-9 were selected for laboratory analyses. The selection of the soil samples for laboratory analyses was at the discretion of the on-site Environmental Project Manager and on the findings of the field activities (e.g., at the soil groundwater interface).

- Groundwater/saturated soils were encountered in each of the drilled locations for this project; however, per the contract for this investigation, groundwater monitoring wells were installed at locations MW-1 and MW-2, only. The wells were completed using 2-inch diameter schedule 40 PVC riser and slotted screen sections. Hillis-Carnes installed slotted screen sections five feet below and five feet above the groundwater level. Solid riser was used from the top of the screening to the ground surface. The annular space between the wall of the bore holes and the riser/screen was filled with sand, specifically from the bottom of the bore holes up to a depth approximately 2 feet above the slotted screen section; the remainder of the annular space was filled with a bentonite slurry to the ground surface. The wells were completed using a locking cap and a flush-mounted bolted metal cover.

- Per the contract for this investigation, eleven (11) samples (nine soil and two water) were collected for laboratory analyses. The soil samples were analyzed for Total Petroleum Hydrocarbons (TPH) - Diesel Range Organics (TPH-DRO), Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO), Volatile Organic Compounds (VOCs), Resource Conservation and Recovery Act (RCRA) 8 Metals, Toxicity Characteristic Leaching Procedure (TCLP) Metals, and Iron. The groundwater samples were analyzed for TPH-DRO, TPH-GRO, and VOCs.

- Before the cessation of drilling operations, the slotted PVC pipes constituting the groundwater monitoring wells were manually removed and the borings were grouted with a bentonite mixture.

Quality Assurance/Quality Control (QA/QC)

During the boring activities, all downhole equipment was cleaned prior to use and between boring locations to prevent cross-contamination. All soil samples were handled using a new, clean pair of dedicated gloves that were changed for every sampling interval.

The samples were collected for laboratory analyses in clean, laboratory-provided glassware. The sample containers were labeled, placed on ice, and delivered promptly to a laboratory. All appropriate chain-of-custody procedures were utilized to track the samples from the point of collection to receipt by the laboratory. The samples were analyzed in accordance with applicable methodology and within the EPA's maximum holding times.

Investigation-Derived Wastes

Investigation-Derived Wastes (IDW) generated during this project included wastewater generated during decontamination procedures (i.e., of the drilling equipment and the oil/water interface probe) and purge water; and soil cuttings from the Geotechnical drilling activity. The wastewater and purge water were placed in 55-gallon drums and the soil cuttings were placed in separate 55-gallon drums. A total of 15 drums of IDW were generated during operations. The drums were staged within the vacant space (i.e. the former Rent-A-Center).

3.0 SOIL AND GROUNDWATER SAMPLING PROGRAM

The advancement of borings was performed at the Site from September 29 to October 10, 2014. The field findings for this assessment are provided in the following subsections.

3.1 Soil Sampling Procedures and Field Findings

Nine geotechnical soil borings (identified as B-1 through B-9) and two additional borings for the primary purpose of installing two groundwater monitoring wells (MW-1 and MW-2) were advanced on the Site. B-1 through B-4 were drilled along the northern portion of the Site. B-5 through B-9 were drilled in the southern portion of the Site. MW-1 was drilled south of the Smile Cleaners tenant space and MW-2 was drilled in the northwest portion of the Site, in the general reported vicinity of a former heating oil tank and southwest of a former off-site dry-cleaner identified in the Phase I ESA, prepared by ECS. The sample locations are illustrated on the Sample Location Map (Figure 2) included in this report.

The following table describes the conditions observed during the drilling of the borings.

Table 1 - Conditions Encountered During Drilling of Soil Borings
901 H Street, NE Project – Washington, D.C.

Boring	Depth Interval (feet below ground surface)	Soils	PID Reading	Staining	Odors	Notes	Sample Collected for Laboratory Analyses
B-1	0-8.5	Sand and Gravel	0	None	None	Groundwater monitoring well set at 27.0 feet in a 5' offset bore hole (MW-2). Groundwater encountered at 22.0 feet	Soil sample collected for lab analysis at 20-22 feet Water sample collected in offset well for lab analysis
	8.5-20	Sand	0	None	None		
	20-30	Silty Sand and Gravel	0	None	None		
	30-40	Silty Sand	0	None	None		
	40-60	Intermittent Layers of Sand and Clay	0	None	None		
	60-70	Sand	0	None	None		
	70-73.8	Silty Clay	0	None	None		

