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SUBSURFACE INVESTIGATION PROPOSED BOROUGH-BASED JAIL 125 WHITE STREET NEW YORK, NEW YORK

Submitted To:

TRC Engineers Inc.

1430 Broadway, 10th Floor New York, NY 10018

October 20, 2021

Submitted By:

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.

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W.O. 10285.01-REV 1



TRC Engineers Inc. 1430 Broadway, 10th Floor New York, NY 10018

Attention: Ms. Kirsten Meyers

October 20, 2021

RE: W.O. 10285.01-REV 1 SUBSURFACE INVESTIGATION PROPOSED BOROUGH-BASED JAIL 125 WHITE STREET NEW YORK, NEW YORK

Dear Ms. Meyers;

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. has completed subsurface investigation for the proposed Borough Based Jail building to be constructed at the existing Manhattan Detention Complex and the NYC Criminal Courts Building, at 120 and 125 White Street, New York, New York. The purpose of the investigation was to document the subsurface conditions in the area of a proposed new high-rise building. This report presents our findings.

We appreciate this opportunity to assist you with this project. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,	PEOFNEW L		
TECTONIC EVGIN	ERING CONSULTAN	Karologists	& LAND SURVEYORS, D.P.C.
Mark A. Stier, C. Executive Vice A	STUDIESSIONAL	NIS S	

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SUBSURFACE INVESTIGATION PROPOSED BOROUGH-BASED JAIL 125 WHITE STREET NEW YORK, NEW YORK

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1.0 <u>INTRODUCTION</u>

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. (Tectonic) has completed a subsurface investigation for the proposed Borough Based Jail building to be constructed at the existing Manhattan Detention Complex and the NYC Criminal Courts Building, at 120 and 125 White Street, New York, New York. The purpose of the investigation was to document the subsurface conditions in the area of a proposed new high-rise building. This report presents our findings.

2.0 <u>SCOPE OF SERVICES</u>

The following services were performed for TRC Engineers, Inc., hereafter referred to as the Client:

- Review information about the proposed construction and previous subsurface investigations, provided by the Client; and review publicly available information about the site and the geologic setting.
- Observe the drilling and sampling of eighteen (18) geotechnical test borings, performed by the Client's drilling subcontractor, to depths as great as 120 feet below existing grade. See the following sections for details about these borings.
- Observe the installation of five (5) groundwater monitoring wells within borings, performed by the **Client's drilling subcontractor**. See the following sections for details about the groundwater monitoring wells.
- Provide field inspection by geotechnical engineers and engineering geologists, working under the purview of a New York State licensed Professional Engineer, to log and classify all soil samples, and to log the installation of the groundwater monitoring wells and record groundwater levels.
- Perform laboratory testing on soil and rock samples, selected to help in the field classifications and to evaluate the engineering characteristics of the soils and bedrock underlying the site.
- Perform limited geotechnical engineering analyses of the subsurface conditions as they relate to the design and construction of foundations and below grade walls for the proposed building.
- Prepare this subsurface investigation report, for the design and construction of the proposed new jail building.

3.0 SITE AND PROJECT DESCRIPTION

The proposed project is to consist of the construction of one or two high-rise jail buildings that will be located at 120 and 125 White Street, New York, New York. It is anticipated that the building(s) will occupy all of Block 198 (Lot 1) and the location of the northern-most building on Block 167 (Lot 1). At the time that this report was **prepared**, **it was Tectonic's understanding that one building may span both properties**, or that two separate buildings might be built.



The site is bound by Centre Street, on the northwest; Baxter Street, on the southeast; and by existing high-rise buildings on the northeast and southwest. At the time of the subsurface investigation, the site was occupied by the Manhattan Detention Complex and the NYC Criminal Courts Building. The Oasis website (<u>http://www.oasisnyc.net/map.aspx</u>) reports that these buildings were built in 1939 and 1985. The existing buildings have 10 floors and 14 floors; however, some portions of the building at 120 White Street are limited to one- to two-stories.

Historic maps of the site show that the site is located where a pond (Collect Pond) and associated wetlands had once existed and that was later in-filled during the development of lower Manhattan (see the Site History and Geology section of the Mueser **Rutledge Consulting Engineers' {MRCE's**} preliminary report, in Appendix III). Later maps show that the site has been occupied by various structures since at least 1879. Subways also reportedly are located beneath Centre Street, with some tracks turning toward the east, beneath the northern corner of Block 168, to run below Walker Street. The available drawings also show that the subway extends approximately 26 feet below the curb elevation. Based on the limited information available, we estimate that the foundation elevation for the subway is roughly at elevation -13 feet.

Ground surface elevations (provided by the Client) around the buildings range from approximately +13 to +21 feet. Available information also indicates that both existing building include one basement level, with finished floor elevations of +1 and -3 feet. A datum was not provided with the elevation data, but it is our understanding that the datum is the North American Vertical Datum of 1988 (NAVD88), as required by the New York City Building Code (Code).

The purpose of the subsurface investigation and this report is to provide the design-builder with information to use in preparation of the final design and construction documents. Based on MRCE's preliminary report, it is anticipated that the building(s) may be as tall as 16-stories; however, the final height of the building(s) was not provided to Tectonic. It is also anticipated that the building(s) will have two (2) basements with an estimated basement finished floor elevation of approximately -13.5 feet. This approximate basement elevation corresponds to estimated bearing elevations of approximately -15 to -17 feet (if the building were to be constructed upon shallow foundations). It is also our understanding that the planned bottom of excavation elevation will be -18.5 feet.



4.0 SUBSURFACE INVESTIGATION

The subsurface investigation consisted of drilling, sampling, and logging of eighteen (18) test borings, including borings B-3M, B-4M, B-7M, B-9M, B-11M, B-12M/B-12M(A), B-13M, B-14M, B-16M, B-19M, B-21M, B-22M, B-23M, B-24M, B-27M, B-29M, B-31M, B-33M and B-34M. The approximate locations of the borings are shown on the attached *Boring, Groundwater Monitoring Well Plan, With Approximate Bedrock Elevations*, Figure 1.

The subsurface investigation was performed in two phases. In the first phase, the drillers cored through the basement floor slab and then hand-drilled the borings to depths ranging from 1.25 to 6 feet below basement finished floor elevation. This work was performed between March 9, 2020 and March 13, 2020, when work was shut-down due to the COVID-19 pandemic. At that time, the Client informed Tectonic that all work (included on-site work, as well as laboratory testing and engineering analyses) was to halt until further notice.

The subsurface investigation was resumed on April 19, 2021 and continued to August 5, 2021, when the investigation was completed. It should be noted that, as suggested by the boring numbers given in the previous paragraph, at least 34 borings had originally been planned for this site: however, we have been informed that AECOM-Hill and the DDC had elected to reduce the number of borings, when work resumed in 2021. This included their election to not extend borings B-14M, B-21M and B-23M past the depths of hand-clearing (6 feet). The logs for these three borings are included at the end of the boring logs, in Appendix I.

The borings for the subsurface investigation were drilled by Aarco Environmental Services, Incorporated (AARCO), using a limited access drill rig within the buildings, and truck- and ATV-mounted drill rigs outside the buildings. As previously noted, each boring was initially advanced to a depth of 5 to 6 feet by coring through the floor slab or sidewalk, then by hand-excavating, to clear potential underground utilities. The borings that were completed after April 2021 were advanced using 4-inch and 3-inch inside-diameter casing, a 3 $^{7}/_{8}$ -inch and/or $2^{7}/_{8}$ -inch diameter tri-cone drill bit, and mud rotary drilling methods.

Standard Penetration Testing (SPT) and split-spoon sampling was generally performed continuously within the top 20 feet of each boring, and at intervals ranging from 2 feet to 5 feet (at greater depths) within the soil, depending upon the conditions encountered. The SPT and split spoon sampling was performed in accordance with the requirements of ASTM Standard D1586 *"Standard Test Method for Penetration Test and Split-Barrel*"



Sampling of Soils". SPTs performed within the buildings (with the limited access drill rig) were performed using a donut hammer, while an automatic hammer was used within borings drilled outside the buildings (with the truck- or ATV-mounted drill rigs). The field SPT N-values were recorded for each penetration test and samples of the soils obtained during the investigation were collected by Tectonic's engineers and geologists, retained in glass jars, and saved for potential future testing at our materials testing laboratory.

A 2-inch inside diameter (NQ2) rock core barrel, equipped with a diamond-impregnated bit, was used whenever an obstruction, such as a boulder, was encountered within a boring and to core bedrock. Once a hole was cut through the obstruction with the core barrel, it was then reamed out using the tri-cone bit and the boring was continued. Once bedrock was encountered, at least five (5) feet of rock core was collected, saved in a wooden box, and shipped to our materials testing lab, for future testing and storage.

It is also noted that the Client performed environmental measurements of the split spoon samples. It is our understanding that a complete listing of these readings will be provided by the Client within their separate report for this project.

In addition to the borings noted above, five (5) groundwater monitoring wells (designated MW-1 to MW-5) were installed within borings B-31M, B-19M, B-9M, B-33M and B-7M, respectively, once the borings were completed. In each case, the boring was partially backfilled to the planned well depth and the monitoring well was then installed. Each well consists of 15 to 30 feet of 2-inch PVC well pipe, with 10 feet of slotted section at the bottom of the well, and solid riser pipe extending from the slotted section to the basement floor or ground surface. After the well pipe was installed, No. 2 well sand was placed around the pipe to a height of at least 2 feet above the slotted section. A Bentonite seal was placed above the well sand, and the remainder of the anulus around the well pipe was backfilled with grout. Each well pipe was capped with a lockable plug and a cover was installed into the basement floor slabs or pavement to protect the well. Once each well was installed, it was left for at least 3 days (without bailing), to allow the biodegradable drilling mud to decompose and to allow the water level within each well to stabilize, before water level measurements were taken.

Geotechnical engineers and engineering geologists observed the subsurface investigation and monitoring well installation, and prepared logs of the subsurface conditions under the direction of a Professional Engineer licensed in New York State. The materials encountered were classified in accordance with the New York City



Building Code (Code), the Burmister Soil Classification System, and the Unified Soil Classification System (ASTM D2488). Note, the Code classification numbers are included herein because the Code requires them, the other two systems are incorporated into the boring logs and this report, because it is Tectonic's standard practice. The results of the subsurface investigation are summarized in Section 6, below, and copies of the boring and groundwater monitoring well logs are included in Appendix I.

5.0 LABORATORY TESTING

Laboratory testing was performed on soil samples selected to help identify the field classifications of the soils, and to assist in evaluating the engineering properties of the soils encountered within the borings. Testing included the following:

	Table 5.0.1 Laboratory Tests	
Quantity	Description	ASTM Standard
55	Grain Size Distribution	D6913
4	Hydrometer Tests (of Fine-Grained Soils)	D422
7	Atterberg Limits Determination (of Fine-Grained Soils)	D4318
12	Organic Content (Organic Soils)	D2974
3	pH Measurement (Organic Soils)	D4972
28	Natural Moisture Content	D2216
16	Point Load Strength Index of Rock	D5731

The results of the laboratory testing are included in Appendix II, and have been incorporated into the boring logs and in the subsurface conditions described in the following section.

6.0 <u>SUBSURFACE CONDITIONS</u>

The results of our subsurface investigation indicate that, beneath approximately 4 to 15 inches of concrete floor slab or pavement (asphalt, or pavers over concrete), the site is underlain by existing fill and native soils (including shallow pond/wetland deposits – peat, organic silt, and non-organic silts and clay), sands, gravels, decomposed bedrock and bedrock. Generalized descriptions of the encountered subsurface conditions are provided below. More detailed descriptions are provided on the boring logs included in Appendix I.

As noted in Section 4, the drill rigs used for this subsurface investigation were equipped with donut and automatic hammers. Donut hammers are generally less efficient than the standard safety hammer, while automatic hammers are more efficient, and therefore, impart more energy to the split spoon than a safety



hammer. Because the energy from a safety hammer is typically the standard used in most geotechnical analyses, typical energy correction factors have been applied to convert the field N-values (reported on the boring logs), to those of a safety hammer (N_{60} -values). An energy correction of 0.75 has been used for the SPTs conducted with a donut hammer, while an energy correction of 1.3 has been used for the SPTs performed with an automatic hammer. Both the field N-values and the corrected N_{60} -values are presented in the following subsections.

6.1 Fill

Existing fill was encountered in all of the borings drilled at the site, except boring B-28M, where the presence of fill could not be readily identified. Fill was not noted in boring B-7M; however, this boring was performed at a previously drilled environmental boring (SB-03) and geotechnical sampling was not performed above a depth of 20 feet (EL = -19 feet). Where encountered, fill extends to elevations as shallow as EL +4.5 feet, in boring B-34M, and to as deep as EL -20 feet, in boring B-4M, and -23 **feet in Yu's preliminary boring B**-1. It should be noted, however, that the fill depths have been conservatively estimated to extend to the top of the first sample of native soil collected from each boring. It should also be noted that the presence of fill was judged by the occasional presence of debris, and/or by other characteristics, such as unusual or mixed colors, that led our field representatives to judge that a soil is fill.

The fill commonly ranges in color from brown to gray, with shades of red and black. The fill largely consists of a mix of sands and gravels, with less than 20 percent silt. In addition to natural soil particles, the fill also was frequently found to contain fragments of brick and wood, as well as occasional concrete and asphalt, and one steel bolt. The existing fill typically has the Unified Soil Classification (USCS) designations of SP, SW, SP-SM, SW-SM, SM, GP, GP-GM, and to a lesser extent: GM, GC, Pt and ML, and has a Code classification of Class 7. Based on the occasional presence of debris and the widely varying N-values measured within the existing fill (see below), the existing fill should be considered to be uncontrolled fill.

Field SPT N-values within the uncontrolled fill range from 2 to 67 blows per foot (bpf) and there were four splits spoon refusals, which are anticipated to have occurred when over-sized material (cobbles, boulders or debris) was encountered within the fill. When corrected, the N_{60} -values within the fill



(excluding the split spoon refusals) range from 3 bpf to 50 bpf, with an average N_{60} -value of 21 bpf. This indicates that the fill ranges from loose to very dense and is generally in a medium dense condition. However, the presence of brick and other debris can abnormally inflate some of the N-values, and therefore, the fill might be somewhat less dense than the field N-values would make it appear.

6.2 Native Soils

The native soils underlying the fill can generally be divided into two deposits. The first is lacustrine deposits from the former Collect Pond; while the second deposit is layered sands and gravels, with occasional isolated pockets of silt. Each of these will be described and discussed in the following paragraphs.

The lacustrine Collect Pond deposits include peat, organic silts and organic clays, as well as layers of silt and clay, with little or no organic material. These soils were encountered in borings B-3M, B-4M, B-5M, B-9M, B-11M, B-12M, B-13M and B-19M, as well as Yu Associates borings B-1 and B-2, and **MRCE's boring MR**-1C-M, which were drilled during preliminary investigations. Figure 2, the *Boring, Groundwater Monitoring Well and Fence Location Plan, With Approximate Bottom of Collect Pond Deposits Elevations*, identifies the borings where the Collect Pond deposits were encountered, by a note next to each boring location {e.g.: (CP -43)}, which indicates the approximate elevation of the bottom of the Collect Pond deposits. It should be noted that Figure 2 also shows three additional borings B-27M, Yu Associates boring B-3 (identified on the drawing as YB-3) **and MRCE's boring MR**-2P-M, which encountered a lean clay deposit immediately below the fill. Given that the bottom of this layer is significantly shallower that the main Collect Pond deposits (Elevations -7 to -8, vs. Elevations -29 to -51), **they've been distinguished from the others with a question mark on the drawing**, {e.g.: (CP -8)}. Based upon the planned bottom of excavation elevation (EL = -18.5 feet), it is expected that most of the Collect Pond deposits will remain below **the proposed new building's basement**.

Laboratory testing of the Collect Pond deposits show that the peat consists of approximately 14 to 76 percent organic matter – indicating that some of the peat is sandy, while other samples are largely made up of plant fibers. Moisture contents within the peat range from 104 to 412 percent, with the higher moisture contents measured in samples with higher organic contents. Furthermore, pH tests



were performed on three (3) peat samples, which measured the pH to range from 4.6 to 6.2, indicating that the peat is mildly acidic, but has a relatively low potential for being corrosive.

Laboratory testing was also performed on the silts and clays, which found that the organic contents of these soils range from 1 to 83 percent, with moisture contents ranging from 24 to 583 percent. As with the peat, the moisture contents of the silts and clays appear to be directly correlated to their organic contents. Several Atterberg limits determinations were also performed on some of the silts and clays, and they were found to have plasticity indices that range from 4 to 14 percent.

Field N-values within the lacustrine soils range from 0 to 63 bpf, with corrected N₆₀-values ranging from 0 to 47 bpf. On average, the Collect Pond deposits have an N₆₀-value of 9 bpf, indicating that the soils range from very soft to hard, and are typically medium stiff. It should also be noted that the portions of these deposits that extend below Elevation -40 feet have N-values of 0 to 6 bpf, indicating that the Collect Pond deposits that might remain below the basement floor have an undrained shear strength of approximately 200 to 750 pounds per square foot psf. These estimates of the undrained shear strength are corroborated by a few pocket penetrometer tests that were performed on these soils. They measured unconfined compressive strengths typically ranging from 0.25 to 0.5 tons per square foot (500 to 1,000 psf). Collectively, mineral clays and silts, the organic clays, organic silts, and the peat have USCS designations of CL, CL-ML, ML, OL and Pt, and have Code classifications of Class 6, 4b, and 5b, depending upon the organic content, soil type and N-value.

It should be noted that it was our understanding, during the subsurface investigation, that the finegrained Collect Pond soils described above would be mostly, if not completely, removed during building excavation. Subsequently undisturbed sampling and laboratory strength testing was not performed on these materials. Later information revealed that the building will largely be located on or above these materials. Subsequently, if the design-build team needs additional strength information about these soils, additional borings will need to be conducted to collect undisturbed samples of the fine-grained Collect Pond deposits, and the design-build team will have to perform additional laboratory testing on the collected samples.



The layered sands and gravels encountered either below the Collect Pond deposits, or directly beneath the fill, generally consist of layered deposits of relatively clean sand and silty sand, with frequent layers of gravel, and occasionally layers of sandy silt. It should be noted that the preliminary subsurface investigations identified some of these soils as glacial till; however, we could not see any features within the layered sands and gravels that would fit typical glacial till descriptions, and therefore the term glacial till is not used in our soil descriptions.

Burmister soil classification system descriptions of the layered sands and gravels range from redbrown fine SAND, trace Silt (USCS designation: SP); to brown-green-pink coarse to fine Gravel and coarse to fine Sand, little Silt (USCS designation: GW-GM). A typical description of the occasional silt layers is brown SILT, little f Sand (USCS designation: ML). Overall, the layered sands and gravels, with occasional silt layers, have USCS designations of GP, GP-GM, GW-GM, SP, SW, SP-SM, SW-SM and ML. Code classifications for these soils include 2a, 2b, 3a, 3b, 5a, 5b and 6, depending upon the primary soil constituent and the N-value.

It should also be noted that occasional layers that appear to be dominated by cobbles and boulders were encountered in half of the borings. These were encountered within borings B-3M, B-4M, B-5M, B-16M, B-18M, B-24M, B-31M, B-33M and B-34M.

Excluding split spoon refusals that largely occurred on cobbles and boulders, field N-values within the layered sands, gravels and occasional silts, range from 5 to 114 bpf, with corrected N_{60} -values ranging from 4 to 125 bpf. However, the loose samples are rare, with only 10 SPTs measuring an N_{60} -value less than 10 bpf. The native sands and gravels have an average N_{60} -values of 30 bpf (excluding the split spoon refusals), indicating that the native sands and gravels are typically in a medium dense condition.

6.3 Bedrock

A review of the USGS Bedrock and Engineering Geologic Maps of New York County, and Parts of Kings and Queens Counties, New York, and Parts of Bergen and Hudson Counties, New Jersey (1994) show that the underlying bedrock at the site is Manhattan Schist, consisting of "Gray medium- to coarsegrained, layered sillimanite – muscovite – biotite – kyanite schist and gneiss interlayered with layered



tourmaline – garnet – plagioclase - biotite quartz schist and gneiss, with black amphibolite layers 3 ft **or more thick."** Rock cores performed at each of the borings encountered bedrock that is consistent with this description. Overall, the bedrock can be described as gray moderately weathered to fresh, moderately to slightly fractured, coarse to fine grained, moderately hard to hard Schist, of very good to very poor quality, with Code classifications of Class 1a to Class 1d.

More specifically, approximately 2 to 16 feet of Soft Rock (Class 1d) was encountered in eleven (11) out of the eighteen (18) borings drilled for this investigation, before more-competent bedrock was encountered. Of the rock cores collected from the top 5 to 10 feet of bedrock, the rock quality designation (RQD) ranges from 0 to 95 percent, with an average of 57 percent, indicating that the cored bedrock has a Code classification of Class 1b, on average. Furthermore, the rock cores found that the quality (and therefore the class) of the bedrock typically improves with depth; however, in one boring (B-31M), where multiple rock cores were collected, the RQD and Code classification decreased from 40 percent to 34 percent (Class 1c to 1d).

The laboratory testing for this project included several Point Load Strength Index (PLSI) tests of the recovered rock cores (see Appendix II). Table 6.3.1, below, provides a statistical review of the PLSI tests performed. The table has been divided into two columns showing the PLSIs in mega-Pascal (MPa) and pounds per square inch (psi) for the overall sample set.

Table 6.3.1 - Point Load S	Strength Index S	Statistics				
	PLSI					
Statistical Parameter	(MPa)	(psi)				
Minimum	1.343	194.8				
Mean - 1 Std. Dev.	3.016	437.4				
Average (Mean)	5.344	775.1				
Median	4.791	694.8				
Standard Deviation	2.329	337.7				
Mean + 1 Std. Dev.	7.673	1112.9				
Maximum	10.562	1531.9				



6.4 Groundwater

Due to the introduction of drilling fluids into the borings, direct measurements of the groundwater depth could not be readily performed within most of the borings. However, as previously noted, five (5) temporary groundwater monitoring wells (MW-1 to MW-5) were installed within the borings. Groundwater depth measurements were made within each of the groundwater monitoring wells after the biodegradable drilling fluid had time to decompose. Table 6.4.1, below, provides the finished floor or ground surface elevations, plus the measured groundwater depths and elevations for each well. Additional details are provided within the Groundwater Observation Well logs, included in Appendix I.

	-	Table 6.4.1 Ground	lwater Monitorin	g Data	
Monitoring Well Number	Boring Number	Surface Elevation ¹ (ft)	Date Measured	Measured Depth (ft)	Groundwater Elevation (ft)
MW-1	B-31M	1	5/4/21 7/22/21	3.12 3.32 3.33	-2.12 -2.32
MW-2 B-19M 15.9		8/16/21 6/13/21 8/16/21	-2.33 5.73 ² -0.60		
MW-3	B-9M	1	7/2/21 7/22/21 8/16/21	16.50 3.33 3.27 3.33	-2.33 -2.27 -2.33
MW-4	B-33M	1	7/23/21 7/26/21 8/16/21	1.00 2.50 2.33	0.00 -1.50 -1.33
MW-5	B-7M	1	8/6/21 8/16/21	2.92 2.92	-1.92 -1.92

Notes:

1. Surface Elevation indicates the finished floor elevation or ground surface elevation at each boring location.

2. The 6/13/21 groundwater measurement at MW-2 was performed immediately after the well was installed, and before the water in the well could equilibrate with the surrounding groundwater. Therefore, it is not expected to represent the groundwater elevation, as well as later measurements do.

As can be seen from the table, the groundwater elevations across the site range from -0.6 foot, at MW-2, to -2.33 feet, at MW-1 and MW-3. Overall, the measured groundwater elevations suggest that there is a slight gradient (about 1 foot) from north to south across the site. However, the groundwater elevation appears to be slightly elevated near the center of the site, at MW-2. This could represent a slightly perched condition, above the Collect Pond deposits, or could be caused by a possible leaking utility line.



It should be noted that groundwater levels fluctuate with the seasons and weather conditions. Consequently, groundwater may be encountered at other depths, at other times. It is also noted that because some of the wells were installed near the end of the subsurface investigation, it is recommended that the design-build team be given access to the site to perform additional groundwater depth measurement during their design process.

7.0 DISCUSSION AND LIMITED RECOMMENDATIONS

Based on our analyses and the proposed building's estimated basement elevation, we anticipate that conventional shallow spread footings or a pressure mat foundation will not be suitable for supporting the proposed building(s), because of the presence of the weak Collect Pond deposits beneath the west-central portion of the building(s). It is also expected that the medium dense sands underlying the site might cause excessive settlement of the proposed high-rise building(s) if they were designed to bear upon friction piles embedded into the sands. Finally, with a planned basement finished floor elevation of -13.5 feet and a design groundwater elevation of +2.5 feet, the basement floor slab will need to resist approximately 1,000 pounds per square foot of hydrostatic uplift pressure.

Based upon the conclusions given above, it is recommended that the proposed building(s) be supported by either caisson piles or drilled shafts socketed into competent bedrock (Class 1c or better) and designed in accordance with the Code. The caisson piles or drilled shafts should be fully cased between the pile caps and rock sockets, and the rock sockets should have a bonded length that is at least 5 feet, or twice the socket diameter, whichever is greater. Furthermore, the designers should consider whether the deep foundations should be designed and constructed with or without pile load testing. If caisson piles or drilled shafts are designed in accordance with Section 1810.7.3, they may be constructed without pile load testing, but more piles may be needed to support the building than would be necessary. Conversely, it might be less expensive to designed caisson piles or drilled shafts, with higher bond stresses, as indicated in Section 1810.7.3.1 of the Code, and perform load testing to verify the higher capacity. If the latter is selected, we recommend that the load testing be performed by incorporating an Osterberg cell into the bottom of the rock socket of each pile/drilled shaft to be tested, to directly measure the skin friction and end bearing between the grout or concrete, and the surrounding and underlying bedrock of the rock socket.



As previously described, rock cores performed for this subsurface investigation extended approximately 5 to 10 feet into the bedrock. Section 1802.5.1 requires that a sufficient number of rock cores be performed to "provide assurance of the rock soundness" within 10 feet below the "lowest level of bearing". In the case of rock sockets, this section can be interpreted to require that rock cores extend at least 10 feet below the tip elevation(s) of rock sockets. Therefore, the design-build team should plan to perform additional borings (either immediately after demolition of the existing buildings, or during foundation construction) to obtain rock cores that extend at least 10 feet below the planned deepest rock socket elevations or depths.

In addition to the conclusions noted above, it is anticipated that most of the existing fill and little of the Collect **Pond deposits will be removed during excavation of the building's basements.** Therefore, these deposits will need to be supported by the temporary support of excavation (SOE) walls. As can be seen from Figure 2, the Collect Pond deposits were encountered in the western and southwestern portions of the site, but were not encountered near the southeastern, eastern or northern portions of the site. Subsequently, it is our recommendation that the SOE walls be designed to resist different loading conditions, depending upon their locations. This will provide adequate support, while eliminating the potential for over-designing the SOE walls in the areas where adverse soil conditions were not encountered. These recommendations will be given in the following subsection.

Another construction-related concern is that the bottom of the excavation will extend into the peat or organic silt of the Collect Pond deposits, within the west-central portion of the site. It is not anticipated that these soils will be sufficiently stable to support excavation and pile or drilled shaft installation equipment. It is anticipated that a working pad of crushed stone, controlled fill or granular on-site soils, potentially stabilized with separation fabric or geogrid, will be needed to provide a stable working surface within the area of the Collect Pond deposits. It should be anticipated that this working pad will need to be some 1 to 3 feet thick, depending on whether geotextiles are used, to provide stable conditions. Alternatively, the contractor could use another stabilization method, such as placing swamp mats above the Collect Pond deposits, as a working surface.

It is our understanding that this project will be a design-build project and that only limited design recommendations are to be provided as part of this report. In particular, the following items were requested:

• Coefficients of lateral earth pressure, base friction, and unit weight of soil for design of belowgrade walls.



- Suitability of on-site materials for fill, recommended material type for imported fill and compaction procedures/requirements to achieve stable engineered fills.
- Seismic site classification.

The following limited recommendations are provided to assist the designers in preparing their foundation designs and to assist the contractor during construction.

7.1 Below Grade Walls

It is recommended that foundation walls and walls for support of excavation be designed in accordance with the following criteria:

	Table 7	.1.1 – Below-(Grade Wall Load	ding Parameters			
		(Centre Street Half of South		Northern and Ea and Eastern Half Wall	of Southern	Newly	
Soil Parameter	Existing Fill (Above EL = -18 Feet)	Pond Deposits (EL = -18 to -43 Feet)	Native Soils Below EL = - 43 Feet	Existing Fill (Above EL = -5 Feet)	Native Soils Below EL = -5 Feet	Placed Controlled Fill	
Angle of Internal Friction	31°	0	33°	31°	34°	34°	
Undrained Shear Strength (psf)	0	250 ²	0	0	0	0	
Active Earth Pressure Coefficient (Ka) ^{3,4}	0.32	1.00	0.29	0.23	0.28	0.28	
Passive Earth Pressure Coefficient (Kp) ⁴	3.12 ⁵	1.00	3.39	3.12 ⁵	3.54	3.54	
At-Rest Earth Pressure Coefficient (Ko) ^{4,6}	0.48 5	1.00	0.46	0.48 5	0.44	0.44	
Total Unit Weight of Soil (pounds per cubic foot) ⁷	120	120	125	120	125	130	
Allowable Coefficient of Base Friction ⁸	NA	NA	0.35	NA	0.33	0.35	

Notes:

1) The wall locations given in the table assume that the building will be constructed with four walls (northern, eastern, southern and western walls) and will be constructed with lowest basement at one elevation (approximately -40 feet). Because Collect Pond deposits were found within boring B-9M, it is recommended that the western half of a southern wall be designed in the same manner as the western wall. This recommendation is different than preliminary recommendations provided in a memorandum dated 8/6/21.



- 2) For effective stress analysis, under drained conditions, we recommend that an effective friction angle of 31 degrees be used, instead of the unconfined compressive strength, as indicated for a normally consolidated undisturbed clay with an average PI of 9 and the -1 standard deviation curve in Figure 11.27 of "An Introduction to Geotechnical Engineering" (1981), by Holtz & Kovacs. This has been provided per the Joint Venture's request.
- 3) Use only for freestanding walls, where movement of up to 0.0025 X height of wall is both possible and tolerable. Otherwise, use at-rest coefficient.
- 4) The coefficients provided assume a level backfill and vertical foundation walls. The coefficients should be re-evaluated for other conditions, such as for retaining walls with a sloping backfill.
- 5) Reduce the passive pressure above a depth of 4 feet below exterior grade by half to account for frost disturbance.
- 6) Use for walls restrained against lateral movement.
- 7) Use for soils that are above the design groundwater table (EL = +2.5 feet). Subtract the unit weight of water (62.4 pcf) to obtain the buoyant unit weight, when analyzing soils below the groundwater table.
- 8) Coefficient of base friction applies to mass concrete placed directly against the soils noted in the table. Note, a reduction factor of 2/3 has already been applied to these factors, and therefore, no additional factor of safety should be applied.
- 9) The criteria provided above are based on the soil conditions encountered within the borings, experience with native and fill soils encountered within and around New York City, upon standard Rankine earth pressure coefficients for the assigned friction angles, and upon engineering judgement.
- 10) The friction angles, and subsequent lateral load coefficients, given for the non-cohesive existing soils within the given soil depth range are based on a correlation between the average N₆₀ and friction angle (excluding split spoon refusals), developed by Ohsaki, et al (1959), and presented in "Performance and Use of the Standard Penetration Test in Geotechnical Engineering Practice", Virginia Polytechnic Institute and State University, The Charles E. Via Jr. Department of Civil and Environmental Engineering, Center for Geotechnical Practice and Research, 1998. It should be noted that split spoon refusals were excluded because most appear to be largely due to the presence of gravel within the soil samples, which could have artificially inflated the N₆₀-values.

In addition to the recommended design parameters given above, it is noted that the western foundation and support of excavation walls will be located only a few feet from the subway wall. Based on available drawings, it appears that the eastern subway wall is roughly located about 6 feet from the western property line. Subsequently, the western walls are expected to support minimal loads caused by the thin section of soil located between them and the eastern subway wall.

Any additional loading due to temporary and permanent surcharges should be added by the wall designer to the lateral loading exerted by the backfill, when designing below-grade walls. Loads due to supported structures should be applied in appropriate combinations with the lateral loads. Lateral loading coefficients due to sloping back fill should be evaluated using Coulomb's method.

Dampproofing and waterproofing should be provided for all foundation walls where the outside grade is higher than the basement slab elevations. Based on the groundwater measurements made during the project, it is recommended that dampproofing be installed on all exterior foundation walls above an elevation of +5 feet. Waterproofing should be installed beneath the basement floor slabs and on all exterior basement walls that lie below an elevation of +5 feet. The recommended elevation where the



transition from waterproofing to dampproofing occurs (+5 feet) is two and one-half (2.5) feet above the recommended design water elevation (+2.5 feet), which, in turn, is approximately 3 feet above the highest groundwater elevation at the site. The structure should be designed to resist the resulting hydrostatic forces below this elevation. All roof drains should be directed away from the building.

7.2 Groundwater and Dewatering

Groundwater at the site was encountered at an elevation of approximately -1 foot and it is our understanding the basement elevation will be at approximately -15.5 feet. Subsequently, it is anticipated that groundwater will be encountered approximately 14 to 15 feet above the planned foundation elevation during construction, thus requiring dewatering. It is also anticipated that the building will need to be constructed with waterproofing, and with basement walls and floor slabs that are capable of resisting hydrostatic pressures.

It should be further noted that our field personnel note odors (e.g.: gasoline) within some split spoon samples collected from the existing fill. It is our understanding that the specifics of the environmental measurements will be discussed in a separate report prepared by the Client (TRC); however, the potential presence of contaminants within the soils and groundwater will directly affect how the project is constructed. In particular, the potential presence of contaminants may require that the soil and groundwater removed from the site be tested for contaminants and be disposed of and/or treated at a facility capable of handling contaminated materials. Furthermore, the moisture barrier and waterproofing used on the exterior basement walls and below the basement floor slabs should be resistant to the potential contaminants.

Given the depth that the groundwater will need to be depressed to allow for construction of the proposed building in-the-dry (approximately 20 feet), it is anticipated that a significant volume of groundwater will need to be removed and trucked to a treatment facility during construction-phase dewatering, if standard dewatering methods are used. Subsequently, we suggest that the design-build team consider alternative methods for groundwater control, such as deep groundwater cut-off walls, permeation grouting or ground freezing. These methods might allow for construction without, or with minimal dewatering. Note, if permeation grouting is used, the grout should be kept weak enough that caisson piles or drilled shafts can be readily installed through the grouted soils. Regardless of the



method of groundwater control, the potential effects that it might have on neighboring structures, such as the subway tunnel and neighboring buildings, will have to be considered. The dewatering system, if necessary, should be designed by a New York State licensed Professional Engineer.

7.3 Earthwork Construction Recommendations

As indicated in the Code, controlled fill should consist of clean sand, gravel, crushed stone, crushed gravel, recycled concrete aggregate (RCA), or a mixture of these, and should contain no organic matter. The controlled fill materials should meet the following gradation requirements.

Sieve Size	Percent Finer by Weight
3-inch	100
No. 40	0 - 70
No. 200	0 - 10

Note, the above gradation is similar to the New York State Department of Transportation gradation for Select Granular Fill but has been modified to meet Code requirements for maximum particle size and the percent finer that the No. 200 sieve.

Based on field classifications and laboratory testing of the on-site soils, it appears that some of the existing fill, and native sands and gravels within the anticipated depth of excavation, will be suitable for use as controlled fill. However, it should be noted that some of the fill was found to contain debris (brick, concrete, et cetera) that might need to be removed, and that both the fill and native soils were found to contain cobbles and boulders, and fines contents greater than 10 percent. Furthermore, none of the Collect Pond deposits are suitable for use as controlled fill, so the overlying fill and surrounding sands and gravel will need to be separated from the Collect Pond deposits, if the Contractor wishes to use on-site soils as controlled fill. The contractor should also expect that they might need to screen (to remove over-sized particles and/or debris) or remove some of the on-site soils, before they can be used as fill. If the design-build team intends to use on-site materials as controlled fill, it is recommended that they conduct thorough laboratory testing to verify its suitability. A geotechnical engineer should review and approve the use of soils in the field prior to placement.



Controlled fill and backfill should be compacted to at least 95 percent of the maximum dry density, at a near optimum moisture content (± 2 percent), as determined by ASTM D1557. The lift thickness for the soils will vary depending on the type of compaction equipment used. Controlled fill should generally be placed in uniform horizontal lifts not exceeding 8 inches in loose thickness when compacted with heavy compaction equipment. In confined areas, the loose lift thickness should be reduced to 4 inches, or less, and each lift should be compacted with sufficient passes of hand operated vibratory or impact compaction equipment. Compaction within 5 feet of below grade walls should only be done with hand-operated equipment. A geotechnical engineer with appropriate field and laboratory support should inspect all subgrades, approve materials for use as controlled fill, and test backfill materials for compliance with the recommended compaction.

Free draining crushed stone, placed as a drainage layer behind below grade walls and below floor slabs (if used), should be Underdrain Filter Type I material, as specified in the New York State Department of Transportation Standard Specifications, and as follows:

Percent Finer by Weight
100
30 - 100
0 - 30
0 - 10
0-5

Note, gravel meeting the gradation for ASTM C33 Number 57 stone may also be used as free draining crushed stone.

Flowable fill may also be used as backfill. Flowable fill, should have a minimum 28-day unconfined compressive strength of 250 psi. If specified, flowable fill should meet the requirements for Controlled Low Strength Material (CLSM), as specified in Section 733-01 – **"Flowable Fill" of the NYSDOT Standard** Specifications.

7.4 Seismic Site Classification and Liquefaction Assessment

As indicated above, representatives of the Joint Venture (the Client's Client) requested that Tectonic provide a seismic site classification for the site. What follows is a description of how we evaluated the site classification and our recommendations.



To provide a seismic site classification, we began with an evaluation of the potential for liquefaction to occur within soils at the site. Liquefaction of soils can be caused by strong vibratory motion due to earthquakes. Both research and historical data indicate that loose, granular soils saturated by a shallow groundwater table are most susceptible to liquefaction. Liquefaction occurs when an earthquake and associated ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid increase in pore-water pressure, causing the soil to behave as a fluid for short periods. Based on the results of the subsurface investigation and the criteria outlined on Figure 1813.1 of the Code, some of the soils underlying the site fall within the range where liquefaction evaluation is required.

Based on the above-noted results, a more-precise analysis was performed to evaluate the liquefaction potential. A procedure recommended by Youd et al (2001) was used in evaluating the liquefaction potential at the site. This method estimates the stresses likely to be induced by an earthquake and the stresses likely to initiate liquefaction using the SPT blow counts, the effective overburden pressure, and the peak horizontal ground acceleration that would be caused by the design seismic event. Based on a preliminary site classification of D, the peak horizontal ground acceleration would be 0.24g, as specified by the Code. The earthquake moment magnitude was taken as 5.49, which is the mean value for the site's location, calculated on the USGS Unified Hazard Tool using the "Dynamic: Conterminous U.S. 2014" model, and a 2 percent probability of exceedance in 50 years (a 2475-year return period).

The factors of safety against liquefaction were computed by the ratio of cyclic shear strength of the soil to the cyclic shear stress induced by the seismic event. The liquefaction analysis indicates that some of the soils underlying the site have a factor of safety against liquefaction less than the generally accepted minimum of 1.0, suggesting that liquefaction might occur. However, this analysis method is intended for granular soils – specifically sands – and a review of the liquefaction analysis reveals that soils with an N_{60} -value less than 6 bpf have a factor of safety less than 1. Comparing these SPTs with the boring logs show that they were performed within the peat and clay of the Collect Pond deposits. Although these soils could lose a small percentage of strength during a design earthquake event, they are unlikely to liquefy, because of their high fines-contents and plasticity. Subsequently, it is our judgement that liquefaction is unlikely to occur if a design earthquake event were to occur.



The second step is to consider the soil profile underlying the site, as a whole. When the average conditions across the whole site are considered, the seismic site classification is Class D. This is based upon using published correlations between the N-values and shear wave velocity for the various soils. However, the building code provides several conditions, which if met require a seismic site classification of Class E or Class F. Per Table 1513.5.2 of the Code, a soil profile that has more than 10 feet of soil with a natural moisture content greater than 40 percent should be classified as a Class E site. Boring B-3M has approximately 24.5 feet of peat and organic clay that meet this requirement below the planned bottom of excavation. Therefore, the site should be considered to have a seismic site classification of Class E. This seismic site classification **matches MRCE's preliminary** recommendations.

Given that most of the site can be considered to have a seismic site classification of Class D, it may be onerous to design the entire building based on the subsurface conditions encountered within a single boring. Furthermore, it is our understanding that the Joint Venture wishes to have alternatives to designing the building for Class E conditions. There are several options for addressing the unsuitable conditions near boring B-3M. The first option would be to measure the average shear wave velocity of the soil and rock profile near boring B-3M. The most accurate method for doing this is to perform cross-hole shear wave velocity measurements within the top 100 feet of the soil and rock. This requires the drilling of two to three borings to a depth of approximately 100 feet, installation of casing, and measurement of the cross-hole shear wave velocities.

Other methods for evaluating the site's average shear wave velocity within the upper 100 feet of the soil and rock profile include measurements performed from the ground surface. These include Spectral Analysis of Surface Waves (SASW), Multichannel Analysis of Surface Waves (MASW) or Refraction Microtremor (ReMi) seismic survey methods. It should also be noted that these surficial methods of seismic testing can also be used to roughly show the soil profile along the seismic arrays, and therefore, could be used to better map the extent of the Collect Pond deposits along Centre and White Streets. If performed, it is possible that the measured average shear wave velocity would show that the soil meets the requirements for a Class D rating; however, there remains a possibility that this testing could verify the Class E conditions near boring B-3M. It should also be noted that to measure conditions to a depth



of 100 feet, the surficial methods will need to string an array of seismographs over a length of approximately 200 to 300 feet.

The other alternative, or the next step, would be to improve the soil conditions to eliminate the high moisture content conditions within the Collect Pond deposits in the area around boring B-3M (near the intersection of Centre and White Streets and in the southwestern corner of the site). One option would be to remove the peat and fine-grained pond deposit soils and replace them with granular fill. However, these soils were found to extend down to approximately elevation -43 feet in boring B-3M, or about 24.5 feet below the planned bottom of excavation (at EL = -18.5 feet). To reduce the thickness of the soils with a moisture content greater than 40 percent to less than 10 feet, would require undercutting and replacing the Collect Pond soils to a depth of approximately 15 feet below the planned bottom of excavation support walls. However, it is anticipated that the granular soils excavated from elsewhere on the site could be used as the backfill, and this remains a viable option that should be considered.

The complications associated with removal and replacement leads us to consider in-situ mediation options. These include installation of rammed aggregate piers or aggregate columns, to drain and strengthen the pond deposit soils, deep mixing, jet grouting or mass mixing to strengthen the soils with introduced grout, or a more-exotic method like vacuum consolidation, which can be used to reduce the moisture content of the Collect Pond deposit soils. Most, if not all, of these ground improvement methods are familiar to the ground improvement specialty contractors working within New York City. It should also be noted that the options that include the insertion of grout can also be used to minimize the volume of water entering the excavation that will need to be removed during dewatering.

If the designers wish to consider ground improvement, it is recommended that additional borings be performed, perhaps after demolition, near boring B-3M and in the southwestern portion of the site to better identify the extent of the Collect Pond deposit soils that would require improvement. For a conservative preliminary estimate, it is recommended that the design team estimate that the soils that would need improvement extend half-way between boring B-3M and (clockwise from north) borings B-4M, B-13M, B-12M, B-11M and B-39M, and extend to the southern and western walls. The



preliminary estimated depth of improvement should be based on the conditions encountered in B-3M, until otherwise indicated by additional subsurface investigation.

8.0 <u>LIMITATIONS</u>

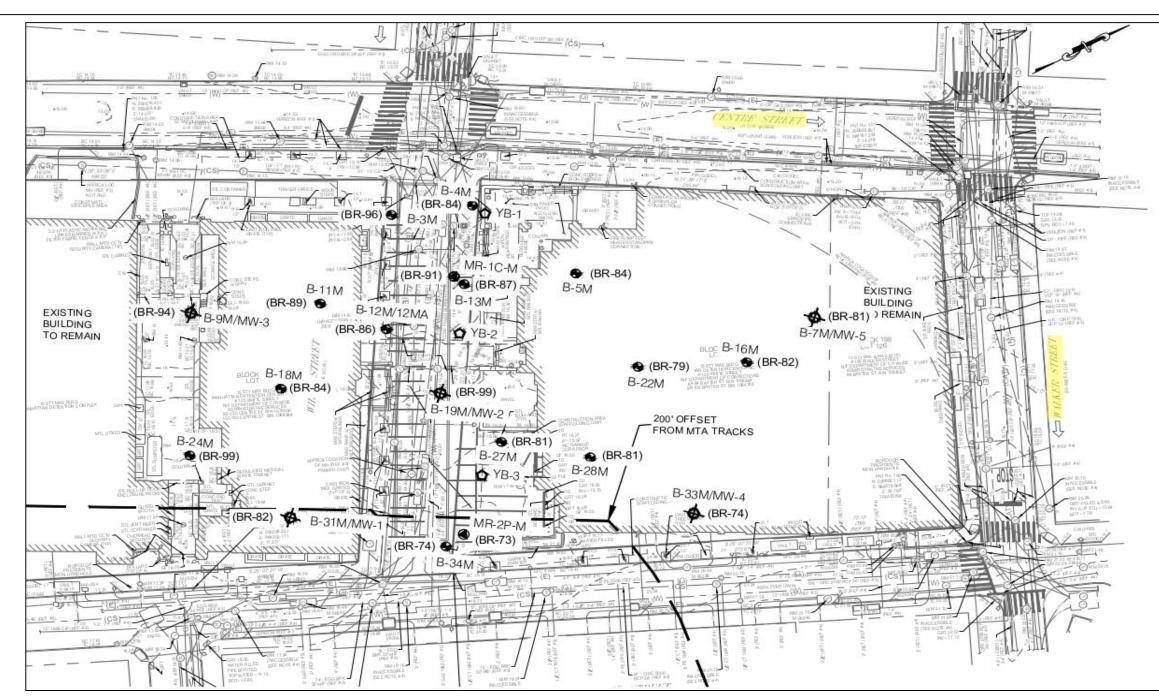
Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers and geologists practicing in this or similar situations. The interpretation of the field data is based on good judgment and experience; however, no matter how qualified the geotechnical engineer or detailed the investigation, subsurface conditions cannot always be predicted beyond the points of actual sampling and testing. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The limited recommendations contained in this report are only intended to inform the project designers. The recommendations are not intended for final design of the proposed structure(s). Designers, contractors and others involved in the design and construction of this project are advised to make an independent assessment of the soil and groundwater conditions for the purpose of establishing quantities, schedules and construction techniques.