Boring	Depth Interval (feet below ground surface)	Soils	Highest PID Reading	Staining	Odors	Notes	Sample Collected for Laboratory Analyses
B-2	0-5	Clayey Sand	0	None	None	Groundwater encountered at 22.5 feet	Soil sample collected for lab analysis at 18-22.5 feet
	5-8.5	Silty Sand	0	None	None		
	8.5-12	Silty Clay	0	None	None		
	12-17	Sand, with Clay Lenses	0	None	None		
	17-34	Silty Sand and Gravel	0	None	None		
	34-57	Intermitttent Layers of Sand and Clay	0	None	None		
	57-67	Silty Sand and Gravel	0	None	None		
	67-75	Clay	0	None	None		
B-3	0-7	Silty Sand and Gravel	0	None	None	Groundwater encountered at 22 feet	Soil sample collected for lab analysis at 18-22 feet
	7-17	Sand	0	None	None		
	17-32	Silty Sand, with Gravel	0	None	None		
	32-62	Intermittent Layers of Sand and Clay	0	None	None		
	62-72	Silty Sand and Gravel	0	None	None		
	72-75	Clay	0	None	None		
B-4	0-7.5	Silty Sand and Gravel	0	None	None	Groundwater encountered at 22.5 feet	Soil sample collected for lab analysis at 18-22 feet
	7.5-17	Silty Sand, with clay	0	None	None		
	17-32	Silty sand and Gravel	0	None	None		
	32-42	Silty Sand	0	None	None		
	42-62	Intermittent Layers of Sand and Clay	0	None	None		
	62-67	Sand	0	None	None		
	67-69	Silty Sand and Gravel	0	None	None		
B-5	0-7.5	Sand and Gravel	0	None	None	Groundwater encountered at 22.5 feet	Soil sample collected for lab analysis at 19-22 feet
	7.5-15	Sand	0	None	None		
	15-25	Sand and Gravel	0	None	None		
	25-70.5	Sand	0	None	None		

Boring	Depth Interval (feet below ground surface)	Soils	Highest PID Reading	Staining	Odors	Notes	Sample Collected for Laboratory Analyses
B-6	0-7	Sand and Gravel	0	None	None	Groundwater encountered at 22.5 feet	Soil sample collected for lab analysis at 19-22 feet
	7-10	Sand	0	None	None		
	10-35	Silty Sand, with Gravel	0	None	None		
	35-45	Clay	0	None	None		
	45-70	Sand, with Clay Lenses	0	None	None		
	70-75	Silty Clay	0	None	None		
B-7	0-10	Sand and Gravel	0	None	None	Groundwater encountered at 23 feet	Soil sample collected for lab analysis at 20-23 feet
	10-20	Silty Sand	0	None	None		
	20-25	Silty Sand, with Gravel	0	None	None		
	25-40	Sand, with Gravel	0	None	None		
	40-75	Sand, with Clay Lenses	0	None	None		
B-8	0-10	Sand and Gravel	0	None	None	Groundwater encountered at 23 feet	Soil sample collected for lab analysis at 20-23 feet
	10-30	Silty Sand	0	None	None		
	30-50	Silty Sand, with Clay Lenses	0	None	None		
	50-65	Silty Sand	0	None	None		
	65-75	Cobbles	0	None	None		
B-9	0-5	Clayey Sand	0	None	None	Groundwater encountered at 24 feet	Soil sample collected for lab analysis at 22-25 feet
	5-10	Clay	0	None	None		
	10-20	Sand	0	None	None		
	20-30	Sand, with Gravel	0	None	None		
	30-73	Sand, with Clay Lenses	0	None	None		
MW-1	0-15	Sand and Gravel	0	None	None	Groundwater monitoring well set at 27.0 feet	Water sample collected in well for lab analysis
	15-28	Sand	0	None	None		

At boring locations B-1 through B-9 (as well as MW-1) the soils in the split-spoon sampler were visually inspected in the field (e.g., for odors, staining) and were screened in the field for volatile organic compounds (VOCs) with the utilization of a photoionization detector (PID).

Soil samples from B-1 through B-9 were collected for laboratory analyses. Soil samples were generally collected just above the soil/groundwater interface. The samples collected were placed in clean, laboratory-provided containers, labeled, placed in a cooler, packaged for transport, and delivered to the laboratory.

The nine soil samples were analyzed for the following: Total Petroleum Hydrocarbons (TPH) - Diesel Range Organics (TPH-DRO); Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO); Volatile Organic Compounds (VOCs); Resource Conservation and Recovery Act (RCRA) 8 Metals; Toxicity Characteristic Leaching Procedure (TCLP) Metals; and Iron. All appropriate chain-of-custody procedures were utilized to track the samples from collection to final

disposition at the laboratory. The samples were analyzed using EPA methodology and within EPA's holding times.