This report has been prepared for the exclusive use of TRC Engineers, Inc. and their agents for the specific application to the proposed building described in this report. We recommend that prior to construction, Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. (Tectonic) review the project plans and specifications. It should be noted that upon review of those documents, some recommendations presented herein might be revised or modified. In the event that any changes in the design or location of the proposed structures are planned, Tectonic shall not consider the conclusions and recommendations contained in this report valid unless reviewed and verified in writing. It is further recommended that Tectonic be retained to provide construction monitoring and inspection services to ensure proper implementation of the recommendations contained herein, which would otherwise limit our professional liability.

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FIGURES



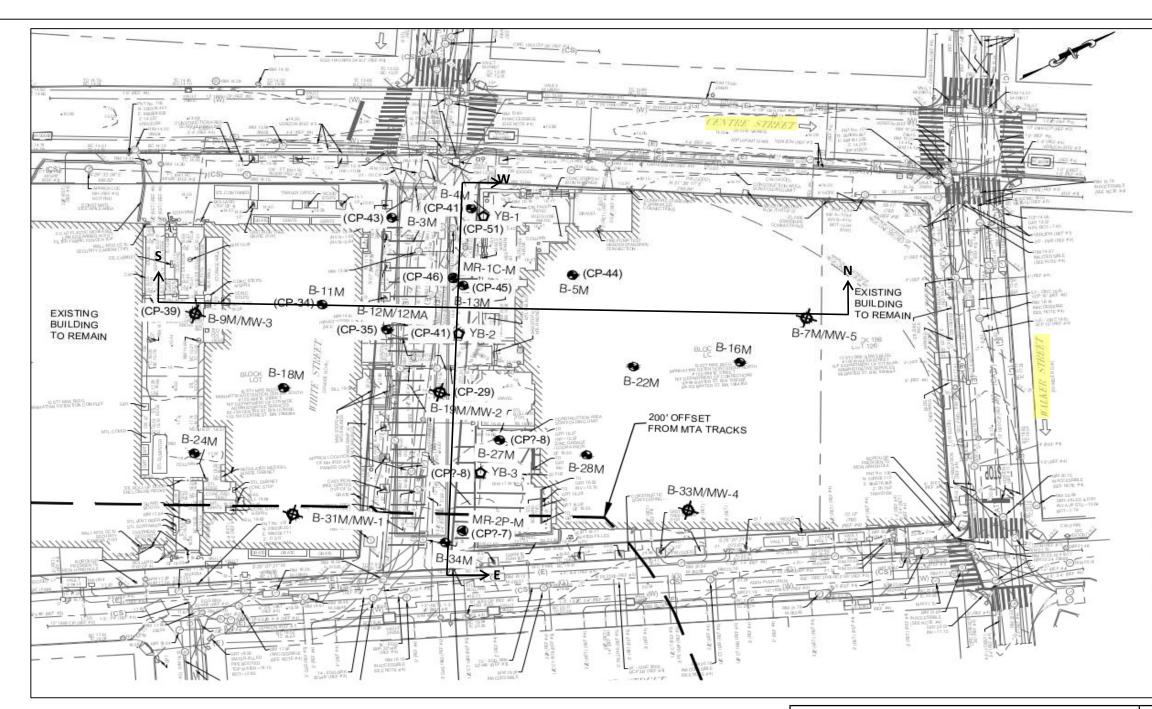
Notes:

THIS DRAWING IS BASED ON THE DRAWING "GEOTECHNICAL BORING LOCATIONS, 125 WHITE STREET, NEW YORK, NY 10013" DRAWING, FIGURE 1, DATED JULY 2021, BY TRC.

THE LOCATIONS OF BORINGS B-14M, B-21M AND B-23M ARE NOT SHOWN, BECAUSE THEY WERE NOT DRILLED BEYOND THE DEPTH OF HAND UTILITY CLEARANCE (6'), AFTER BEING TERMINATED PER THE CLIENT'S INSTRUCTIONS.

BORING AND WELL LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.

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Notes:

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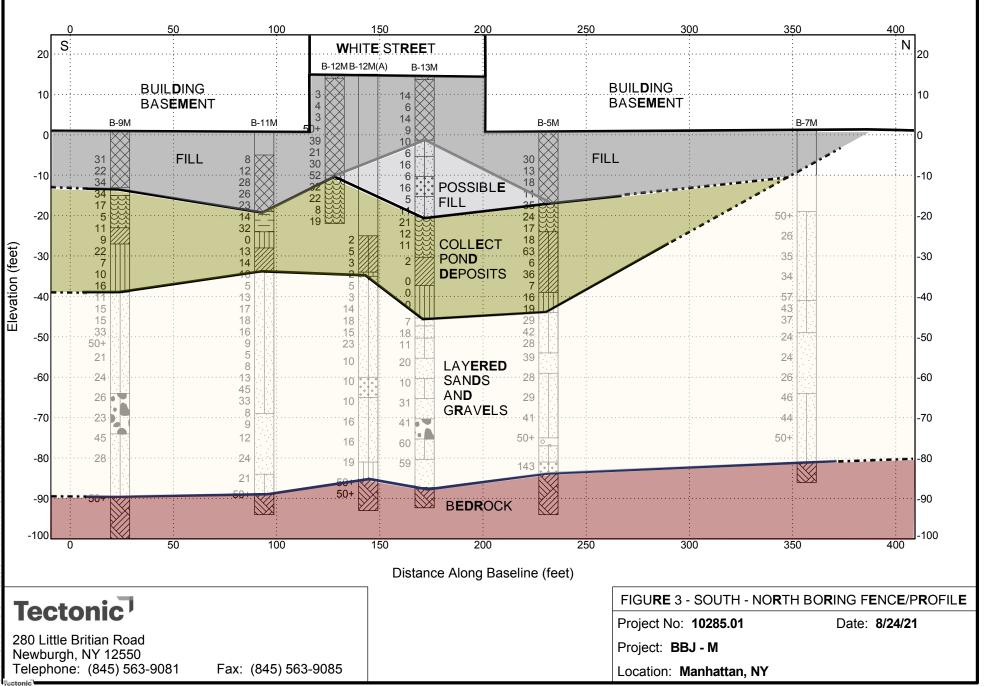
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BORING AND WELL LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.

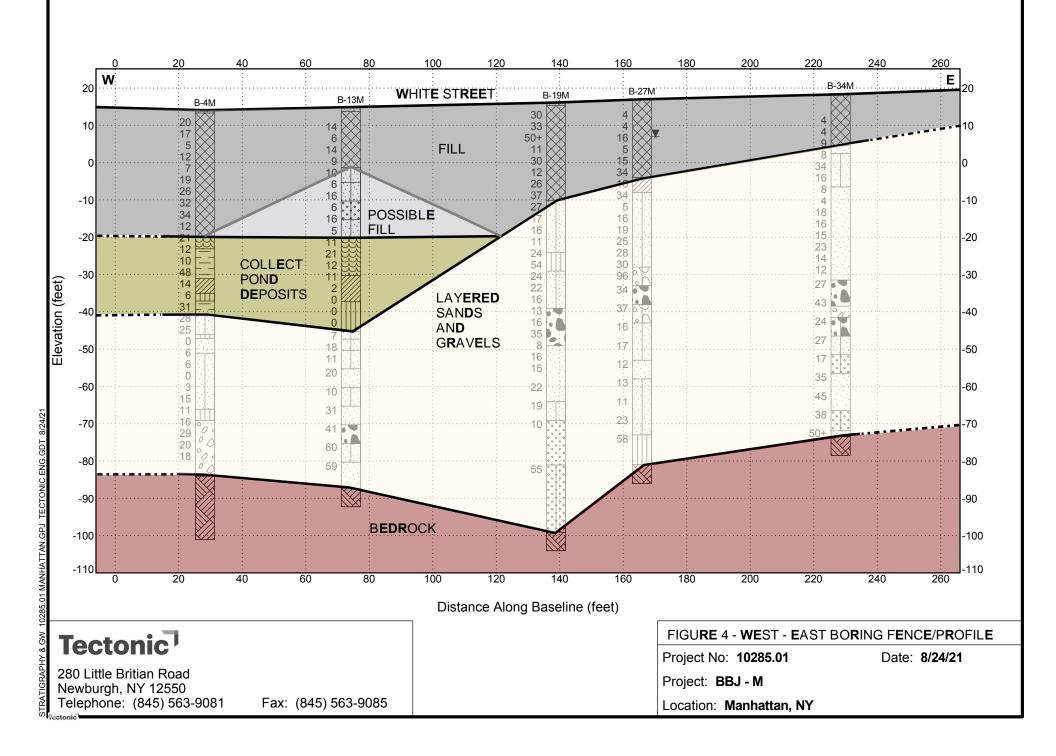
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125 WHITE STREET NEW YORK, NEW YORK

Date	9/3/2021	Work Order No.	Drawing No.	Rev. No.
Scale	NTS	10285.01	Figure 2	0



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APPENDIX I

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POV	VER AU	GER:						то	MON. W	/ELL	YES	X NO	DAT	TUM:	Se	e Rem	arks	
ROT	. DRILL	:			3 7/8"		0	to 90'	SCREE	N DEPTH:	то		DAT	TE STAF	RT: (6/19/21		
CAS	ING:				4"		0	to 90'	WEATH	IER: Clear	TEMP:	80° F	DAT	E FINIS	iH:	6/20/21		
DIAN		ORE:			2"		110	TO 115'	DEPTH	TO ROCK:	110'		UN		D COMPF (TONS/		RENGTH	
CME	55 Tru	ck Mounte	d Drill F	Rig with	Automat	ic Ha	mmer		*CHANC	GES IN STRAT	A ARE INFERRED)		1 2	2 3	4	5	
		z		SAM	PLES							*		ASTIC	WATE	R	LIQUID	
Ē.	N./F1	ATIO ANCI	μıγ	REC	OV.	ЯE	ED		DES	SCRIPTIC	N	0 Q		1IT % ⊁─ ─ ─		- — — -	LIMIT % — —∆	
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)		MOISTURE	UNIFIED SOIL CLASS.			OF		LITHOLOGY*		10 2		40	50	ELEVATION (FT.)
D	o z	PEN RE:	SAI	ENG (IN	RQD (%)	MOI	so C		M	ATERIAL		5	•		STANDA RATION (ARD BLOWS/ 40	FT.) 50	L L
								0.33' Asph		mont				10 2	0 30	40	- 50	
1	-	-	-					0.25' Cond	crete	nent			3					-
2	Ļ	-	S-1			М	SP-SM		Hand cleared to 3' 1.5' - 3' Bwn c-f SAND, and c-f Gravel, trace									_
3										es (FILL) (C			8					
		3 2						BwpcfS		ne f Gravel	, trace Silt (FIL	\ 🕅	8					
4	- 5	3	S-2	18		М	SP-SM	(Class 7)	-110, 501	ne i Glavei		-' 🛞	1					-
5	_	2											8		•••••••••••••••••••••••••••••••••••••••			8.8
6	- 4	2	S-3	8		М	SP-SM	SP-SM Same (FILL) (Class 7)										_
7		2 3						, , , , , , , , , , , , , , , , , , ,										
0		3 3																
8	- 8	5	S-4	3		М	SP-SM	Same (FIL	L) (Class	s 7)			3 9					-
9		5 2											3 /					-
10	- 5	2 -	S-5	6		М	SP-SM	Bwn c-f S/ brick piece			el, trace Silt,		} ∳					3.8
11		3							55 (I ILL)	(Class T)			$\{ \ \}$					
12	_	5 5		10				Bwn c-f S/	AND. sor	ne c-f Grav	el, little Silt,							
	- 7	2 2	S-6	12		М	SM	brick piece			- ,,		{ 7					
13		WOH											8/					-
14	- 2	0 - 2	S-7	8		М	SP-SM	Bwn c-f S/ pieces (Fl			, little Silt, brick		\mathbf{A}					-
15		2							, (= = = =	,			<u>}</u>					1.2
16	- 7	1	S-8	8		W	SM	Bwn m-f S	and, litt	le f Gravel,	little Silt (FILL)							
	'	4 5	0-0	0		••	OW	(Class 7)					1 8					
17		5											$\left\{ \right. \right\}$					-
18	- 8	4 -	S-9	10		W	SM	Same (FIL	L) (Class	s 7)								-
19		3 WOH) }					-
20	- 10	3	S-10	14		w	ML			trace f Gra			}	••••••				6.2
21		7 6					SM	Bwn c-f S/ (Class 7)	AND, little	e f Gravel, I	ittle Silt (FILL)		X	/				
		4							FSAND	some f Gra	vel, trace Silt		3 /					
22	- 7	3 4	S-11	12		W	SP-SM	(FILL) (Cla	ass 7)		שפו, נומטל טוונ		{ 🛉					F
23		7 4			\vdash													F
24	- 6	3	S-12	9		W	ML	Dk gy CLA		T, some c-	f Gravel, little c	-f 🔛						Ļ
25		3 8						Sand (FIL	∟) (Class	()			$\langle \rangle$					
-	LARKS:	1	.		<u> </u>		1	1				<u> </u>	1		<u></u>		<u></u>	··⊢ '!!4

BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21

			_					PROJECT No. 10285.01	BO	R	IN	GN	lo. I	B-3N	Ν		
Т	A	C	1		nì			PROJECT: BBJ - M				-					
								LOCATION: Manhattan, NY	SHEET No. 2 of 4								
CLIE	INT: T	RC									UN			/IPRESS. NS/FT)	STREN	GTH	
CON	ITRACT	0R: Aa	rco Er	viron	menta	l Serv	ice Inc					1	2	3 4	5	5	ELEVATION (FT.)
(.	Li/NIW 20 N Li/NIW 20 N 1 - 6 2 - 4 5 - 4 5 - 4 5 - 4 6 - 2 7 - 6 3 - 6 4 6 2 4 5 - 4 5 - 4 6 - 2 7 - 6 3 - 5 4 6 2 4 5 - 4 5 - 4 6	Sщ		SAM	-		- vi		*	-	PL LII	ASTIC		ATER FENT %	LIQU	UID T %	NO
DEPTH (FT.)	TAN(3 IN.)	ШЖ	REC		JRE	UNIFIED DIL CLAS	DESCRIPTION OF		2		<u>≻</u> — 10	 20	⊗— — - 30 4		△ 0		
	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL			•	ſ	STAI	H H			ііі Г Ш	
	z		νz	(I	£ ~	¥	S				•	PEN 10		N (BLOW 30 4		0	
26	40	4 10	0.40	7		14/	014			\bigotimes							
	- 16	6 4	S-13	7		W	SM	Gy-bwn c-f SAND, little f Gravel, little Silt (FILL) (Class 7)									-
27		3									,	X					-
28	- 5	2 -	S-14	0				No Recovery			Ý						-
29		4															-
30																	16.2
31	6	1	S-15	6		w	Pt	Dk bwn PEAT with organic fibers (Class 6)									
32	0	3 3	3-13	0		vv	FL	DK DWITT EAT WITT OF game libers (Class 0)			Ĭ						
		3															-
33	- 6	3 3	S-16	6		W	Pt	Dk bwn PEAT with wood fibers (Class 6)			¢						F
34	_	3															-
35	- 4	2	- S-17 0 W	w		No soil recovery wood in tip of spoon									21.2		
36		2 2															
37		2 3	0.40	10			Di I										
	- 6	3 4	S-18	18		W	Pt	Dk bwn PEAT with wood fragments (Class 6	"		T						-
38		2															-
39	- 4	2 -	S-19	10		w	Pt	Same (Class 6)			•						-
40		3															26.2
41	- 6	3	S-20	24		w	OL	Dk gy Organic CLAYEY SILT with roots fibe	rs								_
42		3 5						(Class 6)									
43	_	1 2						Dk gy Organic CLAYEY SILT, trace f Gravel									
	- 5	3	S-21	10		W	OL	with root fibers (Class 6)		_	T						-
44		3															-
45		WOH										•					31.2
46	- 2	0 - 2	S-22	20		w	OL	Dk gy Organic CLAYEY SILT (Class 6)			¢						F
47		2															Ļ
48		WOH 0	S-23	16		w	OL	Same (Class 6)	[L
49	5	5	3-23			vv					T						
																	-
50		WOH										•					36.2
51	- 0	WOH -	S-24	0				No Recovery		긤							F
52		WOH WOH															F
53	- 0	woн	S-25	22		w	CL	Gy CLAY & SILT, trace f Gravel (Class 6)									Ļ
54	_	WOH WOH						(pocket pen-0.0 - 0.25tsf) (Class 6)									L
																	_
55	L IARKS:		4		<u> </u>	I			(///	(//)	L.						41.2

BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21

			_					PROJECT No. 10285.01	BC)R	INC	ΞN	lo. E	3-3N	Λ		
	6	C			nì			PROJECT: BBJ - M									
								LOCATION: Manhattan, NY					SH	EET N	lo. 3 o	f 4	
CLIEI	NT: T	RC									UNC		ED COM		STRENG	GTH	
CON	TRACT	OR: Aa	rco Er	viron	menta	l Serv	vice Inc						2 3	,	5	5	
_	. ·	Z III		SAM	PLES				*	ĸ	PLA	I STIC IT %	WA	IER (LIQ	UID	ELEVATION (FT.)
(FT.)	N./FT	ATIO ANCE IN.)		REC	COV.	Щ	ED	DESCRIPTION		606		IT %	CONTI 	ENT %)— — —	/	Δ	
DEPTH (FT.)	N OR MIN./FT.	ETR SIST/ 3L/6	SAMPLE NUMBER	HL (MOISTURE	UNIFIED SOIL CLASS.	OF	2	LITHOLOGY*	1	10 : 	20 3		0 50	0	
DEF N OF	PENETRATION RESISTANCE (BL/6 IN.)	SAI	LENGTH (IN.)	RQD (%)	MOI	so	MATERIAL	<u> </u>		•		STAN TRATION 20 3	I (BLOW	'S/FT.) 0 50	D		
56	- 0	WOR WOR	S-26	22		w	CL	Gy CLAY & SILT (Pocket pen 0.0 -0.5 tsf)									
57	0	WOR WOR	0-20					(Class 6)									
	_	4							ÍÍÍ								-
58	- 5	4 -	S-27	18		W	ML	Gy-bwn SILT, some f Sand (Class 6)			•						-
59	_	2															F
60	_	-										<u> </u>					46.2
61	_	_										$ \rangle$					
60												$ \setminus$					
62	-	-										\					-
63	-	-											\land				-
64	_	-											$ \rangle$				-
65										Щ							51.2
66	~ (15 15						Gy-bwn f SAND, little Silt, trace organic fibe	ers					_		NGTH 5 + QUID MIT % 50 50	
	- 31	16 12	S-28	6		W	SM	(Class 3a)									Γ
67	_	12															-
68	_	-															-
69	_	-															Ļ
70													/				56.2
71		10 10															
	- 19	9	S-29	1		W	SP-SM	Gy-bwn f SAND, trace Silt (Class 3b)					1				-
72		9											Ν				-
73	_	-															-
74	_	-															Ļ
75													$ \rangle$				61.2
		4 9		_				Rd-bwn f GRAVEL, some c-f Sand, little Sil									
76	- 27	18	S-30	2		W	GP-GM	(Class 2b)									F
77		18															-
78	_	-															F
79	_	-							ŀ			,	/				Ļ
80																	66.2
		8 7						Bwn c-f GRAVEL, and m-f Sand, trace Silt									
81	- 13	6	S-31	6		W	GP-GM	(Class 2b)				•					F
82		7								N							-
83	_	-							Ĭ								F
84	_	-															L
85																	71.2
	- ARKS:		1		I				•	- 4							F / 1.2

	-							PROJECT: BBJ - M	BOF	111		1 U. I	וט-ט	V I				
Tecto																		
								LOCATION: Manhattan, NY		_			HEET N					
LIEN	T: T	RC								'		NED CON (TON	1PRESS. NS/FT)	STRENG	GTH			
ONTF	RACTO	DR: Aa	rco Er	viron	nenta	l Serv	vice Inc				1	2	3 4	4 5	;			
DEPTH (FT.) N OR MIN./FT. PENETRATION RESISTANCE (BL/6 IN.) SAMPLE NUMBER (IN.) SAMPLE NUMBER (IN.) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%																		
-	IN./F	ATIC ANC IN.)	шК	REC	OV.	Ш	IED LASS	DESCRIPTION	00		$\times -$		∞— — -		△	ŀ		
	N OR MIN./FT	IETR SIST BL/6	SAMPLE NUMBER	ENGTH (IN.)		MOISTURE	UNIFIED SOIL CLASS.	OF	LITHOLOGY*	-						í		
	z	PEN RE	SA NU	(IN	RQD (%)	MOI	so	MATERIAL	Ē	•	PEN 10	IETRATIO	NDARD N (BLOW 30 4		- I			
		5									1							
6_	11	6 _ 5	S-32	0		w		No Recovery								F		
7		7										\mathbf{X}				F		
8_		_						Casing advanced to 90'								L		
9																		
		_														Ī		
0		6						Bwn c-f SAND, little Gravel, trace Silt (Class								76 1		
1	61+	11 _ 50/0	S-33			W	SP	2a)	°0 0	0					ě			
2	2								00	4						F		
3	3								000	ď						L		
		_	C-1	12/48	0			12" fractured boulders	000	0						Ī		
4	1 0.5	-							000	4						F		
5	5 6								00	d						81		
6_		_							00	4						F		
7									00	0								
							0 0 0 0 0	0										
8_		-							00	4						F		
9_		-							00	4						F		
0		-							°0 0	o 						86		
1								Rotary drilled to 110'	000	0						L		
								Rotary drilled to 110	00	4						-		
2_		-							00	4						Γ		
3_		-							000	0						F		
4		-							000	0						\vdash		
5_		_							00	4						91		
6									000	4								
		-							°0 0 0 0	4						Ī		
7		-							°00	0						F		
8_		-							000	4						F		
9_		-							00	4						F		
0									00	4						96		
	9									§								
1	4	-						X						Γ				
2		-	0.5	00.00	~~			Blk-gy, slighty weathered, slightly fractured, f								┢		
3_	2	-	C-2	60/60	93			grained, hard, SCHIST, fractures 30 - 45 degrees from horizontal (Class 1a)								\vdash		
4	2									Š						L		
	5																	
5	RKS:					I				<u> </u>	· · · · · · · · ·					10		

BORING LOG 10285.01 MANHATTAN GPJ TECTONIC ENG GDT 8/24/21

		C						LOCATION:	Manh	attan, NY							SH	EET N		 of 4	
CLIE	NT: T	RC								DATE		TIME		EPTH	INS	PECTOR		ack Ru			
CON	TRACT	OR: Aa	rco Er	viron	mental	Serv	vice Inc		GROUND WATER						DRI	LLER:		ulio Ga	-		
ЛЕТНО	DD OF	ADVANCI	NG BOR	RING	DIA.		DE	PTH	GR(SUF	RFACE EI	LEVAT	TION:	1	3.9	
POW	/ER AU	GER:					٦	го	MON. W	l /ELL	`	YES	X	NO	DAT	UM:	s	See Re	marks		
ROT	DRILL	:			3 7/8"		0	TO 110'	SCREE	N DEPTH:		то	-		DAT	E STAR		6/13/2			
CAS	NG:				4"		0 7	TO 65'	WEATH	ER: Ove	rcast	TEM	P: 6	0° F	DAT	E FINISH	1:	6/20/2	21		
DIAN	IOND C	ORE:			2"		110	TO 115'	DEPTH	TO ROCK:	110)'			UN		COMF (TONS		STREN	GTH	
Geop	orobe G	P050 with	Automa	atic Har	nmer		-	-	*CHANO	GES IN STRA	ATA A	RE INFERF	RED			1 2	(1014	3/F1) 3 4	4 5	5	Í
_		z		SAM	PLES									*	PLA	+ +	WAT	TER			
(FT.)	N./FT	ATIO ANCE IN.)		REC	OV.	Ц	ED		DES	SCRIPTI	ON			OGY		\times	CONTE	<u> </u>		-	
DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	.) TH		MOISTURE	UNIFIED SOIL CLASS.		-	OF				LITHOLOGY*		10 20			0 50	0	
DE	o z	PEN	SA	LENGTH (IN.)	RQD (%)	MOI	s l		Μ	ATERIA	L			Ē	•	PENETF		N (BLOW		50	1
														P 4 4					, ol	Ĭ	-
1	-		-					4" Tile blo 6" concret		lvanced th	iroua	h stone t	o 2'		>						╞
2		2									3				>						F
3	- 20	8	S-1	10		м	GP-GM	Bwn-gy f C	GRAVEI,	and c-f Sa	and, t	race Silt			>						Ļ
4		12						(FILL) (Cla	4557)												
5		8 9						Gy c-f GR	AVEL. tra	ace c-f Sa	nd. tr	ace Silt									_8.9
	- 17	8	- S-2	6		М	GP	(FILL) (Cla	ass 7)		,				/ > >				•••••		_0.9
6	_	5													× /	$\left \right $					F
7	- 5	3	S-3	8		М	GM		-f GRAVEL, some c-f Sand, little Silt ces) (FILL) (Class 7)												F
8	_	1						(-) (,										Ļ
9	- 12	5	- S-4	8		W	SM	Bwn c-f SA	AND, and	d c-f Grave	el, litt	le Silt (Fl	LL)								L
10		7 7						(Class 7)							>	[_3.9
-		1													/	1					
11	- 7	3	- S-5	0				No Recove	ery						┦						F
12		4 7														$\left \right\rangle$					F
13	- 19	8 11	S-6	14		W	GP	Bwn-rd c-f (brick piec				nd, trace	Silt		>						-
14	_	20 14						· ·	, (, ,	,				>		\setminus				F
15	- 26	15	- S-7	6		W	GP	Same (FIL	L) (Class	s 7)					}						1.1
16		11 15						, .	/	,											L
17		15 14						Bwn-gy c-	f SAND	little f Gra	vel. li	ttle Silt (I	orick		>		}				
	- 32	18	- S-8	24		W	SM	pieces) (F	ILL) (Cla	ss 7)	2., 1				×			T			F
18		14						-					.		Ž						F
19	- 34	21 13	S-9	6		W	GP	Bwn-gy c- (brick piec	t GRAVE ces) (FILL	L, some c) (Class 7	:-t Sa 7)	nd, trace	Silt								F
20	_	7						•							, 		,				6.1
21	- 12	8	- S-10	8		W	GP	Same (FIL	L) (Class	s 7)					×						Ļ
22	_	4 5						- (, (=	,					2	$ \rangle $					L
23																					
	-	·	1																		F
24	-		-												>						F
25 REM	_													$(\times \times)$	¥	<u>.</u>		<u></u>		<u></u>	11.′

	_							PROJECT No. 10285.01	BOF		3 N	0. R	-4N	1	
Т		Ċ			ni			PROJECT: BBJ - M	501			U. D			
								LOCATION: Manhattan, NY				SHE	ET N	o. 2 of 4	4
CLIE	NT: T	RC								UNC		ED COMP (TONS		STRENGT	н
CON	TRACT	0r: Aa	rco Er	vironr	nenta	l Serv	vice Inc				:	2 3	4	5	ET.)
(-	Zщ		SAM	PLES		, ci		*	PLA: LIM	STIC	WATE CONTE	ER NT %	Liqui Limit (ELEVATION (FT.)
H (FT	IIN./F	RATIC TANC	щК	REC	OV.	RE	IED:	DESCRIPTION	0 0	>	\leftarrow		— — — 40	- <u>-</u> ∆	ÄTI.
DEPTH (FT.)	or MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS	OF MATERIAL	LITHOLOGY*		0 2	STAND			
Δ	Z	RE RE	ŝĭ	(II II)	80 50	OM	Š			•		RATION 0 30	(BLOWS		
26		5 10						Bwn-rd c-f GRAVEL, and c-f Sand, trace Silt		X					
	- 21	11 7	S-11	6		W	GP	(FILL) (Class 7)		Š	/				Ē
27		6								2					F
28	- 12	7 5	S-12	8		W	GP	Bwn-dk gy c-f GRAVEL, and c-f Sand (FILL) (Class 7)		X	Ý				F
29		7						· · ·		X					-
30	_									X					
31	- 10	10 6	S-13	14		w	GM	Rd-bwn-gy c-f GRAVEL, and c-f Sand, little		Ĵ.					
32	10	4	0-10	14		vv	Givi	Silt, with a Silt layer at spoon tip							
		20								X			\triangleleft		Ē
33	- 48	23 25	S-14	12		W		Bwn wood with c-f SAND, some Silt (FILL) (Class 7)		X				>	F
34		15								X			\square		-
35	_												· · · · · · ·		21.1
36	- 14	9	S-15	14		w	Pt	Bwn PEAT with organic Silt (Class 6)							
37		7 8	0.0								/				
		2								- /					Ē
38	- 6	3	S-16	2		W	OL	Bwn Organic SILT, trace c-f Sand (Class 6)		-1 🔨					F
39		5 13							<u> </u>	-					F
40	- 31	15 16	S-17	22		W	OL	Dk gy-bwn Organic SILT with Peat pockets, trace c-f Sand (Class 6)	F]]·····			•••••	• • • • • • • • • •	26.1
41		13 12								-					-
42	- 28	12	S-18	14		w	OL	Gy SAME (Class 6)	[-					
43		16 15							[]	-					
		11 12							Ē	-					
44	- 25	13	S-19	22		W	OL	Gy-bwn Organic CLAYEY SILT (Class 6)		-					F
45		14 WOR								<u>_</u>	/	/		• • • • • • • • • •	31.1
46	- 0	WOR _	S-20	22		W	CL	Gy CLAY & SILT with Mica (Class 6)							-
47		WOR 2									/				-
48	- 6	3	S-21	22		w	CL	Gy CLAY & SILT (Class 6)							
49		3	-												
		4													[-36.1
50	- 6	3	S-22	22		W	ML	Bwn-gy SILT with Clay seams (Class 6)		···· • ··				•••••	
51		2 WOR							Ľ <u></u>	<u>+</u>					F
52	- 0	WOR _ WOR _	S-23	14		W	OL	Gy Organic CLAYEY SILT (Class 6)	Ē	-					F
53		WOR							E]					F
54	- 3	3	S-24	8		w	ML	Bwn-gy CLAYEY SILT (Class 6)							Ļ
55	J	2 2				••				-1					
	ARKS:		ł											<u></u>	····⊢ ◄1.1

								PROJECT No. 10285.01	BO	RI	NG N	о. В [.]	-4M			
	e	Ċ						PROJECT: BBJ - M								
								LOCATION: Manhattan, NY					ET No			_
CLIEI	NT: T	RC										ED COMPR (TONS/I		[RENG]	тн	
CON	FRACT	0R: Aa	rco Er	viron	menta	l Serv	rice Inc				1	2 3	4	5		
(Т.	Кщ		SAM	PLES				*	_	PLASTIC LIMIT %	WATE CONTEN	R T%	LIQUI LIMIT	D	
DEPTH (FT.)	OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	ше	REC		RE	UNIFIED SOIL CLASS	DESCRIPTION		3	\times			∆	/	
HT H	R M	NETR SIST BL/6	SAMPLE NUMBER	i) TH	Q ()	MOISTURE	UNIFIED DIL CLAS	OF			10 2	0 30 STANDA	40	50		
ä	z	A B C	ר צ⊿ N	LENGTH (IN.)	RQD (%)	IOM	sc	MATERIAL		5 '		IRATION (1 0 30		/FT.) 50		
		5									Ň	<u> </u>	Ť	1		_
56	15	6 9	S-25	22		W	SP-SM	Bwn c-f SAND, little Silt with mica (Class 3b)			•				F	
57	_	11													-	
58		-													-	
59		_														-
60																-4
		2					ML	Gy CLAYEY SILT, some f Sand (Class 5b)	ÌÌÌ			···· ·	•••••	•••••	····· -	-4
61	11	4 -	S-26	22		W	SP	Bwn-or c-f SAND, some f Gravel, trace Silt			ŧ				F	
62		8						(Class 3b)							F	
63		-													F	
64		_														-
65																5
		7						Outro a f CAND little f Crowel trace Silt (Cla					•••••			-0
66	16	8 _ 8	S-27	22		W	SP-SM	Gy-tn c-f SAND, little f Gravel, trace Silt (Cla 3b)	55		•				F	•
67		9													-	
68		-													ŀ	
69		_														-
70																5
		11 11						Gy-or bwn c-f SAND, and c-f Gravel, trace S	ilt							Ŭ
71	29	18	S-28	22		W	SP-SM	(Class 3b)				7			F	
72		18													F	
73		-													F	
74		-													Ļ	
75																6
		6 11						Rd-bwn c-f SAND, little f Gravel, trace Silt						ľ		
76	20	9	S-29	16		W	SP-SM	(Class 3b)							F	
77		10													F	
78															F	
79		-													F	
80																6
81	40	8 8	0.00	40		147	ML	Rd-bwn SILT, some c-f Sand with mica (Clas	s							
	18	10 12	S-30	12		W	IVIL	5b)			•				ſ	
82		12													F	
83		-							°o	Щ С					F	
84		-						increase in resistance/chatter begins at 83' Rotary advanced to 93'	0/	14					F	
85		_						Notary advanced to 30	00	0 1 4.						7

								LOCATION: Manhattan, NY		UNC		ED COM				
		OR: Aa	rco Er	nviron	mental	l Serv	ice Inc				• 1 :	(TON	S/FT)	l E	5	
_		z		SAM	PLES				*	PLA	i STIC IT %	WA	TER I	LIQ LIMI		1
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	шК	REC	OV.	ЗE	UNIFIED SOIL CLASS	DESCRIPTION	LITHOLOGY*	2	<		»— — —		Δ	
HTH	DR MI	JETR SIST BL/6	SAMPLE NUMBER	ENGTH (IN.)	Q ()	MOISTURE	UNIFIED	OF	HQ H	1	0 2	0 3 STAN		0 5	0	
ä	z	RE ()	AS NU	(IN.)	RQD (%)	IOM	S	MATERIAL		•	PENET 0 2	FRATION	I (BLOW		0	
86									0000							
	-	-							000							F
87	-	-							000							F
88	-	-							000							-
89		-							000							ŀ
90	-	-							0000							7
91	-	_							000							L
92									000							
	-	-							000							
93	20								000							F
94	24	-							000							╞
95	-	-							0000							8
96	5	-	C-1	18/60	0			18" Boulder	000							Ļ
97	2	-							000							L
98	3								000							
99	4															
	3	-						No Recovery (Sample lost due to								
100	4	-	C-2	0/48	0			malfunctioning core lifter)								8
101	- 4	-														╞
102																F
103	-	-														ŀ
104		_														
105		_														9
106								Rotary drilled through lost core sample and								
		-						competent rock to 110'								ſ
107	-	-														F
108	-	-														F
109	-	-														╞
110																9
111	6	-														ļ
112	10	-						Gy, slightly weathered, slightly fractured, c-f								ļ
113	10		C-3	23/60	38			grained, hard SCHIST fracture 45 degrees								
	10	-						from horizontal (Class 1c)								Γ
114	10	-														F
115 REM/																1

		C				U		LOCATION:	Manh	attan, NY					QUE	ET No. 1		
CLIENT	т	RC							1	DATE	TIME	DEI	РТН	INSPECTOR		ry Ouimet		
		OR: Aa	rco Er	wiropr	nontal	Son	ico Inc		GROUND WATER	DATE				DRILLER:		-		
				-	DIA.			PTH	SRO WA					SURFACE E		-	4.0	
					DIA.				MON. V		 □ YES	1 X					1.0	
POWER					0.7/01								NU	DATUM:		e Remark	.s	
ROT. DI					3 7/8"		•	TO 12'			TO			DATE STAR		/26/21		
CASING		0.05			4"		•	TO 14'	WEATH		TEMF	·.		DATE FINIS	-	7/30/21	NGTH	1
DIAMON					3"		0	to 78'		TO ROCK:	90'			•	(TONS/F			í
Portable		with Cath	ead Doi	SAMF					*CHANG	GES IN STRA	TA ARE INFERR	ED			3	4	5	
Ĥ	λFΤ.	PENETRATION RESISTANCE (BL/6 IN.)		REC			SS.		DES	SCRIPTI	ON		G≺*	PLASTIC LIMIT %		T% LIN	QUID ⁄IIT % —∆	
DEPTH (FT.)	OR MIN./FT.	TRAT STAN /6 IN	PLE	-		'URE	UNIFIED			OF			OLO	10 20) 30			
DEP	N OR	(BL	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS		Μ	IATERIAI	_		LITHOLOGY*			RD BLOWS/FT.)		
	2	<u>е</u> "	<i>°</i> , 2	Щ°	<u> </u>	Σ								10 20			50	
1												•	\bigotimes					
												•	\bigotimes					[
2_		-						Previously	hand cl	eared to 6'			\bigotimes					F
3_		-	-					-				4	\times					F
4		-	-					(INO SOII de	escription	n provided)		ĺ	\times					F
5_		_											\times	}				4.0
6													>>>					
		9										•	>>>					F
7 - :	30	12 18	S-1	4		W	SP-SM	(FILL) (Cla		ce c-t Grav	el, trace Silt	•	\otimes		•			F
8		6 10										•	\bigotimes					F
9_	13	6	S-2	8		w	SP-SM		ND, trace	f Gravel, t	race Silt (FILL	.)	>>>					Ļ
10		7 8	-					(Class 7)				4	\times					9.0
		17 8									e c-f Gravel,		>>>					
11	18	10	S-3	2		W	SM	trace brick (Class 7)	, trace w	ood fragm	ents (FILL)		>>>					F
12		9 10						(0.0001)					>>>					F
13	11	8 3	S-4	4		w	SM	Bwn m-f S (FILL) (Cla	AND, so	ome Silt, tra	ice f Gravel	•	\bigotimes					F
14		3							1557)			•	\bigotimes					L
15		39 15						Bwn m-f S	AND. so	ome Silt. so	me Organics	•	\bigotimes		\mathbf{A}			14.0
	35	20	S-5	4		W	SM	(wood) (FI	LL) (Cla	ss 7)			\times		·····	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		[· · · ·
16		19 6											XX		X			F
17 - :	24	9 _ 15	S-6	6		W	ML	Bwn SILT, (Class 7)	and Org	ganics, trac	e f Sand (FILL	_)	\bigotimes		•			F
18		28						(XXX		/			F
19	17	6 7	S-7	8		w	Pt	Bwn-rd PE		ss 6)								L
20		10 14	5-1			~ ~				55 07								19.(
		4							- AT		l nontiner - ff							- 19.0
21_	18	8 - 10	S-8	24		W	Pt	Bwn-rd PE Sand (Cla	≤AT, With ss 6)	i occasiona	al partings of f							F
22		16 33							•						\uparrow	$ \rightarrow $		F
23	63	26	S-9	20		W	Pt	Bwn-rd PF	EAT. little	e Clavev Si	lt (Class 6)							33
24		37 34						Sandri		. clayby Of							\downarrow	Ī
																\square		F
25 _ REMAR		<u> </u>	<u> </u>							eviously pe			<u>, i i i i</u>	<u></u>		<u> </u>	<u>. </u>	24.0

								PROJECT: BBJ - M	DUL	NII		о. В [.]	-2141		
	e	Ċ						LOCATION: Manhattan, NY							
								LOCATION. Mannallan, NY			CONFIN		ET No. 2 RESS. STRE		
	NT: T		_								•	(TONS/I		Nom	
TNC T	FRACT	0r: Aa	rco Er			I Serv	vice Inc				1	2 3	4	5	-
	/FT.	PENETRATION RESISTANCE (BL/6 IN.)		SAM REC	-		- SS	DESCRIPTION	<u>⊀</u>	PL	ASTIC /IT %	WATE CONTEN	R L IT% LI	IQUID MIT %	
	MIN	STAN 16 IN	л Е К Г Г			URE	CLA	OF	DLO		10 2		40	—∆ 50	-
	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*				NRD BLOWS/FT.	、	i
_	2	<u>م</u> ۳ 2	~ 2	Щ -	Ľ	Σ						20 30	40	.) 50	
26	- 6	3	S-10	14		w	CL-ML	GY CLAYEY SILT, trace organics (Class 6)							
7	-	3 4									\searrow				
		22 19						Gy CLAYEY SILT, with frequent partings of f				\square			_
28	- 36	17	S-11	24		W	CL-ML	Sand, trace organics (wood) (Class 5a)					▶		F
9		19					$\left \right $								F
0		2					$\left - \right $.		[.			29
1	- 7	2	S-12	0		w		No Recovery (Class 6)		•	K				Ļ
2		5 4						,							L
		4 7		_		_		Gy CLAYEY SILT, with frequent partings of f							
3_	- 16	9	S-13	24		W	CL-ML	Sand (Class 5b)							f
4		13													F
5		11					$\left \right $			ý	·				34
6	- 19	10 9	S-14	8		w	CL-ML	Gy CLAYEY SILT, and f Sand, trace organic (Class 5b)	s						Ļ
7		9						(Class 5b)				\backslash			
8															
	-	-													[
9_	-	-													-
0		9								2		\ ·.			39
1	- 29	14 15	S-15	12		w	ML	Bwn SILT, little f Sand, trace organics (Class 5b)	;						-
2		15													-
3_	-	_											\setminus		
4															
5_		16								 ∶]		·····	·····\	•••	44
6	- 42	20 22	S-16	10		w	SM	Bwn m-f SAND, little Silt (Class 3a)		·.])		F
7		22					$\left \right $						/		F
8	-	-								:			/		F
.9	-	-								:			/		Ļ
i0 _												/	'		49
		10 13								· ·					
1	- 28	15	S-17	20		W	SM	Rd-bwn c-f SAND, little Silt (Class 3b)		· ·					F
2		18					$\left \right $			·. ·.					F
3	-	-								·.		$ \rangle$			F
i4		-								·.					Ļ
5		-								·.			<u> </u>		54
	ARKS:	Surfac	e elev	ation v	vas pr	ovide	d by the	Client, based on a previously performed site surv	/ey, NAVI	D 1988	3.				

								PROJECT No. 10285.01	BOR	ING No	о. В-5М	
	6	C			nì			PROJECT: BBJ - M				
								LOCATION: Manhattan, NY			SHEET No. 3	of 4
IEI	NT: T	RC									D COMPRESS. STREN (TONS/FT)	
DN.	TRACT	OR: Aa	rco Er	nviron	menta	l Serv	vice Inc			1 2	3 4	5
-	Ŀ.	N E (PLES		S.	DESCRIPTION	*	PLASTIC LIMIT %		5
	MIN./	FRAT STAN /6 IN.	PLE BER		COV.	URE	IFIED CLAS	OF		× 10 20		-∆ 50
ī	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*	PENET	STANDARD RATION (BLOWS/FT.)	
	-	23		<u>۳</u>		2				10 20		50
6	- 39	20 19	S-18	16		w	SP	Bwn m-f SAND, trace Silt (Class 3a)				
7	_	23										
8	_	-	-									
9	_											
0												
		11 16						Rd-bwn m-f SAND, trace Silt, trace c-f Gravel			/	
1	- 28	12	S-19	12		W	SP-SM	(Class 3b)			•	
2		13										-
3	-	-	-									
4	-	-	-									-
5		18										6
5	- 29	15	S-20	8		w	SP-SM	Same (class 3b)				
7		14 14										
3	_	_										
	-	23 24						Rd-bwn m-f SAND, little Silt, trace f Gravel				
	- 41	17	S-21	6		W	SP-SM	(Class 3a)				
2		17										
3	-	-										
+	-	-	-									-
5	EQ :	17	0.00			147	SP-SM	Rd-bwn m-f SAND, little Silt, trace c-f Gravel				7
5	50+	50/3	S-22	3		W	3P-SIVI	(Class 3a)	00			
,	-	-	-					Boulders/Cobbles to 78'	000			
;	-	-	-									
,	_	-	-									
)	_											
1												
	-	_										
2		47						Bwn c-f SAND, trace Silt, trace f Gravel (Clas				143
3	- 143	60 83	S-23	13		w	SW-SM	3a)				
4		50/2						Drilled to 85' on weathered rock				
5	-	-						Client, based on a previously performed site surve				

		C						PROJECT: BBJ - M	BOF		או כ	U. E	וכ-כו	VI		
	C	G				U		LOCATION: Manhattan, NY				S⊢		No. 4 c	of 4	
CLIEI	NT: T I	ર૦								UNC			PRESS. IS/FT)	STREN	GTH	
CON	TRACT	DR: Aa	rco Er	viron	menta	l Serv	ice Inc				1	2	3 4	4 (5	ĺ
<u>.</u>	ΓŢ.	N H (PLES		SS.	DESCRIPTION	*- 5	LIM	STIC IT %		TER ENT %		UID IT %	
DEPTH (FT.)	N OR MIN./FT.	TRAT STAN /6 IN.	SAMPLE NUMBER		cov.	IURE	UNIFIED SOIL CLASS	OF	OLO(← — - 0 2		8——- 80	0 5	∞ i0	
DEP	N OR	PENETRATION RESISTANCE (BL/6 IN.)	SAM NUM	LENGTH (IN.)	RQD (%)	MOISTURE	SOIL	MATERIAL	LITHOLOGY*	•		FRATIO	DARD N (BLOV			
								Drilled 85' to 90' through weathered bedrock			0 2	0 3	30 4	0 5	0	-
86	-	-														-
87	-	-														F
88	-	-	-													-
89	-	-	-													-
90																89.
91	- -	-	-													F
92	- 14 -	-	-					Gy, slightly weathered, moderately fractured m-f grained, moderately hard, SCHIST with	, 🕅							-
93	9.5	-	C-1	56	53			m-f grained, moderately hard, SCHIST with banding (Class 1b)								-
94	9.5	-	-													-
95	12.5															94.0
96	-	-						End of Boring at 95'								
97	_	-														
98	_	_														
99	_	_														
00	_	_														99.
01																
02	-															
103	-	-														
104	-	-														
105	-	-														
06	-	-	1													
07	-	-	1													[
	-	-														F
08		-														F
09		-														
10	-	-														109
11	-	-														F
12	-	-														F
113	-	-														F
114	-	-														F
115	- ARKS:			- 4'				Client, based on a previously performed site sur								114

								PROJECT N PROJECT:					B	UR	KIN(N ز	0. I	3-7I	Vİ		
	e	C						PROJECT:	BBJ -												
								LOCATION:	Manh	attan, NY							Sł	IEET I	No. 1	of 4	
CLIENT	TR	RC							UN R	DATE		TIME	DEF	TH	INSF	PECTO	R: F	. Villa	/ J. R	usk	
ONTF	RACTC)r: Aa	rco E	nviron	mental	Serv	vice Inc		GROUND WATER							LER:	-	ose			
THOD	of Al	DVANCIN	IG BOF	RING	DIA.		DE	EPTH	<u></u> >						SUR	FACE	ELEVA	TION:		1.0	
OWE	r aug	BER:			_			ТО	MON. V	VELL		YES	XN	10	DAT	UM:		See Re	mark	s	
OT. D					2 7/8	•	0	TO 82'	SCREE	N DEPTH:		- TO			DAT	E STA	RT:	8/2/2	1		
ASING	G:				3"	_	0	TO 75'	WEATH	IER:		TEMP:						8/5/2			
	ND CC				2"		82	TO 87'		TO ROCK:	82				UNC			IPRESS. NS/FT)	SIRE	NGTH	
ortable	e Rig v	with Cath	ead Do					1	*CHANG	GES IN STRA	ATA A	RE INFERRE	D			1 	2	3	4 	5	
2	Ľ.			SAM			- Si		DES	SCRIPTI	ON			*≻	LIM	STIC IT %	W/ CON	TER TENT %	LIN	QUID 11T %	
	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	ШЧ		COV.	MOISTURE	UNIFIED SOIL CLASS.		DL	OF	011			rithologΥ*		← — - 0 2		⊗——- 30 4		-∆ 50	
	OR	ENET (BL)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	DIST	UN		Μ	IATERIA	L			THC	•			DARD		1	
<u> </u>	z		0) Z		<u>к</u> -	Š	0,								-			N (BLOV 30 4		50	
1_		-																			F
2		-																			-
3_		-						Previously	hand cle	eared to 6											-
4								(No soil de	escriptior	n provided)										
		-																			Ē .
5_		-																• • • • • • • • •			4.0
6		-																			-
7		_																			
8																					
		-																			-
9_		-																			-
10		-																			9.0
11		_						Environme	antal hori	na (SB-03		nducted to	20'								
										ng (0D-00) (0		20								
12_		-																			-
13_		-																			-
14		-																			-
15																					14.
		_																			
6_		-																		1	F
17		-																			F
18_		-																		1	Ļ
19																				1	
		-																			40
20	50+	32	S-1	8		W	SP-SM			some c-f	Grav	el, little Sil	t .		• • • • • • •			•••••••	• • • • • •	•	19.
21		50/6						(Class 3a)					.						/		F
22		-											. .						/		Ļ
23		_																.	V	1	
		-											.					/			
24 _		-																/			F
25													ŀ				1		l		24.

	P	C						PROJECT: BBJ - M									
								LOCATION: Manhattan, NY					SF		No. 2 o	of 4	
IEN	NT: T	ર૦									UN			IPRESS. IS/FT)	STREN	GTH	
N∩	RACT	DR: Aa	rco Er	viron	nenta	l Serv	vice Inc					1		3	4 5	5	i
	Ŀ	Zш		SAM	PLES					*	PL	ASTIC	WA	+ TER ENT %		UID	
	IN./F	ANC IN.)	шК	REC	OV.	RE	IED	DESCRIPTION		ÓĠ		иїт % — — -	(⊗— — -		Δ	
	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	Q ()	MOISTURE	UNIFIED SOIL CLASS.	OF		LITHOLOGY*		10	+	30 4 	10 51 	5	
	z	A B C	ר S⊳	ENC LENC	RQD (%)	MOI	sc	MATERIAL		Ę	•		TRATIO	N (BLOV	VS/FT.) 40 5	0	
6		17 13						Rd-bwn c-f SAND, little Silt, trace c-f Gravel									
	26	13 16	S-2	4		W	SP-SM	(Class 3b)									Ē
7		10															-
8		-												\			-
9		-							ļ					$\left \right\rangle$			F
0		31											.				29
1	35	19 _	S-3	2		w	SP-SM	Bwn m-f SAND, little Silt, trace f Gravel (Clas	ss								Ļ
2		16 13						3a)									L
3																	
		-															Γ
4		-															F
5		37											.				34
6	34	17 _ 17	S-4	6		W	SP-SM	Same (Class 3a)									F
7		17							-					$ \rangle$			-
8		-													$\left \right $		-
9		-													$ \setminus $		
0																N	39
1		31 29	0.5														
	57	28 24	S-5	0				No Recovery	ļ								
2		22						Pure of SAND little Silt little f Crouel (Close									-
3_	43	20 23	S-6	10		W	SM	Bwn c-f SAND, little Silt, little f Gravel (Class 3a)							$ \neq $		-
4		25															F
5		13							ļ					·····/			44
6	37	19 18	S-7	10		w	SM	Bwn c-f SAND, little Silt, trace f Gravel (Class 3b)	s								-
7		21															-
8		-							ļ					/			Ļ
9									ļ					X			
0													/				49
		13 12						Bwn c-f SAND, trace Silt, trace f Gravel (Clas	ee	<u> </u>			/.				+9
1	24	12	S-8	4		W	SP	3b)	55				•				F
2		12							ļ								F
3		-															F
4		-															F
5_												<u>. </u> .	<u> </u>	<u></u> .	<u> </u>		54
M/	ARKS:	Surfac	e elev	ation v	vas pr	ovide	d by the	Client, based on a previously performed site surv	vey, N	JAVE	1988	3.					

	P	C						PROJECT: BBJ - M								
								LOCATION: Manhattan, NY				:	SHEET	No. 3 o	f 4	
ΞN	IT: T I	RC											OMPRESS ONS/FT)	6. STREN	GTH	
Tν	RACT	DR: Aa	rco Er	viron	nenta	l Serv	ice Inc				1	2	3	4 5	5	
	<u> </u>	Z III		SAM	PLES				*		PLASTIC LIMIT %		NATER	LIQ	ŲID	
	N./F	ATIC ANCI	шК	REC	OV.	ЯË	IED ASS	DESCRIPTION			×··		NTENT % —⊗— —		△	
	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)		MOISTURE	UNIFIED SOIL CLASS.	OF			10	20		40 5	0	
	z	A B C	SA NU	(IN	RQD (%)	IOM	s - S	MATERIAL	-	5	• PE		ANDARD ION (BLO 30	WS/FT.) 40 5	0	
		16 12														
	24	12 12	S-9	6		W	SP	Same (Class 3b)								-
		12														-
-		-														-
-		-														F
_		25														5
L	26	16	S-10	6		w	SP	Bwn c-f SAND, trace Silt, trace f Gravel (Clas	s	••••						F
L		10 13						3b)					\backslash			L
													$\left \right $			
		-														-
ŀ		-														-
-		19														L-6
-	46	24 22	S-11	4		W	SM	Bwn-rd f SAND, some Silt, trace f Gravel (Class 3a)						•		Γ
_		23														F
_		-														⊢
		-														F
																L-6
		31 23	a 1a					Bwn c-f SAND, some f Gravel, little Silt (Class	, · ·							
	44	21 24	S-12	6		W	SM	3a)								-
		24														-
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-	50+	50/3	S-13	0				No Recovery								7
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┝		-														-
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_		-								\approx						F
L		-							Ň							F
			C-1	59/60	95			Gy, slightly weathered, slightly fractured, c grained, hard SCHIST (Class 1a)		$\langle \! \rangle$						8
-	RKS:	Surfac	e elev	ation v	vas pr	ovide	d bv the	Client, based on a previously performed site surve	ey, NA	VD	1988.					_

								PROJECT No. 10285.01	BOR		2 N	~ 6	2_71	Л		
	Γο	Ċ			ni			PROJECT: BBJ - M				0. 1	J-11	VI		
								LOCATION: Manhattan, NY				SF	IEET N	lo. 4 c	of 4	
CL	IENT: T	RC								UNC		ED CON (TON	IPRESS. IS/FT)	STREN	GTH	
СС	NTRACT	OR: Aa	rco Er	viron	menta	l Serv	ice Inc				1 :	2	3 4	1	5	(FT.)
Î	Ŀ.	U U			PLES		S.	DESCRIPTION	*-	LIM			TER ENT %		UID IT %	ELEVATION (FT.)
DEPTH (FT.)	/ NIW	TRAT STAN /6 IN.	PLE BER		COV.	'URE	UNIFIED SOIL CLASS.	OF			← — – 0 2		⊗— — - 30 4 +	05	-A 50	EVAT
DEP	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	SOIL	MATERIAL	LITHOLOGY*	•	PENE	STAN	Idard N (Blov	/S/FT.)	•	ELE
				5		~				1					50	
8	6_	-	-													-
8	7															-
8	в_	-	-					End of Boring at 87'								-
8	9_	-	-													_
9	o _	-	-													89.0
9	1	_	_													
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9	3															
9.																
9		-														94.0
		-											• • • • • • • • •			94.0
9		-														-
9		-	-													-
9		-	-													-
9	9_	-	-													-
10	0_	-	-													99.0
10	1_	-	-													-
10	2_	-	-													-
10	3_	-	-													-
10	4 _	-	-													-
10	5_	-	-													104.0
<u>م</u> 10	6	-	-													-
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10 ⁰	в	-	-													_
2 2 10	9	_	-													_
NOLO: 11	o L	_														109.0
비 대 11		_														
UNATION IN THE																L
TAHNAI 11		-														ľ
11 01 M/		-	1													Ē.
BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21 11 11 11 11 11 11 11 11 11 11 11 11 11		-														
00 11 RE	DE MARKS:	Surfac	e elev	ation \	was pr	ovide	d by the	Client, based on a previously performed site su	ırvey, NAVD	1988.	<u> </u>					L-114.0
ORING																
ш																

	E	Ċ						LOCATION:										
								LOCATION:	Mann	attan, NY							No. 1 of 4	4
CLIEN									L L L L L L L L L L L L L L L L L L L	DATE	_	TIME	DEPTH	INSPECTO		Barry O		
CONT	RACT	OR: Aa	rco Er	viron	mental	Serv			GROUND WATER		_			DRILLER:		Julio Ga	alarza	
<i>I</i> ETHO	DOFA	ADVANCIN	IG BOR	ING	DIA.	_	DE	EPTH	-					SURFACE	ELEV	ATION:	1.0	
POWE	ER AU	GER:						ТО	MON. W	/ELL	א X	/ES	□ NO	DATUM:		See Re	emarks	
ROT.	DRILL				2 7/8"	·	0	TO 95'	SCREE	N DEPTH:	5	ТО	15'	DATE STA	RT:	6/28/	21	
CASIN	NG:				3"		0	TO 80'	WEATH	ER:		TEMP:		DATE FINI		7/2/2		
DIAMO	OND C	ORE:					95	TO 101'	DEPTH	TO ROCK:	95'					MPRESS. DNS/FT)	STRENGT	
Acker	Portab	le Rig with	n Cathe			nmer	1	1	*CHANC	GES IN STRA	TA AF	RE INFERRE	D	1	2	3 4	4 5	Ľ
<u>.</u>	Ľ.	Sы		SAM			, vi				ואר		*	PLASTIC LIMIT %	W CON	ATER		
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	ЩЩ	REC	OV.	JRE	UNIFIED SOIL CLASS.		DEC	SCRIPTIC OF	JN		LITHOLOGY*	× - ·	— — — 20		<u> </u>	
EPT	OR N	NETI ESIS'	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIF OIL C		M	ATERIAL			0H	Ĩ			+	ں — ت
	z	III III	S J	LEN LEN	R(()	MO	N		IVI		-		5	PENE 10		ON (BLOV	VS/FT.) 40 <u>5</u> 0	
															\square			
1_		-																-
2_		-																-
3_		-						Previously	cleared	to 6'								_
4								(No soil de	escriptior	n provided)				X I				
		-												X I				Γ.
5_		-												8			•••••	4.0
6		6																-
7	31	18	S-1	10		М	GM	Bwn-gy c-	f GRAVE	L, and c-f	Sand	d, little Silt				•		Ļ
8		13 9						(FILL) (Cla	ass 7)						,	Λ		
0		8 8						Same with	hrick fra	igment, wit	h 1"	Silt laver						
9_	22	14	S-2	14		М	GM	seam (FIL	L) (Class	s 7)		Ontheyer						F
10		13 13												8		\	• • • • • • • • • •	9.0
11	34	16 18	S-3	12		w	GM	Bwn-gy c- (FILL) (Cla	f GRAVE	L, some c-	-f Sa	nd, little Si	lt 💥					-
12		20							ass 1)									
13 _		18 18						Gv c-f GR	AVEL. so	ome c-f Sa	nd. tı	race Silt						
	34	16	S-4	8		W	GP	(FILL) (Cla	ass 7)		, .							Ē
14		8 20																F
15_	17	10 7	S-5	10		w	OL	Bwn Woo	d with org	ganic SILT	/ PE	AT (Class	6)	_] ,●	.1			
16		6												,				Ļ
17	5	2	S-6	8		w	Pt		T with Or	ganic Silt (Class	s 6)						L
	5	3 4	3-0			vv				ganic Sill (Jids	30)		ấ \				
18_		4						1						₹ \				F
19_	11	5 - 6	S-7	18		W	Pt	Peat with	Organic	Silt (Class	6)							F
20		7												≴				
21	9	3	S-8	24		w	Pt	Bwn PFA	T with On	ganic Silt (Clas	s 6)		X 4				Ļ
22	-	6 8								52 Ont (2100	,						
		18							ᄃᄭᄑᇪᆥᄂ	Organic C	1000							F
23 _	22	12 10	S-9	18		W	Pt	6)	∟rti witu	Organic C	aye			糸 ㅣ .	Þ			F
24		11 3												∄ ∕				F
25_		3													<u>. .</u>			24.0

	P	C			11			PROJECT:	BBJ - M								
								LOCATION:	Manhattan, NY						ET No.		
EN	IT: T I	ર૦										UNC		D COMPI (TONS/	RESS. STF FT)	RENGTH	
NT	RACT	DR: Aa	rco Er	viron	menta	l Serv	ice Inc					1	2	3	4	5	_
	Ļ.	Sщ		SAM			6				*	PLAS	STIC T %	WATE	R NT %	LIQUID LIMIT %	
	IIN./F	RATIC	ще	REC		끮	IED:		DESCRIPTIO OF	N	00		\leftarrow		40	- <u>—</u> △ 50	
	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.		MATERIAL		LITHOLOGY*	i			Í		
	z	임 문	ΩΣ	E LE	92 e)	Р М	Ň				5			RATION	BLOWS/F 40	T.) 50	
	7	4	S-10	14		W	ML	Gy SILT & C	CLAY, little f Sand (Class 6)							
; -		4															F
'-	10	5 5	S-11	24		w	ML	Same (Clas	s 4b)								-
3		4											\setminus				F
	16	7	S-12	24		w	ML	Gy CLAYEY	SILT, little f Sand,	little f Gravel							
L	-	9 9						(root structu	ıres) (Class 5b)								
		5 6								(a) =: :							
-	11	5	S-13	6		W	ML	Gy CLAYEY	/ SILT, little f Sand	(Class 5b)							F
2		5															F
-		-															F
-		-															F
;_																	34
5	45	6 8	0.44					Gv-bwn CLA	AYEY SILT, some r	n-f Sand. little t	f						
	15	7 8	S-14	8		W	ML	Gravel (Clas	ss 5b)	,			•				
-																	-
3		-															F
╞		-															-
┝└		8										<u> </u>					39
ıL	15	5	S-15	12		w	SM	Gy-bwn m-f	SAND, some Silt, t	race f Gravel		· ·					
		10 14						(Class 3b)									
													X				
3_		-												\setminus			
-		-												\setminus			F
5-		10										· ·		\.			44
\$-	33	16 17	S-16	4		w	SM	Bwn-gy c-f S (Class 3a)	SAND, some f Grav	el, little Silt							F
,		7						(========							\uparrow		F
3		-														\square	\downarrow
,																	
		-															[
)_	00 i	44	0.47			14/		Bwn-gv c-f S	SAND, some c Gra	vel, little Silt		· · · · · · · · · · · · · · · · · · ·	•••••	•••••			49 96
	96+	46 50/5	S-17	3		W	SM	(Class 3a)	,	,							Ť
2		-															F
3		-															F
۱L		-															1
																	54
_	RKS:	Surfac	e elev	ation v	vas pr	ovide	d by the	Client based	on a previously perfe	ormed site surve	ev, NAVI	D 1988.		· · · · · · · · · · · · · · · · · · ·			· – •

1	6	Ċ			ni			PROJECT: BBJ - M	BC								
	C							LOCATION: Manhattan, NY					Sł	HEET	No. 3 (of 4	
LIE	NT: T	RC									UNC				. STREN		Γ
CON	TRACT	OR: Aa	rco Er	viron	menta	l Serv	ice Inc					•	וטו) ז	NS/FI)	1	5	
					PLES					*	PI AS	STIC	2 		+	i	•
DEPTH (FT.)	L/FT				COV.	ш	SSS.	DESCRIPTION		ğ	PLAS LIMI >			ATER IENT % ⊗— —		OUID ÎIT % -∆	
HT	OR MIN./FT	ETRA ISTA	1PLE 1BER			TUR	UNIFIED SOIL CLASS	OF		OLO	1	0 2	20 	30 ·	40 5 	50 	-
	N OF	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	SOLU	MATERIAL		LITHOLOGΥ*	•	PENE		NDARD N (BLO)	NS/FT.)		
_		9								 	1	0 2	20	30 4	40 5	50	┝
56	- 21	11 10	S-18	12		W	SM	Bwn c-f SAND, little f Gravel, little Silt (Class 3b)					•	1			F
57		10						30)									L
58																	
	-	-															Γ
59	-	-															F
60		14															-5
61	- 24	11 13	S-19	6		W	SM	Bwn c-f SAND, some f Gravel, little Silt (Clas: 3b)	s								ŀ
62		13						50)									L
63									· · ·								
	-	-															ſ
64	-	-							 								F
65		12							•								<u> </u> -•
66	- 26	13	S-20	12		W	GM	Bwn c-f GRAVEL, some c-f Sand, little Silt									Ļ
67	_	13 10						(Class 3b)	•								
68																	
	-	-															F
69	-	-															F
70	_	17							•	Кb							<u></u> -€
71	- 23	15 8	S-21	8		W	GM	Bwn-gy c-f GRAVEL, little c-f Sand, little Silt (Class 2b)									ŀ
72	_	8											$ \setminus$				L
73																	
	-													$\left \right\rangle$			Γ
74	-	-												$ \rangle$			F
75		10													\		-7
76	- 45	20 25	S-22	6		W	SM	Bwn-gy c-f SAND, little c-f GRavel, little Silt (Class 3a)									F
77		13															ŀ
78	_	_													1		L
79														/			ľ
	-	-												/			F
80		28															-7
81	- 28	16 12	S-23	3		w	SM	Bwn c-f SAND, little c-f Gravel, little silt (Clas 3b)	S								F
82		11						/						X			F
83	_																
84														$ \rangle$			
	-	-															F
85	- ARKS:	-				• •	L	Client, based on a previously performed site surv			1000				<u> </u>	.	{

						PROJECT No. 10285.01	BOF		3 N	n F	R-91	Л	
To	cto		nì	ic		PROJECT: BBJ - M				0. 1	5-51		
						LOCATION: Manhattan, NY				SF	IEET N	lo. 4 of	4
CLIENT: TF	RC							UNC			IPRESS. IS/FT)	STRENG	
CONTRACTO	DR: Aarco Ei	nviron	menta	al Serv	vice Inc				1	2	3 4	5	(FT.)
Û. Î.	U U C		PLES		SS.	DESCRIPTION	*		STIC IT %	WA CONT	TER ENT %	LIQU	
DEPTH (FT.) N OR MIN./FT.	TRAT STAN /6 IN. PLE BER		COV.	-URE	CLA8	OF			₩ — - 10 2	(20 3	8——– 30	- — —∆ 0 50	, TAJ
N OR	PENETRATION RESISTANCE (BL/6 IN.) SAMPLE NUMBER	(IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*	•	PENE		idard N (Blow	/S/FT.)	
		<u> </u>		2			 	1 •.			30`4		
86 _	_												-
87 _	_											\setminus	-
88 _	_							:]					_
89 _	_												_
90						Top 6" Bwn-gy c-f SAND, little c-f Gravel, litt	le	· ·					89.0
91 _	50/5 S-24	8		W	SM	Silt (Class 3a) Bottom 2" SOFT ROCK (SCHIST) (Class 1d)	·. K				•	
92 _								X					
93													Γ
94	-												
	-												-
95								8					94.0
96 _	- C-1	33/36	27			Gy, slightly weathered, moderately fractured grained, moderately hard SCHIST (Class 1d	, c	X					-
97 _	-					grained, moderately hard SCHIST (Class To)						-
98													-
99 _	- C-2	40/36	57			Gy, slightly weathered, slightly fractured, c							-
100 _	-	40/30	57			grained, moderately hard SCHIST (Class 1b)	3					99.0
101													-
102 _	_					End of Boring at 101'							-
103 _	_												-
104 _	_												-
105 _	_												104.0
106 _	_												
107	_												
108 _													
109													
110													
111												•••••	
													Ť
112_													F
113 _	-												F
114 _	-												F
115 _ REMARKS:	Surface elev	/ ation \	Nas pr	rovide	d by the	Client, based on a previously performed site sur	/ev. NA\/I	D 1988					114.0
	24.7400 0107	20011		2140					-				

				-				PROJECT:	BBJ -	м		B	UK	INC	Nכ	0. E	3-11	IVI		
	E	C			11							_								
								LOCATION:	Manh	attan, NY						S⊦	IEET N	lo. 1 of	4	
CLIE	NT: T I	RC							DZ K	DATE	TIME	DEF	PTH	INSF	PECTO	R: J.	Rusk	B. Ouir	net	
CON	TRACT	DR: Aa	rco Er	viron	mental	Serv	vice Inc		GROUND					DRIL	LER:	Jı	ulio Ga	alarza		
METHO	DD OF A	DVANCIN	IG BOR	ING	DIA.		DE	EPTH	8 3					SUR	FACE	ELEVA	FION:	1.0)	
POW	ER AU	GER:						ТО	MON. W	/ELL	YES		10	DAT	UM:	5	See Re	marks		
ROT	DRILL:				2 7/8"		0	to 90'	SCREE	N DEPTH:	то			DAT	E STAF	RT:	6/14/	21		
CASI	NG:				3"		0	TO 85'	WEATH	ER:	TEMP	D:		DAT	E FINIS	SH:	6/25/	21		
DIAN	IOND C	ORE:			2"		90	to 95'	DEPTH	TO ROCK:	90'			UNC			PRESS. S/FT)	STRENG	гн	
Acke	r Portab	le Rig with	n Cathe	ad & Do	onut Ham	nmer			*CHANG	GES IN STRAT	TA ARE INFERRI	ED			1		3 4	4 5		Ĺ.
_	Ľ	z		SAM	PLES								*		STIC		TER	LIQUI	D	
DEPTH (FT.)	OR MIN./FT.	ATIO ANCI IN.)	ш¥	REC	OV.	ЯE	UNIFIED SOIL CLASS.		DES	SCRIPTIC	N		LITHOLOGΥ*	>	IT % ← — -	(ENT % ⊗— — -		%	ELEVATION (FT.)
РТН	RM	ETR SIST/ 3L/6	SAMPLE NUMBER	H (STUF	UNIFIED			OF			μ	1	0 2		l	0 50		2
Ē	io N	PENETRATION RESISTANCE (BL/6 IN.)	SAN	ENGTH (IN.)	RQD (%)	MOISTURE	ر ا		Μ	ATERIAL			Ē	•		TRATIO	DARD N (BLOW			Ш
														1	0 2	20 3	0 4	0 50		—
1	_	-																		
2																				
2	-	-						Previously	hand cle	eared to 6'										
3	-	-																	F	
4	_	-						(No soil de	escriptior	n provided)									Ļ	
5																			-4	4.0
	-	-																		1.0
6		3										k	$\times\!\!\times$						-	
7	- 8	4 _	S-1	8		М	SP	Gy-bwn c- (FILL) (Cla	f SAND,	some c-f G	ravel, trace S	Silt	\bigotimes	ę					-	
8	_	10							1557)			<pre></pre>	\bigotimes	/						
_		1 2										¢	\bigotimes		N					
9	- 12	10	S-2	6		М	SP	Same (FIL	L) (Clas	s 7)		¢	\bigotimes						-	
10	_	7 14										¢	\otimes						9	9.0
11	- 28	13	S-3	0				No Recove	erv			¢	>>>						Ļ	
12		15 17							,			¢	>>>							
		10								aama a f C	roval little Ci	:14	>>>							
13	- 26	13 _ 13	S-4	8		W	SM	(FILL) (Cla	ass 7)	Some c-r G	Gravel, little Si		>>>			•			-	
14	_	28 21										¢	>>>			/			-	
15	- 23	12	S-5	8		w	SP	Gy c-f SAI	ND, som	e c-f Grave	, trace Silt	¢	>>>							14.0
16	20	11 13	00					(wood pied	ces) (FIL	L) (Class 7))	¢	\bigotimes			\mathcal{V}				
16	_	18						1				¢	\bigotimes		/				F	
17	- 14	8 - 6	S-6	0				No Recove	ery			¢	\bigotimes						F	
18		7										¢	\bigotimes						F	
19	- 32	17 14 _	S-7	0				No Recove	⊃rv			¢	\bigotimes							
	52	18 15	51						. , y			¢	\bigotimes			/				10 0
20		WOR									A 1 1 1 1	-	<u></u>			/	•••••		·····	19.0
21	- 0	WOR WOR	S-8	24		W	OL	Dk bwn Oi Gravel (Pe	rganic SI eat) (Clas	LT, little c-f ss 6)	Sand, little f	ŀ							F	
22		WOR								/		ŀ			/	1			Ļ	
23	40	4 5	0.0			1.47		Dk bwn Oi	rganic SI	LT, some c	-f Sand, little	f								
	- 13	8	S-9	24		W	OL	Gravel (Pe	eat) (Clas	ss 6)	,	ļ							F	
24	_	9						-				ŀ							F	
25														<u></u>	<u> </u>	<u> </u>	<u></u>	<u></u>	2	24.0
	ARKS:	Surfac	e elev	ation v	vas pro	video	d by the	Client, base	d on a pr	eviously per	formed site su	irvey, N	JAVD	1988						

	E	C				U		LOCATION: Manhattan, NY	-		SHEET No. 2 of	
	NT: T									UNCONFIN	ED COMPRESS. STRENGT	
		OR: Aa	roo Er	viron	manta	Som	ioo Ino			•	(TONS/FT)	
T				SAMI							2 3 4 5 H H H H WATER LIQUI	
	or MIN./FT.	NCE (;		REC	-		ASS.	DESCRIPTION	LITHOLOGY*	PLASTIC LIMIT %	WATER LIQUI CONTENT % LIMIT 	D %
	S MIN	ETRA ISTA L/6 II	SAMPLE NUMBER			TUR	UNIFIED SOIL CLASS.	OF	OLO	10 2	20 30 40 50	
	N OF	PENETRATION RESISTANCE (BL/6 IN.)	SAN NUN	LENGTH (IN.)	RQD (%)	MOISTURE	N SOI	MATERIAL	<u></u>		STANDARD TRATION (BLOWS/FT.)	
	14	3 5	S-10	18		w	ML	Dk bwn-gy SILT, some c-f Sand, trace f Gra	avel		20 30 40 50	
_	14	9 9 11	3-10	10		~~~		(root structure) (Class 5b)				-
	16	9 7 7	S-11	18		w	ML	Gy-bwn SILT, some Clayey Silt, little c-f Sa trace f Gravel (root structure) (Class 5b)	ind,			-
	5	2 2 3	S-12	22		w	CL	Gy SILT & CLAY, little f Sand (Class 6)				29
ŀ		7 3 4										F
	13	9 10	S-13	24		w	CL	Same (Class 4b)				F
		-										-
-		7 7						Gy-bwn c-f SAND, little Clayey Silt, little c-f		2		34
	17	10 7	S-14	12		W	SM	Gravel (Class 3b)				Ļ
		-										-
		-										-
	18	1 9 -	S-15	10		w	SM	Gy-bwn c-f SAND, little c-f Gravel, little Silt				39
		9 12						(Class 3b)				-
-		-										-
		-								·		44
_	16	10 8 8	S-16	0				No Recovery				-
╞		7										F
_	9	4 _ 5	S-17	14		w	SM	Bwn c-f SAND, little c-f Gravel, little Silt (Cl 6)	ass	i f		F
		3										-49
F	5	2	S-18	6		w	SM	Bwn c-f SAND, some Silt (Class 6)				48
	5	4 5	0-10									-
_		-										-
		-										F
	RKS:	- Surfaa		otion			 	l Client, based on a previously performed site su		<u>ا.</u>	4	54

		C						PROJECT: BBJ - M	_						
								LOCATION: Manhattan, NY					HEET		
E١	NT: T	RC									UNCONF		MPRESS. NS/FT)	STRENG	STH
Π	RACT	OR: Aa	rco Er	nvironi	menta	I Serv	ice Inc				1	2	3	4 5	
	Ŀ.	Sщ		SAM	PLES		vi	DESCRIPTION	*	_	PLASTIC LIMIT %	W CON	ATER	LIQU	JID %
	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	щЖ	REC		RE	UNIFIED SOIL CLASS.	DESCRIPTION OF		2	<u>≻</u> - 10	- <u> </u>			2
	OR N	NETI ESIS'	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE		MATERIAL	P	2	Ť		NDARD	r r	
	z	R R	δĨ	(II	6) B(MO	Ň			5 '	PE		ON (BLOV	VS/FT.) 40 50	
	•	5 4	0.40												
	8	4 9	S-19	0				No Recovery							Ē
		10									Ν				F
-	13	10 3	S-20	0				No Recovery							-
		2										\backslash			
															L-
		-	1												
F		9													-
-	45	18 27	S-21	0				No Recovery							-
	_	12													Ļ
	33	30 22	S-22	24		w	SM	Bwn-gy c-f SAND, little f Gravel, little silt							
	33	11 7	5-22	24		vv	SIVI	(Class 3a)							Γ
F	-	4													·····
-	8	3 5	S-23	0				No Recovery			•				-
		5													Ļ
" -		-													-
۱		6													·····
	9	6 3	S-24	16		w	SP	Bwn-gy c-f SAND, trace f Gravel, trace Silt (Class 6)			4				-
		3													
ľ		-													F
ŀ		-													F
-		6												.	
	12	5	S-25	24		w	SP	Same (Class 3b)							Ļ
		7 9									$\left \right\rangle$				
		-									\				F
-		-										\setminus			F
-		-										V			F
	04	18 10	0.00			1.47	0.5	Same (Class 25)							
	24	14 12	S-26	6		W	SP	Same (Class 3b)							F
-		12													F
-		-	-												F
Ļ		-													Ļ
	ARKS:	Surfac	e elev	ation v	vas pr	ovide	hv the	Client, based on a previously performed site su	Irvev. NA\	VD 1	988.				

								PROJECT No. 10285.01		RING No		4 NA		
		Ċ						PROJECT: BBJ - M	DUr		J. D-1	1 171		
								LOCATION: Manhattan, NY			SHEET	No. 4 c	of 4	
CLI	ENT: T	RC									D COMPRES (TONS/FT)	S. STREN	GTH	
CO	NTRACT	OR: Aa	rco Er			l Serv	rice Inc			1 2	3	4 5	5	(FT.)
Î.	ĒT.				PLES		SS.	DESCRIPTION	*- 5	PLASTIC LIMIT %	WATER CONTENT %		UID T %	ELEVATION (FT.)
DEPTH (FT.)	N OR MIN./FT.	STAN STAN	SAMPLE NUMBER			MOISTURE	UNIFIED SOIL CLASS.	OF	LITHOLOGY*	× 10 20) <u> </u>	40 5		EVAT
DEP	N OR	PENETRATION RESISTANCE (BL/6 IN.)	SAM NUM	LENGTH (IN.)	RQD (%)	MOIS	SOIL	MATERIAL	LI H		STANDARD RATION (BLC	WS/FT.)		EL
		5				_				10 20	30	40 5	0	
86	- 21	7 14	S-27	22		w	SM	Bwn-gy c-f SAND, some f Gravel, little Silt (Class 3b)						-
87		43												-
88	-	-	-							· · ·				-
89	50+	50/0	S-28	0				No Recovery						-
90			0.20											89.0
91	2	-	-											_
92	6	-	-					Lgt gy, slightly weathered, moderately to						_
93	11	_	C-1	56/60	80			slightly fractured, medium hard, fine grained SCHIST, fractures 0 to 60 degree from	,					_
94	8	_						horizontal (Class 1b)						
95	9													94.0
96								End of Boring at 95'						_ 00
97		-						, i i i i i i i i i i i i i i i i i i i						-
		-												-
98		-	-											-
99		-	-											-
100		-	-											99.0
101	-	-	-											_
102	-	-	-											-
103	-	-	-											-
104	-	-	-											-
105	-	-	-											104.0
م N 106	-	-	-											-
107	-	-	-											-
108 108	-	-	-											_
집 일 109	L	-	-											_
110		_												109.0
표 깊 111	L													
0.NPL 112														
LYNNA 113		-												
01 M/		-	1											
BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21 101 100 100 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21 111 111 111 112 111 111 111		-												-
0 115 0 REM	L /ARKS:	Surfac	e elev	ation v	was pr	ovide	d by the	Client, based on a previously performed site sur	vey, NAVI	 D 1988.	<u></u>			114.0
SORINC														
ш —														

		Ċ							Marah	attan NV											
								LOCATION:	wann	attan, NY	_								No. 1 of		
	NT: T								ND RE	DATE	_	TIME	DEP	ΥΗ		PECTO		-	VanGro		
CON	TRACT	0R: Aa	rco Er	nviron	mental	Serv			GROUND WATER							LLER:		-	Pacher	.0	
/ETHO	DD OF /	ADVANCIN	IG BOR	RING	DIA.		DE	PTH	< ں						SUF	RFACE	ELEVA	TION:	1	5.0	
POW	'ER AU	GER:					-	ГО	MON. W	VELL	<u> </u>	YES	XN	10	DAT	UM:		See Re	emarks		
ROT	DRILL	:			3 7/8"	'	0	TO 35'	SCREE	N DEPTH:		то			DAT	E STAF	RT:	6/13/	21		
CASI	NG:				4"		0	TO 30'	WEATH	IER: Clear	r	TEMP:	65°	F		EFINIS		6/13/			
DIAN	IOND C	ORE:					-	ГО	DEPTH	TO ROCK:					UN			NPRESS. NS/FT)	STRENG	этн	
Geop	probe 78	322DT wit	n DH10			nmer			*CHANG	GES IN STRAT	TA A	RE INFERREI	D			1 :	2	3 4	4 5 		ļţ
<u>.</u>	Ľ.	N N		SAM			ý			SCRIPTIC	ואר			*		IT %		ATER FENT %	LIQU LIMIT		
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	ШШ	REC	OV.	JRE	UNIFIED SOIL CLASS.		DE	OF	Л			гітно∟осΥ*		——— 10 2	 20 :	⊗— — - 30 4			
EPT	ORN	ESIS (BL/	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	OIL 0		М	IATERIAL				THO	_	1	STAN		+ +		
	z		νΞ		Ϋ́, Ϋ́	M	S		IV.		-			Ξ	•		TRATIO	N (BLOW	VS/FT.) 10 50)	
								4" Concret	te pavers	s, 8" Concre	ete		<i>1</i> ,								
1	_												K								F
2	-	-	-				0.5	Hand exca					Ŕ	\bigotimes						ľ	F
3	-	-	-			М	SP	(FILL) (Cla		ne c-f Grav	ei, i	Ittle Slit	Ŕ	\bigotimes							F
4	_													\bigotimes							L
5		2 2						Bwn c-f G	RAVEL	little c-f Sar	nd, t	race Silt		\bigotimes	_						10.0
5	- 3	1	S-1	5		М	GP	(FILL) (Cla			, t			\bigotimes	•••••						10.0
6		2											k	\bigotimes							F
7	- 4	2 -	S-2	10		М	SP	Bwn c-f SA (FILL) (Cla		e m-f Grave	el, tr	ace Silt	K	\bigotimes	•						F
8	_	3											Ŕ	>>>							L
9	- 3	2	S-3	7		м	sw	Bwn c-f SA	AND, sor	ne f Gravel	, tra	ce Silt (FIL	L)	\bigotimes							
	- 3	1 2	5-3	'		IVI	500	(Class 7)				·	ĺ	\bigotimes		<u> </u>					[
10		3										0.11		\bigotimes				•			_5.0
11	- 114+	14 100/2	S-4	10		W	SP-SM	Rd-bwn c- (FILL) (Cla	t SAND, ass 7)	little f Grav	vel, t	race Silt		\bigotimes							4
12		8						. , ,	,				Ŕ	\bigotimes							F
13	- 39	26	S-5	13		w	SP-SM	Bwn c-f SA	AND, littl	e c-f Grave	I, tra	ace Silt,	Ŕ	>>>							L
14		13 19						wood, bric	K (FILL)	(Class 7)			K	\bigotimes							
		5 11						Dk bwn o'		little c-f Gra	aval	traco Silt	K	\bigotimes				1			[
15	- 21	10	S-6	11		W	SP-SM	(FILL) (Cla	ass 7)		avei			\bigotimes			*				_0.0
16	_	11 11												\bigotimes			$ \setminus$			ĺ	╞
17	- 30	19 11	S-7	1		W	GM	Gy m-f GF (FILL) (Cla	RAVEL, li	ttle Silt, tra	ce c	-f Sand	R	\bigotimes							F
18	_	8							1001)				Ŕ	\bigotimes						l	Ļ
19		18 23	0.0	10		14/		Bwn m-f S	AND, so	me Silt, littl	le f (Gravel (FII	l) K	\bigotimes						~	
	- 52	29 31	S-8	10		W	SM	(Class 7)	,•	,		- (ŕĶ	\bigotimes							[<u>-</u> -
20		10											. {	\bigotimes							5.0
21	- 32	14 18	S-9	1		W	SP-SM	Bwn c-f SA (Class 7)	AND, littl	e c-f Grave	I, litt	le Silt (FILI	L) {	\bigotimes							╞
22		18						(ß	\bigotimes							F
23	_	_											Ŕ	\bigotimes			/	/			L
													Ŕ	\bigotimes			/				
24	-	-											Ŕ	\bigotimes			/				F
25	- ARKS:	<u> </u>	<u> </u>	- 41						eviously per			K		4000		<u> /</u>	<u></u>	<u> </u>	<u></u>	10.0

		Ċ	LL					LOCATION: Manhattan, NY				C L	EET N		.f 0	
	NT: T									UN	CONFIN					
		OR: Aa	roo Er	viron	monto	Som	ico Ino				●	(TON				
					PLES	Jerv								÷	I	-
FT.)	I./FT.	NCE (-			COV.	ш	ASS.	DESCRIPTION	G⊀,		STIC IT % ★ — -	WA ⁻ CONTI	ENT %	LIQ LIMI	oid IT % ☆	
DEPTH (FT.)	N OR MIN./FT.	ETRA ISTA	SAMPLE NUMBER		-	MOISTURE	UNIFIED SOIL CLASS.	OF	LITHOLOGY*		10 2 	0 3	0 4	0 5	0 	
DEI	ō z	PENETRATION RESISTANCE (BL/6 IN.)	SAN	LENGTH (IN.)	RQD (%)	MOIS	N IOS	MATERIAL	=	•	PENE	STAN	I (BLOW		~	
		8				W	SP-SM	Top 8" - Bwn c-f SAND, little c-f Gravel, Silt				0 3	0 4	0 5	0	
26	- 22	11 11	S-10	12		w		(Class 3b) Bottom 4" - Wood (possible timber pile)				•				F
27		13										(F
28	-	-	-								/					F
29	-	-	-													ŀ
30	_										/					15
31	- 8	6 4	S-11	21		w	Pt	Bwn wood, some Peat (Class 6)		4						Ļ
32		4 5								1						
33											$\left \right $					
	-	-									$ \rangle$					Γ
34	-	-														ţ.
35		8						Bwn Wood (Class 6)								20
36	- 19	9 _ 10	S-12	24		W		Discontinued boring due to wood obstruction and offset to drill boring B-12M(A).								F
37		11						and offset to drill boring B-12M(A).								F
38	-	-	-					End of Boring at 37'								F
39	-	-	-													F
40	-	-	-													25
41	-	-	-													F
42	-	-	-													-
43	-	-	-													Ļ
44	-	-	-													Ļ
45	_	_														30
46	_															
47	_															
48	_	-														ſ
	-	-														f
49	-	-														† "
50	-	-														35
51	-	-														F
52	-	-														F
53	-	-														F
54	-	-														F
55	_	_						Client, based on a previously performed site surv								40

Te	CL			C			BBJ -											
						LOCATION:	Manha	attan, NY							IEET N	lo. 1 of	4	
CLIENT: TF							N H	DATE	TIN	/IE	DEPTH		PECTO			Bastie	n	
CONTRACTO	R: Aarco	Environ	1	Servio			GROUND WATER						LER:		ick			
IETHOD OF A	OVANCING BO	ORING	DIA.		DE	EPTH	< ں >							ELEVA	TION:	1	5.0	
POWER AUG	ER:					ТО	MON. W	ELL	YES		X NO	DAT	UM:	\$	See Re	marks		
ROT. DRILL:			3 7/8'	•	0	TO 103'	SCREEN	I DEPTH:		то		DAT	E STAF	RT:	6/19/	21		
CASING:			4"		0	TO 30'	WEATH	ER: Clear		TEMP:	85° F		E FINIS		6/19/			
DIAMOND CO	RE:		2"	1	03	TO 108'	DEPTH	TO ROCK:	101.2'			UNC			IPRESS. IS/FT)	STRENG	STH	
Geoprobe GP	050 with Auto	matic Har	nmer			1	*CHANG	ES IN STRAT	A ARE IN	FERRED			1	2	3 4	4 5		Ę
	s		PLES		Ś				NI		*	PLA LIM	STIC IT %	WA CONT	TER ENT %	LIQU	JID %	Č
DEPTH (FT.) N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.) SAMPLE		OV.	RE	UNIFIED SOIL CLASS.		DES	CRIPTIC OF	'IN		LITHOLOGY*		← — - 0 2	- — —(20 3	⊗— — - 30 4			F <
OR M	PENETRAT RESISTAN (BL/6 IN SAMPLE	LENGTH (IN.)	RQD (%)	MOISTURE	UNIF OIL O		N/L				PH		ľ –	1	IDARD			
ā z			Я e	M M	Х		IVI				5	•		TRATIO	N (BLOW 30 4		,	
															1			
1_	-																-	
2_	_																Ļ	
3_																		
																	F	
4_	-																F	
5_	_																	.10.0
6_																		
7																		
																	F	
8_	-																-	
9_	-																-	
10_	_					Drilled adja 12M for de	acent to t etails abo	oring B-12 ut the soils	M. See encount	boring tered								.5.0
11						above a de												
																	Γ	
12_	-																F	
13_	-																-	
14_	_																F	
15_																		.0.0
16_																		
	1																f	
17_	-																F	
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20																		5.0
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21_	-																F	
22_	-																F	
23_	_																Ļ	
24																		
	1																Γ	10
25 REMARKS:		vation v		habiv	by the	Client, based	d on a pro		ormod s	ito ouro <i>u</i>		1088		<u> </u>			·····	-10.

		PROJECT No. 10285.01		$P_{\rm NC} = P_{\rm 12M}(A)$
Teet	onic	PROJECT: BBJ - M	DUK	ING No. B-12M(A)
ICCU	Unic	LOCATION: Manhattan, NY		SHEET No. 2 of 4
CLIENT: TRC				UNCONFINED COMPRESS. STRENGTH (TONS/FT)
CONTRACTOR: Aarco	o Environmental Service Inc			1 2 3 4 5 (·LJ)
	SAMPLES	DESCRIPTION	_* G≺	1 2 3 4 5 PLASTIC WATER LIQUID NOIL LIMIT % CONTENT % LIMIT % X - - 10 20 30 40 + + + - + + STANDARD H
DEPTH (FT.) I OR MIN /FT. ENETRATION RESISTANCE (BL/6 IN.) SAMPLE		OF	LITHOLOGY*	
DEPTH (FT.) N OR MIN /FT. PENETRATION RESISTANCE (BL/6 IN.) SAMPLE	NUMBE LLENGTH (IN.) RQD (%) MOISTUI UNIF SOIL CI	MATERIAL		PENETRATION (BLOWS/FT.)
26				
27				-
28				-
29				
30				15.0
31				
32				
33				
34				
35				
36				-
37				
38				
39				
40			7.11.11	25.0
41 - 2 ^{WOH}	S-1 24 W CL-ML	Dk gy CLAYEY SILT, trace wood debris,		
42 1		organics (Class 6)		
43 - 5 3 - S	S-2 24 W CL-ML	Gy CLAYEY SILT (Class 4c)		
WOH		Gy CLAYEY SILT, trace f Sand, Sandy lens	a	
45 - 3 + - 5 46 - 2	S-3 24 W CL-ML	44.25 (Class 6)		
WOH				
	S-4 0	No Recovery		
	CL-ML	4" Gy CLAYEY SILT		
	S-5 24 W ML	20" Bwn-gy CLAYEY SILT, some c-f Sand (Class 4c)		
2	S-6 14 W SM	Bwn-gy m-f SAND, some Clayey Silt (Class	6)	
52 2 4		Dum a f CAND little Olevery Olit have a		
9	S-7 20 W SM	Bwn c-f SAND, little Clayey Silt, trace wood debris (Class 3b)		
54 13				
55	elevation was provided by the	Client, based on a previously performed site surv	. vev. NAVD	
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

									╡┖	SOI	KIN	GN	IO. I	3-12	2M(/	A)	
	e	C						PROJECT: BBJ - M	-								
								LOCATION: Manhattan, NY						HEET N			
.IEN	NT: T I	ર૦									U			1PRESS. NS/FT)	STREN	GTH	
DNT	RACT	DR: Aa	rco Er	viron	menta	l Serv	vice Inc					1	2	3 4	4 5	5	ĺ
T	н. Н	Sщ		SAM	PLES		, iii			*	PL	ASTIC MIT %	W/ CONT	TER TENT %	LIQI LIMI	UID T %	
	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	шК	REC		끮	UNIFIED SOIL CLASS.	DESCRIPTION		LITHOLOGY*		— — 10		⊗— — - 30 4	,	Δ	F S
	A N	NETF SIST (BL/6	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE		OF MATERIAL		HOH			1			0	
	z	E B	NN S/	l Ž ≦ I I	R S S S S	Q	l S	MATERIAL		5	•		ETRATIC	N (BLOW	/S/FT.) 0 5	0	'
		5						Dura of CAND, little of Crowel, trace Clower			· :-			1			
6	18	7 - 11	S-8	14		w	SM	Bwn c-f SAND, little c-f Gravel, trace Clayey Silt (Class 3b)	y		·						F
7		14															\vdash
8_		-									· · ·						F
9		_															L
0																	45.
		10						Pup of SAND trace of Crouple trace Claus	~~~		: : :	· · · · · · ·					
1	15	8 - 7 -	S-9	10		w	SM	Bwn c-f SAND, trace c-f Gravel, trace Claye Silt (Class 3b)	≠y		· . . :	•					F
2		12									· · · ·						F
3_		-															┝
4		-											V				L
5													Ν				50
		12						Dum of CAND, come of Croupl, trace Clour	~		· · · · · · · · · · · · · · · · · · ·			•••••			
6_	23	8 _ 15	S-10	5		w	SM	Bwn c-f SAND, some c-f Gravel, trace Claye Silt (Class 3b)	ey				•				F
7		9															F
8_		-											/				F
9		_									· :						L
o											· · · · · · · · · · · · · · · · · · ·						55.
		7						Bwn c-f SAND, trace c-f Gravel, trace Silt			·	/					_ 00.
1	10	5 _ 5	S-11	8		W	SM	(Class 3b)			:. ::	Ý					F
2		5									· · ·						F
3		-									·. . ·						F
4		-									.:.						F
5											÷]						60.
		8 5						Bwn-blk c-m SAND, and f Gravel, trace Silt				 					
6_	10	5	S-12	18		W	SW-SM	(Class 3b)				•					ſ
7		7															F
8_		-															F
9_		-															┝
0											•						65
1		7 5	.					Bwn c-f SAND, little c-f Gravel, little Silt (Cla	ass								
	10	5	S-13	4		W	SM	3b)				T					Ī
2		6															F
3_		-															F
4		-															┝
5		_									.: 						70
MA	ARKS:	Surfac	e elev	ation v	was pr	ovide	d by the	Client, based on a previously performed site sur	rvey,	NAV	D 198	8.					