The analytical parameters and laboratory results for the soil samples are described in Section 3.3.1.

3.2 Groundwater Sampling Procedures and Field Findings

Groundwater was encountered in each of the soil borings and the auger probe. However, as described in the contract for this project, groundwater monitoring wells were installed at MW-1 and MW-2, only. MW-1 was installed to address the on-site dry-cleaner (Smile Cleaners) identified in the Phase I ESA report. MW-2 was installed to address the former off-site dry-cleaner and a former heating oil tank discussed in the Phase I ESA report. In addition, MW-2 was installed to obtain groundwater data from an area of the Site that was somewhat separated by distance from MW-1.

The MW-1 groundwater monitoring well was set at a depth of approximately 28.0 feet below the ground surface (bgs). The MW-2 groundwater monitoring well was set at a depth of approximately 27.0 feet bgs.

Following installation, the well was developed with a bailing technique in order to remove fine soil particles and enhance hydraulic performance. Approximately forty-eight (48) hours after development, an oil/water interface probe was utilized to measure the depth to water and to determine if there is a measurable layer of free-phase product present. Groundwater levels were recorded at 22.3 feet and 22.4 feet in MW-1 and MW-2, respectively, approximately 48 hours after well installation. No evidence of free-phase product was detected in the groundwater monitoring wells. Further, no observable petroleum hydrocarbon sheens were observed on the components of the field instrumentation.

Following the development activity, each well was purged and a water sample was collected. The purging and sampling was conducted utilizing a peristaltic pump and disposable tubing. The water sample was visually inspected for the presence of free-phase product, sheens and odors. No free-phase product, sheens or odors were observed in either of the groundwater monitoring wells; therefore a groundwater sample was collected. The groundwater samples were placed in clean, laboratory-provided containers, labeled, placed in a cooler, packaged for transport, and delivered to the laboratory.

The two groundwater samples were analyzed for the following: TPH-DRO, TPH-GRO, and VOCs. All appropriate chain-of-custody procedures were utilized to track the samples from collection to final disposition at the laboratory. The samples were analyzed using EPA methodology and within EPA's holding times.

The analytical parameters and laboratory results for the groundwater samples are described in Section 3.3.2.

3.3 Analytical Methodologies and Results

The samples selected for laboratory analyses were transported to and analyzed by ALS Environmental, located in Middletown, Pennsylvania. A copy of the completed Chain-of-Custody Forms and the Laboratory Reports is included in Appendix A.

3.3.1 Soil

Petroleum Hydrocarbons and VOCs

As reflected in Table 2, laboratory analyses of the soil samples revealed the presence of TPH-DRO, and certain constituents of VOCs, at concentrations exceeding the laboratory's practical quantitation limit in some of the samples.

Table 2
901 H Street, NE Project – Washington D.C.
Soil Sample Results
Petroleum Hydrocarbons and Volatile Organic Compounds

Results and Standards are presented in milligrams per kilogram (mg/kg)
mg/kg = parts per million (ppm)

	Petroleum Hydrocarbons		VOCs				
	TPH-DRO	TPH-GRO	Acetone	Methylene Chloride	Toluene	Benzene	Ethylbenzene
B-1	ND	ND	ND	ND	ND	ND	ND
B-2	ND	ND	0.0181	0.0034	0.0042	ND	ND
B-3	ND	ND	0.0119	ND	0.0034	ND	ND
B-4	0.0119	ND	0.011	ND	0.0031	ND	ND
B-5	ND	ND	0.0124	0.0036	ND	ND	ND
B-6	ND	ND	0.0151	ND	ND	ND	ND
B-7	ND	ND	0.0182	ND	ND	ND	ND
B-8	ND	ND	0.02	ND	ND	ND	ND
B-9	ND	ND	0.0335	0.0033	ND	ND	ND
Tier 0 Standard	100	100	61,000*	57*	10**		

Tier 0 Standard = District of Columbia Municipal Regulations (DCMR) Title 20 Section 6208.

*The DCMR Tier 0 Standard does not include a standard for the constituents Acetone or Methylene Chloride; therefore, the most conservative of the EPA Regional Screening Levels (RSLs) for Resident Soil, as presented in the EPA's RSL Resident Soil Table (May 2014) was utilized.

**DCMRs Tier 0 Standard indicates that the constituents of Benzene, Toluene, Ethylbenzene and Xylenes (BTEX); shall not exceed 10 ppm, when added together.

ND = Not detected at a concentration exceeding the laboratory's practical quantitation limit.

As seen in Table 2, certain samples analyzed had concentrations of TPH-DRO and Toluene above the detectable limits of the laboratory. However, the concentrations detected are significantly below the threshold limits as determined by DCMRs Tier 0 Standard. Hillis-Carnes concludes that the presence of these constituents does not appear to be an environmental concern at the Site.