LIENT: ONTRAC		rco Er	SAMI REC	menta PLES COV.		ice Inc	PROJECT: BBJ - M LOCATION: Manhattan, NY			UNCONFIL	NED COM				
LIENT: ONTRAC	TRC TOR: Aa bENETRATION (BL/6 IN.) 8 8	rco Er	SAMI REC	menta PLES COV.			LOCATION: Manhattan, NY				NED COM	PRESS.			
ONTRAC 	PENETRATION PENETRATION BENETRATION (BL/6 IN.) 8		SAMI REC	PLES COV.	l Serv	rice Inc							STRENG	STH	
L - 16 86 - 16 87 - 16 88 -	PENETRATION PENETRATION (BL/6 IN.)		SAMI REC	PLES COV.	l Serv	ice Inc				•	(TON	3/FT)			
86 _{- 16} 87 88 ₋	10 8 8	SAMPLE NUMBER	REC	OV.						1	2 3	3 4	5		EI EVATION (ET)
86 _{- 16} 87 88 ₋	10 8 8	SAMPLE NUMBER							*	PLASTIC LIMIT %	WA	TER ENT %	LIQU	JID	NC
86 _{- 16} 87 88 ₋	10 8 8	SAMPL	N.)		RE	IED LAS	DESCRIPTION		00	×		≥——— Э———— 0 40	- — —4	2	1 T V
86 _{- 16} 87 88 ₋	10 8 8	Σ Σ		RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	OF MATERIAL		LITHOLOGY*		+		, JU 	,	Ĺ
87 88 _	8 8			RC 080	Q	S	MATERIAL		5	PENI 10	ETRATION				
87 88 _	8						Bwn c-f SAND, some c-f Gravel, trace Silt								
88 _	13	S-14	8		W	SM	(Class 3b)							-	
														-	
39 L	-													-	
	-	-												-	-
90															75.
91 - 16	11 7	S-15	12		w	SM	Bwn c-f SAND, little c-f Gravel, trace Silt								_
92	9 11	0-10	¹				(Class 3b)								
93 _	-	-													
94 _	-	-												F	
95	6														-80.
96 - 19	10 9	S-16	8		W	SM	6" c-f SAND, little Silt (Class 3b)	[-	-
97	13				W	ML	2" Tn CLAYEY SILT (Class 5b)								-
98															_
99														\searrow	
	-														
	33	0.47			w	ML	2" Same	Ų						8	85. 3
01 _ 88+	38 50/2	S-17	3		W	GP	SOFT ROCK, which when sampled broke in	to						Ī	-
02_	-						Gy c-f GRAVEL (Class 1d)								
)3 50+	50/0	S-18	1		W	GP							•		-
04 6	-	-							\otimes						-
5 05_															90.
4		C-1	54/60	79			Gy-bl-rd, slightly weathered, slightly fractured m-f grained hard, SCHIST (Class 1b)	□,							_
07 6								K							
5	-	1												ľ	•
							End of Poring at 109							F	
9_	-	-					End of Boring at 108'							ŀ	-
0_	-	_													95.
11	-	-												ŀ	-
12_	-	-												ŀ	-
13															_
14															_
														Ī	
15 L EMARKS:	: Surfac	e elev	ation v	vas pr	ovide	d by the	Client, based on a previously performed site sur	vey, NA	AVD	<u> </u> 1988.	<u>. </u>				100

	0	C						PROJECT:	BBJ -	M									
	C							LOCATION:	Manh	attan, NY					S⊦	IEET N	o. 1 of	4	
CLIEN	T: TF	ર૦							д ж	DATE	TIME	DEPT	н ім	ISPECTO	R: R	yan Vil	la		
CONTR	RACTO	DR: Aa	rco Er	viron	mental	Serv	ice Inc		GROUND WATER				D	RILLER:	D	aybi			
ETHOD	OF A	DVANCIN	IG BOR	RING	DIA.		DE	PTH	l Ω R) ≥				S	URFACE I	ELEVA	FION:	14	l.7	
POWE	r auc	BER:						ТО	MON. W	VELL [] YES	X NC	D	ATUM:	5	See Re	marks		
ROT. D	RILL:				3 7/8"	•	0	TO 102'	SCREE	N DEPTH:	то		D	ATE STAF	RT:	6/12/2	21		
CASIN	G:				4"		0	TO 45'	WEATH	IER: Overc	ast TEMP:	70° F	D	ATE FINIS	SH:	6/12/2	21		
DIAMO	ND C	ORE:			2"		102	TO 107'	DEPTH	TO ROCK:	102'		ι			PRESS. S/FT)	STRENG	TH	
Geopro	be 78	22DT with	DH10 ו	3 Auton	natic Har	nmer			*CHANG	GES IN STRAT	A ARE INFERRE	D				3 4	5		i Î
	<u>.</u> .	Zш		SAM	PLES								E F		WA	HER	LIQU		
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	ше	REC	COV.	ЗE	UNIFIED SOIL CLASS.		DES	SCRIPTIO	N			.IMIT % — — —	- — —(ENT % ⊗— — —	LIMIT ∆	.	ELEVATION (FT.)
PTH	RM	IETR SIST, BL/6	SAMPLE NUMBER	ENGTH (IN.)	0	MOISTURE	UNIFIED			OF			₽́	10 2	1	0 40) 50 		
B	o z	RE:	SAI	ENG ENG	RQD (%)	MOI	s C		M	ATERIAL			∃ ●		TRATIO	DARD N (BLOW			Ξ
-												<i>P</i> 5	6.4	10 2	20 3	0 40) 50		
1_		-	-					4" Pavers				×	XX						F
2		-	-					8" Concret					\bowtie						F
3								Gravel Sul	obase				\bigotimes						
		-						Hand exca descriptior		6' (No soil 1)		X	\bigotimes						-
4		9										X	\mathbf{X}					ŀ	_
5_	14	7 7	S-1	6		М	SP	Rd-bwn m (FILL) (Cla		, and c-f Gra	vel, trace Silf	t 🕅	×						_9.7
6		5						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,				\otimes	X					F
7	6	4	S-2	4		м	SP	Rd-bwn m	-f SAND	, trace c-f Gi	avel, trace S	ilt, 🖗	\otimes .						L
8	0	3 4	0-2			IVI		trace brick	(FILL) (Class 7)			× `						
°		7						Dillo		h			\bigotimes					Ī	-
9_	14	7 7	S-3	8		W	SP	trace brick			vel, trace Silt	' 🕅	\bigotimes	•				ł	-
10		7										×	×						_4.7
11	9	6	S-4	4		w	SM	Rd-bwn c-	f SAND,	little c-f Gra	vel, little Silt,		\otimes						F
12		3 2						trace brick	(FILL) (Class 7)			\bigotimes						L
10		1 0						Rd-bwn c-	f SAND	little Silt_tra	ce c-f Gravel		\mathbf{X}						
13_	10	10	S-5	24		W	SM	trace brick				' 🏼	\bigotimes	1				Ī	-
14		23 4											\bigotimes					ł	Ē
15_	6	2 4	S-6	6		w	SM			, some Silt, L) (Class 7)	trace f Grave	I, X	×	•					0.3
16		6						liuce ergu				Ř	X	X					F
17	16	6 7	0.7	16		w	SP-SM	Gy-blk m-f	SAND,	some f Grav	el, trace Silt								
	16	9 9	S-7	16		vv	37-311	(Člass 3b)	(POSSI	BLE FILL)								[-
18		2												X				ł	-
19_	6	5 - 1	S-8	0				No Recove	ery					<				ŀ	_
20		2																	5.3
21	16	4	S-9	12		w	SM				ace c-f Grave	I						ļ	F
22		12 15						(Class 3b)	(POSSI	BLE FILL)									L
														/				Ī	-
23 _		-												/				ŀ	-
24 _		-												/				ŀ	ſ
25		_										: : .		<u>/.</u>					10.3

	E	C						PROJECT: BBJ - M	4
								LOCATION: Manhattan, NY	SHEET No. 2 of 4
EN	T: T	RC							UNCONFINED COMPRESS. STRENGTH (TONS/FT)
NT	RACT	0R: Aa	rco Er	vironr	nental	Serv	ice Inc		1 2 3 4 5
	Т.	Νų		SAM	PLES				
	IN./F	ATIC ANC	шК	REC	OV.	RE	IED LASS	DESCRIPTION	$\begin{bmatrix} 9 \\ & & & - & - & - & - & -$
	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	Q ()	MOISTURE	UNIFIED SOIL CLASS.	OF MATERIAL	$\begin{array}{c cccc} * & \text{PLASTIC} & \text{WATER} & \text{LIQUID} \\ \text{LIMIT} & \text{CONTENT} & \text{LIMIT} & \\ & & & & & & & \\ \hline & & & & & & & \\ \hline & & & &$
	z	E B C	ר S⊿	E N	RQD (%)	MO	S S	MATERIAL	PENETRATION (BLOWS/FT.) 10 20 30 40 50
;_	5	3	S-10	6		W	SW-SM	Rd-bwn c-f SAND, some f Gravel, trace Silt	
	5	2 WOH	5-10	0		vv	300-300	(Class 6) (POSSIBLE FILL)	
		8 5							
-	11	6	S-11	10		W	SW-SM	Same (Class 3b) (POSSIBLE FILL)	
-		8							
ľ		7							
-	21	10 _ 11 _	S-12	10		W	SM	Gy-bwn m-f SAND, some Silt, little c-f Grave (Class 3b) (POSSIBLE FILL)	
_		11						(, (
		-							
		6 4							
-	12	8	S-13	10		W	Pt	Rd-bwn PEAT (Class 6)	
_		13							
-		-							
_		-							
_									
	11	4 5	S-14	2		W	Pt	Bwn PEAT (Class 6)	
		6 8	0-14	-		vV			
-		-							
-		-							
-		WOH							
-	2	1 _	S-15	24		w	CL	Gy CLAY & SILT (Class 6)	
_		1							
		-							
		-							
		WOH							
F	0	woн woн	S-16	24		W	CL	Same (Class 6)	
-		WOH WOH							
-	0	woн woн	S-17	24		w	ML	Gy CLAY & SILT, trace Organics (Class 6)	
		WOH							
_	RKS:	Surfac	e elev	ation v	vas pro	ovide	d by the	Client, based on a previously performed site sur	

							PROJECT: BBJ - M	BORING No. B-13M
16	PC							
				_			LOCATION: Manhattan, NY	SHEET No. 3 of 4
ENT:								UNCONFINED COMPRESS. STRENGTH (TONS/FT)
NTRAC	CTOR: Aa	rco Er			l Serv	vice Inc		
l	Sж		SAM	-				★ PLASTIC WATER LIQUID LIMIT % CONTENT % LIMIT %
IIN./F	TANC IN.)	щк	REC		RE	=IED	DESCRIPTION OF	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
z	RE	ג ג	LEN LEN	R S	MO	S(PENETRATION (BLOWS/FT.) 10 20 30 40 50
	WOH							
- 0	WOH WOH	S-18	12		W	ML	Bwn SILT, trace Organics (Class 6)	
	WOH							
		_						
]						
	3							
- 7	3.4	S-19	16		w	SP-SM	Rd-bwn f SAND, trace Silt (Class 6)	
	5							
- 18	5	- S-20	22		w	SM	Run f SAND little Silt (Class 26)	
- 18	12 14	3-20			vv	SIVI	Bwn f SAND, little Silt (Class 3b)	
	5							
- 11	5	- S-21	12		w	SP-SM	Lgt bwn m-f SAND, little c Gravel, trace Silt	
	6 6						(Člass 3b)	
		1						
+		-						
	8							
- 20	11	S-22	12		w	SP	Rd-bwn-or m-f SAND, little c-f Gravel, trace	
	9 8						Silt (Class 3b)	
• <u>-</u>		1						
۱ <u>-</u>		-						
; <u> </u>	5							
- 10	5	S-23	12		w	SP-SM	Rd-bwn-or m-f SAND, trace f Gravel, trace s	Silt 🔯
	5 6						(Class 3b)	
-		1						
'-		-						
	17							
- 31	17	S-24	4		w	SP	Rd-bwn m-f SAND, trace c-f Gravel, trace S	silt [333] _ _
	14 13						(Class 3a)	
3		-						
•		-						
;								
MARK	Surfac	e elev	ation	vas nr	ovide	d by the	Client, based on a previously performed site su	rvey, NAVD 1988.

			_					PROJECT No.	10285.01		BOF	RINO	GΝ	0. E	3-1:	3M		
T	6	C	1		nì			PROJECT:	BBJ - M		_ •.	•	- • •		- •			
_								LOCATION:	Manhattan, NY					SF	IEET I	No. 4 c	of 4	
LIEN	NT: T I	ર૦										UNC			IPRESS. IS/FT)	STREN	GTH	
CONT	RACT	DR: Aa	rco Er	viron	menta	l Serv	ice Inc						1 :	2	3	4 !	5	
<u> </u>	Ŀ.	Sн		SAM	-		vi		DESCRIPTION		*	PLA LIM	STIC	WA CONT	TER ENT %	LIQ	UID IT %	
DEPTH (FT.)	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	ШЩ	REC		JRE	UNIFIED SOIL CLASS.		OF		LITHOLOGY*		₩—-		⊗— — · 30 4		-A 50	
	I OR	ENET RESIS (BL	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	NN		MATERIAL		ITHO	•					1] _
_	2	<u>م</u> ۳ 34		Щ -	-	Σ						1			N (BLOV 30 4		50	-
86	41	20	S-25	2		w	GP		VEL, little m-f Sand, tra	ace Silt								Ļ
87		21 23						(Class 2a)								$\left \right\rangle$		
38		_														$ \setminus$		L
89																		
		-															$ \rangle$	[
90 _		29						Dd burn o f				•					···· \	75.
91_	60	28 32	S-26	10		W	SM	Rd-bwn c-f s (Class 3a)	SAND, some c-f Grave	i, iillie Silt								•
92		19										•						╞
93 _		-	-															-
94 -		-	-															ŀ
95		50																80
6	59	30	S-27	14		w	SP		ND, and c-f Gravel, trac	e Silt								
7		29 34						(Class 3a)										
18																		
99												•						
		-																6
		-										•						85.
)1		-	-															F
)2	5																	F
)3 _	5	-	-															-
)4 _		-		40/00	60			Gy, slightly	weathered, moderately	fractured, c								╞
)5 _	5	-	C-1	48/60	62			45 degrees,	dium hard, SCHIST, fra with Quartz and Garne	et								90.
6	6	-	-															F
07	5																	Ļ
08_		-	-						End of Boring at 107'									Ļ
9		-																L
0																		95.
1		-																
		-	1															F
12		-	-															F
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15	ARKS:			otier				Client hard'	on a previously performe	ad aita arrest		1000						100
/	a true.	Sunat			rus pr		a by the	Siloni, 50350			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1000	•					

			_					PROJECT N	o. 1028 5	5.01		B	OR	RING	GΝ	o. I	B-1 (6M		
1	6	C			nĭ			PROJECT:	BBJ -	м					- 11	~ 1	- 11			
								LOCATION:	Manh	attan, NY						Sł	HEET	No. 1 (of 4	
CLIE	NT: T	RC							9 ~	DATE	TIME	DE	РΤΗ	INS	РЕСТО	R: J	ack Rı	ısk		
CON	TRACT	OR: Aa	rco Er	viron	mental	Serv	ice Inc		GROUND WATER					DRI	LER:	J	ulio Ga	alarza		
1ETH	OD OF A	DVANCIN	IG BOR	RING	DIA.		DE	EPTH	R ≥					SUF	FACE	ELEVA	TION:		1.0	
POV	/ER AU	GER:						то	MON. V	/ELL	YES		10	DAT	UM:		See Re	emark	s	-
ROT	. DRILL:				2 7/8"		0	TO 85'	SCREE	N DEPTH:	TO			DAT	E STA	RT:	7/7/2	:1		
CAS	ING:				4" & 3'	•	0	TO 75'	WEATH	IER:	TEMP:	83°	F	DAT	EFINI	SH:	7/13/	21		
DIAN	IOND C	ORE:			3"		85	to 90'	DEPTH	TO ROCK:	83'			UN			/IPRESS. NS/FT)	STREM	IGTH	
Acke	r Portab	le Rig with	n Cathe	ad & Do	onut Ham	nmer			*CHAN	GES IN STRAT	TA ARE INFERRE	D			1	2	3	4	5	Ē
<u>.</u>	T.	Zщ		SAM	PLES		<i>i</i>						*	PLA	STIC	W/ CONT	ATER FENT %		UID	
H (FT.	IN./F	ATIC ANC	щК	REC	OV.	RE	IED LASS		DES	SCRIPTIC)N		,0 O		×		⊗— — •		-A	ATIO
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	DG (9)	MOISTURE	UNIFIED SOIL CLASS.		N 4	OF ATERIAL			LITHOLOGY*		10 2	1	30 4 	10 ±	50 	ELEVATION (FT.)
ä	z	PEr RE	SA NU	(IN LENC	RQD (%)	MO	sc		IV	AIERIAL			E	•		TRATIC	N (BLOV		50	
													\times						-	+
1	_	-	1										\times	>						F
2	-	-	-										\bigotimes							F
3	_	-	-					Hand exca					\bigotimes							L
4								(NO SOII de	escriptior	n provided)			>>>	>						
	_	-											\bigotimes	>						F
5	-	-											\bigotimes	× · · · · · · ·						4.0
6	_	1											\bigotimes	>						-
7	- 3	2_	S-1	12		М	SM	Bwn-gy c-	f SAND,	little Silt, litt	tle c-f Gravel		\bigotimes							F
8		1 3						(FILL) (Cla	ass ()				\bigotimes							
0		2 5						Bwn-av c-t	F SAND	little Silt, litt	lle f Gravel		\bigotimes							
9	- 14	9	S-2	3		М	SM	(gasoline d	odor) (Fl	LL) (Class 7	7)		\bigotimes							F
10		9 7											XXX							9.0
11	- 26	13 13	S-3	16		М	SM	Bwn-gy c-i (roots) (Cl	f SAND,	little Silt, litt	tle f Gravel									-
12	_	12							uss ob)											
13	50	14 20		00		14/	014	Bwn m-f S	AND, litt	le Silt, trace	e f Gravel (Cla	ss								
	- 58	38 40	S-4	22		W	SM	3a)			,									ή
14		10						_												F
15	- 34	14 20	S-5	20		W	SM	Bwn-gy c-i (Class 3a)		little Silt, litt	tle c-f Gravel									14.0
16		20 19						, ,												-
17	- 45	28	S-6	18		W	SM	Same (Cla	ee 3a)											
18	40	17 19				••			100 00)											
		11						Durn of C			Crovel (Class							$ \rangle$		Ē
19	- 49	21 28	S-7	24		W	SM	Bwn c-r SA 3a)	-ind, littl	e Siit, little I	Gravel (Class									F
20		31 16																/		19.0
21	- 40	21	S-8	14		W	SM	Same (Cla	iss 3a)											F
22		19 14						Ì	,								/			L
23																				
	-	-	1														/			ſ
24	-	-	-														\backslash			F
25	_ ARKS:	Surfac															<u>/</u>			

								PROJECT: BBJ - M		717			U.	3-10	J1VI		
	e		1(J		C		LOCATION: Manhattan, NY									
								LOOATION. INdiffiduali, INT			LINI				No. 2 o		
	NT: T						_				UN			NS/FT)	SIREN	ып	
CON.	FRACT	OR: Aa				Serv	ice Inc					1	2	3	4 5 	5	
<u>.</u>	Ŀ.	No Ho			PLES		- vi	DESCRIPTION		*	PL/ LIN	ASTIC 11T %	WA CONT	ATER TENT %	LIQI LIMI	UID IT %	
DEPTH (FT.)	1/'NIV	TAN(3 IN.)	ЦП	REC		JRE	UNIFIED DIL CLAS	OF		⁰		х — ∙ 10		⊗— — ·		-∆	
EPT	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS	MATERIAL		LITHOLOGY*			+	DARD	+ Ť		1
	z	R R	S Z		м С	MC	Ō			<u> </u>	•		TRATIO	N (BLOV	VS/FT.) 40 5	0	
20		12 13											/				
26	- 26	13	S-9	12		W	SM	Bwn c-f SAND, little Silt (Class 3b)					•				F
27		13															F
28		-							· · ·								F
29		-												ľ			L
30														\mathbb{N}			L-29
	-	11						Ou hum a f CAND little Cite little f Oreccel									2
31	- 33	10 23	S-10	12		W	SM	Gy-bwn c-f SAND, little Silt, little f Gravel (Class 3a)						•			F
32		25					$\left \right $										╞
33	-	-															ļ
34	-	_															L
																	<u>,</u>
35		16											• • • • • • • •				34
36	- 34	18 – 16	S-11	10		W	SM	Gy-bwn c-f SAND, some c-f Gravel, little Silt (Class 3a)						🛉			╞
37		17															F
38	-	-															Ļ
39																	
	-	-															[_
40		14											.				39
41	- 30	12 18	S-12	8		W	SM	Bwn c-f SAND, some c-f Gravel, little Silt (Class 3b)						•			╞
42		15					$\left - \right $. · · · · ·								F
43	-	-															Ļ
44	_																L
																	Ē.
45		16											•	++			44
46	- 33	15 - 18	S-13	8		W	SW-SM	Bwn m-f SAND, little f Gravel, trace Silt (Clas 3a)	S .					•			F
47		16					$\left \right $							V			F
48	-	-											/	/			Ļ
49	_												/				L
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51	- 21	9 12	S-14	8		W	SM	Bwn c-f SAND, little f Gravel, little Silt (Class 3b)					Ŕ				╞
52		16											$ \rangle$				F
53		-															L
54																	
	-	-												N			Γ
55	-	-						Client, based on a previously performed site surv									54

C	Ċ						LOCATION: Manhattan, NY	SHEET No. 3 of 4
NT: T	RC							UNCONFINED COMPRESS. STRENGTH
TRACT	OR: Aa	rco Er	viron	menta	l Serv	vice Inc		 (TONS/FT) 1 2 3 4 5
	z		SAM	PLES				
N OR MIN./FT	ATIO IN.)		REC	OV.	щ	UNIFIED SOIL CLASS.	DESCRIPTION	🞖 → △
RM	ETR/ SIST/ 3L/6	SAMPLE NUMBER	HL (MOISTURE	IL CL	OF	
0 Z	PENETRATION RESISTANCE (BL/6 IN.)	SA	LENGTH (IN.)	RQD (%)	MOM	so	MATERIAL	STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50
05	15 17	0.45	0		14/	014		
- 35	18 22	S-15	8		W	SM	Bwn c-f SAND, little Silt (Class 3a)	
-	-	-						
-	-							
	16						Pure av a fRAND little f Croval little Sit	
- 36	16 20	S-16	10		W	SM	Bwn-gy c-f SAND, little f Gravel, little Silt (Class 3a)	
	16							
-	-	-						
-	-	-						
	16							
- 36	15 21	S-17	8		w	SM	Bwn-gy c-f SAND, little Silt (Class 3a)	
_	24							
-	-	-						
-	-	-						
50+	50/1	S-18	0				No Recovery	
-		3-10	0				No Recovery	
_		-						
12:44 -		_						
12:48		C-1	3	0			Two small pieces of boulder	
12:51	-			Ŭ				
1:00								
_	-]						
-	10 18							
- 40	22 50/4	S-19	0				No Recovery	
	50/4							
-	-	-					Bedrock begins at 83'	
-	-	-					drilled through to competent rock @ 85'	
- ARKS:	<u> </u>	<u> </u>					Client, based on a previously performed site sur	

Tectonic PROJECT NO. 10285.01 BORING N PROJECT: BBJ - M LOCATION: Manhattan, NY CLIENT: TRC UNCONFIN	SI IED COM				
	IED COI	HEET			
			No. 4 (of 4	
-	(10	MPRESS	S. STREM	NGTH	
CONTRACTOR: Aarco Environmental Service Inc	2	3	4	5	ET.)
Image: Samples Samples Plastic Image: Samples Image: Samples Image: Samples Image: Samples Image: Samples <td< td=""><td>W/ CON</td><td>ATER</td><td>' LIC LIN</td><td>DIUC MT %</td><td>ELEVATION (FT.)</td></td<>	W/ CON	ATER	' LIC LIN	DIUC MT %	ELEVATION (FT.)
LIMIT % LIMIT % DESCRIPTION OF OF UNITEED OF UNITEED OF OF UNITEED OF OF OF OF OF OF OF OF OF OF	 20	- <u>8</u>		-∆ 50	VAT
SAMPLES DESCRIPTION N OW WIN 'LL'. DESCRIPTION NOT UN NOT UN NO NOT UN NO NO NO NO NO NO NO NO NO N	STA	' NDARD ON (BLO)		T	
				50	
					_
					_
1:32 C-2 60/60 87 Gy, slightly weathered, slightly fractured, c grained, hard SCHIST (Class 1a)					_
89 1:55					
90 2:16					89.0
91 End of Boring at 90'					
					-
					-
93					-
					-
95	.				94.0
96					-
97					-
98					-
99					-
					99.0
					_
					_
					_ 104.0
					104.0
					-
					-
					-
					F
	.		.		109.0
					-
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					F
					-
100					114.0
REMARKS: Surface elevation was provided by the Client, based on a previously performed site survey, NAVD 1988.					
Na					

		_		_	•			PROJECT N		-			B	JR	INC	3 N	o . I	3-18	BM		
	e	C			11	C		PROJECT:	BBJ -												
								LOCATION:	Manh	attan, NY							Sł	IEET I	No. 1	of 4	
CLIE	NT: T I	RC							D R	DATE	т	ME	DEP	тн	INSF	PECTO	R: B	arry C	Juime	t	
CON	TRACT	OR: Aa	rco Er	viron	mental	Serv	ice Inc		GROUND WATER						DRIL	LER:	J	ulio G	onzol	ez	
ETH	DD OF A	DVANCIN	IG BOR	RING	DIA.		DE	EPTH	5 2						SUR	FACE	ELEVA	TION:		1.0	
POW	ER AUG	GER:					-	то	MON. W	/ELL	☐ YES		ΧΝ	0	DAT	UM:		See Re	emark	S	
ROT	DRILL:				2 7/8"		0	TO 87'	SCREE	N DEPTH:		то			DAT	E STA	RT:	6/3/2	21		
CAS	NG:				3"		0	TO 81'	WEATH	ER:		TEMP:						6/11			
DIAN	IOND C	ORE:			2"		87	to 92'	DEPTH	TO ROCK:	87'				UNC			IPRESS NS/FT)	. STRE	NGTH	
Acke	r Portab	le Rig with	n Cathe			nmer			*CHANC	GES IN STRA	ATA ARE I	NFERRE	D			1 	2	3	4	5	L L
T.)	Ľ.			SAM			S.		DES	SCRIPTI	ON			*	LIM	STIC IT %	WA CONT	ATER TENT %	LIN	QUID /IT %	
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	ER E	REC		URE	UNIFIED SOIL CLASS.			OF				гітногоду*		⊷—- ρ 2		⊗— — 30 4		–∆ 50	ELEVATION (FT.)
DEPT	ORI	ENET (ESIS (BL/	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	NN (М	ATERIA	L			H	•		STAN		1	1	
	z	R R	ωz		<u>م</u> (M	0				_				1			N (BLO)		50	
4																					
1	-	-																			F
2	-	-																			+
3	-	-	-					Hand exca provided)	vated to	6' (No soi	l descrip	tion									+
4	_	_						provided)													
-																					
5	-	-																•			4.0
6	_	23												\propto							+
7	- 25	12	S-1	2		М	GP	Wht tn f G		and c-m S	Sand, tra	ce Silt	ß	\bigotimes							-
8		13 11						(FILL) (Cla	iss 7)				ß	\bigotimes			K				
0		5 7						Bwn-gy c-1		and c-f	Sand tr	ace Silt	. 8	\bigotimes							
9	- 10	3	S-2	12		М	GP	(FILL) (Cla	ass 7)	., and o i	ound, ti			\bigotimes		ľ					F
10		4											K	\otimes							9.0
11	- 11	5 6	S-3	2		w	GP	Gy-wh c-f (FILL) CLa		_, little c-f	Sand wit	h wood	k	\bigotimes							-
12		7							1337)				k	\bigotimes							
13													ß	\bigotimes							
	-	-											ß	\bigotimes							F
14	50+	18	S-4	8		W	GM	Bwn Orgai	nic SILT,	and c-f G	ravel, lit	le c-f	ß	\bigotimes					$\left \right\rangle$		+
15		50/4	3-4	0		vv	Givi	Sand (FILI	_) (Class	7)			ß	\bigotimes							14.0
16	_												Ř	\bigotimes							Ļ
17	82+	WOH 28	S-5	12		W	ML	Bwn SILT,	and c-f	SAND, tra	ce f Gra	vel (Cla	ss								82
	-	54/6						5a)													Γ
18	-	-	-											ШЦ 0 - О							F
19	-	-						18 - 20' Po 20'	ossible b	oulder rota	ary adva	nced to	6								+
20	_												4								19.0
21	- 104	37 50	6.6	1.4		۱۸/	CM	Burn m f O		mo Silt (C)										1	104
	- 104	54 54	S-6	14		W	SM	Bwn m-f S	AND, SO	me Siit (C	iass 3a)		· . · .								Ţ
22		<u> </u>						1													F
23	-	-	-																		+
24	_	-																			Ļ
25																					24.0

								PROJECT No. 10285.01 PROJECT: BBJ - M	RC	ĸ	ING No	. В-1	VIVI	
	(2	C	[[(r			
								LOCATION: Manhattan, NY					No. 2 of 4	
	NT: T I											(TONS/FT)	5. STRENGTH	
CON)r: Aa	rco Er	-		l Serv	vice Inc				1 2	3	4 5	ELEVATION (FT.)
(;	ΓŢ.	N E (-	PLES		SS.	DESCRIPTION	*	×		WATER CONTENT %		
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	PLE MER	REC		MOISTURE	UNIFIED SOIL CLASS.	OF		LITHOLOGY*	× – – · 10 20		<u>−</u> <u>−</u> <u>∧</u> 40 50	
DEP	N OR	ENE RESIS	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	OIST		MATERIAL		Ĕ		STANDARD		
	2		~ Z	Щ С	ш. 	Σ				 	10 20		40 50	
26	- 47	21 23	S-7	14		w	SM	Bwn-gy c-f SAND, little f Gravel, little Silt						
27	-11	24 25	07					(Class 3a)						
	_													F
28	-	-												F
29	-	-												F
30	_	11												29.0
31	- 49	25	S-8	12		w	SP	Gy-bwn m-f SAND, little c-f Gravel, trace Sil	t					Ļ
32	10	24 18						(Class 3a)						
33	-	-											1	-
34	-	-												F
35	_	9										/		34.0
36	- 23	11	S-9	18		w	SP-SM	Bwn-gy c-f SAND, little Silt, trace f Gravel						Ļ
37	_	12 11						(Class 3b)						
38														
	-	-												-
39	-	-												-
40		8												39.0
41	- 27	8 19	S-10	0				No Recovery				è		-
42		20												_
43	- 22	5 9	S-11	18		w	SP	Bwn-gy c-f SAND, trace Silt (Class 3b)						
44	22	13 9	3-11			vv	J	Dwn-gy C-I SAND, trace Sitt (Class 50)						
														F
45		11												44.0
46	- 20	14 6	S-12	18		w	SM	Bwn m-f SAND, little Silt (Class 3b)						F
47	_	19												F
48	_	-							· · ·					
49	_											\backslash		
	-	-												
50	-	-						Boulder at 50'	0	·		••••••		49.0
51	-	-							0					F
52	-	-							0	01				F
53	-	-								, o 1				Ļ
54	_								°0	,			$ \rangle $	
		-							6)				EAC
55 REM	- ARKS:	Surfac	e elev	ation v	vas pr	ovide	d by the	Client, based on a previously performed site sur	vey, NA	<u>^ 1</u>	1988.	· · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	54.0

		-		_						'KI	NG No	. D-1	DINI	
	A	C						PROJECT: BBJ - M	-					
								LOCATION: Manhattan, NY				SHEET	No. 3 of	4
IEN	NT: T	ર૦										COMPRESS (TONS/FT)	. STRENG	
DNT	TRACT	DR: Aa	rco Er	viron	menta	l Serv	ice Inc				1 2	3	4 5	Í
	<u>.</u>	Ζш		SAM	PLES				*>	_	PLASTIC LIMIT % C	WATER ONTENT %	LIQU	ID
	IN./F	ATIC ANC	шК	REC		끮	IED	DESCRIPTION		3	×		— — —△	
	OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)		MOISTURE	UNIFIED SOIL CLASS.	OF			10 20	- T	40 50	ID %
	z	RE ()	SA NU		RQD (%)	IOM	- OS	MATERIAL		5		ATION (BLO 30	NS/FT.) 40 50	
	50+	50/0	S-13	0				No recovery	°0	0			-0 	
6	-	-							00	3 4				-
7	-	-	-						00	39				_
8	_	_							000	-				
	-	-							0					
9_	-	-							0 (0	2 4				F
0									0	j g.				59
1	-	-							°0 0 (20		\backslash		F
2	_							No Recovery	0	-		Λ		L
			C-1	0/60				Boulder 55' to 57' Void 57' to 58'	0 (0	2 4		/		
3_	-	-						Boulder 58' to 60'	00	34		/		-
4	-	-	-						0	34				-
5	_	10							<u>°</u> ,	0	//			64
6	- 14	10 7	S-14	10		w	SP	Bwn c-f SAND, trace f Gravel, trace Silt (Cla	ass					
	14	7 8	0-14			**		3b)						
7	-									•				F
8	-	-	-											-
9	-	-	-											-
0	_											\		69
1		19 10						Bwn-gy c-f SAND, little f Gravel, trace Silt				\setminus		
1	- 28	18	S-15	24		W	SP	(Class 3b)				/		-
2		13												F
3	-	-	-											-
4	_	-	-							••••				_
5														
		13 4									////			
6_	- 10	6	S-16	0				No Recovery						F
7		13 16							<u>^</u> ^	 				F
8	- 35	18	S-17	22		w	SW	Bwn-gy c-f SAND, little f Gravel, trace Silt		•••				F
9		17 8						(Class 3a)		••••			\searrow	
														<u> </u>
0		50							<mark>* • *</mark> •			• • • • • • • • • • • • • • • • • • • •		
1	- 75	32 43	S-18	10		w	SM	Bwn f SAND, little Silt (Class 3a)						75
2		46												F
3	-	-												
4	-	-												/†
5			0.01	otior				Oliont boood on a providencial strategy of all						84
.ivi/	ARKS:	Sunac	e elev	auun	was pr	ovide	a by the	Client, based on a previously performed site sur	vey, NA	v D I	1300.			

Image: Instruction instructin instructin instruction instruction instruction instruction in							PROJECT No. 10285.01	B	OR	INC	3 N	0. F	3-18	BM		
CLUENT: TRC Conversion Initialization Conversion	Τρ	ct		nì	íC		PROJECT: BBJ - M					0				
CLIMIN: INC • <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>LOCATION: Manhattan, NY</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>							LOCATION: Manhattan, NY									
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1 z <thz< th=""> <thz< th=""> <thz< th=""></thz<></thz<></thz<>	FT.) !/FT.					NSS.	DESCRIPTION		\$∠\$				TER ENT % 🔊 — -			LION
1 z <thz< th=""> <thz< th=""> <thz< th=""></thz<></thz<></thz<>	R MIN	ETRA SISTA 3L/6 II MPLE MBER			STURI	IL CL/			10L0	1	0 2	1		05	i0	EVA
80 99 8-19 0 No recovery 81 -	N O DE	SAI (E	U.	RQI (%)	MOIS	SO	MATERIAL		É	•		TRATIO	N (BLOW		60	
B I <thi< th=""> <thi< th=""> <thi< th=""> <thi< th=""></thi<></thi<></thi<></thi<>	50+	I S-19					No recovery									
88 -		30/0														-
88 - C.2 60.00 93 Gy. moderately weathered, slightly fractured, or grained, hard SCHIST, fractures 60 degrees from horizontal (Class 1a) - </td <td></td> <td>-</td>																-
0 -		_							\gg							-
90 -		- C-2	60/60	93			Gy, moderately weathered, slightly fractured c-f grained, hard SCHIST; fractures 60	I,	\mathbb{X}							-
92 .	90 _	-					degrees from horizontal (Class 1a)		\otimes							89.0
90	91_	-														-
94 -	92							¥								-
96 96 96 96 96 96 96 96 96 97 96 97 <td< td=""><td>93 _</td><td>_</td><td></td><td></td><td></td><td></td><td>End of Boring at 92'</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></td<>	93 _	_					End of Boring at 92'									-
98 .	94 _	-														-
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										<u></u>	<u></u>	<u> </u>	<u></u>	. <u></u>	<u></u>	<u>1</u> 14.0
REMARKS: Surface elevation was provided by the Client, based on a previously performed site survey, NAVD 1988.	REMARKS:	Surface elev	ation v	was pr	ovideo	d by the	Client, based on a previously performed site sur	vey, N	AVD	1988.						

			_				ъ.	PROJECT N	o. 10285	5.01		B	OR	INC	G N	o. I	B-19	M	
	6	Ċ	7		٦Ĭ	C		PROJECT:	BBJ -	М			-		-	-	-		
								LOCATION:	Manh	attan, NY						Sł	HEETN	lo. 1 of 5	5
CLIE	NT: T	RC							д и	DATE	TIME	DE	PTH	INSF	PECTO	R: E	Barry O	uimet	
CON	TRACT	OR: Aa	rco Er	nvironi	mental	Serv	ice Inc		GROUND WATER					DRIL	LER:	J	ulio Ga	larza	
ETHC		DVANCIN	IG BOR	RING	DIA.		DE	PTH	80 80 8					SUR	FACE I	ELEVA	TION:	15.	9
POW	ER AU	GER:						то	MON. W	VELL	X YES		NO	DAT	UM:		See Re	marks	
ROT.	DRILL				3 7/8"		0	TO 115'	SCREE	N DEPTH:	20 TO	30	•	DAT	E STAF	RT:	6/12/	21	
CASI	NG:				4"		0	to 85'	WEATH	IER: Overc	ast TEMP	: 60 °	'F	DAT	E FINIS	SH:	6/13/	21	
DIAM	10ND C	ORE:			2"		115	TO 120'	DEPTH	TO ROCK:	110'			UNC			/IPRESS. NS/FT)	STRENGT	н
Geop	orobe G	P050 with	Automa	atic Han	nmer				*CHANG	GES IN STRAT	A ARE INFERRE	ED				2	3 4	4 5	
_	L.	Zш		SAM	PLES								*_		I STIC IT %	W/	H ATER FENT %	LIQUIE LIMIT %	
(FT.	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	шк	REC	OV.	RE	UNIFIED SOIL CLASS.		DES	SCRIPTIO	N		LITHOLOGY*	>	← — -		∞	_ <u> </u>	
DEPTH (FT.)	IR MI	NETRATI(ESISTANC (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	Q ()	MOISTURE	UNIFIED			OF			보	1	0 2	1	30 4	0 50	
B	z	RE)	SA NU	(IN	RQD (%)	MOI	so		M	ATERIAL			Ë	•		TRATIC	NDARD N (BLOV 30 4	/S/FT.) 0 50	Ц
\neg				_									P 4 4				30 4	0 50	
1	-	-	-					6" Concret Advanced		clean stone	to 2'								F
2								, avancea	anough	olean otonie	10 2		\bigotimes						-
3	- 30	6 16	S-1	16		М	GM	Bwn c-f G	RAVEL,	and c-f Sand	d, little Silt wi	th	\bigotimes						
	50	14 9	0-1	10		IVI	Givi	brick and o	concrete	particles (F	ILL) (Class 7)	\bigotimes				T		
4	_	19																	F
5	- 33	24 9	S-2	12		М	GM	Gy-bwn c- (FILL) (Cla		EL, some c-f	Sand, little S	Silt	\bigotimes						10.9
6	_	10 17								l como o f	Sand, trace	Cilt	\bigotimes						75
7	75+	75/4	S-3	6		М	GP	(FILL) (Cla		L, Some C-I	Sanu, liace	Siit							Ĩ
8																			
		8						Bwn-gy-rd	c-f GRA	VEL, some	c-f Sand, trad	ce	\bigotimes						F
9	- 11	3 8	S-4	14		W	GP			brick fragm			\bigotimes						-
10		16 14											\bigotimes						5.9
11	- 30	15	S-5	8		w	GP		Same, v	with brick fra	gments (FILL	_)	\bigotimes				•		Ļ
12		15 7						(Class 7)					\bigotimes						
		3 6											\bigotimes			ſ			Γ
13	- 12	6	S-6	0				No recove	ry										-
14		9 10																	F
15	- 26	13	S-7	8		w	GP	Bwn c-f Gl (FILL) (Cla	RAVEL,	some c-f Sa	nd, trace Silt		\bigotimes						0.9
16	_	13 10							1557)				\bigotimes						
17		3 16						Bwn c-f G	RAVEL	some c-f Sa	nd, trace Silt		\bigotimes				$\left \right\rangle$		
	- 37	21	S-8	16		W	GP				LL) (Class 7)								F
18	_	24 12											\bigotimes						-
19	- 27	13 14	S-9	16		W	SP			d c-f Gravel, L) (Class 7)	trace Silt wit	h	\bigotimes			Þ			F
20		16								_, (0.000 /)			\bigotimes						4.1
21	- 17	5 7	S-10	5		W	SP		ND, trace	e f Gravel, tra	ace Silt (FILL	_)	\bigotimes			ľ			
	17	10 12	0-10	5		vv	57	(Člass 7)			•		\bigotimes						Γ
22		10											\bigotimes						F
23	- 16	11 5	S-11	12		W	SM	Bwn-gy c- Silt (FILL)			el, little Clay	ey	\bigotimes		🔶				F
24		4								,			\bigotimes		/				F
25	_	4 5											\bigotimes						

								PROJECT: BBJ - M		RING			/		
	E	C	L(LOCATION: Manhattan, NY							
											FINED CON		NO. 3 OF		
	NT: T I		_									NS/FT)	STRENC		
TNC	RACT	0r: Aa	rco Er			l Serv	rice Inc			1	+	3 4	4 5		Į
	Ę.	U E O		SAM			SS.	DESCRIPTION	<u>ج</u>	PLASTIC LIMIT %	C WA CONT	TER ENT %	LIQU	Г%	
	MIN.	TRAT STAN 6 IN.	ШЧ	REC		URE	CLA:	OF		×	20 3	⊗——– 30 4	2 0 50		
	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	80D (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*						ī
	Ζ		<i>°</i> , Z	Щ	ш.	Σ				10	ENETRATIO	N (BLOW 30 4)	
6	35	9 26	S-20	20		w	GP	Bwn c-f GRAVEL, some c-f Sand, trace Silt							L
7	00	9 6	0-20	20		~~		(Class 2a)							1
									•			1			-
8_		-												-	-
9_		-	-								X				-
i0										.					44.
1	8	6 5	S-21	8		w	GP	Bwn c-f GRAVEL, some c-f Sand, trace Silt							-
2	0	3	0-21					(Class 6)							1
															-
3_		-												-	-
4		-												ŀ	-
5										<u> </u>					49
6	16	9 7	S-22	8		w	SP	Bwn c-m SAND, some f Gravel, trace Silt							∟
7	10	9 10	0-22			~~		(Class 3b)			T I				1
															-
8_		-								· ·				-	-
i9 _		-													-
'o L		7								·					54.
'1	15	8	S-23	10		w	SP	Bwn c-f SAND, some c-f Gravel, trace Silt							-
2	10	7 9	0 20				0.	(Class 3b)			T				1
															-
3_		-												-	-
4		-	-								V				-
5		9								:					59.
6	22	9	S-24	22		w	SP	Bwn c-f SAND, some f Gravel, trace Silt							-
7		13 12						(Class 3b)							L
										:					
8_		-													-
9_		-	-							·					-
0		7								·] [·]					64
1	19	10	S-25	20		w	SP-SM	Gy-or-bwn c-f SAND, some f Gravel, trace Si	lt		4				-
2		9 9						Bottom 2" Dk gy f SAND, little Silt (Class 3b)			/				L
											/				
3_		-									/			-	-
4		-								: /					-
5_		-								Ŀ					69
MA	ARKS:	Surfac	e elev	ation v	vas pr	ovide	d by the	Client, based on a previously performed site surv	ey, NAVI	J 1988.					