With regard to acetone, acetone was detected in the majority of the soil samples collected and laboratory analyzed for this project. The presence of the acetone in the samples is a suspected laboratory artifact as acetone can be a break-down product of one of the preservatives utilized in the sampling technique/glassware. More specifically, acetone can be a break-down product of the

sodium bisulfate preservative that is in the glass vials associated with the Terra Core^{R} sampling technique utilized for VOCs. Since the detection of acetone in the samples is a suspected laboratory artifact, Hillis-Carnes concludes that the presence of acetone does not appear to be an environmental concern at the Site. In addition, the concentration of acetone detected in the samples is significantly below the most conservative of the EPA's RSLs for acetone in residential soil.

With regard to methylene chloride, methylene chloride was detected in some of the soil samples collected and laboratory analyzed for this project. The laboratory reported that the presence of the methylene chloride in the samples is a suspected laboratory artifact. Based on Hillis-Carnes' experience, methylene chloride is commonly found in samples analyzed in a laboratory for VOCs since methylene chloride is used as an extraction agent for certain analytical methodologies and can become airborne through volatilization. Since the detection of methylene chloride in the samples is a suspected laboratory artifact, Hillis-Carnes concludes that the presence of methylene chloride does not appear to be an environmental concern at the Site. In addition, the concentration of methylene chloride detected in the samples is significantly below the most conservative of the EPA's RSLs for methylene chloride in residential soil.

RCRA 8 Metals

The laboratory results for the RCRA 8 Metals and Iron analyses for the soil samples are provided in Table 3. Also provided in the table are the Anticipated Typical Concentrations (ATCs) for metals, as described later in this section. In addition, Table 3 includes USGS background levels for metals, also described later in this section.

Table 3
901 H Street, NE Project – Washington D.C.
Soil Sample Results
Heavy Metals, including Iron

Results and Cleanup Standards are presented in milligrams per kilogram (mg/kg)
milligrams per kilogram = parts per million (ppm)

	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	ATC	Background
Arsenic	ND	2.4	4.8	4.8	8.2	5.7	3.8	3.4	5.3	3.6	7.2
Barium	27.2	11.2	18.2	17.9	19.7	13.4	18.0	21.3	25.6	73	580
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Chromium	8.3	9.4	18.5	10.4	21.3	8.7	9.7	10.1	18.7	28	54
Lead	2.6	4.6	4.5	3.4	3.4	3.1	4.2	4.5	3.0	45	19
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Iron	4,680	4,900	12,700	5,130	14,200	9,060	7,200	9,230	11,600	15,000	26,000

ATC = the MDEs Anticipated Typical Concentration in Eastern Maryland Region.

Background = USGS reference levels.

ND = Not detected at a concentration exceeding the laboratory's practical quantitation limit.

NA = Not applicable, a comparative standard is not presented as levels of the constituents were not detected.

The Tier 0 Standards (for soil) presented in the District of Columbia Municipal Regulations (DCMR) Title 20 Section 6208 do not include standards for metals in soil. Therefore, Hillis-Carnes compared the concentrations of metals detected (i.e. arsenic, barium, chromium, lead and iron) with Maryland's Anticipated Typical Concentrations (ATCs, or "naturally-occurring" concentrations of metals in soils) that are presented in the MDE's Cleanup Standards for Soil and Groundwater (June 2008), hereafter referred to as the MDE Cleanup Standard Guidance Document. The ATCs were developed from ten years of investigations at properties around the state of Maryland and indicate typical levels of metals that naturally occur in soils. The MDE Cleanup Standard Guidance Document presents ATCs for three regions across Maryland (i.e., Western Maryland, Central Maryland and Eastern Maryland). When compared with the location of the three regions, the Site's location in the eastern portion of Washington D.C. appears to correlate with the Eastern Maryland Region. Therefore, based on the location of the Site (i.e. Northeast, Washington D.C.); Hillis-Carnes utilized the ATCs reported in the Eastern Maryland region for comparative purposes.

In addition to the ATCs listed above, Hillis-Carnes included the reference levels of the United States Geologic Survey (USGS) background metal concentrations in native soil for the Conterminous United States. According to the MDE Cleanup Standard Guidance Document, "comparison of the reference levels to the background metal concentrations… indicates a good correlation exists between the data sets" (i.e., the MDE's data sets to calculate the ATC's and the USGS data sets to calculate background levels).

With the exception of arsenic, concentrations of metals detected are below the ATC (as well as the USGS background levels) as provided in the MDE Cleanup Standard Guidance Document. Therefore, it is Hillis-Carnes' opinion that the concentrations of barium, chromium, lead and iron in the samples analyzed are not an environmental concern and appear to be a result of naturally-occurring metals.

With regard to arsenic, the ATC for arsenic in the Eastern Maryland region is 3.6 parts per million (ppm). The ATC for arsenic in the Eastern Region is calculated based on the results of 76 soil samples with arsenic concentrations ranging between 0.12 ppm and 6.9 ppm.

- The arsenic concentrations in B-2 and B-8 (i.e., 2.4 ppm, and 3.4 ppm, respectively) did not exceed the ATC for arsenic in Eastern Maryland (3.6 ppm).

- The arsenic concentrations in B-3, B-4, B-6, B-7, and B-9 (4.8 ppm, 4.8 ppm, 5.7 ppm, 3.8 ppm, and 5.3 ppm) did not exceed the background level (7.2 ppm) for arsenic according to the USGS. In addition, the concentrations did not exceed the maximum concentration of arsenic (i.e., 6.9 ppm) utilized by the MDE to calculate the ATC for arsenic in Eastern Maryland.

- The arsenic concentration in B.5 (8.2 ppm) only slightly exceeded the USGS background level (7.2 ppm).

In addition, based on data collected by Hillis-Carnes during arsenic remediation projects in Maryland (i.e., at golf courses, former orchards), it is Hillis-Carnes' experience that the concentrations of arsenic detected in the samples appear to be indicative of naturally occurring levels of arsenic. Based on MDE's ATC data (including USGS background levels) and Hillis-Carnes' experience, it is our opinion that the presence of arsenic in above soil samples may be a result of naturally-occurring arsenic and not necessarily indicative of arsenic contamination at these sample locations.

TCLP Metals

The Toxicity Leaching Characteristic Procedure (TCLP) conducted in the laboratory is designed to determine the mobility of analytes that may be present in soil (e.g., to simulate leaching of metals from solids in a municipal landfill). The laboratory results for TCLP metals in the soil samples are provided in Table 4. Also provided in the table is the EPAs Regulatory Limit, as described later in this section.

Table 4
901 H Street, NE Project – Washington D.C.
Soil Sample Results
TCLP - Metals

Results and Regulatory Limits are presented in milligrams per liter (mg/L)
milligrams per liter = parts per million (ppm)

	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	Regulatory Limit
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	5 mg/L
Barium	ND	ND	ND	ND	ND	ND	ND	ND	ND	100 mg/L
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 mg/L
Chromium	ND	ND	ND	ND	ND	ND	0.045	ND	ND	5 mg/L
Lead	0.027	0.018	0.15	0.11	ND	ND	0.021	ND	ND	5 mg/L
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2 mg/L
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 mg/L
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	5 mg/L

mg/L - milligrams per liter = parts per million.

ND = Not detected at a concentration exceeding the laboratory practical quantitation limit.

Regulatory Limit for TCLP tests = EPA's regulatory limit for a characteristic hazardous waste, as cited in Table 1 of 40 CFR 261.24.

Although some TCLP Metals were detected, none of the concentrations exceeded the EPA's regulatory limit for a hazardous waste.

3.3.2 Groundwater

As reflected in Table 5 (on the following page), laboratory analyses of the groundwater samples revealed the presence of TPH-DRO, and certain constituents of VOCs, at concentrations exceeding the laboratory's practical quantitation limit in some of the samples.

Table 5
901 H Street, NE Project – Washington D.C.
Groundwater Sample Results
Petroleum Hydrocarbons and Volatile Organic Compounds

Results and Standards are presented in milligrams per kilogram (mg/kg)
mg/kg = parts per million (ppm)

	Petroleum Hydrocarbons		VOCs		
	TPH-DRO	TPH-GRO	Isopropylbenzene	cis- 1,2-Dichloroethene	Tetrachloroethene
MW-1	0.85	ND	0.0013	ND	ND
MW-2	0.22	ND	ND	0.0037	0.0284
Standard	1*	NA	0.066**	70*	5*

* Tier 1 Standard - District of Columbia Municipal Regulations (DCMR) Title 20 Section 6209.

**The DCMR Tier 1 Standard does not include a standard for the constituent Isopropylbenzene; therefore, MDE's Groundwater Standard for Type I and Type II Aquifers was utilized. The Groundwater Standards are applied to groundwater from Type I and Type II aquifers and to Groundwater Use Areas and generally correspond to the EPA's Maximum Contaminant Levels (MCLs) for drinking water. However, as previously reported, the Site and site vicinity utilize municipal water and the groundwater at the Site is not utilized as a potable water source or for any other purpose.