	E	Ċ		Л		C		LOCATION: Manhattan, NY							
							-	LOCATION. Wannattan, NT		UNCO					
	NT: T		_							01100		NS/FT)	OTTEN		
		OR: Aa	rco Er		menta PLES	Serv				1	2	3 4	5		
Ĥ	/FT.	NCE (.		REC	-		SS.	DESCRIPTION	G⊀*	PLAST LIMIT	"IC W/ % CON"	ATER FENT %	Liqi Limi 		
DEPTH (FT.)	MIN	TRA STAN /6 IN	PLE BER			IURE	UNIFIED SOIL CLASS.	OF		10	20	30 4			
DEP	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	SOIL	MATERIAL	гітногод У *	•	STAI		(S/FT)		i
	2	6		Щ		2				10 17		30 4)	
86	· 10	6	S-26	16		W	sw	Dk bwn c-f SAND, trace f Gravel, trace Silt							
87	-	4						(Class 3b)							
											\setminus				_
88_		-									V				F
89_		-													F
90								Resistance at 90' Rotary advanced to 97'							74
91		-													F
92		-										$\left \right $			Ļ
93		_										$ \setminus $			L
94															
		-											\setminus		
95		-							••••••						79
96		-													-
97		10												\backslash	F
98	55	20 35	S-27	22		W	SW-SM	Lgt bwn-gy c-f SAND, trace Silt, trace f Grave (Possible decomposed bedrock) (Class 3a)							Ļ
99		48						(Possible decomposed bedrock) (Class Sa)							
100															84
101															
		-													F
102		-													F
103		-													F
104		-													-
105		-													89
106		_						Drilled through weathered bedrock							Ļ
107															L
108															
		-													F
109		-													F
110		-											•••••		94
111		-													ŀ
112		-													ŀ
113		-													Ļ
114															L
115		-													99
	ARKS:	Surfac		ation		ovidor	l l by the	Client, based on a previously performed site surve	<u>⊌•⊍•</u> av NAVD	1988	·····				F-99

								PROJECT No. 10285.01	BOF		G N	0 F	2_10	м		
17		Ċ			ni			PROJECT: BBJ - M				0. L	J-10	/141		
								LOCATION: Manhattan, NY				S⊦	IEET N	lo. 5 c	of 5	
CLIE	INT: T	RC								UN			IPRESS. IS/FT)	STREN	GTH	
CON	ITRACT	OR: Aa	rco Ei	nviron	menta	l Serv	ice Inc				1 :	2	3 4	1 !	5	(FT.)
l î:	Ŀ.	U E O			PLES		SS.	DESCRIPTION	*	LIN	STIC	WA CONT	TER ENT %	LIQ LIM		ELEVATION (FT.)
DEPTH (FT.)	NIN./	TRAT STAN /6 IN.	ole Ber		COV.	URE	CLAS	OF			——— 10 2	(0 3	8——– 30 4		∆ 0	EVAT
DEP.	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*	•	PENE		idard N (Blow	' /S/FT.)		
	-			<u> </u>		2				<u> </u>			30 4		0	
116	-	-	-													-
117	-	-	-					Gy, moderately weathered, slightly to	. 🕅							-
118	_	-	C-1	60/60	60			moderately fractured, c-f grained, moderately hard, SCHIST, fractures 45 and 60 degrees	y 🔣							_
119	_	_						from horizontal (Class 1b)								
120																104.1
121								End of Boring at 120'								
122								-								[
		-														Γ
123		-														-
124		-														-
125	-	-	-												• • • • • • •	109.1
126	-	-	-													-
127	-	-	-													-
128	-	-	-													-
129	-	-														-
130	-	-	-													114.1
131	_	-	-													Ļ
132	_	-	-													_
133		-	-													
134	_	_														
135																119.1
136																
137		-														-
SDT 8		-														-
0. 138 Ng		-														-
0100 139	-	-														-
	-	-														124.1
141 N	-															F
¥∐ 142	F	-														F
143	-															F
144	F	-														F
00 145				<u> </u>						<u> </u>	<u></u>					129.1
BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG. GDT 8/24/21 101 103	IARKS:	Surfac	e elev	ation \	was pr	ovideo	by the	Client, based on a previously performed site sur	vey, NAVI	1988 ט	-					
BQ																

								PROJECT:	BBJ -	м				ING	UP	ים .	-2211	78	
	E	C				C		LOCATION:	Manh	attan, NY					Г				
								LOCATION.	1	1	TINAE		DTU				ET No.		
						0			GROUND WATER	DATE	TIME		PTH				k Rusk		
		DR: Aa		-	DIA.	Serv		EPTH	SROUNE					DRILLE		Jos	-	4.0	
			IG BOR	ang	DIA.	_		TO	MON. W		 □ YES			DATUN				1.0	
		DER.			3 7/8	-		TO 80'			TO			DATON			e Rema //15/21	arks	
					4"		-	TO 80'	WEATH		10 TEM		•	DATE			//15/21		
		ORE.				+	•	TO 50		TO ROCK:	82'			UNCON	FINED	COMPR	ESS. STI	RENGTH	
		with Cathe	ead Do	nut Han	nmer							RED		1	•	(TONS/F	FT)	5	Í
				SAM									*	PLASTI		WATE			
É.	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)		REC	OV.	ш	ASS.		DES	SCRIPTI	NC		ГITHOLOGY*	LIMIT		CONTEN	т % — — — —	LIMIT % - —∆	
DEPTH (FT.)	RMIN	ETR/ SIST/	SAMPLE NUMBER	Ξ,		MOISTURE	UNIFIED SOIL CLASS.			OF			PL6	10	20	30	40	50	
	io N	PEN RES (B	SAN	LENGTH (IN.)	RQD (%)	MOIS	N IOS		Μ	ATERIA	_		<u></u>		ENETR		BLOWS/F		Ē
														10	20	30	40	50	
1		-											\bigotimes						+
2		-																	
3								Hand clea	red to 5'	5"			\bigotimes						
		-						(No soil de	escriptior	n provided)	1		\bigotimes						F
4		-																	F
5_		-											\bigotimes						4.0
6		9											\bigotimes						-
7	9	4	S-1	6		м	SM		AND, sor	ne Silt, littl	e f Gravel (Fl	LL)	\bigotimes						
8	-	5 6						(Class 7)											
		9 14						Top 6" Sa	me (FILL) (Class 7))		XX						
9- 2	28	14	S-2	10		М	SM	Bottom 4"	Bwn-blk	f SAND, s	ome Silt, little	f				۲			F
10		16 12						topsoil) (C	lass 3b)		sible buried								9.0
11	41	8 _ 33 _	S-3	22		W	SM	Top 12" Sa Bottom 10			, some Silt, li	tle f							+
12		32						Gravel (ro	ots) (Cla	ss 3a)	, come ont, n								Ļ
13	73	50 41 _	S-4	14		w	SM		AND, little	e Silt, little	f Gravel (Cla	ss							73
14	/3	32 37	0-4	'		**		3a)											
		10																	
15_ ;	38	17 _ 21	S-5	10		W	SM	Bwn c-f S/	AND, little	e Silt (Clas	s 3a)						••••		14.(
16		18																	+
17_		-																	+
18_		-																	
19																			
		-																	[
20		12															••••		19.0
21_ ;	38	18 20	S-6	12		W	SM	Bwn c-f S/	AND, little	e Silt (Clas	s 3a)						∕⊨		-
22		21																	F
23		_														/	/		Ļ
24																X			
		-																	Ē .
25 _ REMAR	KS.	Surfac	e elev	ation v	was pro	vide	 d hv the	Client hase	d on a pre	eviously pe	rformed site s	INAV	 NA\/ח	1988		/			24.0
		Sunat	0 0101	auonv	rus pro	, TUC	a by the	5 Shorn, Dase		cricaciy pe		u voy,		1000.					

		C						PROJECT:	BBJ - M									
								LOCATION:	Manhattan	, NY				S⊦	IEET N	lo. 2 o	of 4	
ENT:	TRO	;										UN			IPRESS. IS/FT)	STREN	GTH	
NTR	ACTOR	R: Aa	rco Er	viron	menta	l Serv	ice Inc						1	2	3 4	4 5	5	
	· z			SAM	PLES						*	PL	ASTIC AIT %	WA		LIQ	μid	
	ATIC	ANCI IN.)	шК	REC		ЗE	ASS		DESCR) Ö		×	- — —(ENT % 8— — -		Δ	
	N OR MIN./FT	RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	TH (Q ()	MOISTURE	UNIFIED SOIL CLASS.		0		LITHOLOGY*		10 2	1		0 5	0	-
			ר S⊿	LENGTH (IN.)	RQD (%)	MOI	sc		MATE	RIAL		•		TRATIO	IDARD N (BLOW 30 4	/S/FT.) 0 5	0	
		9										• :		7				
- 2	23	12 _ 11	S-7	8		W	SM	Bwn f SANE	0, some Silt	(Class 3b)								F
-		11																╞
-		-																F
,		_													$\left \right $			Ļ
																		29
		10 20	0.0	10														
	39	19 15	S-8	10		W	SM	Bwn c-f SAI	שע, some Si									ſ
		10																F
F		-														$ \rangle $		F
-		-																╞
5	0+	50/4	S-9	1		W	SM	GV f SAND	some Silt li	ttle f Gravel (Class 3	a))		34
			00					Gy I G/ (ND,	Some Ont, in		a)							Ļ
		_																
		_																-
-		-																F
'		17										· · · · · ·						39
- 2	29	15 _ 14	S-10	6		W	SM	Bwn c-f SAl 3b)	ND, little Silt	little f Gravel (Class								-
		15						,										╞
•		_																Ļ
		_													$ \rangle$			L
																		44
		35 19						Bwn c-f SAI	ND, some f (Gravel, little Silt (Clas	s							
	36	17 16	S-11	6		W	SM	3a)	,									Γ
' <u>-</u>		10				L												F
-		-																╞
'-		-																╞
		14										· · · · · · · · · · · · · · · · · · ·						-49
- 3	30	16	S-12	8		w	SP		ND, some f (Gravel, trace Silt					↓			Ļ
		14 16						(Class 3b)										L
3			_															
		-																Ē
-		-																F
		_						Client hard '		sly performed site sur		<u> </u>	<u>. </u>		J			54

	ec			nì			PROJECT: BBJ - M		RING I			
	GU						LOCATION: Manhattan, NY			SHEET I	No. 3 of 4	
ENT:	TRC									INED COMPRESS		
	ACTOR:	arco E	nviron	menta	l Serv	vice Inc				(TONS/FT)	4 E) %
				PLES				*	PLASTIC	WATER	4 5 LIQUID	,
			REC	COV.	щ	ED ASS.	DESCRIPTION	∑	LIMIT %	CONTENT % 	LIMIT % — — —∆	6
	PENETRATION RESISTANCE	SAMPLE NUMBER	Ħ,	0 ~	MOISTURE	UNIFIED SOIL CLASS.	OF	LITHOLOGY*	10		10 50	_
	N PEN	SAI	LENGTH (IN.)	RQD (%)	MOI	sol	MATERIAL	<u></u>		STANDARD		
	13								10 · :	20 30 4	0 50	
i- 3	B1 17 14	- S-13	6		w	SM	Bwn-blk c-f SAND, little f Gravel, little Silt (Class 3a)					F
·	15											F
-		_										-
		_										
	25 21						Bwn c-f SAND, some c-f Gravel, little Silt					
-	20	- S-14	10		W	SM	(Class 3a)					F
	22	-										F
-		-										F
-		-										-
	16	_										64
i - 2	7 15	- S-15	8		w	SM	Bwn c-f SAND, little f Gravel, little Silt (Class	3				
	12 13						3b)					
		1										F
'-		-										F
' <u>-</u>	12	_							·: ·:			
- 3	36 19 17	- S-16	10		w	SP	Bwn c-f SAND, some f Gravel, trace Silt (Class 3a)					-
	13											-
-		_										-
		_										_
	0+ 28 50/3	S-17	8		w	SM	Bwn-rd c-f SAND, little Silt (Class 3a)					
												Γ
'-		1										F
-		-										F
-		-										F
		S-18	0				No Recovery					
_		-										F
2							Gy, moderately weathered, moderately					
3		C-1	26/60	32			fractured, c grained, moderately hard SCHIS	ят 🔣				
]					/ GNEISS (Člass 1d)					Γ
-		1										F.
	(0) Surf		-	L			Client, based on a previously performed site sur		<u>אן</u> 1988 סי		<u> </u>	

								PROJECT No. 10285.01	BC	Þ		2 N	0. E	2_22	м		
17		Ċ						PROJECT: BBJ - M		'n		J IN	U. L)-22	- 1 4 1		
								LOCATION: Manhattan, NY					SH	EET N	lo. 4 c	of 4	
CLIE	NT: T	RC									UNC		ED COM (TON	PRESS. S/FT)	STREN	GTH	
CON	ITRACT	0r: Aa	rco Er	nviron	menta	l Serv	ice Inc							3 4		ō	ET.)
	Ŀ.	NВ		1	PLES		S.	DESCRIPTION	*	-	PLA: LIM	STIC	WA CONT	TER ENT %	LIQ LIM	UID T %	ELEVATION (FT.)
DEPTH (FT.)	MIN./F	TATI TAN(6 IN.)	ШШ	REC		URE	FIED	DESCRIPTION OF			>	\leftarrow	0	9——- 0 4		Δ	VATI
DEPT	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL			•		STAN	DARD			
	2		07 Z	Щ [°]	ш	Δ							TRATIOI	0 4		0	
86	L	-	-							\otimes							_
87	L	_	C-2	36/48	83			Gy slightly weathered, slightly fractured, c									
88			0-2	00/40	00			grained, hard SCHIST (Class 1b)									
	-	-								$\langle \rangle$							-
89								End of Boring at 89'									-
90	-	-	-					End of Bonny at 69									89.0
91	-	-	-														-
92	-	-	-														-
93	-	-	-														-
94	-	-	-														-
95	_	-	-														94.0
96	L	-															
97																	
98																	
		-															
99		-	-														-
100	-	-	-														99.0
101	-	-	-														-
102	-	-	-														-
103	-	-	-														-
104	-	-	-														-
105	_	-	-														104.0
- 106	L	-															Ļ
8/24/2	L	_															L
LOD: 108																	
0 109		-															
TONIC		-															400.0
		-	-														109.0
40 111	-	-	-														F
112 112	-	-	-														F
113	_	-	-														F
114	_	-	-														F
BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21 807 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 111		L									<u></u>						114.0
	IARKS:	Surfac	e elev	ation v	vas pr	ovideo	l by the	Client, based on a previously performed site sur	vey, NA	VD	1988.						
BOR																	

		Ċ						LOCATION:	Manh	attan, NY							SHEET	⁻ No. 1 of	4
CLIE	NT: T	RC								DATE		TIME	DE	PTH	INSPEC				Barry Oui
CON	TRACT	OR: Aa	rco Er	viron	mental	Serv	vice Inc		GROUND	6/2/21		9:42 AM	2	.4'	DRILLE	R:		Galarza	
METH	DD OF		IG BOR	RING	DIA.		DE	PTH	₿ Ŝ						SURFA	CE ELE	VATION:	-3.	.0
POW	'ER AU	GER:					-	то	MON. W	/ELL		YES	X	NO	DATUM	:	See F	Remarks	
ROT	DRILL	:			2 7/8		0	to 98'	SCREE	N DEPTH:	-	то		-	DATE S	START:	3/9/	/20	
CASI	NG:				4" & 3		0	to 85'	WEATH	ER: Clea	ar	TEMP:	60	° F	DATE F	INISH:	6/2	/21	
DIAN	IOND C	ORE:			2"		98	TO 103'	DEPTH	TO ROCK:	9	8'					COMPRES TONS/FT)	S. STRENG	
Porta	ble Rig	with Cath	ead Do	nut Han	nmer	·			*CHANC	GES IN STRA	ATA	ARE INFERRE	D		1	2	3	4 5	
(<u>н</u>	Sш		SAM	PLES		, ci				~ `			*	PLASTI LIMIT 9	c c	WATER ONTENT %	LIQU 6 LIMIT	
H (FT	IIN./F	RATIC FANC	щК	REC	OV.	RE	FIED		DES		ON	1		00	×- 10	 		- <u>-</u> ∆ 40 50	
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.		Ν.4	OF ATERIA				LITHOLOGY*	I				
ā	z	E B	S N⊓	EN LE	R(%	МО	N N		IVI		L				 PI 10 	ENETRA 20	TION (BLC 30	, DWS/FT.) 40 50	
1	-	-	-					15" Concre	ete slab										-
2	-	-	-					Hand clear	red to 6'				¥						-
3	-	-	-								、			\bigotimes					_
4	_	_						(No soil de	escription	n provided)			\bigotimes					
F														\bigotimes					
5	-	-												\bigotimes					,
6		13												\bigotimes					-
7	- 4	3	S-1	8		W	GP	Bwn-gy c-1 (FILL) (Cla	f GRAVE	L, little m-	-f Sa	and, trace S	ilt	\bigotimes					-
8	_	7													X				_
9	- 20	5 10	S-2	16		W	SM	Bwn c-f SA	AND, little	e f Gravel,	, litt	le Silt (Class	5						
10	20	10 9	5-2			vv	Sivi	3b)											13.0
		12																	
11	- 41	18 23	S-3	14		W	SP	Bwn-gy m-	-f SAND,	trace Silt	(Cl	ass 3a)						•	-
12		22																	-
13	-	-																	_
14	_																		_
15																			18.0
	-	-																1	
16		15																	F
17	- 36	17 19	S-4	12		W	SP	Bwn c-f SA 3a)	AND, trac	ce t Grave	el, tr	ace Silt (Cla	SS				🖊		F
18		16						,											F
19	_	-															X		Ļ
20																			23.0
		6 10														/	/		
21	- 22	12	S-5	14		W	SP-SM	Bwn c-f SA	AND, trac	ce Silt (Cla	ass	3b)				Í			F
22	_	11																	F
23	-	-																	F
24	_	-																	Ļ
25																			28.0
	- ARKS:	Surfac		ation	vas nro	wide	d by the	Client base	d on a nr	aviouely ne	orfor	med site sur			1988			<u></u>	<u> </u>

								PROJECT: BBJ - M	DUr	RING No	D-24	+1V1	
								-		Г			
								LOCATION: Manhattan, NY		UNCONFINED	SHEET I		
	NT: T										TONS/FT)	SIRENGI	
CON	TRACT	OR: Aa				l Serv	ice Inc			1 2	3	4 5 	
Ê	Ĩ.	N E			PLES		si si	DESCRIPTION	*		WATER ONTENT %	LIQUIE LIMIT %) %
DEPTH (FT.)	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	с Е К	REC		MOISTURE	UNIFIED SOIL CLASS	OF	LITHOLOGY*	× 10 20	- <u>-</u> ⊗ 30 4	— — <u>—</u> ∆ ŀ0 50) %
DEP	I OR	ENE RESIS	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	OIST		MATERIAL	HE				
	2		~ Z	Щ С	Ľ	Σ			<u> </u>	10 20	TION (BLOV 30 4	VS/F1.) IO 50	
26	- 18	6 8	S-6	12		w	SP-SM	Gy-bwn c-f SAND, trace Silt, trace f Gravel					
27	10	10 9	00	12		••		(Člass 3b)					
													Ē
28	-	-								. \ . \	\setminus		-
29	-										\backslash		-
30	_	22								<u> </u>			33
31	- 34	16	S-7	10		w	SM	Gy-bwn m-f SAND, some f Gravel, little Silt					Ļ
32	στ	18 17	51			••		(Class 2a)					
												$\left \right $	F
33	-	-											F
34	-									·			
35		100								•. •			
36	- 67	40	S-8	3		w	SP	Bwn-gy c-f SAND, and c-f Gravel, trace Silt (Class 3a)		· ·			67
37		27 20						(Class Sa)		· ·			
38										·			
	-	-								·.			
39	-	-								•			-
40	_	36											43
41	- 16	10 6	S-9	20		W	SP	Bwn-gy c-m SAND, trace f Gravel, trace Silt (Class 3b)					-
42	_	8											-
43	_	_											
44													
	-	-											Ē
45	-	-								`•••••••••••••••••••••••••••••••••••••			48
46	-	-											F
47	_	-								.			F
48	_	-											Ļ
49	_												
50													[-53
		4								·	••••		53
51	- 11	2 9	S-10	24		W	SP	Same (Class 3b)					F
52		9											F
53	_	-											F
54	_	-											L
55										: \			58
_	- ARKS:	Surfac	e elev	ation \	was pro	ovide	d by the	Client, based on a previously performed site sur	vey, NAVE) 1988.	<u></u>	1	

	C	Ċ	LL)		U		LOCATION: Manhattan, NY									
								LOCATION. Mannallan, NT						HEET N			1
	NT: T		_								ON	•		NS/FT)		GIII	
CON		0r: Aa	rco Er			Serv	ice Inc					1	2	3 4	4 E		!
í.	Ĩ.	CE NO		-	PLES		ss.	DESCRIPTION	*	, ,		STIC	W/ CON	ATER FENT %	LIQ LIMI	IT %	
DEPTH (FT.)	MIN	FRAT STAN 6 IN	ШЧ		COV.	URE	UNIFIED DIL CLAS	OF		Ď		ж — - 10	 20	⊗——– 30 4		⊡ 10	
DEP	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS	MATERIAL			•			NDARD N (BLOW		I	
	2		~ 2	Щ -	Ľ	Σ								30 4		0	_
56	- 21	16 10	S-11	24		w	SP	Bwn-gy c-f SAND, little c-f Gravel, trace Silt					L				L
57	2.	11 14	0.11					(Class 3b)					T				
	_																F
58	-	-															F
59	-	-															F
60		7															63
61	- 26	11	S-12	18		W	SP	Bwn-gy c-f SAND, trace Silt (Class 3b)									Ļ
62		15 20						(), · · · · · · · · · · · · · · · · · · ·					Ī				
63																	
	-	-															F
64	-	-															F
65		12									• • • • • • •		. .				68
66	- 22	11 _ 11	S-13	24		W	SP	Bwn-gy c-f SAND, trace f Gravel, trace Silt (Class 3b)									F
67	-	9															Ļ
68																	
	-	-						Boulder & Cobbles 68' to 70'	00	0			/				[
69	-	-							°o	0							F
70		10						Gy c-f SAND, little Silt (Class 3b)	0				.				73
71	- 15	11 4	S-14	1		W	SM										F
72		3						Running sands to 75'									F
73	-	-											$\left \right $				Ļ
74	_	_											$ \setminus$				
75																	78.
		17 13															['0.
76.	- 35	22	S-15	0				No Recovery									F
77		10													\setminus		F
78	-	-															F
79	-	-														\backslash	ŀ
80		-						Top 3" - Bwn f SAND, and Silt with mica									83
81	60+	60/5	S-16	5		W	SM	Bottom 2" - Gy c-f SAND, with c Gravel fragments in spoot tip (Class 3a)									
		-															Ī
82	-	-															F
83	-	-															F
84	-	-															F
85	-	_						Client, based on a previously performed site surv									88

	E	C				U		LOCATION: Manhattan, NY						1- 4-	5.4	
	NT: T									UN	CONFINE		EET N			
		OR: Aa	rco Fr	viron	mental	Serv	ice Inc				•		S/FT)		-	Í
				SAMI					*	PLA		Ī	3 4 H H TER		5 	
(FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)				щ	ED ASS.	DESCRIPTION	LITHOLOGY*	LIN	ііт % — — –	CONT	ENT % 9— — -	LĪM	IT %	
DEPTH (FT.)	R MI	ETR/ SIST/ 3L/6 I	SAMPLE NUMBER	۲,		MOISTURE	UNIFIED SOIL CLASS.	OF	10L(10 2 	1	0 4	0 5	0 	
В	o z	RES (FE	SAI	LENGTH (IN.)	RQD (%)	MOIS	Sol L	MATERIAL	Ē	•		TRATIO	DARD N (BLOW 0 4		0	
	2			_					000			.0 .	4	0 3		
86	9	-							000							F
87	-	-							000							F
88	3	-	C-1	16/60				Cobbles	000							-
89	3	_							000							
90	5								000							93.
91									000							
	-	-							000							F
92	-	-							000							F
93	-							Rotary drilled through boulders to 96'	000							F
94	-	-							0000							F
95	-	-							000							98.
96	-	-						Desistant drilling OCI to OCI (passible								-
97	-	_						Resistant drilling 96' to 98' (possible weathered bedrock)								L
98																
99	8															
	6	-						Gy, slightly weathered to fresh, moderately								102
100	- 5	-	C-2	56/60	35			fractured, fine grained, medium hard, SCHIS	r 🕅							103
101	9	-						fractures 0 to 60 degrees with near vertical fracture 98 - 99' (Class 1c)								F
102	12	-														-
103	12															-
104	-	-						End of Boring at 103'								-
105	-	-														108
106	-	-														Ļ
107	-	_														L
108																
109	-	-														[
	-	-														F .
110	-	-														113
111	-	-														+
112	-	-														F
113		-														Ļ
114	-	-														ļ
115																118

	E	C	L			U		LOCATION:	Manh	attan, NY											
								LUCATION.		1								HEET N			
	NT: T								GROUND WATER	DATE		TIME	DEF		-	PECTO		lichael	Bastie	en	
		OR: Aa		-	1	Serv			GROUND	6/5/21	10	0:00 AM	1	0'		LER:		Daybi			
		ADVANCI	NG BOF	RING	DIA.			EPTH	-								ELEVA			7.0	
	ER AU							TO	MON. V		□ YI		X	10	DAT			See Re		;	
	DRILL				3 7/8		-	TO 98'		N DEPTH:		TO		_				6/5/2			
CASI					4"		•	TO 55'	WEATH			TEMP:	80°	F				6/5/2		GTH	
					2"		98	TO 102'		TO ROCK:	98'		_		0.10	•		NS/FT)	0 THEIR		
Geop	robe 78	B22DT wit				mmer			*CHAN	GES IN STRA	TA AR	E INFERRE				1	2	3 4	4 5	1	
Ĥ.	/FT.	PENETRATION RESISTANCE (BL/6 IN.)			PLES COV.		SS.		DES	SCRIPTIC	DN			₹¥	LIM		CON1	ATER TENT %	LIQI LIMI	IT %	
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	-		MOISTURE	UNIFIED SOIL CLASS.			OF				LITHOLOGY*		← — - 0 2	20 :	⊗——– 30 4	40 5	-∆ i0	
DEP	N OR	(BL	SAM	ENGTH (IN.)	RQD (%)	IOIST	SOIL		N	IATERIAL	-			H H H	•			NDARD N (BLOW	NS/FT)		
	2			<u> </u>	_	Σ									1			30 4	40 5	0	<u> </u>
1	_							Hand clea	red to 3'				K	\bigotimes							
2													K	\times							
	-	-						(No soil de	escription	n provided)				\bigotimes							F
3	_	3											k	\bigotimes							F
4	- 4	2.	S-1	8		М	GP	Tn c-f GR/ (Class 7)	AVEL, lit	tle c-f Sand	l, trac	e Silt (FIL	.L) (\times	€						F
5	_	4											k	\bigotimes							_12.0
6	- 4	3 2	- S-2	8		м	GP	Same					k	\bigotimes							
7	- 4	2	3-2	l °		IVI	GF	Same					K	\bigotimes							[
		5				М	GP	2" Same					K	\bigotimes	``						F
8	- 16	9 7	S-3	10		М	GM	8" Bwn-gn	-rd c-f S	AND, some	e c-f G	Gravel, littl	le 🌡	\bigotimes							F
9	_	8						Clayey Šil 6" Blk Pea	t (FILL) (at (possik	(Class 7) ole old tops	oil) (F	III) (Clas	ss k	\times	/	/					ŀ
10	- 5	2	S-4	14		W	Pt	7)		-			Ţ	\bigotimes							_7.0
11	_	5				W	SC	trace c-f G	GLATE Gravel (F	Y SILT, son ILL) (Class	ne m- 7)	-i Sano,	K	\bigotimes							
12		2 5						Bwn-rd c-f	SAND.	some c-f G	ravel	little	K	\bigotimes		\sum					
	- 15	10	- S-5	14		W	SM	Clayey Sil	t (FILL) (Class 7)		,		\bigotimes		▏▝					F
13		12 11											Ŕ	\bigotimes							F
14	- 34	10 24	S-6	6		W	SM	Bwn-rd-bll Clayey Sil	< c-f SAN t (FILL) (ND, and c-f	Grav	el, little	k								-
15	_	12							- () (,			k	\bigotimes				1			_2.0
16	- 16	13 7	- S-7	2		w	GM	Gy-rd c-f (GRAVEL	, some c-f	Sand	, little	K	\bigotimes			ľ				Ļ
17	10	9 10						Clayey Sil	t, organio	c odor (FILI	L) (Cl	ass 7)	K	\bigotimes			\setminus				
		12											Ŕ	\bigotimes				$\begin{pmatrix} & & \\ & & \end{pmatrix}$			Γ
18	- 34	14 20	S-8	2		W	GP	Gy c-f GR	AVEL, lit	ttle c-f Sanc	d (FIL	L) (Class	7)	\bigotimes							F
19		24 3											k	\bigotimes			\square				F
20	- 5	2	S-9	1		w		Old, squar	re-head s	steel bolt (F	ILL)		k	\otimes							3.0
21	_	6								*	-		K	\bigotimes							Ļ
22	- 16	6 6	0.40	4		W				NV and - f	Sec	1 (Class 4)									L
	10	10 15	- S-10	1		vv	CL	own-gy Si		AY, and c-f	Sand	i (Ciass 41	()								[
23		13																			F
24	-		-																		╞
25	- ARKS:	Surfac																			8.0

								PROJECT No. 10285.01	BO	RII	NGI	NO. I	B-2	7M		
	E	C						PROJECT: BBJ - M								
								LOCATION: Manhattan, NY				SI	HEET I	No. 2 c	of 4	
IEN	IT: T	RC										INED CON (TO	/IPRESS. NS/FT)	STREN	GTH	
DNT	RACT	OR: Aa	rco Er	viron	menta	l Serv	vice Inc				1	2	3	4 5	5	Í
	· ·	Z III		SAM	PLES				*		PLASTIC	W	+ ATER TENT %	LIQ	UID	
	N./F	ATIC ANCI		REC	OV.	ЗE	ED ASS	DESCRIPTION	0G		LIMIT %		-⊗— — ·		∆	Ì
	N OR MIN./FT	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	HL (MOISTURE	UNIFIED SOIL CLASS.	OF	LITHOLOGY*	_	10	20	T	0 5	0	
	o z	REN (F	SAI	ENGTH (IN.)	RQD (%)	MOI	so l	MATERIAL	<u></u>			NETRATIC				i
		7									10	20	30 4	0 5	0	
6	19	8 11	S-11	16		W	SM	Bwn c-f SAND, some Clayey Silt (Class 3b)								_
7		14										N N				_
8																
		-	1													-
9_		-														-
0		11								·:						13
1	25	12	S-12	16		w	SM	Bwn m-f SAND, little Clayey Silt (Class 3b)								_
2	20	13 14	0.12									I				
																-
3_		-	-													-
4		-	-							•						_
5_																18
6		13 12						Bwn m-f SAND, little Silt, trace c Gravel (Cla	ass							
	28	16	S-13	16		W	SM	3b)								_
7		19								· '. ·.						-
8_		-	1													_
9_		-	-													_
.0																23.
1		13 14														
1_	30	16	S-14	16		W	SM	Same (Class 3a)								-
2		13												\searrow		-
3_		-	-													_
4		-	-							· :						_
5										· · ·						28
		24 50						Bwn-blk-gn c-f Gravel, and c-f Sand, little Si							Ģ	6
6_	96	46	S-15	16		W	GW-GM	(Class 2a)								
7		28							[0, 0]	ł						-
8_		-	-						lo lo	۲L						_
9		-							ĘΦ	۲ ۲						L
										8						33
		15						Run of CDAVEL little of Sand trace Sile		Ĵ						_ 00.
1_	34	17 17	S-16	6		W	GP	Bwn c-f GRAVEL, little c-f Sand, trace Silty Clay (Class 2a)					•			-
2		17														-
з_		-	-													_
i4 _																
		-														
5L		-	1					Client, based on a previously performed site sur		.			. <u> </u>			38.

	A	C		ור				PROJECT: BBJ - M							
								LOCATION: Manhattan, NY				SHE	ET No	. 3 of 4	
IEN	NT: T I	ર૦								UN		ED COMPI (TONS)		RENGTH	
DNT	RACT	DR: Aa	rco Er	vironi	menta	Serv	ice Inc				1	2 3	4	5	Í
	Ŀ.	Sщ		SAM			, vi	DECODIDITION	*	PL LII	ASTIC MIT %	WATE CONTEI	ER NT %	LIQUID	
-	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	ШЖ	REC		JRE	UNIFIED SOIL CLASS.	DESCRIPTION OF	LITHOLOGY*		\times		40	— —∆ 50	i i
	OR N	ESIS'	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE		MATERIAL	HO HI		-1	STAND	ARD		— í i
	z	Я В	ωΞ	(II)	Ϋ́ς, Ϋ́ς	MO	S					TRATION	(BLOWS/	/FT.) 50	
6	07	53 22	0.47	0		14/	GW-GM	Bwn-blk-gn c-f Gravel, and c-f Sand, little Sil	t PC						
	37	15 20	S-17	6		W	GW-GM	(Class 3a)		d d					Ē
7		20							Š¢				/		-
8_		-								ď		$ \Lambda$			-
9_		-													F
0		21							0	Ţ	,	/			43.
1	16	7	S-18	12		w	SM	Bwn c-f SAND, little c-f Gravel, little Clayey	Silt						Ļ
2		9 12						(Class 3b)							L
3															
		-													F
4		-													F
5		9								· [*] .		.			48.
6_	17	9 8	S-19	14		W	SM	Bwn c-f SAND, little Clayey Silt (Class 3b)							F
7		10													F
8_		-													Ļ
9															
0		-													[-53.
		6						Bwn m-f SAND, trace f Gravel, trace Silt				-			55.
1	12	6	S-20	16		W	SP	(Class 3b)			•				F
2		5													F
3_		-													F
4		-													F
5_												.			58.
6_	13	11 6	S-21	1		w	SM	Bwn c-f SAND, little Clayey Silt, trace f Grav	el						L
7		7 5				••		(Class 3b)			IT				
															Γ
8_		-													F
9_		-													F
0		4								·:		.			63.
1	11	5 6	S-22	14		W	SM	Bwn c-f SAND, little Clayey Silt, trace f Grav (Class 3b)	el		ŧ				F
2		9						(F
3		-													L
4															
		-													[
5	RKS:	Surfac	e elev	ation v	vas nr	ovidor	l hy the	Client, based on a previously performed site sur		⊥`. /D 198	<u> </u> R	p	<u> </u>	<u></u>	

	E	C	LC			IC		LOCATION: Manhattan. NY								
								LOCATION: Manhattan, NY						0. 4 of		
	NT: T		_									(TONS	S/FT)	STRENG		
CON	TRACT	OR: Aa	r		PLES	I Serv						23	4	5		Į
Û.	./FT.	L CE			COV.		D. SS.	DESCRIPTION	* ط		STIC IT % ★ — —	WA1 CONTE	ER ENT %	Liqu Limit		
DEPTH (FT.)	N OR MIN./FT.	ETRA ISTAI	IPLE			TURE	UNIFIED SOIL CLASS	OF	OLC			0 30	- 0 40			: . i
DEP	N OF	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	SOIL	MATERIAL	LITHOLOGY*	•	PENE	STANI RATION	I (BLOW	S/FT.)		i
		14									0 2	0 30) 40) 50		
86	- 23	11 12	S-23	16		W	SM	Bwn c-f SAND, some Clayey Silt, little c-f Gravel (Class 3b)							-	_
87	_	18													-	_
88	-	-											\backslash			-
89	-	_														F
90														\backslash		73
		24 29	_											·····		0
91	- 58	29	S-24	18		W	ML	Bwn SILT, little c-f Sand (Class 5a)							۲	-
92		29													ŀ	-
93	-	-													-	-
94	-	-													-	-
95	-	-	-													78
96	-	-	-												-	_
97	-	-	-												-	-
98	_															-
99	7	_														F
100	7															83
101	5		C-1	60/60	83			Gy, fresh, slightly fractured, fine grained hard SCHIST (Class 1b)								
	- 6.5	-													Ī	-
102	- 8	-													f	-
103	_								X/A						ł	-
104	-	-						End of Boring at 103'							-	-
105	-	-														88
106	-	-													-	-
107	-	-													ŀ	-
108	-	-	-												ŀ	-
109	-	-														_
110	-	-														93
111	_	-														⊢
112	_															L
113	-	-]												Ī	-
	-	-														-
114	-	-													ŀ	-
115	- ARKS:							Client, based on a previously performed site surv								98

1		Ċ				C		PROJECT:	BBJ -	М										
								LOCATION:	Manh	attan, NY							SHE	ET No	o. 1 of 4	4
CLIENT	: TI	RC							D R	DATE		TIME	DE	PTH	INSF	PECTOR	Jac	k Rus	sk	
CONTR	ACTO	OR: Aa	rco Er	viron	mental	Serv	ice Inc		GROUND WATER						DRIL	LER:	Juli	io Gala	arza	
IETHOD	OF A	DVANCIN	IG BOR	RING	DIA.		DE	EPTH	н Ц Ц Ц Ц Ц Ц						SUR	FACE EI	EVATIO	ON:	1.0	
POWER	r aug	GER:						ТО	MON. W	/ELL		YES	X	NO	DAT	UM:	Se	e Ren	narks	
ROT. DF	RILL:				2 7/8	•	0	to 82'	SCREE	N DEPTH:		то			DAT	E STAR	r: 7	7/26/2 [.]	1	
CASING	G:				3"		0	TO 77'	WEATH	ER:		TEMP:	82°	° F	DAT	E FINISH	l: (8/3/21		
DIAMON	ND C	ORE:			2"		82	to 89'	DEPTH	TO ROCK:					UNC		COMPF (TONS/		STRENGT	
Portable	e Rig	with Cath	ead Do	nut Han	nmer				*CHANC	GES IN STRA	ATA A	RE INFERRE	D	_		1 2	3	4	5	
(Ļ.	NШ		SAM	PLES		, cò				~			*	PLA LIM	STIC	WATE CONTEN			
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	щК	REC	OV.	RE	UNIFIED SOIL CLASS.		DES		ON			LITHOLOGY*	>	← — — 0 20	— —⊗- 30		→ <u> </u>	Ē
EPTH	DR M	NETF SIST (BL/6	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED DIL CLAS		N/	OF ATERIAI				PH	1		STAND			— í
	z	E B	אר S/N	E LE	R0 %	МО	X		IVI	AIERIAI	L				•	PENETF	RATION ((BLOWS 40		
								Hand clea	red to 5'											
1_		-						(No soil de		nrovided)	`									-
2_		-							Joonpuol	provided)	,									+
3_		-																		_
4																				
ļ																				
5		8													••••					4.0
6	12	6 6	S-1	12		W	SM	Bwn c-f S/ (Class 3b)		e f Gravel,	little	Silt (roots))			●				-
7		6 11																		-
8_ 2	21	13	S-2	10		w	SM			e f Gravel,	little	Silt (roots)				,			_
9		8 9						(Class 3b)												
		6 5														/				
10	16	11	S-3	24		W	SM	Same (Cla	ass 3b)						••••					9.0
11		20 8															\searrow			F
12	40	19 21	S-4	14		W	SM	Bwn c-f S/ 3a)	AND, little	e f Gravel,	little	Silt (Class	6					\rightarrow		-
13		23						00)												_
14	22	4 8	S-5	24		W	SM	Same (Cla	200 2h)											
	22	14 21	5-5	24		vv	5111	Same (Cia	155 50)											
15		20						1								····· ·				14.
16 - 3	36	17 _ 19	S-6	14		W	SM	Bwn c-f S	AND, little	e Silt (Clas	ss 3a	ı)								F
17		27 12																\setminus		F
18 - 3	39	16	S-7	14		w	SM		AND, little	e Silt, little	f Gr	avel (Class	5							Ļ
19		23 25						3a)											\searrow	
		34 33						Bwn-gy c-	f SAND	little Silt li	ittle f	Gravel								70-19.
	70	37	S-8	14		W	SM	(Class 3a)		intro Ont, II										···· ●-19.
21		39						-												F
22		-																		F
23		-																		Ļ
24																				
		-																		
25 _				L			I			eviously pe				L 1. F.		.		<u> .</u>		24.

	6	Ċ			nĭ			PROJECT: BBJ - M									
								LOCATION: Manhattan, NY					SH	EET N	0.20	f 4	
CLIF	NT: T	RC						· · · · · · · · · · · · · · · · · · ·			UNC		ED COM	PRESS.			
		OR: Aa	rco Fr	viron	mental	Serv	ice Inc					•	(TON:		-	:	
		1			PLES							STIC	2 3 		5 		
(FT.)	J./FT.	PENETRATION RESISTANCE (BL/6 IN.)		REC		ш	ED ASS.	DESCRIPTION		2	PLAS LIMI X			ENT %	Liqi Limi 	T % ∆	
DEPTH (FT.)	N OR MIN./FT	ETRA ISTA	SAMPLE NUMBER			MOISTURE	UNIFIED SOIL CLASS	OF			10) 2	0 31	0 40	50 50	0	: i
B	N OF	RES (B	SAN NUN	LENGTH (IN.)	RQD (%)	NOIS	SOIL	MATERIAL			•	PENET	STANI IRATION		S/FT.)		i
		35				2					10) 2	0 3	0 40	50		
26	98+	48	S-9	12		W	SM	Bwn-gy c-f SAND, little Silt (Class 3a)								9	8
27	_	50/5															
28																	
	-	-						drilled through boulder/cobbles to 30'									F
29	-	-														/	+
30		15								<u>. .</u> . 						<i>.</i>	29
31	- 40	17 23	S-10	10		W	SP	Bwn c-f SAND, some c-f Gravel, trace Silt (Class 3a)						ļ			ŀ
32		23															Ļ
33	_													/			L
34																	
34	-	-															F
35	_	12												/	••••		34.
36	- 28	12 16	S-11	3		W	SM	Bwn c-f SAND, and c-f Gravel, little Silt (Class 3b)	s				┥				F
37	_	17											/				Ļ
38	_	_															L
39													/				
	-	-										/	(-
40		9								· · · · · · · · · · · · · · · · · · ·		/		•••••			39.
41	- 16	8 8	S-12	8		W	SP	Bwn c-f SAND, little f Gravel, trace Silt (Class 3b)				Ý					-
42		9															F
43	-	-															Ļ
44	_	_															Ļ
45																	44.
		8 7															[
46	- 17	10	S-13	10		W	SP	Bwn c-f SAND, trace Silt (Class 3b)				•					F
47	_	12															╞
48	-	-															╞
49	-	-															F
50	_																49
51	_ 17	10 8	C 14	0		14/	CM4	Dwp of SAND little Silt (Close 26)									L
	- 17	9 11	S-14	8		W	SM	Bwn c-f SAND, little Silt (Class 3b)				T					[
52																	F
53	-	-															╞
54	-	-															╞
55	-	_															54
REM	ARKS:	Surfac	e elev	ation v	was pro	ovideo	l by the	Client, based on a previously performed site surve	ey, NA	VD 1	988.						

	6	C						PROJECT: BBJ - M								
								LOCATION: Manhattan, NY					S	HEET	No. 3 d	of 4
ΞN	IT: T I	ર૦									UNC			MPRESS NS/FT)	. STREN	IGTH
١T	RACT	DR: Aa	rco Ei	nviron	menta	l Serv	vice Inc					1	2	3	4	5
		z		SAM	PLES				*		PLA	I STIC IT %	W	H ATER TENT %	LIC	
	N OR MIN./FT	ATIO ANCI	шœ	REC	OV.	ЯE	UNIFIED SOIL CLASS.	DESCRIPTION		3	>	← — ·		- <u>—</u> —		ÌT % -∆
	M	ETR SIST, BL/6	SAMPLE NUMBER), TH	D)	MOISTURE		OF	Ę	<u> </u>	1	0	20		40 5 	50
	o z	PENETRATION RESISTANCE (BL/6 IN.)	SA	LENGTH (IN.)	RQD (%)	MOI	so	MATERIAL	E	5 '	• 1		TRATIC	NDARD DN (BLO\ 30		50
		12		_								Ť	20	<u> </u>	+0 0	
-	15	8 7	S-15	8		w	SP	Bwn c-f SAND, and c-f Gravel, trace Silt (Class 3b)								
		9												$\left \right\rangle$		
		-	-												\searrow	
	00.	36	0.40	_		141	0.4		、 T				•	•••••••••		9
	90+	40 50/4	S-16	8		W	SM	Bwn f SAND, little f Gravel, little Silt (Class 3a	a)							
_		-														
_		-														
		_														
	77 .	7	S-17	2		w	SM	Sama (Class 2a)								7
_	77+	27 50/3	5-17	2		vv	5101	Same (Class 3a)								
_		-														
_		-	-													
		_	-													
	90+	36 40	S-18	0				No Recovery								9
		50/4						No recovery								
-		-														
_		-	-													
_		-	-					drilled through boulder/cobbles to 75'								
													.			
	77	21 35	0 40			w	014	Pup f SAND some Silt (Class 20)								7
	77	42 46	S-19	8			SM	Bwn f SAND, some Silt (Class 3a)								
_		-	-													
_		-	-													
		25											.		.	
	50+	35 50/5	S-20	11		w	SM	Bwn c-f SAND, little Silt (Class 3a)								Ý
	8							Gy, moderately weathered, moderately	\otimes							
-	9	-	C-1	12/24	0			fractured, c grained, hard, GNEISS / SCHIST (Class 1d)								
										$\langle \rangle$						
	9	_							\otimes	K.						
A	RKS:	Surfac	e elev	ation v	vas pr	ovide	d by the	Client, based on a previously performed site surv	ey, NA	VD 1	988.					

								PROJECT No. 10285.01	B			2 N	~ [3-28	2 M		
		Ċ						PROJECT: BBJ - M					0. 1	J-2() I V I		
								LOCATION: Manhattan, NY					SF		lo. 4 c	of 4	
CLIE	INT: T	RC							1		UNC			IPRESS. IS/FT)	STREN	GTH	
CON	ITRACT	OR: Aa	rco Ei	nviron	menta	l Serv	ice Inc					1 :	2	3 4	<u>ب</u>	5	(FT.)
Î	Ŀ.	N E (PLES		S.	DESCRIPTION		*	PLA: LIM	STIC IT %	WA CONT	TER ENT %	LIQ LIM	UID IT %	ELEVATION (FT.)
DEPTH (FT.)	/'NIW	FRAT STAN /6 IN.	PLE BER		COV.	URE	UNIFIED SOIL CLASS.	OF		DLOO	> 1	← — – 0 2	20 3	⊗——- 30 4		⊠ 10	EVAT
DEP.	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	SOIL	MATERIAL		LITHOLOGY*	•	PENE	STAN	' IDARD N (BLOW	(S/FT.)	I	
		ш. —		<u> </u>		2					1			30 4		0	
86	10	-	-					Gy moderately weathered slightly fractured	1 0	>>>							-
87	10 -	-	C-2	60/60	53			Gy, moderately weathered, slightly fractured grained, hard, SCHIST (Class 1b)	, U	X							-
88	11	-	-														_
89	1																_
90		_						End of Boring at 89'									89.0
91																	
92																	
93		-															
		-															-
94		-															-
95	-	-												•••••			94.0
96	-	-															-
97	_	-	-														-
98	-	-															-
99	_	-	-														-
100	_	-	-														99.0
101	-	-	-														-
102	_	-	-														-
103	_	-	-														_
104	_	-	-														-
105	_	-	-														104.0
_ 106		_															_
8/24/2																	
108																	
00 100 NH		-															[
TONIC 110		-	1														- L-109.0
		-												•••••		• • • • • • • •	-109.0
40.111		-															+
		-	-														F
113 MAN 10	-	-	-														F
BORING LOG 10285.01 MANHATTAN.GPJ TECTONIC ENG.GDT 8/24/21 80710 10285.01 101 101 8/24/21 8071 111 111 111 111 111 111 111 111 111 112 111 111 111 111 112 111 111 111 111	-	-	-														+
0 115 9 REM	ARKS:	Surfac	e elev	ation v	was nr	ovider	bv the	Client, based on a previously performed site sur	rvev M		1988						114.0
	., u (110).	Sunat		adon v	ruo pi		. Sy the	Show, based on a providuory performed alle sur	. • Cy, I		1000.						

		C						LOCATION:	Manha	attan, NY			Г	SHEET No. 1 of 4	
CLIENT	. т	RC								DATE	TIME	DEPTH	INSPECTOR:	Barry Ouimet	
		OR: Aa	rco Fr	viron	mental	Serv	ice Inc		GROUND WATER	4/20/21	11:00 AM	12'	DRILLER:	Julio Galarza	
				-	DIA.			EPTH	GR0 WA			12	SURFACE ELE		
POWEF								ТО	MON. W	 /FU Г	YES	X NO	DATUM:	See Remarks	
ROT. D		-			2 7/8'	,		TO 110'	_	N DEPTH:	TO		DATE START:		
CASING					4" & 3		-	TO 50'	WEATH		TEMP:		DATE FINISH:		
DIAMO		ORF [.]			2"		•	TO 90'			82.0'		UNCONFINED	COMPRESS. STRENGTH	
		le Rig with	n Cathe	ad & Do	_	nmer					A ARE INFERRE	D		(TONS/FT) 3 4 5	Í
		-		SAMI									PLASTIC	WATER LIQUID	
ET.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)		REC		ш	SS.		DES	SCRIPTIO	N	LITHOLOGY*		CONTENT % LIMIT % $ $	
DEPTH (FT.)	AIIN S	ETRA ISTA L/6 II	SAMPLE NUMBER	-		MOISTURE	UNIFIED SOIL CLASS.			OF		OLO	10 20	30 40 50	
DEF	N OF	BNB RES (B	SAN	ENGTH (IN.)	RQD (%)	NOIS	Soll		Μ	ATERIAL				STANDARD ATION (BLOWS/FT.)	Ū
		<u> </u>		15		2							10 20	30 40 50	
1_		-													
2															
		-						Previously	hand Au	idered to 6 ()' (encountere	ы 🕅			Γ
3_		-						2 slabs) (n	io soil de	scription ava	ailable)	² 💥			F
4_		-													F
5_		-											}		4.0
6															
-		9 20						6" Gy SILT Sand (FILI	(Class	, some f Gra	avel, little c-f				
7_ ;	34	14	S-1	14		М	SM	Rd-bwn c-	f SAND,	little Silt (Cla	ass 3a)				F
8		18 13											·		F
9_	38	20 18	S-2	20		М	SM	Rd-bwn c-	f SAND,	little Silt (Cla	ass 3a)				F
10		18													9.0
11	40	14 20													
	42	22 23	S-3	0				No Recove	ery				·		
12		23										▼			-
13 _	9	2 - 7	S-4	14		W	SM	Bwn m-f S	AND, so	me Silt, with	silt seams				-
14		5													-
15_	38	11 16 _	S-5	14		W	SM	Bwn-av c-f	f SAND	little Silt (Cla	ass 3a)				14.0
16		22 25													
47		8 18]							ſ
17	46	28	S-6	18		W	SM	Gy-bwn c-	f SAND,	little Silt (Cla	ass 3a)				F
18		25													F
19_		-													+
20													· · ·		19.
21	24	14 16				1.47									
	31	15 15	S-7	14		W	SM	Ka-pwn c-	I SAND,	little Silt (Cla	ass 38)				ſ
22		15		-				1					·		F
23 _		-													+
24 _		-													+
25 _															

	P	C						PROJECT:	BBJ - M							
								LOCATION:	Manhattan, NY				S	HEET N	o. 2 of 4	4
EN	T: T I	ર૦								I				MPRESS. DNS/FT)	STRENGT	н
١T	RACT	DR: Aa	rco Er	vironi	nenta	I Serv	vice Inc					1	2	3 4	5	
		z		SAM	PLES						*	PLASTI LIMIT %	c w	ATER	LIQUIE LIMIT 9	5
	N./FT	ATIO NCE N.)		REC	OV.	Щ	ASS		DESCRIPTION		JG√		6 CON	NTENT % ⊗		%
	N OR MIN./FT.	ETR/ SIST/ 3L/6 I	SAMPLE NUMBER	TH)	0 ~	MOISTURE	UNIFIED SOIL CLASS		OF		LITHOLOGY*	10	20	30 40) 50	
	o z	PENETRATION RESISTANCE (BL/6 IN.)	SAI	ENGTH (IN.)	RQD (%)	MOIS	sol		MATERIAL		ļ Ē		ENETRATI	ANDARD ON (BLOW		
		14		_								10	20	30 4) 50	
┝	39	18 21	S-8	16		w	SM	Rd-bwn c-f Silt seams (SAND, little Silt, trace f C (Class 3a)	Gravel with						+
_		27							(0.000 00)							-
		_														
		-														Ē
		8														·····
_	41	15 26	S-9	20		w	SW-SM	Rd-bwn m-f (Class 3a)	f SAND, trace Silt, trace f	t Gravel						F
		18						. ,								F
_		-						Drillina resis	stance at 32.0' to 35.0'							Ļ
		-														
		15													• • • • • • • • • • •	
-	39	18 _ 21	S-10	14		w	ML	Bwn SILT, s	some f Sand with mica (C	Class 5a)				•		-
		21														-
_		-														Ļ
																L-
		12														····· [
-	37	19 _ 18	S-11	14		W	ML	Same (Clas	ss 5a)							F
		21														-
_		-						Drilling resis	stance at 43.0' Gravel lay	ver at 43 0						-
_		-						to 45'		yor at rolo						
	<u>.</u>	43 28	0.40	10				Bwn-ay c-f (GRAVEL, some c-f Sand	I, little Silt						64
-	64	36 38	S-12	12		W	GM	(Class 2a)								
	50+	45	S-13	6		w	GM	Same (Clas	ss 2a)							/ †
		50/3						(,							\mathbf{h}
											000					\setminus
_	5	-									001					
	14	_	C-1	14/48	0			Cobbles and	d Boulders		000					
	6		51	1 17-10	v						000					
-	15	-									000					F
											000					F
_		-									000					F
_		_														
Ā	RKS:	Surfac	e elev	ation v	vas pi	ovide	d by the	Client, based	on a previously performed	d site survey,	NAVD	1988.		<u></u>	<u>····</u>	<u></u>

								PROJECT No. 10285.01 PROJECT: BBJ - M	BOR	RING N	lo. E	3-31	Μ	
	e	C	[(
	NT: T							LOCATION: Manhattan, NY		UNCONFI			0. 3 of 4	
		OR: Aa	rco Er	viron	menta	l Serv	ice Inc				(TON	IS/FT)	5	
	Ŀ.	Zш		SAM	PLES				*	I PLASTIC LIMIT %	- WA	TER ENT %	LIQUID LIMIT %	
	IIN./F	RATIC FANC 1N.)	щЖ		COV.	IRE	IED	DESCRIPTION OF	LOG	×	(≥ini % ⊗— — — 80 40	- — <u>→</u>	
	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*		STAN	 DARD	- T	
_	z	<u>я</u> к	ωz	Ē	8 ~	W	^o			PENI 10		N (BLOWS 80 40		
56		-	-						000					-
57	1001	100/6	S-14	6		W	SP	Bwn c-f SAND, trace Silt, trace f Gravel (Clas						100
8	100+	-100/6	5-14	0		vv	58	3a)	S .					Ţ
59		-												
50 L														
51	67	30 32	S-15	18		w	SP-SM	Bwn-gy m-f SAND, little c Gravel, trace Silt						67
52		35 30						(Class 3a)						
3		_												
i4 _														
55														
6	444	38 54	0.40	00		14/								114
7	114	60 62	S-16	20		W	SP-SM	Same (Class 3a)						Ţ
8														F
.9 .9		-								•				F
o L		-												
		-								••••••				
'1_ '2		-												1
2		-												F
3_		-												F
'4 _		-												Ē.
5_		2 2									1			····- '
6_	8	6	S-17	8		W	ML	Bwn-gy c-f SAND, some Silt (Class 6)						F
7														F
8_		-												F
9_		-												F
.0		18	S-18A				ML	6" Gy Micaceous SILT (Class 5a)			· · · · · · · · · · · · · · · · · · ·		•••••	····- '
81	33	18 15	S-18B	16		W	SP	Bwn c-f SAND, some f Gravel, trace Silt						F
32		13						(Class 3a)						-
3_	4													F
4	5	-	-											F
5_	ARKS:					ovidov		Client, based on a previously performed site surv		1099	<u>.</u>			

		PROJECT No. 10285.01	BOR	ING No. B-31M
To	ctonic	PROJECT: BBJ - M		
		LOCATION: Manhattan, NY		SHEET No. 4 of 4
CLIENT: T	RC			UNCONFINED COMPRESS. STRENGTH (TONS/FT)
CONTRACT	OR: Aarco Environmental Service In	;		1 2 3 4 5 + + + + + +
'FT.)	SAMPLES	DESCRIPTION	₹ G	1 2 3 4 5 PLASTIC WATER LIQUID NOIL LIMIT % CONTENT % LIMIT % 20 30 40 50 + + + + 0 20 30 40 + + + +
DEPTH (FT.) N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.) SAMPLE NUMBER NUMBER (IN.) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%	OF	LITHOLOGY*	
N OF	PENETRATION RESISTANCE (BL/6 IN.) SAMPLE NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER NOISTURE (%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	MATERIAL		PENETRATION (BLOWS/FT.)
4	C-2 58/60 40	Gy, fresh, moderately fractured, c grained moderately hard, Micaceous SCHIST fractured	raa 🕅	
86 _ 5		at 20 to 60 degrees with Pyrite (Class 1c)		
87_ 9				
88		-		
89	- C-3 10/24 34	Same (Class 1d)		
907				
91_		End of Boring at 90'		
92_				
93 _				
94 _				
95 _				
96 _				
97 _				
98				
99 _				
100				99.0
101				
102				
102				
104				
105_				104.0
106_				
107_				
108_				
109_				
110_				-109.0
111_				
112_				
113 _				
114 _				
				L-114.0
REMARKS:	Surface elevation was provided by the	e Client, based on a previously performed site sur	vey, NAVD	1900.

								PROJECT:	BBJ -	м					- 140		-331	••	
	E	C				C	,	LOCATION:	Manh	attan, NY					[0.115		1 - 6 0	
	NT: T	20						200,11011			TIME		этн		ECTOR:		ET No		
		DR: Aa			montol		ioo Ino		GROUND WATER	DATE		DEI		DRILI			rry Ouii		
				-	DIA.	Serv		EPTH	SRO WA ⁻						ACE EL			-	
				ling	DIA.								10					1.0	
	ER AU							TO	MON. W		YES			DATU			e Rem	arks	
	. DRILL:				3 7/8"		-	TO 62'		N DEPTH:	5 TO	15			E START		7/8/21		
_	ING:				3"		-	TO 66'	WEATH		TEMP:						7/21/21	RENGTH	
								ТО			79'			0.10	•	(TONS			
orta	able Rig	with Cath	ead Doi	SAMF					*CHANG	JES IN STRAT	ARE INFERRE	:D		1	2	3	4	5	
<u>.</u>	/FT.	PENETRATION RESISTANCE (BL/6 IN.)		REC	-		SS.		DES	SCRIPTIO	N		G≺*	PLAS LIMIT	Г%		ER NT %	Liquid Limit % 	
E E E	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	<u> </u>		MOISTURE	UNIFIED SOIL CLASS.			OF			LITHOLOGY*	10		30	40		
DEPTH (FT.)	N OR	(BLENE)	SAMI	.ENGTH (IN.)	RQD (%)	OIST	NN		Μ	ATERIAL			ITHO	•		STAND	ARD (BLOWS/		
	2		<i>°</i> , <i>Z</i>	۳ ۲	<u> </u>	Σ								10			40	50	
1	L												\bigotimes						
	Γ	-										4	\bigotimes						Γ
2	-	-	-					Previously	hand cle	eared to 6'			\bigotimes						F
3	_	-						_				4	\times						F
4	-	-	-					(No soil de	escription	n provided)			\bigotimes						-
5													\bigotimes						4.0
6													>>>						
		17										•	\bigotimes						F
7	- 54	32 22	S-1	22		М	SP	Bwn-rd c-f (FILL) (Cla		and c-f Grav	el, trace Slit	•	\bigotimes					•	F
8		30 7										•	\bigotimes						+
9	- 51	15	S-2	14		м	SM		AND, sor	ne Silt, trace	f Gravel (FIL	_L)	\times						Ļ
10		36 50/6						(Class 7)				4	\times						-9.0
		32 37						Bwn c-f S4	AND sor	ne c-f Grave	L trace Silt		\bigotimes						
11	- 58	21	S-3			W	SP	(FILL) (Cla					>>>						₹
12		20 35										•	\bigotimes						-
13	- 67	43 24	S-4	14		w	GP	Bwn-rd c-f (FILL) (Cla	GRAVE	L, and c-f Sa	and, trace Silf	t	\bigotimes						67
14		50/1							,			•	\times						
15	50+	50/0	S-5	0				No Recove	ery				000						
			C-1	2				Cored C-1	from 14	' - 16' boulde	er / cobbles		000						
16		15											0 / 0						F
17	- 24	11 _ 13	S-6	8		W	SP	Bwn-rd c-f (Class 3b)	SAND, I	little c-f Grav	el, trace Silt					\checkmark			F
18		11											. – –				\searrow		Ļ
19	- 56	16 36	S-7	22		W	GP	Bwn c-f Gl	RAVEL,	and c-f Sand	, trace Silt								
20	00	20 33				••		(Class 2a)											
		20																	9.0
21	- 34	21 13	S-8	3		W	GP	Same (Cla	ass 2a)								\checkmark		-
22		11											; Ľ				$\left \right $		-
23	_	-	-															\land	Ļ
24																			
	Γ	-]																
25	L IARKS:	- Surfac		ation		video	l 1 by the	Client, base						1089					24.0

	E	Ċ						PROJECT: BBJ - M						
								LOCATION: Manhattan, NY				SHEET		
LIE	NT: T	RC								UNC		COMPRESS TONS/FT)	. STRENGT	н
ON	TRACT	OR: Aa	rco Er	viron	menta	Serv	ice Inc			1	2	3	4 5	
	<u>ب</u>	Ζw		SAM	PLES				*-	PLAS LIMI	TIC	WATER ONTENT %	LIQUIE	D.
- -	IN./F	ATIO	шК		COV.	RE	IED	DESCRIPTION	0 0 0	×			— — —∆	/0
UEP IH (F I.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	t) (i	Q ()	MOISTURE	UNIFIED SOIL CLASS	OF	LITHOLOGY*		ľ	30 4 H TANDARD	40 50	
ב	z	R R	ר S⊳	LENGTH (IN.)	RQD (%)	MOI	S	MATERIAL		• 1(PENETRA	TION (BLOV	VS/FT.) 40 <u>5</u> 0	
26		28 70												90
	- 90	20 16	S-9	8		W	GP	Same (Class 2a)						•
27	_	10												-
28	-	-												F
29	-	-												\wedge
30	_	10								 				
31	- 32	14	S-10	2		w	GP	Blk-bwn c-f GRAVEL, trace c-f Sand, trace Si	lt				1	
32		18 5						(Class 2a)				[]		
														Γ
33	-	-												F
34	-	-												F
35	_	29							• • •				\	····
36	- 41	18 _ 23	S-11	6		W	SP	Bwn c-f SAND, little f Gravel, trace Silt (Class 3a)						F
37	_	23						Ja)						
38	_													
39		-												Γ
	-	-												F
40		13											···	·····
41	- 37	14 23	S-12	14		W	SP	Bwn c-f SAND, trace Silt, trace f Gravel (Clas 3a)	S			•		F
42		27												F
43	-	-												F
44	_	-												
45														
		18 14						Bwn c-f SAND, little f Gravel, trace Silt (Class						
46	- 34	20	S-13	22		W	SP	3a)						F
47	_	18												F
48	-													F
49	-	-												F
50	-	-												
51	_													
52														ſ
	-	-												F
53	-	-											\	\ F
54	-	-												$\setminus +$
55											<u></u>	<u> </u>		\
EM	ARKS:	Surfac	e elev	ation v	was pro	ovideo	d by the	Client, based on a previously performed site surve	ey, NAVD	1988.				

							PROJECT: BBJ - M	_ • •	RING N			
	ec	L)		U		LOCATION: Manhattan, NY				1- 0-60	
							Lookinon. Mannauan, Wi		UNCONFINE	SHEET N D COMPRESS.		
	TRC	_	_						encontinue	(TONS/FT)	UNLINGIN	
DNTRA	CTOR: Aa				I Serv				1 2	2 3 4	4 5	_
	E No Ho		SAM			SS.	DESCRIPTION	5	PLASTIC LIMIT %	WATER CONTENT %	LIQUID LIMIT %	
	TRAT TRAT STAN 6 IN.	ER E	REC		URE	CLA:	OF		× – – 10 2	- <u> </u>	— — <u>—</u> ∆ 0 50	
	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*		STANDARD		i
		07 Z) Le	ш -	ž				10 2	RATION (BLOW 0 30 4	0 50	
6 6	17 26	- S-14	24		w	SP	Rd-bwn c-f SAND, trace c-f Gravel, trace Silt					V
	34	5-14	24		vv	5P	(Class 3a)					Τ
7												' -
8_		-										F
i9 _		-										F
0									· : 		/	59
1 4	8 17 8 22	- S-15	24		w	SM	Rd-bwn c-f SAND, and Silt, trace c-f Gravel					
1	8 26 23	0-10	24		vv	SIVI	(Class 3a)					
2												\uparrow
3_		1										F
4		-										F
5									·			64
6 9	30 37	- S-16	24		w	SP	Pd burn m f SAND, trace Silt (Class 2a)					97
	60 50/5	3-10	24		vv	J	Rd-bwn m-f SAND, trace Silt (Class 3a)					T
57												F
8_		-										-
i9 _		-										F
o	45								·			69
'1 - 6	0 15 30	S-17	24		w	SP	Same (Class 3a)					
2	30 19		24		••							T
												F
3_		1										F
'4		1										F
′5								×777				74
6_		4										Ļ
7			10/40	10			Gy-blk, slightly to moderately weathered, moderately fractured, c-f grained, medium					
		- C-1	12/48	10			hard, SCHIST, fractured 45 - 180 degrees (Class 1d)					Γ
8_		1										F
9	4											F
0 4		-										79
1 5	0	4					Gy-blk, slightly to moderately weathered,					Ļ
2 3	8	C-2	60/60	48			moderately fractured, c-f grained, medium hard, SCHIST, fractured 45 degrees from					
3	8						horizontal (Class 1c)					ſ
3_ 3	6	1										F
i4								-				F
5							End of Boring at 84' Client, based on a previously performed site surv					84

		Ċ						LOCATION:	Manh	attan, NY							S	HEET	No. 1	of 4	
CLIENT	r: T I	RC								DATE		TIME	DEPT	н	INSF	PECTO	DR: N	Aatt Gr	rimm		
CONTR	RACT	OR: Aa	rco Er	viron	mental	Serv	ice Inc		GROUND WATER						DRIL	LER:	F	Payby	Pache	со	
NETHOD	OF A		IG BOR	RING	DIA.		DE	PTH	R B S						SUR	FACE	ELEVA	TION:		18.5	
POWER	r au	GER:						то	MON. V	VELL] YES	X NO		DAT	UM:		See R	emark	s	-
ROT. D	RILL:	:			3 7/8	•	6	to 92'	SCREE	N DEPTH:		то			DAT	E STA	ART:	5/8/2	21		
CASING	G:				4"		0	to 60'	WEATH	IER: Rai	n	TEMP:	50° F		DAT	E FIN	ISH:	5/9/2	21		
DIAMO	ND C	ORE:			2"		92	to 97'	DEPTH	TO ROCK:	9	2'			UNC			MPRESS NS/FT)	. STREM	√GTH	
Geopro	be wi	th Automa	itic Han	nmer					*CHAN	GES IN STR	ATA	ARE INFERRE	D			1	2	3	4	5	ĺ
· ·	ц.	Sш		SAM	PLES		, vi				~		**	۲		stic IT %	W/ CON	ATER TENT %		UID AIT %	
DEPTH (FT.)	OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	щК	REC	OV.	RE	UNIFIED SOIL CLASS.		DE	SCRIPTI OF	Or	N			>	↔ — 0				∆ 50	
EPT	OR N	NETF ESIS ⁻ (BL/6	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED		N/	UF IATERIA						ř—	1	NDARD	+	1	1 ú 1 ī
	z	믭묎	ŝ	EN	R(()	MO	ŭ		IV		L		-	5 '	• 1	PENI 0	ETRATIC	on (Blo)		50	
														\boxtimes							
1_		-						Hand auge	ered to 6					\bigotimes							F
2_		-						14" - 24" G	Gy-bwn c	-f GRAVE	L, s	some c-f	×	\mathbf{X}							F
3_		-						SAND, littl (FILL)	e Silt, co	ontains bri	ck 8	& asphalt		\bigotimes							-
4		-										Croupl trace		\bigotimes							-
5_		_						Silt, contai				Gravel, trace LL)		Ⅻ.							13.5
										\bigotimes											
6		1						0			1:11		×	\mathbf{X}							F
7_	4	2 -	S-1	6		М	GM	concrete, a				tle Silt brick, 7)		\bigotimes	•						F
8		1												\mathbf{X}							-
9_	4	2 -	S-2	4		М	GM					tle Silt, brick,		\bigotimes	•						-
10		2						concrete, a	aspriait (FILL) (Cla	55	7)		8							8.5
11	9	7 5	0.0				SP	Bwn c-f SA	AND, and	d c-f Grav	el, t	race Silt, bri	ck, 🕅	\mathbf{X}							
	9	4	S-3	8		М	58	concrete, a	asphalt (FILL) (Cla	SS	7)		\bigotimes		1					
12		4												\bigotimes							F
13_	8	4 -	S-4	2		М	SP	Same (FIL	L) (Clas	s 7)				\bigotimes							F
14		11 12											X				\mathbf{k}				-
15_	34	15	S-5	10		w	SP	Bwn c-f SA (Class 3a)	AND, and	d c-f Grav	el, t	race Silt							.		3.5
16		19 12						(01855 38)					 				/	1			L
17	10	13 12		40		14/		Rd-bwn c-	f SAND.	little Silt.	trac	e Gravel				<i>_</i>	X				
	16	4	S-6	12		W	SM	(Class 3b)	3	· -1						/					[
18		4						D			_					\langle					F
19_	8	2 6	S-7	14		W	SM	Bwn-gy c-i (Class 6)	m SAND	, little f Gr	ave	el, little Silt			Ý						F
20		6																	.		1.5
21_	4	2	S-8	4		w	SM		f SAND,	little m-f C	Grav	vel, little Silt									F
22		2 4						(Class 6)							\backslash	k					L
	46	7 8						Bwn-av c-1	f SAND	little m-f (Grav	vel, little Silt				$\left \right\rangle$					
	18	10 11	S-9	18		W	SM	(Class 3b)			~	, .									ſ
24																					F

	0	C						PROJECT: BBJ - M). B-34		
	C	G				U		LOCATION: Manhattan, NY		[SHEET N		
	T: T I							······································		UNCONFINED			
	RACT				monto	1 Com	ice Inc			•	(TONS/FT)		
				SAMI		Jerv						4 5	
	./FΤ.			REC			D SS.	DESCRIPTION	۲ ۲	PLASTIC LIMIT %	WATER CONTENT %	LIQUID LIMIT % — — —	
	N OR MIN./FT	STAI STAI	PLE BER			IURE	IFIE .	OF	OTO	10 20	30 4	0 50	
	N OF	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	MATERIAL	LITHOLOGY*		STANDARD RATION (BLOW	√S/FT.)	
		7		<u> </u>		2				10 20		50	_
6	16	9	S-10	14		w	SP	Rd-bwn c-f SAND, trace Silt (Class 3b)				Í	
,		7 9										Í	
3												Í	
		-										Í	F
9_		-										Í	-
- L		6								·			11
1	15	7 _	S-11	10		w	SP	Same (Class 3b)					F
2		8 10						· ·		1			
3													
		-											ſ
¥		-											F
5_		11								·{·····}·····}			16
3_	23	11	S-12	0				No Recovery			┝		F
_		12 11						-		· /	'		L
3										/			
		-										Í	F
9_		-										Í	F
) _		5								·····			21
1	14	7-7-7	S-13	16		w	SP	Rd-bwn c-f SAND, trace Silt (Class 3b)				Í	+
2		7										Í	Ļ
3		_										Í	
													ſ
<u>۱</u> _		-											F
5_		3								·····			26
3_	12	6 6	S-14	20		w	SP	Bwn c-f SAND, trace Silt (Class 3b)		│			╞
-		8								\			F
3		-											
9										: \			
		-											Ť.
)		12								↓ ····· ·	·\··· ·····		31
1	27	8 - 19	S-15	12		W	GP	Bwn-gn c-f GRAVEL, and c-f Sand, trace Sil (Class 2b)	t	¶	\ \ \		F
2		16						. ,		!	X		F
3		-											Ļ
1													
		-											
5_	RKS:	- Surfac	e elev	ation v	vas pr	ovidor	l 1 by the	Client, based on a previously performed site sur		<u> .</u>) 1988	<u></u>	<u> </u>	36

	E	Ċ				U		LOCATION: Manhattan, NY							£ 4	
	NT: T									UN	CONFIN		EET N			
		OR: Aa	rco Er	wiron	montal	Son	ico Inc				•		S/FT)			
	INACI				PLES	Jerv						2 :		5		
ЕТ.)	./FT.	TION NCE			COV.		SS.	DESCRIPTION	۲¥ ۲		\STIC IIT % ★ — -		TER ENT %	Liqi Limi		
DEPTH (FT.)	N OR MIN./FT	ETRA ISTA L/6 IN	1PLE IBER			TUR	UNIFIED SOIL CLASS	OF	OTO		10 2	20 3	0 4	0 50)	
	N OF	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	ENGTH (IN.)	RQD (%)	MOISTURE	IN SOIL	MATERIAL	LITHOLOGY*	•		TRATIO	DARD N (BLOW	'S/FT.)		
_		23									10 2	20 3	0 4	0 50 \)	┝
56	- 43	19 24	S-16	4		w	GP	Gy-bwn c-f GRAVEL, some c-f Sand, trace Si (Class 2a)	ilt					•		┝
57	_	14						()						/		┝
58	5	-							000							F
59	7		C-1	6				Boulder	0000							L
60	9								000							
		18						Gn c-f GRAVEL, some Sand, little Silt (Class	ĨŃ			/	•••••			
61	- 24	13 _ 11	S-17	4		W	GM	2b)				•				F
62	_	11														ŀ
63	-	-														F
64	-	-														╞
65																L-4
	- 27	25 14	S-18	14		w	SM	Bwn-gy c-f SAND, some c-f Gravel, little Silt								L
67	21	13 15	0-10	'		**	OW	(Class 3b)								
	_															Ī
68	-	-										/				Γ
69	-	-										V				F
70	_	11									<i>j</i>					
71	- 17	8 -	S-19	20		w	SW-SM	Bwn c-f SAND, little f Gravel, trace Silt (Class 3b)								F
72	_	16						0.2)								┝
73	-	-										$\left \right\rangle$				Ļ
74	_	_										$ \rangle$				L
75																[-5
		20 18						Bwn c-f SAND, some m-f Gravel, trace Silt								_``
76	- 35	17	S-20	12		W	SP	(Class 3a)					•			ſ
77	_	23														F
78	-	-											\setminus			┝
79	-	-												\setminus		F
80	_															L-6
81	- 45	27 25	S-21	20		w	SP	Same (Class 3a)								L
82	70	20 22												Ţ		
																Ī
83	-	-														ſ
84	-	-														F
85	- ARKS:	-						Client, based on a previously performed site surve								6

						PROJECT No. 10285.01	BOF		3 N	n F	3_3/	IM		
To	ect		nì	ic		PROJECT: BBJ - M				0. L	J-U-	F1¥1		
						LOCATION: Manhattan, NY				S⊦		lo. 4 o	f 4	
CLIENT: TI	RC							UNC			PRESS. IS/FT)	STREN	GTH	
CONTRACT	OR: Aarco I				vice Inc						3 4	1 5		(FT
ТТ.) /FT.			PLES	1	SS.	DESCRIPTION	۲× G		STIC IT % ← — —		TER ENT %	Liqi Limi		ELEVATION (FT.)
DEPTH (FT.) N OR MIN./FT.	PENETRAT RESISTAN (BL/6 IN SAMPLE			MOISTURE	UNIFIED SOIL CLASS.	OF	LITHOLOGY*			20 3	80 4			EVA
N OF	PENETRATION RESISTANCE (BL/6 IN.) SAMPLE		RQD (%)	MOIS	SOIL	MATERIAL		•		TRATIO	DARD N (BLOW		0	
	14								0 2	20 3	80 4	0 5	0	
86 - 38	¹⁹ 19 - S-2	2 18		w	SW-SM	Bwn m-f SAND, trace Silt, trace f Gravel (Class 3a)								_
87	14											\setminus		_
88_	-													-
89 _	-													-
90	50/6 S-2	3 6		w	SP	Gy-bwn c-f SAND, trace f Gravel, trace Silt, (Class 3a)		•)		71.5
91_	-					(Class 5a)								-
92		_						र						-
93 _ 7	-													-
94 _ 9	-					Gy, moderately weathered, moderately fractured, c-f grained hard SCHIST fractured								-
95 _ ¹⁰	C-2	8 60/60	66			fractured, c-f grained hard SCHIST fractured 20 degrees (Class 1b)		§						76.5
96 _ 8														-
9														_
98_						End of Boring at 97'								_
99_														_
100														81.5
101														_
102														
103 _														
104														
105														86.5
106														_ 00.0
107														_
108														-
109														-
														-
110_	-													91.5
111_														_
112_														-
113_														-
114_														-
115 REMARKS:	Surface ele	vation	was nr	ovide	d by the	Client, based on a previously performed site sur) 1988						96.5
			nuo pi	Strue	a by the	enone, based on a previously performed alle sur	• • • y , I • A V L	- 1000.						

								PROJECT No	o. 1028	5.01			R			2 N	0 F	3-14	IM		
17		C			ni			PROJECT:	BBJ	- M							U. L	J- 1-	F I V I		
						U		LOCATION:	Manl	hattan, N	IY						SH	EET N	lo. 1 o	f 1	
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CON	TRACT	OR: Aa	rco Er	nvironr	nental	Servio	ce Inc		GROUND WATER						DRIL	LER:	Jı	ulio Ga	larza		
METH	OD OF A	ADVANCIN	IG BOR	RING	DIA.		DE	PTH	ц Ц Ц Ц Ц Ц Ц Ц						SUR	FACE I	ELEVA	FION:		-	
POW	/ER AU	IGER:						ТО	MON.	WELL] YES	X 1	90	DAT	UM:	5	See Re	marks	;	
ROT	. DRILL	.:						то	SCREE	EN DEPTH	4:	то			DAT	E STAF	RT:	3/13/2	20		
CAS	ING:						-	ТО	WEAT	HER: F	Rain	TEMP	50°	F		E FINIS	-	3/13/2			1
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				0.4.1.4					*CHAN	IGES IN S	TRATA	ARE INFERRE	ED			1 : I	2 :	í í	- 5 		
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DEPTH (FT.)	N OR MIN./FT.	TRAT STAN -/6 IN	SAMPLE NUMBER			MOISTURE	UNIFIED SOIL CLASS.			OF				LITHOLOGY*		← — - 0 2	20 3	0 41			DEP
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				<u> </u>		2								 4	1			0 4)	
1								12" Concre	ete slab												_1
2	_	-	-					Hand exca	avated to	o 6'				\times							_2
3	_	_						Bwn c f S/		mo Silt	some	e c-f Gravel		>>>							_3
4								(brick & co	oncrete o	debris p	resen	t) (FILL) (Cla	ass	\bigotimes							_4
	-	-						7)					•	\times							
5	_	-	-											\bigotimes							_5
6	_													XXX							_6
7	-	-	-						End	l of Borir	ng at 6	5'									_7
8	-	-	-																		_8
9	_	-	-																		_9
10	_	-	-																		_10
11	_	_																			_11
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린 김 (김)																					_21
TAN.G	-	-	1																		
LTAHN 22		-	1																		_22
4W 23	_	-	-																		_23
BORING LOG 10285.01 MANHATTAN GPJ TECTONIC ENG.GDT 8/24/21 MEM MEM 75 75 75 15 05 06 12 12 12 12 12 12 12 12 12 12 12 12 12	_	-	-																		_24
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BOF																					

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								LOCATION:	Manh	nattan, NY						SH	IEET N	lo. 1 o	f 1	
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CON	TRACT	OR: Aa	rco Er	nviron	mental	Serv	ice Inc		GROUND WATER					DRIL	LER:	Jı	ulio Ga	larza		
METHO	DD OF /	ADVANCIN	IG BOR	RING	DIA.		DE	EPTH	ц В В В В В В В					SUR	FACE	ELEVA	FION:		-	
POW	/ER AU	IGER:						то	MON. V	VELL	YES	X	NO	DAT	UM:	5	See Re	marks	;	
ROT	DRILL							то	SCREE	N DEPTH:	то		-	DAT	E STAF	RT:	3/13/	20		
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DEPTH (FT.)	N OR MIN./FT.	TRAT STAN -/6 IN	SAMPLE NUMBER			MOISTURE	UNIFIED SOIL CLASS.			OF			LITHOLOGY*		← — - 0 2	20 3	604	0 50		DEP
DEP	N OR	PENE RESI (BI	SAM NUM	ENGTH (IN.)	RQD (%)	IOIS	SOIL		Ν	1ATERIAL	-		Ĕ	•	PENE	STAN	DARD N (BLOW	/S/FT.)		
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2	_	-						Hand exca	avated to	o 6'										_2
3	_							Bwp c f S/		me c f Grav	vel, some Silt		\bigotimes							_3
4								(FILL) (Cla	ass 7)		ei, sonie olit									_4
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5.	-	-																		_5
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8	-	-																		_8
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LTAHN 22	-	-																		_22
4W 23	-	-																		_23
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BORING LOG 10285.01 MANHATTAN GPJ TECTONIC ENG.GDT 8/24/21 8/2	-							liant -ft -		an area - C	the 000/00 //	2.0-								_25
	ARKS:	I NIS D	oring v	vas dis	SCONTIN	uedb	y ine C	ment atter har	iu cieari	ng and after	the COVID-19	Pano	iemic.							
BOF																				

								PROJECT N	o. 1028	5.01			R			2 N	~ F	3-23	хM		
17		C						PROJECT:	BBJ	- M							0. L	J-2.	JIVI		
								LOCATION:	Manh	nattan, NY	,		1				S⊦		No. 1 o	of 1	
CLIE	NT: T	RC							д и	DATE	=	TIME	DE	PTH	INSF	PECTO	R: Li	am Mo	Grath	1	
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METHO	DD OF /	ADVANCIN	IG BOR	RING	DIA.		DE	EPTH	ц В В В В В В В В В В В В В В В В В В В						SUR	FACE I	ELEVA	FION:		-	
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CASI	NG:							ТО	WEATI	HER:		TEMP	:			E FINIS		3/11/		0711	
DIAN	IOND C	CORE:						ТО		I TO ROCK					UNC			S/FT)	STREN	GIH	
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Û.	/FT.	PENETRATION RESISTANCE (BL/6 IN.)		SAMI REC			SS.		DE	SCRIPT		١		GY*	LIM	STIC IT %	WA CONT	TER ENT %	Liqi Limi	Т%	DEPTH (FT.)
DEPTH (FT.)	N OR MIN./FT.	TRAT STAN -/6 IN	SAMPLE NUMBER			MOISTURE	UNIFIED SOIL CLASS.			OF				LITHOLOGY*		← — - 0 2		9——- 10 4		0	DEP
DEP	N OR	PENE RESI (BI	SAM NUM	ENGTH (IN.)	RQD (%)	NOIS	SOIL		N	/ATERI/	AL			HTI-	•	PENE	STAN	DARD N (BLOW	/S/FT.)		
				3		2								 4	1	0 2	0 3	0 4	0 5	0	
1	-	-	-					15" Concre	ete slab					444							_1
2	_	-	_					Hand exca	vated to	o 6'				\bigotimes							_2
3	_													\bigotimes							_3
4								Bwn c-f SA (FILL) (Cla	AND, so	me Silt, s	ome	c-f Gravel		>>>							_4
									1557)					$\times\!\!\times$							
5														>>>							_5
6	_													$\propto \sim$							_6
7	_	-	-						End	of Boring	g at 6	5'									_7
8	-	-	-																		_8
9	_	-	-																		_9
10	_	-	-																		_10
11	_	_																			_11
12																					_12
	-	-																			_13
13	-	-	-																		
14	-	-																			_14
15	-	-	-																		_15
16	-		-																		_16
17 × 17	_	-	-																		_17
09 18	_	-	-																		_18
집 일 19	_	-	-																		_19
NOLO: 20	_	_																			_20
표 같 21																					_21
LAN.G	_	-	1																		
LITATION 25	-	-	-																		_22
4W 23	-	-	-																		_23
BORING LOG 10285.01 MANHATTAN GPJ TECTONIC ENG.GDT 8/24/21 8/2	-	-	-																		_24
	-							liant -ft -			har ti	- 00///5 /2	D	!							_25
	ARKS:	I NIS D	oring v	vas dis	scontiñ	ued b	by the C	lient after har	iu cieari	ng and aff	ier th	e COVID-19	rand	emic.							
BOF																					



LEGEND FOR SOIL DESCRIPTION

<u>COARSE G</u>	RAINED SOIL	(Coarser th	nen No	200 Sieve	e)		
	DESCRIPTIVE TERM &	<u>GRAIN SIZ</u>	<u>E</u>				
	TERM	<u>SAND</u>					GRAVEL
	coarse - c	No.		ve to No.	10	Sieve	3" to 3/4"
	medium - m			ve to No.	40	Sieve	3/4" to 3/16"
	fine - f	No,	40 SIê	ve to No.	200	Sieve	
	COBBLES 3" to 1	0"			<u>BOUL</u>	<u>.DERS</u>	10" +
	GRADATION DESIGNAT	IONS					<u>DF COMPONENT</u>
	fine, f						oarse to medium
	medium to fine, m-f					than 10% c	
	medium, m						oarse and fine
	coarse to medium, c-m					than 10% fi	ne nedium and fine
	coarse, c coarse to fine, c-f					eater than 1	
		NI 200			7 in gr		070
<u>FINE GRAI</u>	<u>NED SUIL</u> (Finer ina	an No. 200	Sieve)				
	DESCRIPTION		PLA	STICITY II	<u>NDEX</u>		PLASTICITY
	Silt			0 - 1			none
	Clayey Silt			2 - 5			slight
	Silt & Clay			6 - 10			low
	Clay & Silt			11 - 20 21 - 40			medium
	Silty Clay Clay		C	reater thai			high very high
DDODODTU	•		Ĺ,		140		very nigh
PROPORTIO	<u>UN</u>						
	DESCRIPTIVE TERM					PERCE	NT OF SAMPLE WEIGHT
	trace						1 - 10
	little						10 - 20
	some						20 - 35
	and						35 - 50
	The primary component	is fully cap	oitalized	ł			
<u>COLOR</u>			<u> </u>	arou		11/6	white
	Blue - blue Blk - black		Gy Or	- gray		Wh Yl	- white - yellow
	Bwn - brown		Rd	orangered		Lgt	- light
	Gn - green		Tn	- tan		Dk	- dark
SAMPLE N	3						
	S - Split Spoon Soil S	ample			WOC	- Weight	of Casing
	U - Undisturbed Tube					- Weight	•
	C - Core Sample					- Weight	
	B - Bulk Soil Sample				PPR		ssive Strength based on
	NR - No Recovery of Sa	ample					Penetrometer
					ΤV	- Shear S	trength (tsf) based on Torvane
ADDITIONA	AL CLASSIFICATIONS						
New York C	City Building Code soil clas	sifications	are giv	en in parer	ntheses	s at the end	of each description of material,

New York City Building Code soil classifications are given in parentheses at the end of each description of material, if applicable. See sections 1804.2 of the 2008 Building Code for further details.



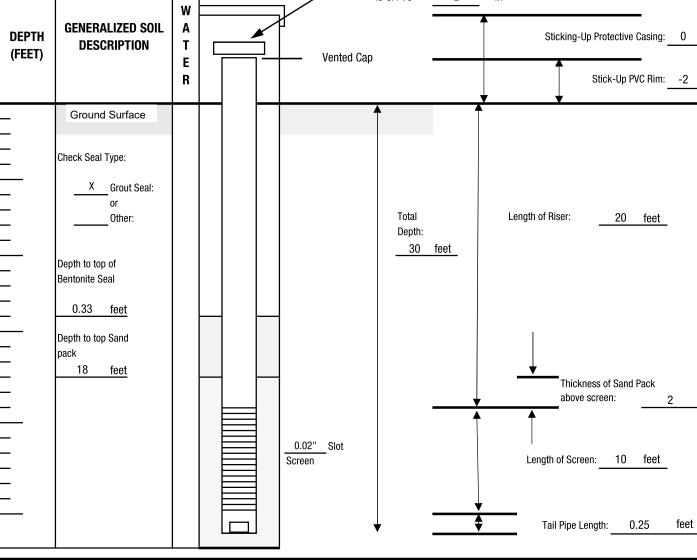
PROJECT:	Borough Based Jai	I - Manhattan	W.0.#:	10285.01	WELL #:MW-1	BORING #:	31M
LOCATION:	125 White Street, N	New York, NY			DATE INSTALLED:	5/4/2021	
CONTRACT	OR: Aarco Enviro	onmental Services, Inc.			TEC ENGINEER:	Barry Ouimet	
DIRECT ME	ASUREMENTS:	CASING TO	PVC:2	2 In	Casing to ground	D:0	In.
SURFACE E	ELEV.: 1	Ft. PVC ELEV.:	0.83 F	ït	PROTECTIVE CASING:	0.83	Ft.
GROUNDW	ATER: DATE:	5/4/2021	TIME: 11	:10 AM	DEPTH: <u>3.12 Ft.</u>	ELEV.: -2.12	Ft.
	DATE:	7/22/2021	TIME:		DEPTH: <u>3.32</u> Ft.	ELEV.: -2.32	Ft.
	DATE:	8/16/2021	TIME: 9:	02 AM	DEPTH: <u>3.33</u> Ft.	ELEV.: -2.33	Ft.
DEVELOPM	IENT: DATE:	NA	RATE AN	ND VOL. REMOVED):		
OBSERVAT	IONS / NOTES:	Surface elevation, a	and resulting eleva	ations are approxi	mate.		
		w		D of PVC 2	in		
DEPTH	GENERALIZED SOIL DESCRIPTION				Sticking-Up Pi	rotective Casing: 0	in
(FEET)		E F	 Vented Cap 				
		R			▼ ▼ St	ick-Up PVC Rim:1	in
	Ground Surface		≜		Ť		
-	Check Seal Type:						
—	X Grout Seal:						
F	or			Total	Length of Riser:	10 feet	
E	Other:			Depth:	Lengur of Miser.	10 feet	
	Depth to top of			20 feet			
-	Bentonite Seal						
F	8 feet						
	Depth to top Sand						
E	pack 8 feet				↓		
F					Thickness above scre	of Sand Pack een: 2	feet
					▲ ▲		1001
E			0.02" Slot				
-		Scr	reen		Length of Screen:	10 feet	
F					↓ ↓		
			↓ ↓		Tail Pipe Lengt	th: 0.25 feet	t



in

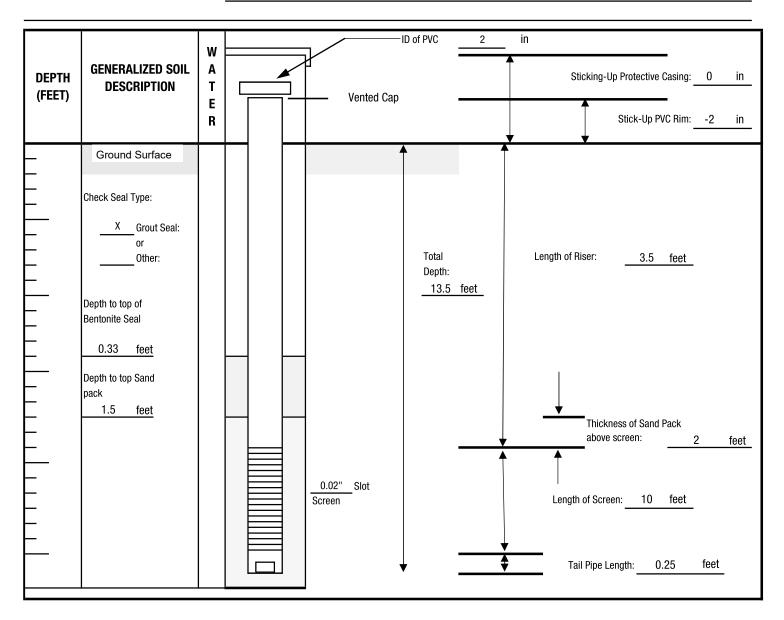
feet

PROJECT:	Borough Based Jai	I - Manhattan	W.0.#:	10285.01		WELL #:	MW-	2	BORING	G #: <u>B-</u>	19M
LOCATION:	125 White Street, N	lew York, NY				DA	TE INSTA	ALLED:	6/13/202	1	
CONTRACTO	R: <u>Aarco Enviro</u>	onmental Services, Inc.				ד	EC ENGI	INEER:	Jack Rusl	<	
DIRECT MEA	SUREMENTS:	Casing to pv):	2 Ir	n	CAS	0	In.			
SURFACE EL	EV.:15.9	Ft. PVC ELEV.:	15.83	Ft.		PROTEC	CTIVE CA	SING:	15	5.9	Ft.
GROUNDWAT	TER: DATE:	6/13/2021 TIME	:	1:00 PM		DEPTH:	10.17	Ft.	ELEV.:	5.73	Ft.
	DATE:	8/16/2021 TIM	: 	9:30 AM		DEPTH:	16.50	Ft.	ELEV.:	-0.60	Ft.
DEVELOPME	NT: DATE:	NA	RATE	e and vol. Ren	MOVED	: _					
OBSERVATIO	INS / NOTES:	Surface elevation, and r	esulting e	levations are ap	pproxir	nate.					
		w		— ID of PVC	2	in					
DEPTH (FEET)	GENERALIZED SOIL DESCRIPTION		Vented Ca	ap —		1	Sticki	ing-Up P	rotective Ca	sing: 0	in





PROJECT:	Borough Based Ja	il - Manhattan	W.0.#:	10285	5.01	WELL #: _	MW	-3	BORIN	G #: <u> </u>	-9M
LOCATION:	125 White Street,	New York, NY				DA	TE INST	ALLED:	7/2/2021		
CONTRACTOR	: Aarco Envir	onmental Services, Inc).				tec eng	INEER:	Jack Rus	k	
DIRECT MEAS	UREMENTS:	CASIN	G TO PVC:	2	In.	CAS	SING TO	GROUN	D:	0	In.
SURFACE ELEV	V.: <u>1</u>	Ft. PVC EL	_EV.: 0.83	Ft.		PROTE	CTIVE CA	ASING:		1	Ft.
GROUNDWATE	R: DATE:	7/2/2021	TIME:	8:37 AM		DEPTH:	3.33	Ft.	ELEV.:	-2.33	Ft.
	DATE:	7/22/2021	TIME:			DEPTH:	3.27	Ft.	ELEV.:	-2.27	Ft.
	DATE:	8/16/2021	TIME:	8:52 AM		DEPTH:	3.33	Ft.	ELEV.:	-2.33	Ft.
DEVELOPMEN	T: DATE:	NA	RAT	e and vol.	REMOVE	D: _					
OBSERVATION	S / NOTES:	Surface elevati	on, and resulting	elevations ar	e approx	imate.					