ND = Not detected at a concentration exceeding the laboratory's practical quantitation limit.

NA = Not applicable, a comparative standard is not presented as levels of the constituent were not detected.

Laboratory analyses of the groundwater sample designated MW-1 revealed the presence of one VOC and TPH-DRO. Laboratory analysis of the groundwater sample designated MW-2 revealed the presence of two VOCs and TPH-DRO. As indicated in Table 5, none of the concentration levels detected exceeded the limits as described in the Tier 1 Standard or the MDE's Groundwater Standard, as applicable. Therefore, it is Hillis-Carnes' opinion the concentrations detected are not an environmental concern at the Site.

4.0 SUMMARY OF FINDINGS AND CONCLUSIONS

Hillis-Carnes has completed an environmental subsurface investigation at the 901 H Street, NE project located in Washington, D.C. Specifically, eleven (11) borings were advanced throughout the Site. At each of the locations, the soils were inspected for evidence of environmental impact (e.g., staining, odors, elevated PID readings, etc.). In addition, a groundwater monitoring well was installed at two of the locations. Per the contract for this assessment, eleven (11) samples were submitted to a laboratory for environmental analyses. Specifically, nine soil and two groundwater samples were submitted.

- Soil

Evidence of impacted soils was not revealed during the drilling activity (i.e., no free liquids were observed, no staining was observed). In addition, PID readings and odors were not detected in the soil samples screened during the drilling activity (refer to Table 1). Further, with the exception of arsenic, the laboratory analysis of the soil samples did not reveal concentrations of VOCs, TPH-GRO or TPH-DRO, RCRA 8 Metals or TCLP levels, as applicable; at concentrations above the comparative standards as presented above (refer to Tables 2, 3 and 4).

With regard to arsenic, as previously reported, the concentration in B.5 (8.2 ppm) only slightly exceeded the USGS background level (7.2 ppm). In addition, based on data collected by Hillis-Carnes during arsenic remediation projects in Maryland (i.e., at golf courses, former orchards), it is Hillis-Carnes' experience that the concentrations of arsenic detected in this sample (and the other samples detecting concentrations of arsenic) appear to be indicative of naturally occurring levels of arsenic. Based on MDE's ATC data (including USGS background levels) and Hillis-Carnes' experience, it is our opinion that the presence of arsenic in the soil samples may be a result of naturally-occurring arsenic and not necessarily indicative of arsenic contamination at these sample locations.

- Groundwater

Visual evidence of contamination (e.g., sheens, free product, odors) was not detected in the water samples collected for this investigation. In addition, the laboratory analysis of the groundwater samples did not reveal concentrations of VOCs, TPH-GRO or TPH-DRO levels, as applicable; at concentrations above the comparative standards as presented above (refer to Table 5).

- Overall Conclusion

Based on the findings of this Environmental Subsurface Investigation, it is Hillis-Carnes' conclusion that evidence of significant contamination in the soil and groundwater at the Site was not revealed. Therefore, it is Hillis-Carnes' opinion that additional investigation with regard to the environmental conditions of the soil and groundwater does not appear warranted.

It should be noted that excavation of on-site soils will be necessary for the proposed future redevelopment of the Site. As appropriate, the findings of this investigation, specifically the laboratory results of the soil analyses, could be provided to the properties/facilities to which the excess soil may be transported to facilitate an evaluation with regard to the acceptance of the soil.

Based on the subsurface conditions encountered in the borings, and the knowledge that excavations will extend to depths on the order of 30± ft below the existing site grades, dewatering will be an important consideration in association with the redevelopment plans. As appropriate, the findings of this investigation, specifically the laboratory results of the groundwater analyses, could be provided to the appropriate personnel (e.g. a subcontractor who specializes in deep foundation excavation drainage) to facilitate an evaluation with regard to the dewatering operation.

5.0 LIMITATIONS

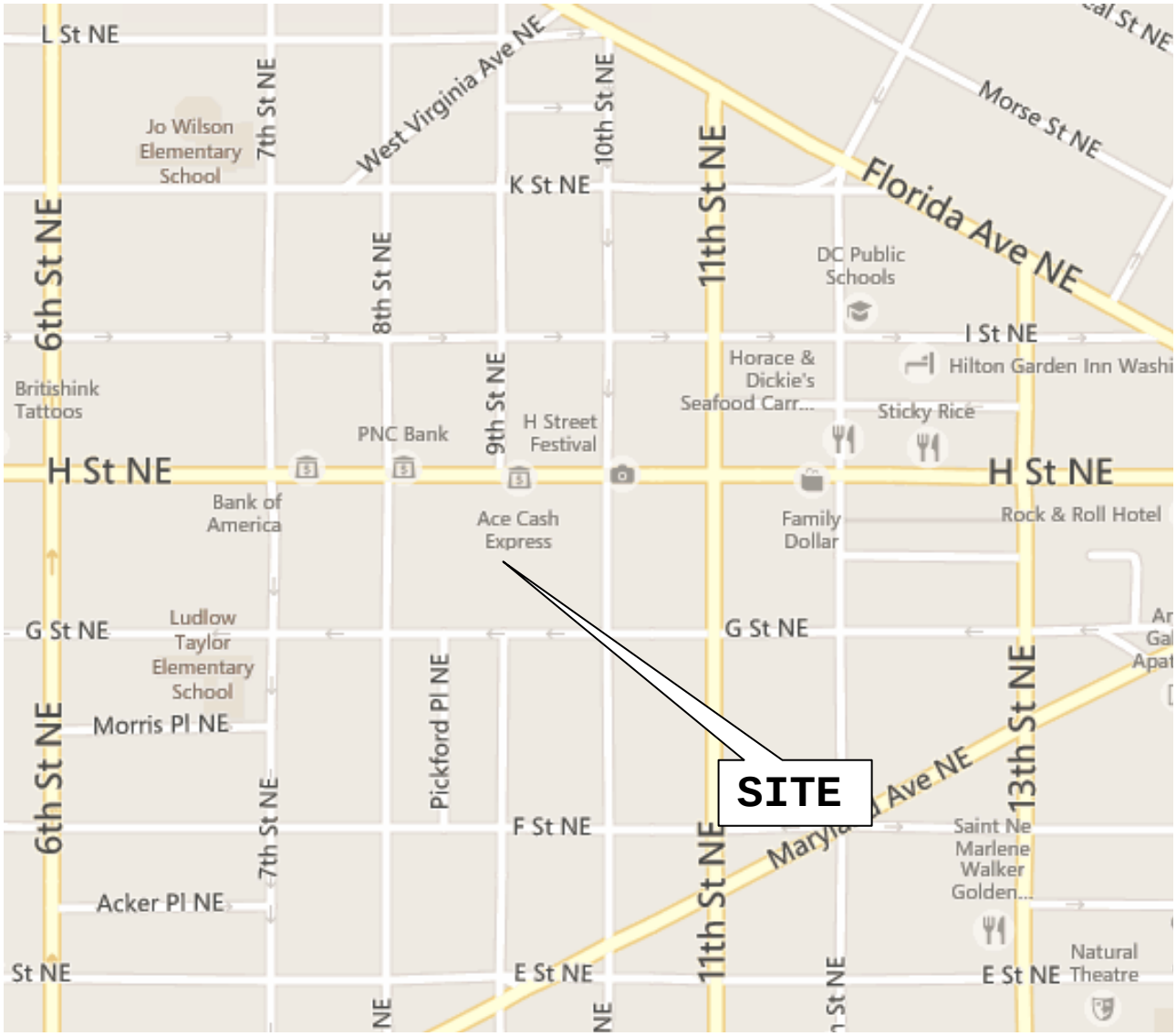
Our professional services have been performed, our findings obtained, and our conclusions prepared in accordance with customary principles and practices in the field of environmental science. This report does not warrant against future operations or conditions, nor does it warrant against conditions present of a type or at locations not investigated.

This report was prepared for the sole use of our Client. The scope of services performed for this assessment may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings or conclusions is at the risk of said user.

This assessment was not intended to be a definitive investigation of subsurface conditions across the entire Site, as the assessment included the advancement of a number of probes at distinct locations and depths on the Site. The conclusions drawn from this assessment are considered reliable; however, there may exist localized variations in the subsurface conditions that have not been completely defined at this time. If evidence of environmental impact is encountered during future re-development activity, the impact should be handled appropriately.

The samples delivered to the analytical laboratory for this project will be retained by the laboratory for thirty (30) days from the date that the samples were received by the laboratory. After 30 days, the laboratory will dispose of the samples. Therefore, if analyses in addition to those presented in this proposal are desired, a request for the additional analyses must be made prior to the expiration of the laboratory's 30-day sample retention policy. Further, although the laboratory retains samples for 30 days, it should be noted that regulatory "holding times" for certain laboratory analyses are less than 30 days.