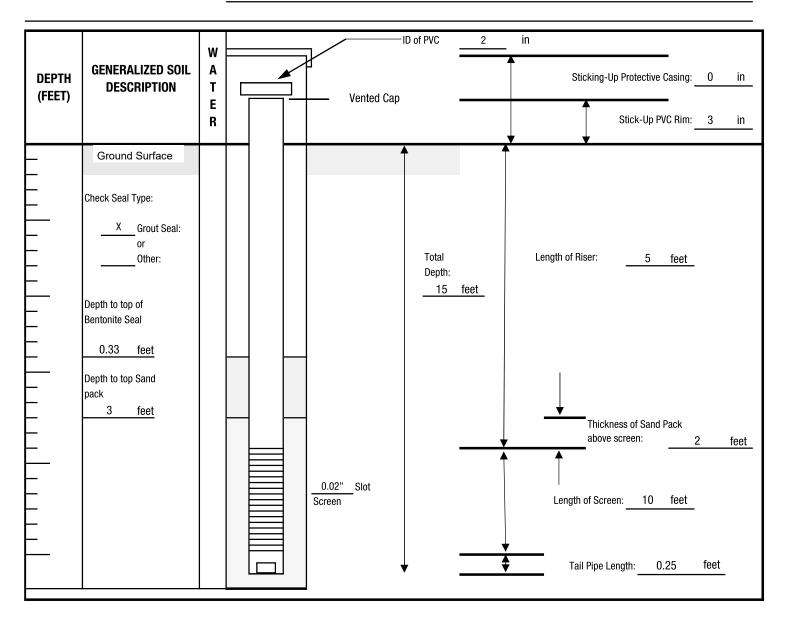




JECT: Borough Based Jail - Manhattan	W.O.#:	10285.01		WELL #: _	MW	-4	. Borin	G #: <u> </u>	33M
ATION: 125 White Street, New York, NY				DA	TE INST	ALLED:	7/22/202	.1	
TRACTOR: Aarco Environmental Services, Inc.					tec eng	INEER:	Ryan Villa	a	
CT MEASUREMENTS: CASING TO PV	'C:	3 li	n	CAS	SING TO	GROUN	D:	0	In.
FACE ELEV.: <u>1 Ft.</u> PVC EL <u>E</u> V.:	0.75	Ft.		PROTE	CTIVE CA	ASING:		1	Ft.
UNDWATER: DATE: <u>7/23/2021</u> TIN	IE:	8:00 AM		DEPTH:	1.00	Ft.	ELEV.:	0.00	Ft.
DATE:7/26/2021 TIM	IE:	8:00 AM		DEPTH:	2.50	Ft.	ELEV.:	-1.50	Ft.
DATE:8/16/2021 TIM	IE:	8:42 AM		DEPTH:	2.33	Ft.	ELEV.:	-1.33	Ft.
ELOPMENT: DATE: NA	RATI	e and vol. Ren	NOVEI): _					
CT MEASUREMENTS: CASING TO PV FACE ELEV.: 1 Ft. PVC ELEV.: UNDWATER: DATE: 7/23/2021 TIN DATE: 7/26/2021 TIN DATE: 8/16/2021 TIN	0.75 IE: IE: IE:	Ft. 8:00 AM 8:00 AM 8:42 AM		CAS PROTE DEPTH: _ DEPTH: _ DEPTH: _	SING TO CTIVE CA 1.00 2.50	GROUN ASING: Ft. Ft.	ELEV.:	0 1 0.00 -1.50	

OBSERVATIONS / NOTES:

Surface elevation, and resulting elevations are approximate.





5 feet

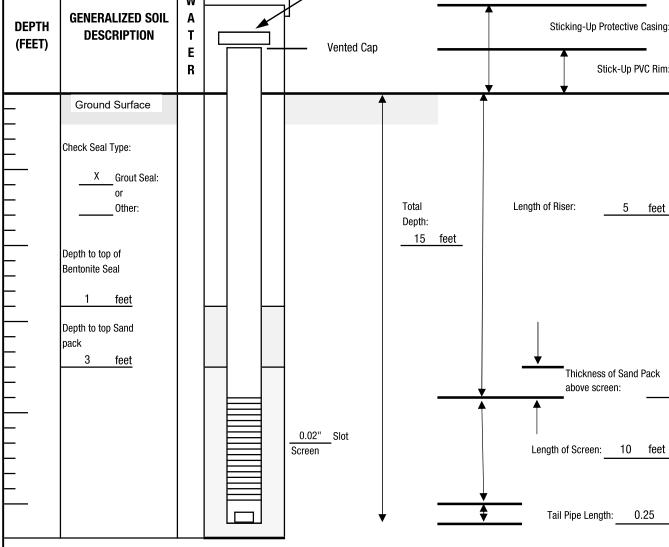
2

feet

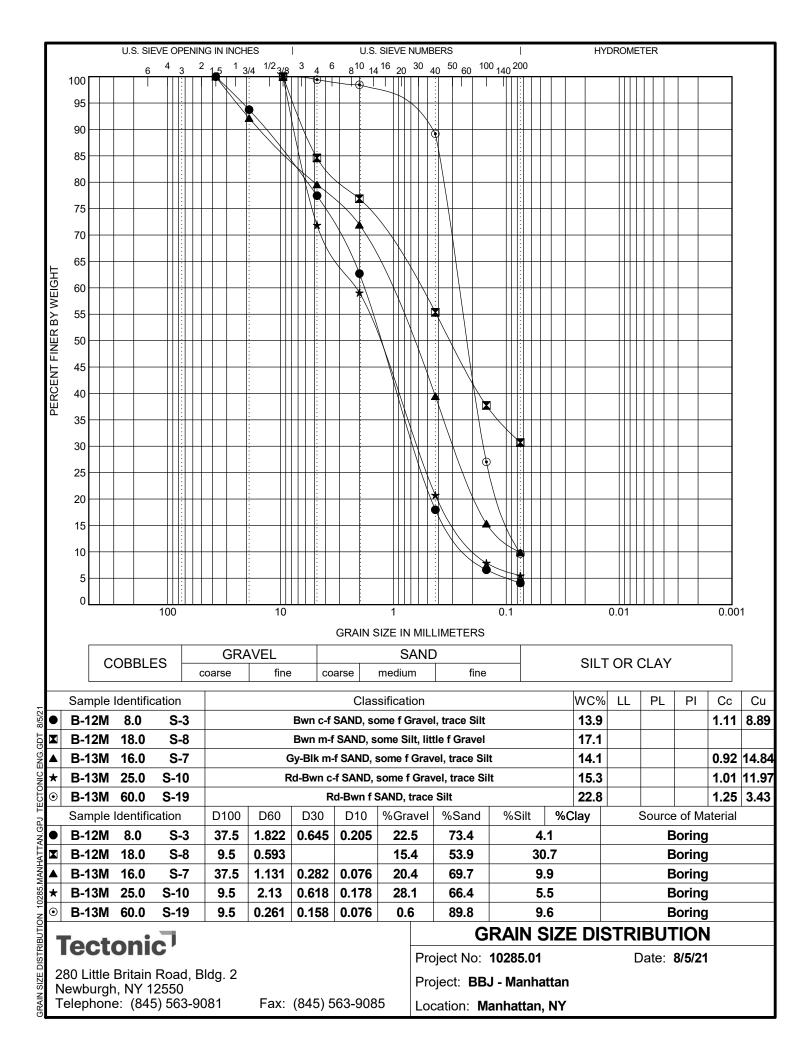
0.25

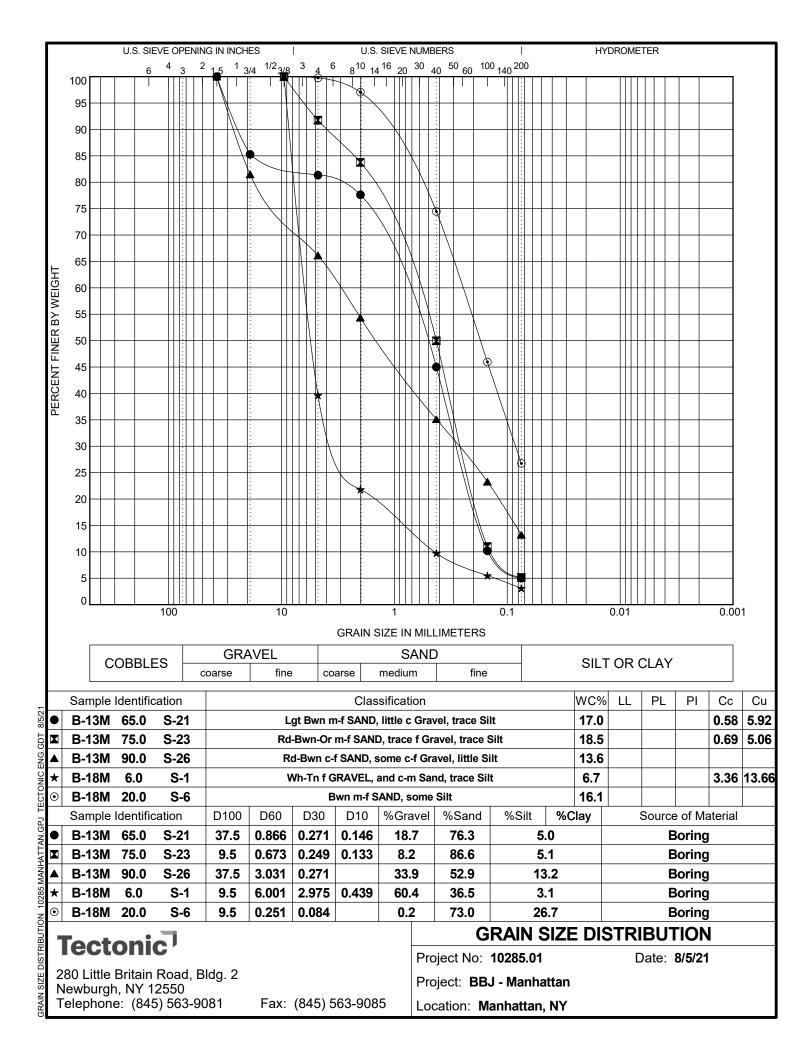
feet

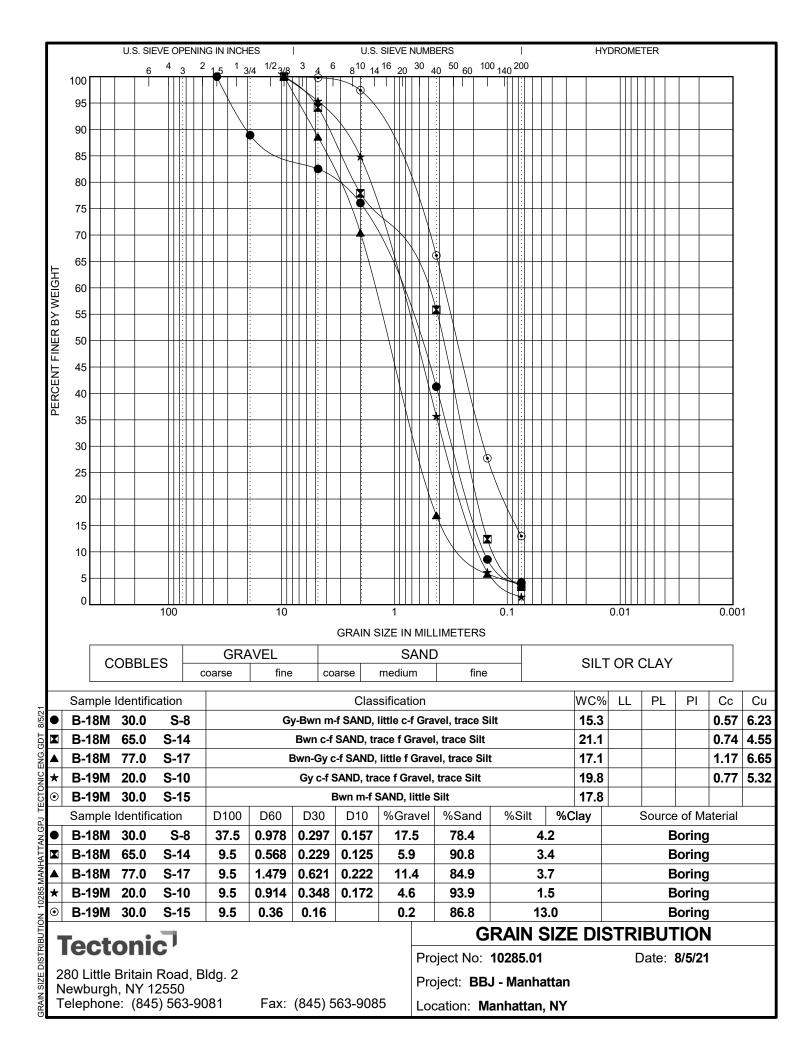
PROJECT:	Borough Based Jail	I - Manhattan	W.0.#:	10285.01	WELL #:	MW-5	BORING #:	B-7M
LOCATION:	125 White Street, N	lew York, NY			DA ⁻	te installed:	8/5/2021	
CONTRACTOR:	Aarco Enviro	onmental Services, Inc.			1	FEC ENGINEER:	Jack Rusk	
DIRECT MEASU	UREMENTS:	CASING 1	го PVC:	4 In.	CAS	ING TO GROUN	ID: 0	In.
SURFACE ELEV	<i>I</i> .: <u>1</u>	Ft. PVC ELEV	/.:0.67	Ft.	PROTEC	CTIVE CASING:	1	Ft.
GROUNDWATE	R: DATE:	8/6/2021	TIME:	9:50 AM	DEPTH:	2.92 Ft.	ELEV.: -1.92	Ft.
	DATE:	8/16/2021	TIME:	8:31 AM	DEPTH:	2.92 Ft.	ELEV.: -1.92	Ft.
DEVELOPMENT	T: DATE:	NA	RAT	e and vol. Remo	WED:			
OBSERVATION	S / NOTES:	Surface elevation,	, and resulting	elevations are app	roximate.			
DEPTH (FEET)	ENERALIZED SOIL Description	W A T E R	- Vented C	ID of PVC	2 in		Protective Casing: 0	
	Ground Surface			▲				

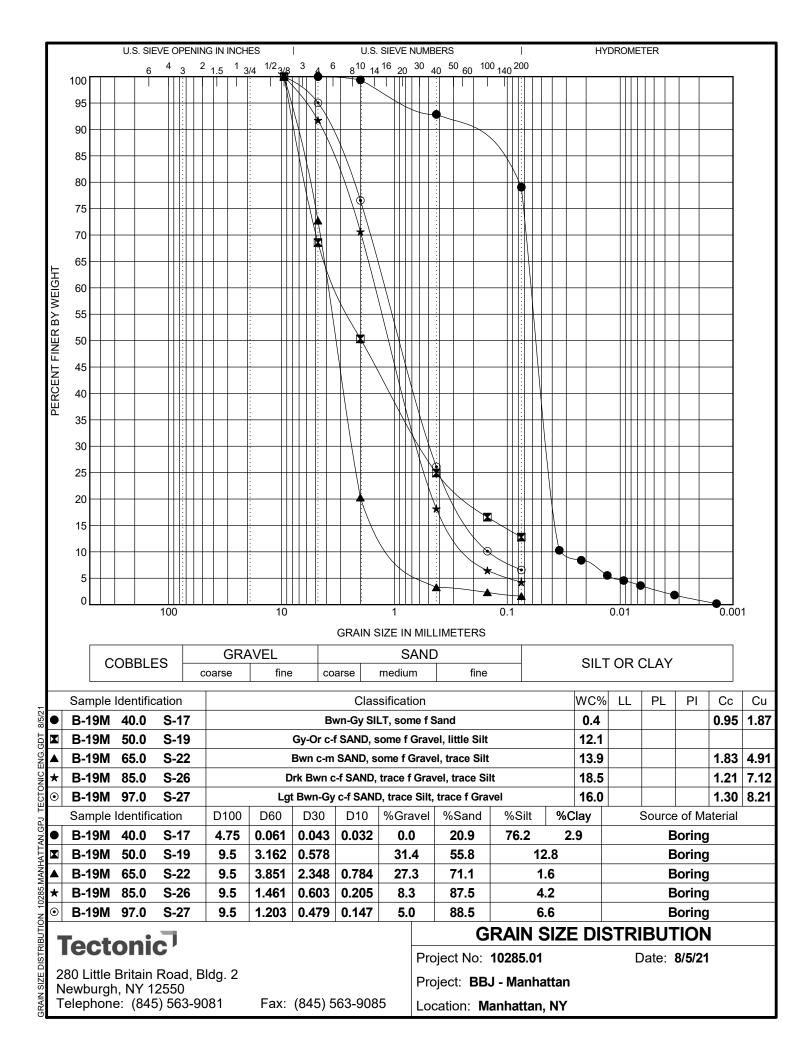


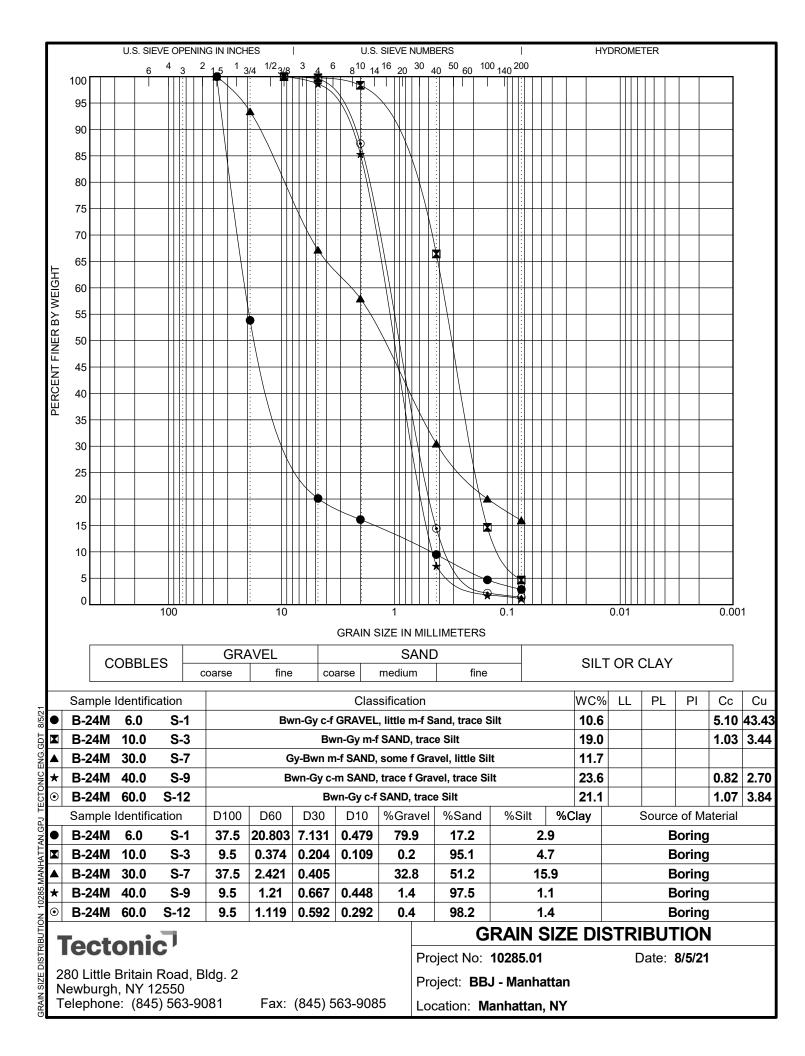
APPENDIX II

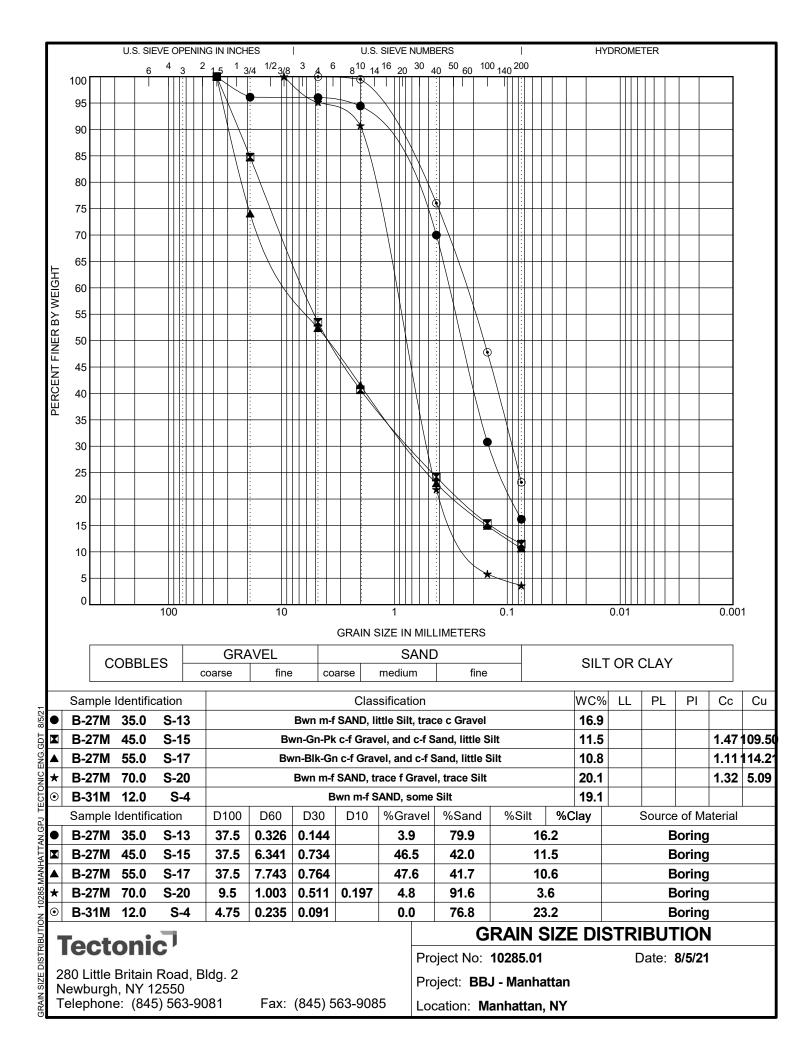


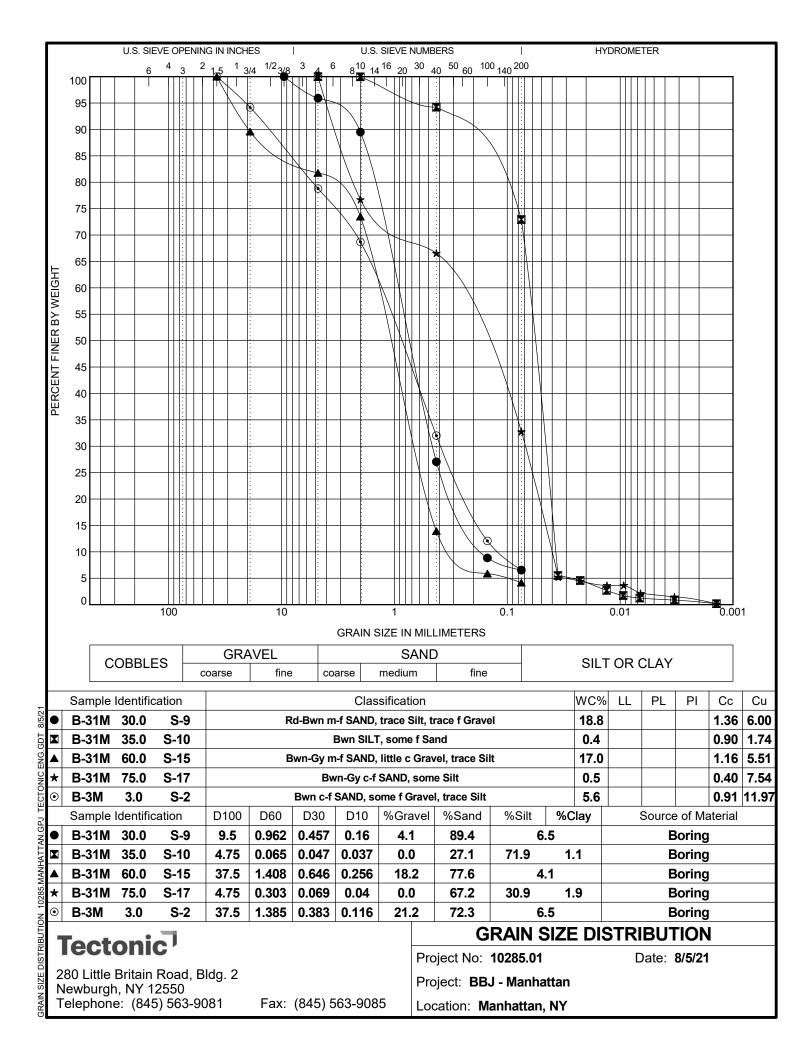


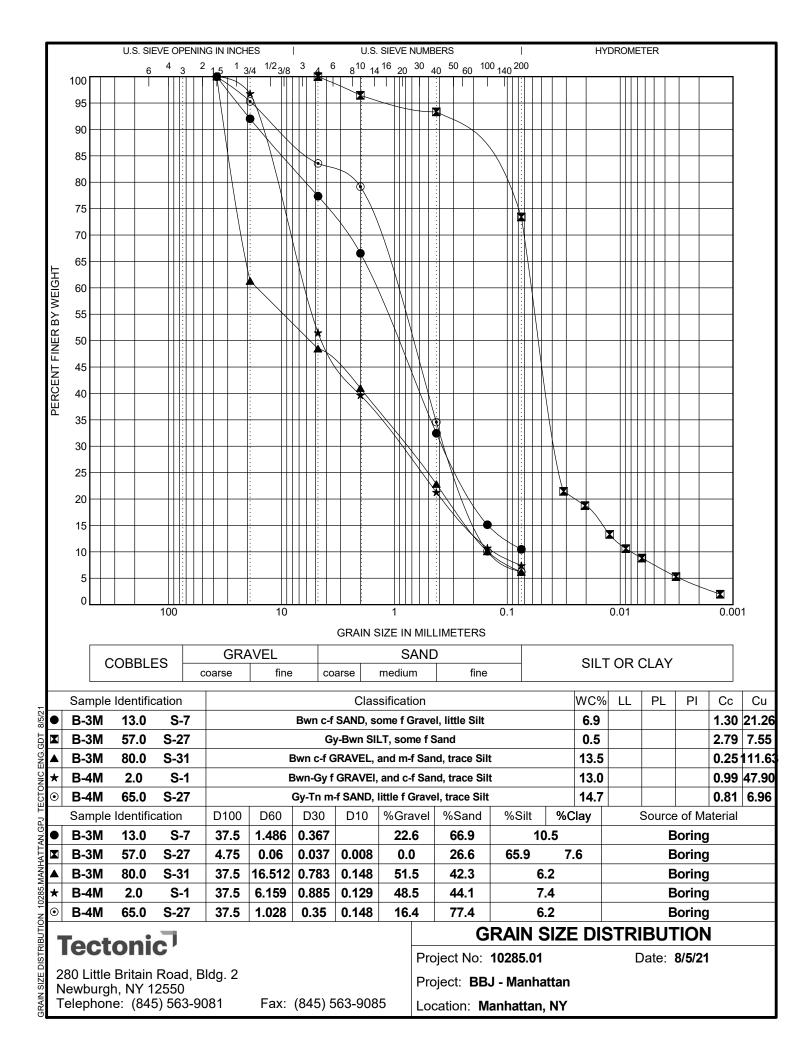


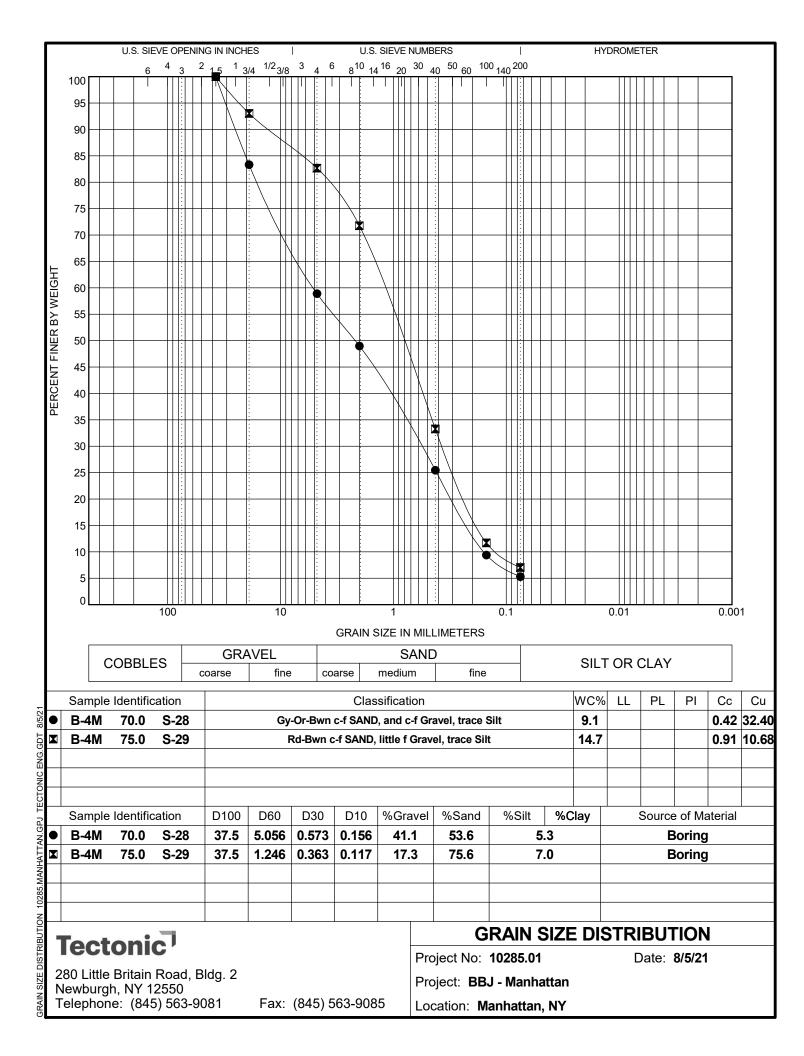


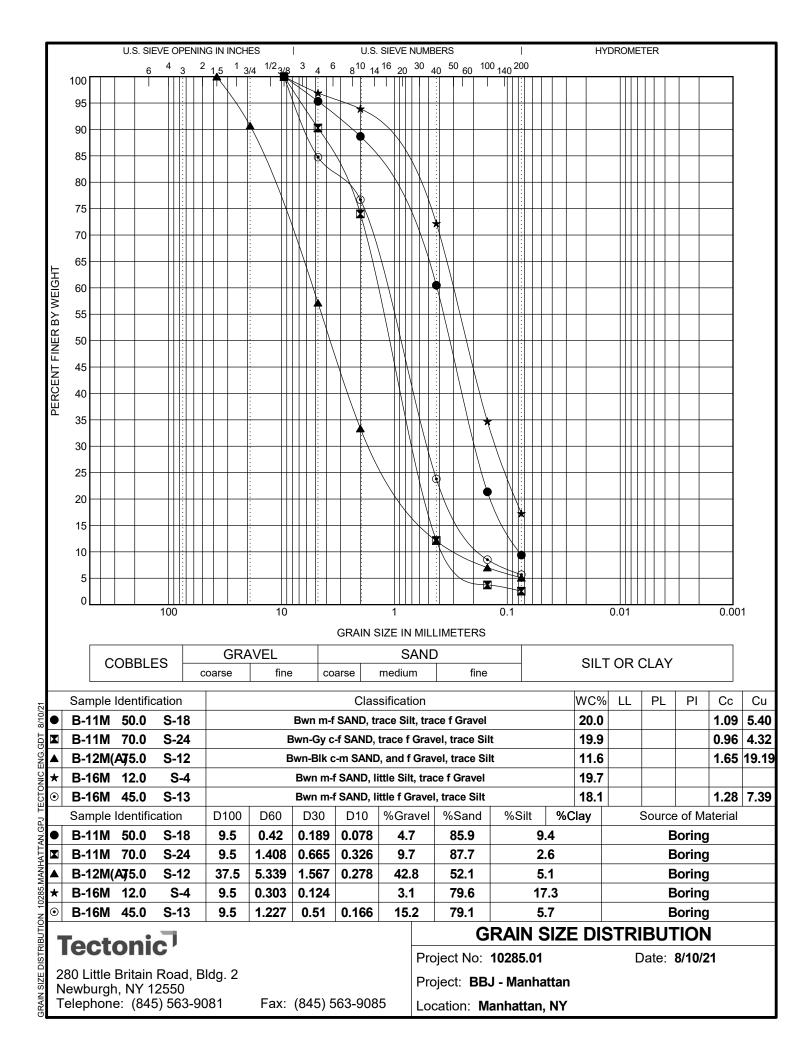


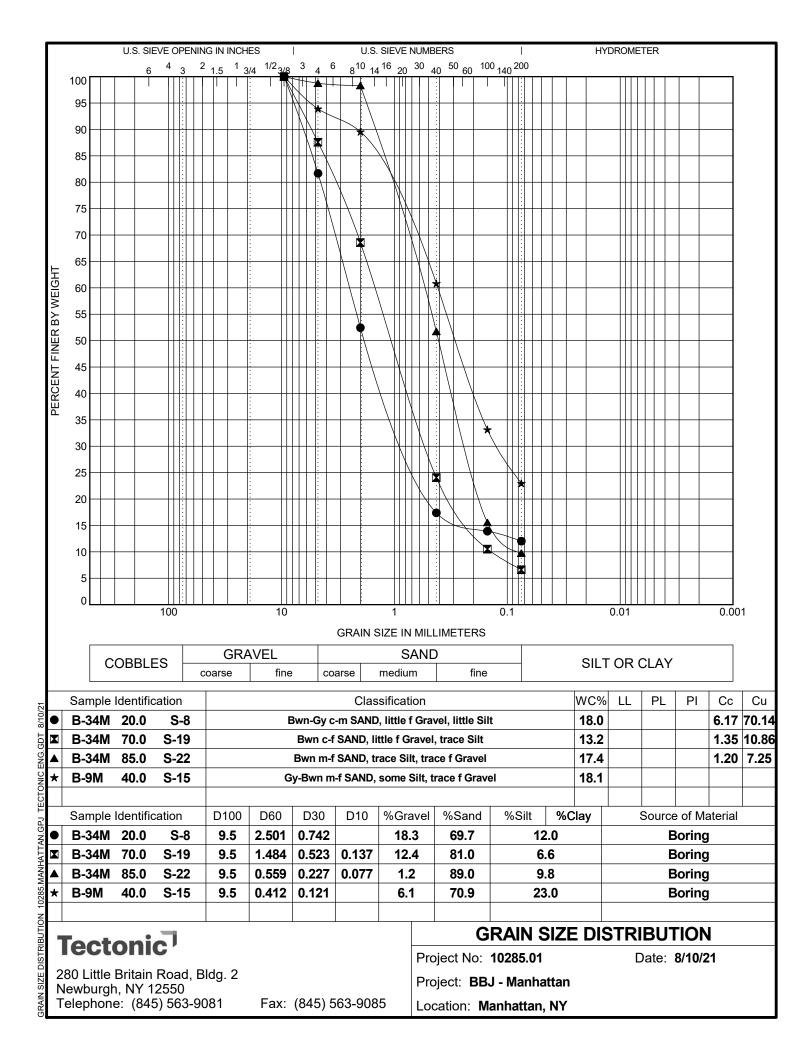


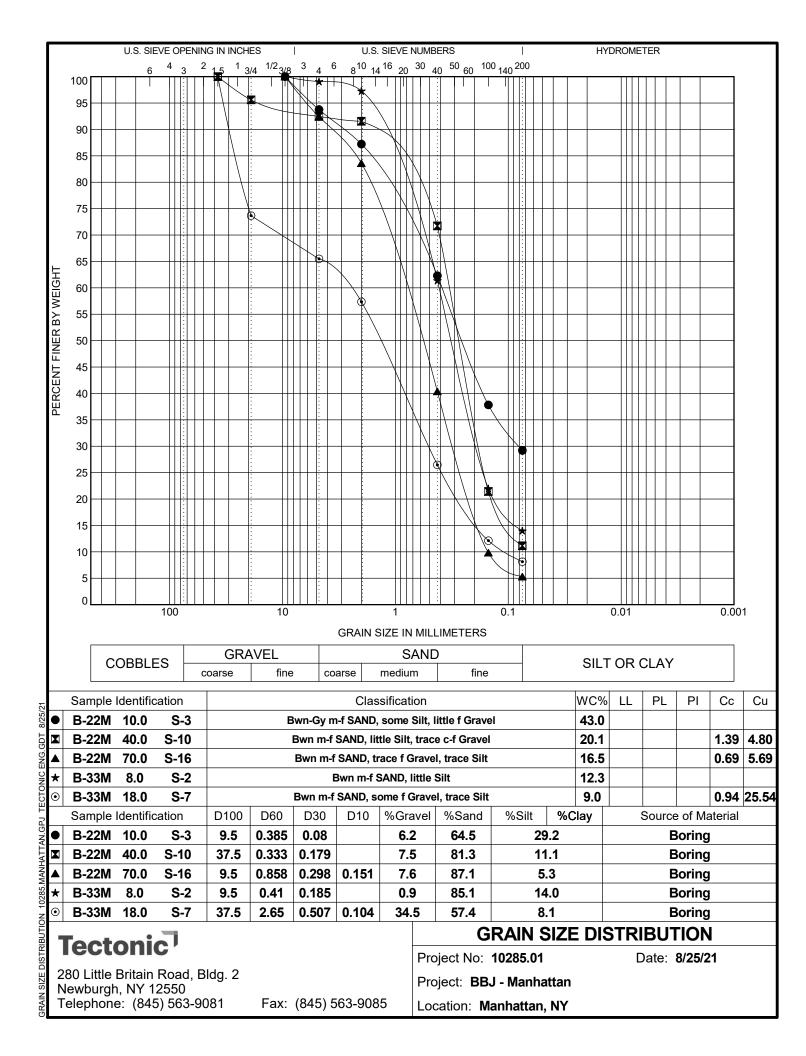


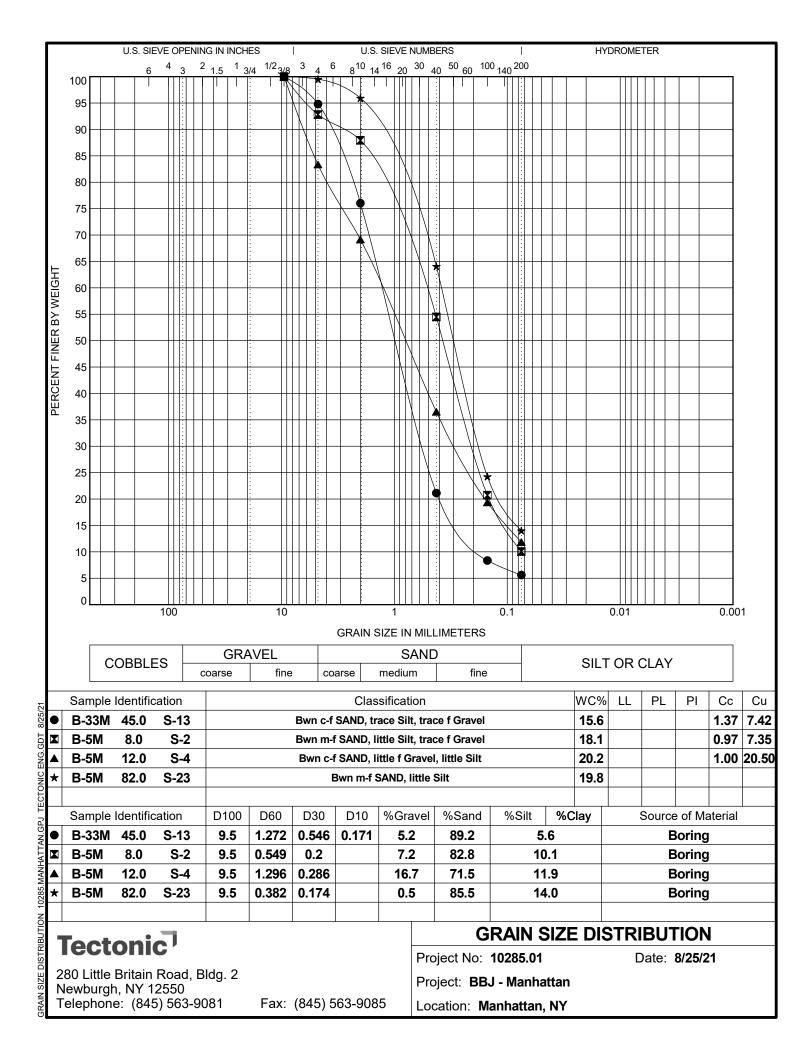


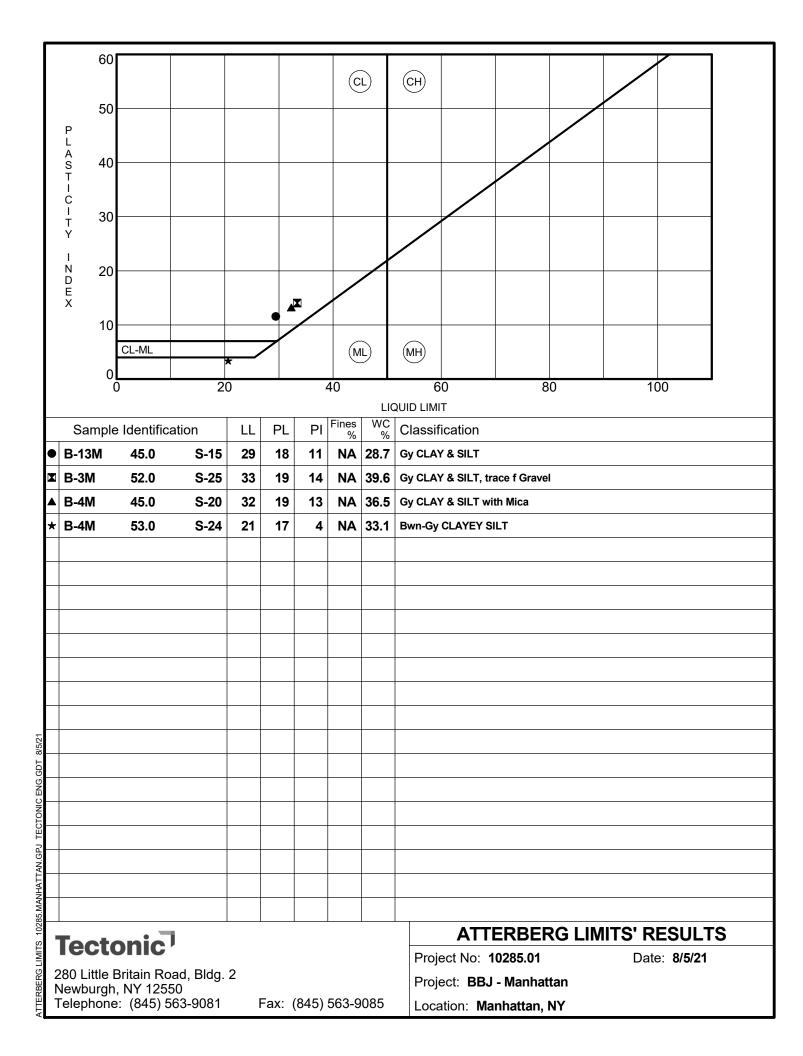


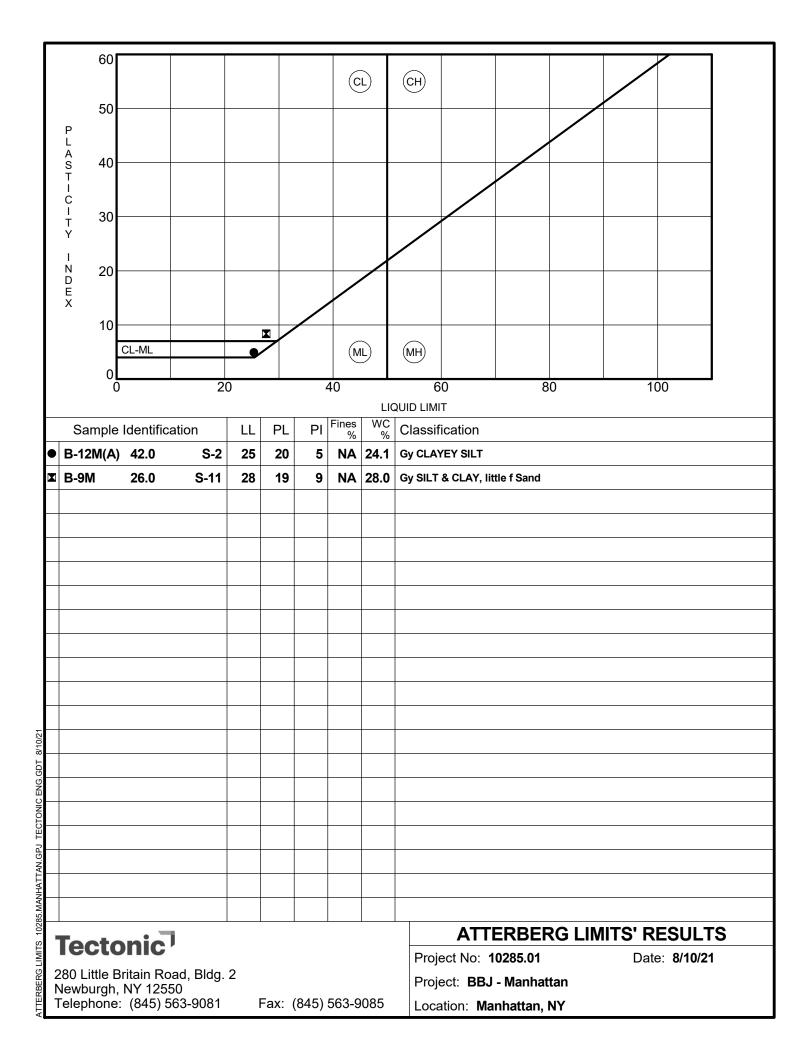


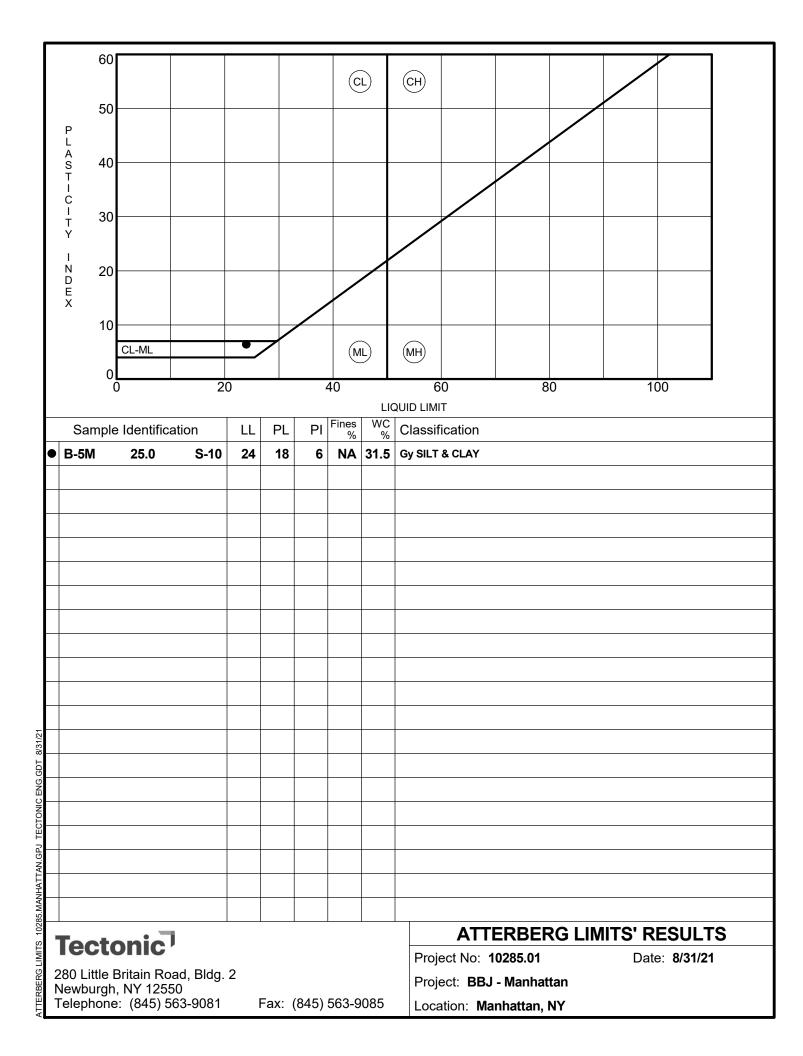














Point Load Strength Test

ASTM D 5731-08

Date: July 21, 2021 Project: BBJ - Manhattan W.O.#: 10285.01

Boring No.	Depth (ft)	Length (in)	Diameter (in)	Diameter (mm)	Load Direction	Maximum Load (kN)	Point Load Strength Index (MPa)	Description
B-9M, C-2 (A)	98 - 101	6.6085	1.8265	46.39	Diametrical	22.73	10.562	Gy, slightly weathered, slightly
B-9M, C-2 (B)	98 - 101	4.089	1.967	49.96	Diametrical	24.15	9.676	fractured, c grained, moderately hard SCHIST
						AVERAGE	10.119	
B-11M, C-1 (A)	90 - 95	6.8365	1.967	49.96	Diametrical	3.35	1.343	Lgt gy, slightly weathered, moderately to
B-11M, C-1 (B)	90 - 95	4.968	1.969	50.01	Diametrical	23.73	9.486	slightly fractured, medium hard, fine grained SCHIST
						AVERAGE	5.415	
B-12M, C-1 (A)	103 - 108	6.072	1.968	49.99	Diametrical	16.17	6.472	Gy-bl-rd, slightly weathered, slightly
B-12M, C-1 (B)	103 - 108	6.459	1.967	49.96	Diametrical	14.00	5.610	fractured, m-f grained hard, SCHIST
						AVERAGE	6.041	
B-16M, C-2 (A)	85 - 90	7.7685	1.97	50.04	Diametrical	13.56	5.415	Gy, slightly weathered, slightly fractured, c
B-16M, C-2 (B)	85 - 90	7.3255	1.977	50.22	Diametrical	15.39	6.103	grained, hard SCHIST
						AVERAGE	5.759	
B-34M, C-2 (A)	92 - 97	8.102	1.981	50.32	Diametrical	6.92	2.734	Gv. moderately fractured hard SCHIST
B-34M, C-2 (B)	92 - 97	7.973	1.978	50.24	Diametrical	8.88	3.517	
						AVERAGE	3.126	