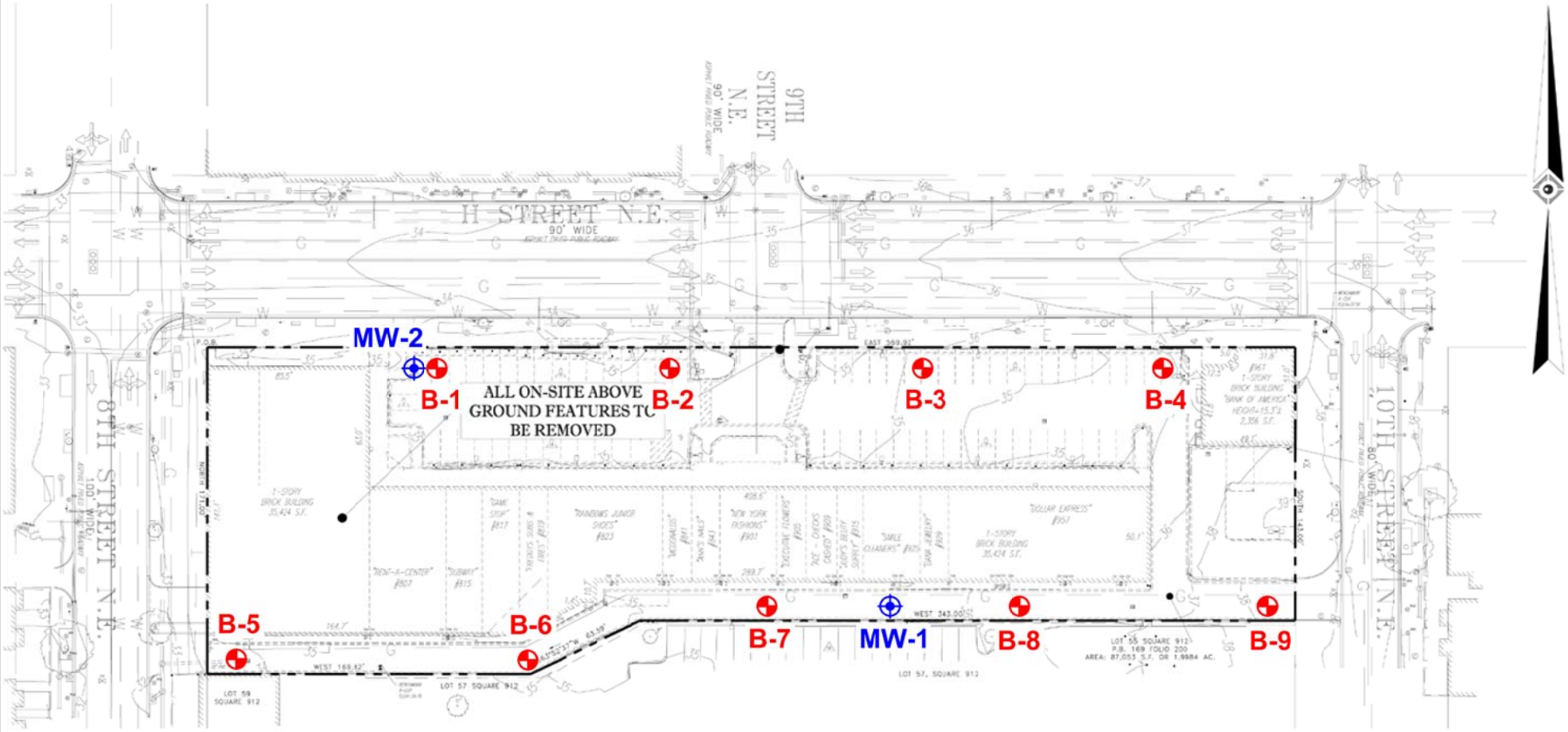
The soil cleanup standards and groundwater standards published in the: MDE's Cleanup Standard Guidance Document; the District of Columbia Municipal Regulations; and the EPAs Residential Screening Tool, as referenced in this report, is several examples of resources that can be utilized to provide some context with regard to laboratory results for soil and groundwater samples. Hillis-Carnes' discussion of these particular standards is not meant to imply that other standards/comparative numbers may not be applicable. Further, an evaluation of the legal obligations of our Client and/or other parties (e.g., an owner of a Site) to report the findings of environmental investigations to regulators are beyond the scope of this project. Therefore, in this report, Hillis-Carnes has not rendered an opinion or provided professional advice regarding reporting obligations, if any, as they may pertain to the findings of this environmental investigation.



HILLIS-CARNES ENGINEERING ASSOCIATES

SITE LOCATION MAP

Date: 12/30/2014 Figure: 1



LEGEND:
- SOIL BORING LOCATION
- MONITORING WELL

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FIGURE 2 - SAMPLE LOCATION PLAN
901 H STREET, NE
WASHINGTON, DC

PROJ. NO:	14441B
DATE:	10/30/14
SCALE:	1" = 80'
SHEET:	1
DESIGN BY:	RWP
DRAWN BY:	AM
CHECKED BY:	GLG