Point Load Strength Test

ASTM D 5731-08

Date: June 28, 2021 Project: Borough Based Jail - Manhattan W.O.#: 10285.01

Boring No.	Depth (ft)	Length (in)	Diameter (in)	Diameter (mm)	Load Direction	Maximum Load (kN)	Point Load Strength Index (MPa)	Description
B-3M, C-2 (A)	110 - 115	7.543	1.976	50.19	Diametrical	12.13	4.814	Blk-gy, slighty weathered, slightly fractured, f
B-3M, C-2 (B)	110 - 115	7.852	1.975	50.17	Diametrical	9.23	3.668	grained, hard, SCHIST
						AVERAGE	4.241	
B-4M, C-3 (A)	110 - 115	5.252	1.974	50.14	Diametrical	11.79	4.690	Gy slightly weathered, slightly fractured c-f
B-4M, C-3 (B)	110 - 115	5.412	1.971	50.06	Diametrical	15.75	6.282	grained hard SCHIST
						AVERAGE	5.486	
B-13M, C-1 (A)	102 - 107	6.987	1.971	50.06	Diametrical	14.38	5.737	Gy, slightly weathered, moderately fractured,
B-13M, C-1 (B)	102 - 107	7.503	1.967	49.96	Diametrical	19.01	7.614	medium hard SCHIST
						AVERAGE	6.676	
B-18M, C-2 (A)	87 - 90	8.089	1.978	50.24	Diametrical	11.05	4.378	Gy moderately weathered, slightly fractured, c-f
B-18M, C-2 (B)	87 - 90	5.645	1.974	50.14	Diametrical	9.81	3.902	grained hard SCHIST
						AVERAGE	4.140	
B-19M, C-1 (A)	115 - 120	5.849	1.971	50.06	Diametrical	4.06	1.619	Gy, moderately weathered, slightly to
B-19M, C-1 (B)	115 - 120	5.012	1.971	50.06	Diametrical	8.40	3.353	moderately fractured, c-f grained, moderately hard, SCHIST
						AVERAGE	2.486	
B-24M, C-2 (A)	98 - 103	5.51	1.979	50.27	Diametrical	9.71	3.842	Gy, slightly weathered to fresh moderately fractured, fine grained, medium hard,
B-24M, C-2 (B)	98 - 103	6.088	1.98	50.29	Diametrical	5.36	2.119	SCHIST
						AVERAGE	2.980	
B-27M, C-1 (A)	98 - 103	6.862	1.967	49.96	Diametrical	15.12	6.056	Gy, hard, unweathered, slightly fractured, fine
B-27M, C-1 (B)	98 - 103	6.323	1.972	50.09	Diametrical	11.76	4.687	grained SCHIST
						AVERAGE	5.371	
B-31M, C-2 (A)	83 - 88	7.746	1.958	49.73	Diametrical	6.87	2.778	Gy, fresh, moderately fractured, moderately hard,
B-31M, C-2 (B)	83 - 88	4.141	1.97	50.04	Diametrical	11.24	4.488	SCHIST
						AVERAGE	3.633	



Point Load Strength Test

ASTM D 5731-08

Date: August 6, 2021 Project: BBJ - Manhattan W.0.#: 10285.01

Boring No.	Depth (ft)	Length (in)	Diameter (in)	Diameter (mm)	Load Direction	Maximum Load (kN)	Point Load Strength Index (MPa)	Description
B-7M, C-1 (A)	82 - 87	6.16	1.978	50.24	Diametrical	17.60	6.971	Gy, slightly weathered, slightly fractured, c
B-7M, C-1 (B)	82 - 87	4.932	1.982	50.34	Diametrical	14.51	5.726	grained, hard SCHIST
						AVERAGE	6.348	
B-22M, C-2 (A)	86 - 89	4.287	1.974	50.14	Diametrical	21.75	8.650	Gy slightly weathered, slightly fractured, c
B-22M, C-2 (B)	86 - 89	4.418	1.978	50.24	Diametrical	26.43	10.472	grained, hard, SCHIST
						AVERAGE	9.561	
B-28M, C-2 (A)	84 - 89	6.12	1.975	50.17	Diametrical	11.81	4.691	Gy, moderately weathered, slightly fractured,
B-28M, C-2 (B)	84 - 89	4.938	1.98	50.29	Diametrical	11.31	4.471	c grained, hard, SCHIST
						AVERAGE	4.581	
B-33M, C-2 (A)	79 - 84	3.703	1.979	50.27	Diametrical	12.67	5.013	Gy-bk slightly - moderately weathered,
B-33M, C-2 (B)	79 - 84	6.232	1.986	50.44	Diametrical	12.13	4.767	slightly - moderately fractured, c-f grained, hard SCHIST
						AVERAGE	4.890	

Boring #	Depth (Ft.)	Sample #	Specimen Description % Gravel % Sand % Fines	USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro- meter (tsf)	Specific Gravity	Organic Content (%)	рН	Average PLSI (Mpa)
B-3M	3.0		Bwn c-f SAND, some f Gravel, trace Silt 21.2 72.3 6.5	SP-SM	6								
B-3M	13.0	S-7	Bwn c-f SAND, some f Gravel, little Silt 22.6 66.9 10.5	SW-SM	7								
B-3M	30.0	S-15	Dk Bwn PEAT w/ Organic Fibers	Pt	113						13.9		
B-3M	32.0	S-16	Dk Bwn PEAT w/ Wood Fibers	Pt	269								
B-3M	36.0	S-18	Dk Bwn PEAT w/ Wood Fragments	Pt	104						20.0		
B-3M	38.0	S-19	Dk Bwn PEAT w/ Wood Fragments	Pt	412								
B-3M	40.0	S-20	Dk Gy Organic CLAYEY SILT	OL	339								
B-3M	42.0	S-21	Dk Gy Organic CLAYEY SILT, trace f Gravel w/ Root Fibers	OL	212								
B-3M	45.0	S-22	Dk Gy CLAYEY SILT **NON-PLASTIC: WILL	OL	104								
B-3M	47.0	S-23	Dk-Gy CLAYEY SILT	CL	59								
B-3M	52.0	S-25	Gy CLAY & SILT, trace f Gravel	CL	40	33	19	14					
B-3M	54.0	S-26	Gy CLAY & SILT	CL	44								
B-3M	57.0	S-27	Gy-Bwn SILT, some f Sand 0 26.6 73.4	ML	1								
B-3M	80.0		Bwn c-f GRAVEL, and m-f Sand, trace Silt	GP-GM	14								
B-3M	110.0		51.5 42.3 6.2 Blk-gy, slighty weathered, slightly fractured, f grained, hard, SCHIST										4.241
B-4M	2.0		Bwn-Gy f GRAVEI, and c-f Sand, trace Silt 48.5 44.1 7.4	GP-GM	13								
B-4M	35.0	S-15	Bwn PEAT w/ Organic Silt	Pt	336						76.1		
B-4M	37.0	S-16	Bwn Organic SILT, trace c-f Sand	OL	583						83.6		
Tec	tor	i.J					Sı	ummary of	Laborate	ory Resu	lts		•
IEC	ton	IC'			Project N	lo:	10285.01	1		Date:	8/31/202	1	
280 Little E Newburgh			. 2		Project:		BBJ - Ma	anhattan					
Telephone: (845) 563-9081 Fax: (845) 563-9085 Location: New York, New York							New Yor	k, New Yo	rk				

	(Ft.)	Sample #	% Gravel	imen Description % Sand	% Fines	USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro- meter (tsf)	Specific Gravity	Organic Content (%)	рН	Average PLSI (Mpa)
B-4M	39.0		Dk Gy-Bwn Orga Pockets, trace c		ıt	OL	238								
B-4M	41.0		Dk Gy-Bwn Orga Pockets, trace c		ıt	OL	153						23.3		
B-4M	43.0	S-19	Gy-Bwn Organic	CLAYEY SILT		OL	129						17.2		
B-4M	45.0	S-20	Gy CLAY & SILT	Γ, with Mica		CL	36	32	19	13					
B-4M	47.0	S-21	Gy CLAY & SILT	Ī		CL	36							6.1	
B-4M	49.0	S-22	Bwn-Gy SILT, wi **NON-PLASTIC	, ,	0LL TO 1/8"**	ML	27								
B-4M	51.0	S-23	Gy Organic SILT	Y CLAY		OL	114						6.4		
B-4M	53.0	S-24	Bwn-Gy CLAYE`	Y SILT		ML	33	21	17	4					
B-4M	65.0	S-27	Gy-Tn m-f SANE Silt 16.4	D, little f Gravel, t 77.4	race 6.2	SP-SM	15								
B-4M	70.0	S-28	Gy-Or-Bwn c-f S Silt 41.1			SP-SM	9								
B-4M	75.0		Rd-Bwn c-f SAN Silt 17.3			SP-SM	15								
B-4M	110.0	C-1	Gy, slightly weat grained, hard SC		actured, c-f										5.486
B-5M	8.0	S-2	Bwn m-f SAND, 7.2	little Silt, trace f (Gravel 10.1	SP-SM	18								
B-5M	12.0	S-4	Bwn c-f SAND, li		e Silt	SW-SM	20								
B-5M	18.0	S-7	Bwn-Rd PEAT			Pt	441						77.3		
B-5M	20.0	S-8	Bwn PEAT, w/ o	ccasional parting	gs of f Sand	Pt	428								
B-5M	22.0	S-9	Bwn-Rd PEAT, I	ittle Clayey Silt		Pt	155						26.9		
B-5M	25.0	S-10	Gy SILT & CLAY			CL-ML	32	24	18	6					
									Su	Immary of	Laborato	ory Resul	lts		
Tect	on	ic					Project N	o:	10285.01	-		Date:	8/31/202	1	
280 Little Bri	ritian Ro	oad, Bldg	. 2				Project:		BBJ - Ma	anhattan					
	NY 125		Fax: (845) 5				Location:								

Boring #	Depth (Ft.)	Sample #	Spe % Gravel	cimen Description % Sand	n % Fines	USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro- meter (tsf)	Specific Gravity	Organic Content (%)	рН	Average PLSI (Mpa)
B-5M	82.0	S-23	Bwn m-f SAND 0.5	, little Silt 85.5	14	SM	20								
B-7M	82.0	C-1	Gy, slightly wea grained, hard S	thered, slightly fra CHIST	actured, c										6.348
B-9M	18.0	S-7	Peat w/ Organio	c Silt		Pt	358						82.6	4.64	
B-9M	26.0	S-11	Gy SILT & CLA	Y, little f Sand		CL	28	28	19	9					
B-9M	40.0	S-15	Gy-Bwn m-f SA Gravel 6.1	ND, some Silt, tra 70.9	ace f 23	SM	18								
B-9M	98.0			thered, slightly fra d, course grained											10.119
B-11M	20.0	S-8	Dk Bwn SILT, li Gravel	ttle c-f Sand, little	F		112								
B-11M	50.0	S-18	Bwn m-f SAND Gravel 4.7	, trace Silt, trace f 85.9	f 9.4	SP-SM	20								
B-11M	70.0			ND, trace f Grave		SP	20								
B-11M	90.0	C-1	Lgt gy, slightly v	weathered, mode d, medium hard, f											5.415
B-12M	8.0	S-3	Bwn c-f SAND, Silt 22.5	some f Gravel, tr 73.4	ace 4.1	sw	14								
B-12M	18.0	S-8	Bwn m-f SAND 15.4	, some Silt, little f 53.9	Gravel 30.7	SM	17								
B-12M(A)	42.0	S-2	Gy CLAYEY SI	LT		CL-ML	24	25	20	5					
B-12M(A)	75.0		Bwn-Blk c-m SA Silt 42.8	AND, and f Grave 52.1	l, trace 5.1	SW-SM	12								
B-12M(A)	103.0	C-1	Gy-bl-rd, slightly m-f grained har	y weathered, sligh d, GNEISS	ntly fractured,										6.041
B-13M	16.0	S-7	Gy-Blk m-f SAN Silt 20.4	ID, some f Grave 69.7	l, trace 9.9	SP-SM	14								
B-13M	25.0			ND, some f Grave	el, trace 5.5	SW-SM	15								
B-13M	35.0	S-13	Rd-Bwn PEAT			Pt	288						68.9		
B-13M	40.0	S-14	Bwn PEAT			Pt	295								
						•	· · · · ·			umman: cf	Laborati	ory Pear	lte		
Tect	ton	ic					Project N	lo:	Si 10285.01	ummary of 1		Date:	lts 8/31/202	1	
280 Little B Newburgh,	NY 125	550					Project:		BBJ - Ma	anhattan					
Telephone: (845) 563-9081 Fax: (845) 563-9085 Location: New York, New York							Location		New Yor	k, New Yo	rk				

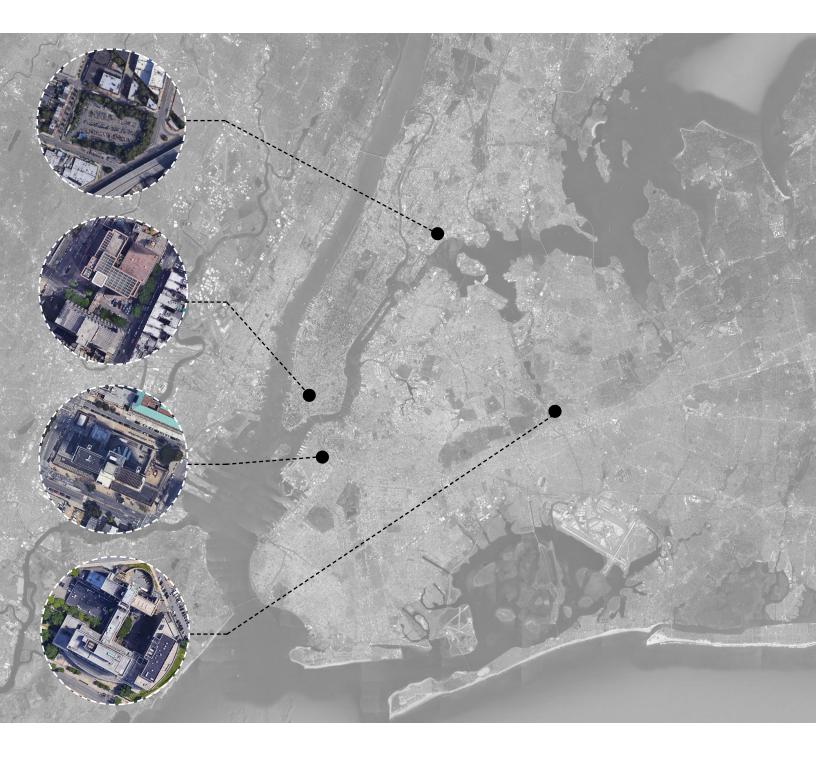
Boring #	Depth (Ft.)	Sample #	Spe % Gravel	cimen Descriptic % Sand	on % Fines	USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro- meter (tsf)	Specific Gravity	Organic Content (%)	pН	Averag PLSI (Mpa)
			% Glaver	% Sanu	% Filles										
B-13M	45.0	S-15	Gy CLAY & SIL	T		CL	29	29	18	11					
B-13M	50.0	S-16	Gy CLAY & SIL	T		CL	39								
B-13M	52.0	S-17	Gy CLAY & SIL	T, trace Organic	S	CL	24						0.6	5.2	<u> </u>
B-13M	55.0	S-18	Bwn SILT, trace	-		ML	24								
B-13M	60.0	S-19	Rd-Bwn f SAND			SP-SM	23								
B-13M	65.0	S-21	Silt	89.8 ND, little c Grav		SP-SM	17								
B-13M	75.0	S-23	Silt	76.3 SAND, trace f G	,	SP-SM	19								
B-13M	90.0	S-26	8.2 Rd-Bwn c-f SAN 33.9	86.6 ND, some c-f Gra 52.9	5.1 avel, little Silt 13.2	SM	14								
B-13M	102.0	C-1		thered, moderat											6.676
B-16M	12.0	S-4		, little Silt, trace f 79.6	Gravel	SM	20								
B-16M	45.0	S-13	15.2	, little f Gravel, tr 79.1	5.7	SW-SM	18								
B-16M	85.0	C-2	Gy, slightly wea grained, hard S	thered, slightly fi CHIST	ractured, c										5.759
B-18M	6.0	S-1	Wh-Tn f GRAVI Silt 60.4	EL, and c-m Sar 36.5	nd, trace 3.1	GP	7								
B-18M	20.0	S-6	Bwn m-f SAND, 0.2		26.7	SM	16								
B-18M	30.0	S-8	Gy-Bwn m-f S/	AND, little c-f Gra	avel, trace Silt	SP	15								
B-18M	65.0	S-14		trace f Gravel, tr 90.8		SP	21								
B-18M	77.0	S-17	Silt 11.4	ND, little f Gravel 84.9	3.7	sw	17								
B-18M	87.0	C-1	c-f grained, har		htly fractured,										4.140
B-19M	30.0	S-15	Bwn m-f SAND 0.2	, little Silt 86.8	13	SM	18								
Tee	Feeteniel							Summary of Laboratory Results							
Tectonic							Project N	o:	10285.01 Date: 8/31/2021					1	
Newburgh	, NY 125						Project:			anhattan					
elephone	e: (845)	563-9081	Fax: (845) 5	563-9085			Location		New Yo	rk, New Yo	rk				

Boring #	Depth (Ft.)	Sample #		cimen Descriptio		USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro- meter (tsf)	Specific Gravity	Organic Content (%)	pН	Averag PLSI (Mpa)
			% Gravel	% Sand	% Fines						()		()		
B-19M	40.0	S-17	Bwn-Gy SILT, s 0	20.9	79.1	ML	0								
B-19M	50.0	S-19	Gy-Or c-f SAND Silt 31.4), some f Gravel, 55.8	little 12.8	SM	12								
B-19M	65.0	S-22		, some f Gravel, 71.1		SP	14								
B-19M	85.0	S-26	Silt 8.3	ND, trace f Grave 87.5	4.2	SW	19								
B-19M	97.0	S-27	Gravel 5	SAND, trace Silt, 88.5	6.6		16								
B-19M	115.0	C-1	moderately frac hard, SCHIST	weathered, sligh tured, c-f grained	d, moderately										2.486
B-22M	10.0	S-3	6.2	ND, some Silt, lit	29.2	SM	43								
B-22M	40.0	S-10	7.5	little Silt, trace c	11.1	SW-SM	20								
B-22M	70.0	S-16	7.6	trace f Gravel, t	5.3	SP-SM	17								
B-22M	86.0	C-2	grained, hard, S												9.56
B-24M	6.0	S-1	8wn-Gy c-f GRA	AVEL, little m-f S 17.2	and, trace Silt 2.9	GP	11								
B-24M	10.0	S-3	Bwn-Gy m-f SA 0.2	ND, trace Silt 95.1	4.7	SP	19								
B-24M	30.0	S-7	Gy-Bwn m-f SA Silt 32.8	ND, some f Grav 51.2	vel, little 15.9	SM	12								
B-24M	40.0	S-9	Bwn-Gy c-m SA	ND, trace f Grav	el, trace Silt	SP	24								
B-24M	60.0	S-12	Bwn-Gy c-f SAN 0.4	97.5 ND, trace Silt 98.2	1.4	SP	21								
B-24M	98.0		Gy, slightly wea fractured, fine g Micaceous GNE	thered to fresh n rained, medium EISS	noderately hard,										2.980
B-27M	35.0	S-13	Bwn m-f SAND, 3.9	little Silt, trace c	Gravel 16.2	SM	17								
B-27M	45.0	S-15	Bwn-Gn-Pk c-f (46.5	Gravel, and c-f S 42	11.5	GW-GM	11								
B-27M	55.0	S-17	Bwn-Blk-Gn c-f 47.6	Gravel, and c-f S 41.7	Sand, little Silt 10.6	GW-GM	11								

	Summary of Laboratory Results						
Tectonic'	Project No:	10285.01	Date:	8/31/2021			
200 Elilio Britan Road, Blag. 2	Project:	BBJ - Manhattan					
Newburgh, NY 12550 Telephone: (845) 563-9081 Fax: (845) 563-9085	Location:	New York, New York					

Boring #	Depth (Ft.)	Sample #	Specimen Description % Gravel % Sand % Fines	USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro- meter (tsf)	Specific Gravity	Organic Content (%)	pН	Average PLSI (Mpa)
			70 Graver 70 Gard 70 Filles										
B-27M	70.0	S-20	Bwn m-f SAND, trace f Gravel, trace Silt 4.8 91.6 3.6	SP	20								
B-27M	90.0	S-24	Bwn CLAYEY SILT, little c-f Sand **NON-PLASTIC: WILL NOT ROLL TO 1/8"**	ML	23								
B-27M	98.0	C-1	Gy, hard, unweathered, slightly fractured, fine grained SCHIST										5.371
B-28M	84.0	C-1	Gy, moderately weathered, slightly fractured, c grained, hard, GNEISS										4.581
B-31M	12.0	S-4	Bwn m-f SAND, some Silt 0 76.8 23.2	SM	19								
B-31M	30.0	S-9	Rd-Bwn m-f SAND, trace Silt, trace f Gravel 4.1 89.4 6.5	SW-SM	19								
B-31M	35.0	S-10	Bwn SILT, some f Sand 0 27.1 72.9	ML	0								
B-31M	60.0	S-15	Bwn-Gy m-f SAND, little c Gravel, trace Silt 18.2 77.6 4.1	SP	17								
B-31M	75.0	S-17	Bwn-Gy c-f SAND, some Silt 0 67.2 32.8	SM	0								
B-31M	83.0	C-2	Gy, fresh, moderately fractured, moderately hard, Micaceous SCHIST										
B-33M	8.0	S-2	Bwn m-f SAND, little Silt 0.9 85.1 14.0	SM	12								
B-33M	18.0	S-7	Bwn m-f SAND, some f Gravel, trace Silt 34.5 57.4 8.1	SP-SM	9								
B-33M	45.0	S-13	Bwn c-f SAND, trace Silt, trace f Gravel 5.2 89.2 5.6	SW-SM	16								
B-33M	79.0	C-2	Gy-bk slightly - moderately weathered, slightly - moderately fractured, c-f grained, hard SHIST										4.890
B-34M	20.0	S-8	Bwn-Gy c-m SAND, little f Gravel, little Silt 18.3 69.7 12	SP-SM	18								
B-34M	70.0	S-19	Bwn c-f SAND, little f Gravel, trace Silt 12.4 81 6.6	SW-SM	13								
B-34M	85.0	S-22	Bwn m-f SAND, trace Silt, trace f Gravel 1.2 89 9.8	SW-SM	17								
B-34M	92.0	C-1	Gy, moderately fractured, hard SCHIST										3.126
Teel		:.7					Su	ummary of	Laborate	ory Resu	lts		
Tectonic						lo:	10285.0 [,]	1		Date:	8/31/202	1	
280 Little Britian Road, Bldg. 2 Newburgh, NY 12550 Telephone: (845) 563-9081 Fax: (845) 563-9085						Project: BBJ - Manhattan							
elephone	e: (845)	563-9081	Fax: (845) 563-9085		Location		New Yor	k, New Yo	rk				

APPENDIX III





Master Plan for the Borough Based NYC Jail System Task 5.3c.1 Final Geotechnical Testing Report - Manhattan November 1, 2018 Preliminary Geotechnical Report Master Plan for Borough Based NYC Jail System Manhattan Facilities - 120 & 125 White Street Manhattan, New York

> Perkins Eastman 115 Fifth Avenue New York, New York 10003

> > November 1, 2018



NEW YORK CITY | WASHINGTON, DC



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Re: Preliminary Geotechnical Report Master Plan for Borough Based NYC Jail System Manhattan Facilities - 120&125 White Street Manhattan, New York MRCE File No. 13176

Greetings:

November 1, 2018

Perkins Eastman

In accordance with Task 5.3c of our proposal dated May 7, 2018, Mueser Rutledge Consulting Engineers (MRCE) has completed a preliminary subsurface investigation for the referenced project. We provide herein a summary of the investigation, our interpretation of subsurface conditions, and preliminary recommendations for foundation design and construction, including geotechnical design parameters. We note that no comments were received for our Draft Report issued for Task 5.3b.

We will be pleased to answer questions regarding this report and further assist in foundation design, construction and other geotechnical aspects of the project.

Very truly yours,

MUESER RUTLEDGE CONSULTING ENGINEERS

Robert T. Wisniewski, PE

NEW

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EXHIBITS

The following exhibits are attached to illustrate our report:

SITE AND PROJECT DESCRIPTION

Two sites are under consideration in the Borough of Manhattan, New York, as shown on Figure No. 1. The north project site, 120/125 White Street, is the subject of this report. The site is along both sides of White Street between the intersections with Baxter Street to the east and Centre Street to the west, occupying the south portion of Block 198 and the northern portion of Block 167, as shown on the 2018 Topographic Survey by Matrix New World Engineering, Land Surveying and Landscape Architecture, P.C. (Matrix). The other project site, 80 Centre Street, is about 400 to 500 feet to the south and is discussed in a separate report.

In general, topography slopes up from west to east. Along White Street, street grades range from about El. + 14 at the intersection with Centre Street to about El. +19 at Baxter Street.

New York City Transit (NYCT) J and Z subway lines run in a 4-track tunnel below Centre Street along the west side of the sites. The bottom of the subway structure is at about El. -18, corresponding to a depth of approximately 35 below street grade, as shown on Drawing No. GS-1-M. The subway structure curves beneath the northwest corner of Block 198.

The site is currently occupied by the Manhattan Detention Complex on Block 198 and NYC Criminal Courts Building on Block 167.

DATUM

Elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD88). NYCT Datum is 98.4 feet below NAVD88.

PROPOSED CONSTRUCTION

The proposed development consists of construction of a new jail facility consisting of a 27-story building with a footprint area of about 70,000 square feet, and a single basement level at El. +1. The basement may include depressed areas for elevator pits, sump pits, and underground fuel tanks.

AVAILABLE INFORMATION

We were provided with information about the site:

- 120/125 White Street Topographic Survey, Drawing No. V101.00, by Matrix New World Engineering, Land Surveying and Landscape Architecture, P.C. (Matrix), dated 6/2/2018.
- 120/125 White Street Utilities Survey, Drawing No. V102.00, by Matrix, dated 6/2/2018.
- EDR Aerial Photo Decade Package, dated March, 2018.
- Certified Sanborn Map Report, dated March, 2018.
- EDR Historical Topo Map Report, dated March, 2018.
- Manhattan Programmatic Diagram, dated July, 2018.
- Master Plan drawings for three schemes, including site plans, floor plans, and stacking diagrams, by Perkins Eastman, dated 8/26/2018.
- Investigation Report: Plaza Settlement Study, by Superstructures Engineers and Architects, dated 10/17/2017.
- Geotechnical Engineering Report for Manhattan Detention Complex, by Yu & Associates, Geotechnical, Environmental, and Civil Engineering, dated 5/15/2017.

We also visited the NYCT Archives and obtained drawings for the subway lines beneath Centre Street (Lines J and Z, Route 9, Section 2), dated 1915. In addition, we reviewed our files for previous work in the vicinity of the site for a general understanding of subsurface conditions.

SITE HISTORY AND GEOLOGY

Published historic topographic maps show that a majority of the project site previously contained a body of water called Collect Pond and bordering marshland (Figure No. 2). The pond and the surrounding area were eventually filled for land development and the street grid was established. Some watercourses and marshes in southern Manhattan were initially filled with soils from nearby sand hills. Early development consisted of smaller residential and commercial buildings (Figure No. 3). Eventually those buildings were replaced by larger municipal structures used for jail and court facilities as shown in Figures Nos. 4 (80 Center Street site) and 5. Manmade fill was placed as demolition and construction occurred.

Based on available information, we anticipate that the site is underlain by a surficial layer of manmade fill overlying natural soils (Figure No. 6), all underlain by bedrock. The lower portion of the fill stratum may consist of natural soils from the previous sand hills. Published geologic information shown on Figure No. 6 indicate that natural soils generally consist of stratified drift resulting from previous glaciation. Organic deposits in previous watercourses and marshes are also likely to be present. Bedrock is mapped as the Manhattan Schist Formation with top of rock at depths of about 100 to 150 feet, as shown on Figure No. 7.

SUBSURFACE INVESTIGATIONS

Previous Investigation

In April 2017, three borings, Nos. B-1, B-2, and B-3, were made along the north side of White Street. That investigation was performed by Warren George Inc. under inspection by Yu & Associates. The borings were advanced to depths of 52 to 72 feet, prior to encountering deeper, more compact soils or bedrock. The report by Yu describes a subsurface profile consisting of 23.5 to 37 feet of fill overlying up to 10 feet of peat and up to 16.5 feet of organic silty clay, underlain by sand with gravel and silt. The easternmost boring, No. B-3 encountered very little peat or organic soils. The investigation included one observation well, No. B-2 (OW), in which the groundwater level was measured at a depth of about 15 feet,

corresponding to El. -0.5. Boring locations are shown on Drawing No. B-1-M, and boring logs are included in Appendix A.

Current Investigation

Planning: MRCE developed a preliminary subsurface investigation program consisting of three (3) borings. Two borings, MR-1-M and MR-2P-M, were proposed along White Street. The third boring was proposed at the 80 Centre Street site. One observation well piezometer was planned to monitor the groundwater level in one of the borings along White Street.

Review and approval of the proposed borings was required by NYCT since the borings are within 200 feet of the NYCT subway structure. We prepared a plan and section showing the site and proposed borings with respect to the subway structure. We submitted drawings and obtained approval from NYCT to perform the borings.

We prepared a boring location plan and specifications, obtained bid prices, and awarded the work to Craig Geotechnical Drilling Co., Inc. (Craig) of Mays Landing, New Jersey. The borings were made by Craig between August 14 and August 21, 2018 under the continuous inspection of our engineer, Mr. Yuta Nakamura, who prepared Daily Field Reports and field boring logs.

Soil Sampling: The borings were made in an open area of the site or on the adjacent sidewalk using a CME-55 track-mounted drill rig. The top 5 feet of each boring was advanced using a hand-auger to clear utilities. The borings were then advanced using rotary drilling techniques with a tri-cone roller bit and a combination of drilling fluid and/or casing to stabilize the borehole. Five soil samples were obtained in the first ten feet of each boring, including material recovered in hand-augering, and at five-foot intervals thereafter. Soil samples were obtained by driving a two-inch outer diameter, split-spoon sampler with an automatic 140-lb hammer, free falling 30 inches. The number of hammer blows required to advance the sampler through each of four, six-inch intervals was recorded. The Standard Penetration Test (SPT) resistance expressed in blows per foot (bpf), also termed N-Value, is an indication of the relative density of the material sampled and is calculated by summing the blows from the second and third six-inch intervals. In some instances, where the sampler was unable to penetrate the full 24 inches due to the presence of dense soils, large gravel, cobbles, boulders, or other obstructions, the sampler was driven until 50 to 100 blows were administered, and the actual penetration of the sampler was measured and recorded. Recovered soil samples were classified in the field in accordance with the Unified Soil Classification System (USCS) and placed in glass jars for preservation and transportation to our laboratory.

Numerous obstructions were encountered at shallow depth while attempting to advance Boring MR-1-M leading to multiple offset boring attempts. Offset borings are given a suffix following the boring number beginning with "A", followed by "B", then "C", etc. Borings MR-1-M through MR-1B-M were abandoned after encountering an obstruction at a depth of about 2 feet. Boring MR-1C-M was advanced through this depth and drilled to completion.

Rock Coring: All borings were terminated after coring 5 feet into bedrock. Bedrock was sampled using an NX-size double-tube core barrel equipped with a diamond bit, recovering nominal 2-inch diameter core. Percent recovery and Rock Quality Designation (RQD) were determined for each core run. Recovery is the length of core recovered expressed as a percentage of the total core run. RQD is defined as the sum of the length of recovered core pieces greater than four inches in length between natural breaks expressed as a percentage of the total core run. RQD is an indication of the relative frequency of jointing or natural fracturing of the bedrock. Sketches of recovered rock cores were prepared in the field and are attached to the boring logs. Rock cores were stored in wooden boxes for shipment to our laboratory. Groundwater Monitoring: An open standpipe piezometer was installed in Boring MR-2P-M following completion of drilling to measure the groundwater level. The piezometer consists of a 2-inch I.D. PVC standpipe extending to a depth of 30 feet. The bottom 10-foot section of the standpipe is slotted and surrounded by filter sand to allow free water movement without movement of soil particles. A cap flush with the surrounding surface was installed for protection and to facilitate future water level readings. A rising head test was performed following piezometer installation to confirm proper operation. The rising head test consisted of bailing water out of the piezometer standpipe and measuring the rise in the water level with time. Piezometer construction details and water level readings are recorded on the Piezometer Record accompanying the boring log in Appendix B. The results of the rising head test are also included in the boring log.

Boring Backfill and Final Survey: Borings MR-1-M through MR-1C-M were backfilled with soil cuttings and patched with cold-patch asphalt or concrete upon completion. Final boring locations were measured from existing structures and site features (i.e. adjacent buildings, curb lines etc.) by our engineer and are shown on Drawing No. B-1-M. Ground surface elevations at as-drilled boring locations were estimated using surface elevations shown on the topographic survey prepared by Matrix.

LABORATORY REVIEW AND TESTING

Upon completion of the subsurface investigation, all soil samples and rock cores were delivered to our inhouse laboratory. Field soil and rock descriptions were reviewed and field log records revised for conformance with MRCE Geotechnical Reference Standards and the USCS, described on Drawing No. GS-R. Rock Core Classification Criteria are described on Drawing No. RC-1. Final typed logs incorporating the results of our laboratory review are included in Appendix B.

SUBSURFACE CONDITIONS

Our interpretations of subsurface conditions are illustrated on Geologic Section A-A on Drawing No. GS-1-M. Boring information shown on the sections include sample number and position, SPT resistance (Nvalue) in blows per foot, and the USCS symbol for each soil sample. Core number and position, percent recovery, and RQD are shown for each core run. A description of the Boring Legend is shown on Drawing No. GS-R.

Soil and Rock Strata

General descriptions of the soil strata encountered in the borings and their classification in accordance with the New York City Building Code are summarized below in order of their occurrence with depth. The results from all borings made under our inspection have been included in determining general stratifications and descriptions.

Stratum F – Fill (NYC Class 7): The uppermost material encountered in the borings is a layer of manmade fill, ranging from 18.5 to 19 feet thick. Stratum F consists of loose to medium compact brown, gray brown, and dark gray fine to coarse sand, some to trace silt, trace to some gravel, trace brick fragments, concrete. N-values range from 2 to 21, averaging 10.

Stratum S1 – Upper Sand (NYC Class 3b): A sand layer was encountered beneath the fill in Boring MR-1C-M 17-feet thick, but not encountered in Boring MR-2P-M. The sand appears to be comprised of natural materials and may represent initial filling of watercourses and marshes using nearby soils including sand hills that existed prior to development. Stratum S1 consists of medium compact to loose gray brown, red brown, and brown coarse to fine sand, some gravel, trace to some silt. N-values of Stratum S1 range from 8 to 26, with an average of 17. Stratum Pt – Peat (NYC Class 6): In Boring MR-1C-M, Stratum S1 is underlain by 8.5 feet of peat. Peat is an organic marsh deposit, and was not encountered in Boring MR-2P-M. Stratum Pt consists of medium dark brown peat and wood, some fine to coarse sand. N-values range from 11 to 23 with an average of 17. Two water contents measured in Stratum Pt were 62% and 364%.

Stratum O – Organic Silty Clay (NYC Class 6): In Boring MR-1C-M, Stratum Pt is underlain by 14 feet of organic silty clay. Stratum O is also a marsh deposit, and was not encountered in Boring MR-2P-M. Stratum O consists of medium gray organic silty clay, trace shells, trace fine sand, grading to red brown clayey fine sand, trace mica. N-values range from weight of hammer to 6 with an average of 5. Four water contents measured in Stratum O ranged from 34% to 38%, and averaged 36%.

Stratum C – Clay (NYC Class 6): A clay layer is present below Stratum F in Boring MR-2P-M. Stratum C was not encountered in Boring MR-1C-M. Stratum C ranges in thickness from 3.5 to 5 feet, and consists of medium gray brown silty clay and clayey silt, some to trace fine to medium sand, trace gravel. N-values range from 4 to 7, with an average of 6. Two water contents measured in Stratum C were 20% and 25%.

Stratum S2 – Lower Sand (NYC Class 3b): Stratum S2 was encountered in all three borings beneath the soils described above. Stratum S2 ranges in thickness from 20 feet to 117 feet, and consists of medium compact brown, gray brown, and red brown fine to medium sand, trace gravel to gravely, trace silt, mica, coarse sand. N-values range from 10 to 74, with an average of 21.

Stratum T – Glacial Till (NYC Class 3a): Stratum T, glacial till, was encountered beneath Stratum S2 in Boring MR-1C-M. Stratum T ranges from 16 feet to 24 feet thick, and consists of compact to very compact brown, gray brown, and red brown fine to coarse sand, gravelly to some gravel, some to trace silt, trace mica, trace silt pockets. N-values range from 38 to 91, with an average of 69.

Stratum **DR** – **D**ecomposed **R**ock (NYC Class 3a/1d): Decomposed rock with thickness ranging from 0.5 to 2 feet was encountered overlying intact bedrock in Boring MR-2P-M. Stratum DR consists of very compact gray and brown gravelly fine to coarse sand, some silt. SPT N-values were in excess of 50 blows over 4-inches.

Stratum **R** – Bedrock (NYC Class 1a): All borings were terminated after penetrating 5 feet into intact bedrock, termed Stratum R. Bedrock consists of hard unweathered to slightly weathered gray gneissic schist, blocky to closely jointed with weathered joints. Core recoveries range from 95% to 100% with an average of 98%. RQD varies from 90% to 92%, with an average of 91%. Depth to bedrock in Borings MR-1C-M and MR-2P-M varies from 91.5 to 102.5 feet, corresponding to El. -73 to El. -88.3.

Groundwater Levels

Groundwater levels were measured during the investigation in the piezometer installed in Boring MR-2P-M. Groundwater levels measured in the piezometer range from El. -0.3 to El. -0.9. The 2017 investigation by Yu & Associates included one observation well in which the groundwater level was measured at about El. -1.

Groundwater levels are expected to vary seasonally throughout the year depending on precipitation levels. As such, the groundwater level at the time of construction may be different from levels observed at the time of the field investigation.

RECOMMENDED DESIGN PARAMETERS

The recommended soil and rock design parameters are listed in Table 1, for use in the design of foundations and temporary construction works such as excavation shoring.

Table 1 – Soil and Rock Design Parameters.

Deveneder	Stratum											
Parameter	F, S1	Pt, O	С	S2	Т	DR	R					
Total Unit Weight (pcf)	115	105	115	115	130	130	160					
Buoyant or Effective Unit Weight (pcf)	55	45	55	55	70	70	100					
Angle of Internal Friction (degrees)	30	0	0	32	38	38	-					
Cohesion (psf)	0	500	500	0	0	0	-					
Ultimate Friction Factor, S - soil/rock to concrete	-	-	-	0.5	0.6	0.6	0.7					
Allowable Bearing pressure (tsf)	-	-	-	3.0	6.0	8.0	60					

Table 1 Notes:

- 1. Effective unit weights should be used below the groundwater table and water pressure should be added. Surcharge loads above the ground surface should be included in accordance with the NYC Building Code.
- 2. For basement walls restrained at the top and bottom (rigid walls), use at-rest pressures. For walls restrained at the bottom and free at the top (flexible), use active earth pressures.
- 3. Active and passive pressures may be computed using Rankine or Coulomb earth pressure theory.
- 4. Allowable bearing pressure is net bearing pressure to be applied at the foundation level, in excess of the stabilized overburden pressure, as per the NYC Building Code.

Design Groundwater and Flood Levels

Groundwater levels measured at the time of our investigation ranged between El. -0.3 and El. -0.9, corresponding to a range between 18.8 feet to 19.4 feet below street grade. The groundwater level measured in a well installed in one of the borings reported by Yu showed a range between El. -0.5 and El. -1.0 for one week in April, 2017. Accordingly, we recommend a design hydrostatic groundwater level at El. +4, allowing for some seasonal variation.

Based on the most recent Flood Insurance Rate Maps (FIRM) available, produced by the Federal Emergency Management Agency, the project site is within Zone X, indicating area of minimal flood hazard. In addition, the western portion of White Street (White Street and Centre Street) is in an area with 0.2 percent annual-chance flood event (500-year flood). Facility design must account for these flood events.

SEISMIC EVALUATION

We evaluated seismic parameters based on the NYC Building Code. Our evaluation addressed liquefaction potential and seismic Site Class.

Liquefaction

Soils that are below the groundwater level, sufficiently free of fine grained binder (i.e. silt and clay sizes), and loose in consistency are susceptible to liquefaction during earthquake shaking. A majority of the samples from the borings, particularly in Stratum S, had sufficiently high blow counts to make the possibility of liquefaction unlikely. The few exceptions represent isolated zones. Using the Code specified guidelines, our analysis indicates that underlying soils are not susceptible to liquefaction, and it need not be considered in design.

Site Class

Based on the preliminary MRCE borings and the 2017 investigation performed by Yu & Associates, seismic Site Class E is appropriate. The seismic design spectral response parameters with respect to g, the acceleration of gravity, are $S_{DS} = 0.444g$ and $S_{D1} = 0.170g$.

PRELIMINARY DESIGN RECOMMENDATIONS

Preliminary foundation recommendations are provided based on the results of the subsurface investigation and our understanding of the current building design schemes. The recommendations are intended to satisfy the requirements of the NYC Building Code, and to provide information for foundation and substructure design. Our recommendations should be reviewed if the scope of the proposed construction changes or if additional subsurface information is obtained.

The subsurface investigation reveals a general subsurface profile consisting of a surficial layer of fill underlain by organic peat and clay, sand, till, and decomposed rock, all overlying bedrock. The thickness of the compressible organic stratum is greatest towards the western side of the site, decreasing towards the east, and not present in borings made along the east side. This suggests that the site is near the edge of the previous pond and bordering marsh. The depth to bedrock along White Street ranges from about 92 feet to 102 feet.

Building Foundations

Strata F, S1, Pt, O and C are unsatisfactory bearing materials for building foundations. Therefore, foundations will have to derive support in the underlying more competent natural soils or bedrock. The proposed basement level at El. +1 will be within Stratum F, approximately 10 to 45 feet above competent soil strata capable of supporting the proposed building.

Therefore, deep foundation elements such as driven or drilled piles are recommended for building support. Driven piles, such as steel H-piles or concrete-filled steel pipe piles can provide an allowable design load of about 75 tons if bearing in dense soil (Strata T and DR), and about 150 tons if driven to bedrock (Stratum R). Drilled pile elements such as mini-piles or caissons can penetrate into bedrock to develop much higher capacities. Rock-socketed pile capacities cover a large range depending on size and socket depth. The allowable resistance provided by the bond of concrete to bedrock (Class 1c or better) can be regarded as 200 pounds per square inch (psi). For example, a 13.375 inch drilled pile with a 12 foot long rock socket in bedrock can achieve an allowable design load of 600 tons in compression. Rock socket lengths can be adjusted for uplift capacity, if needed, based on an allowable bond stress of 100 psi for uplift. Larger diameter drilled piles may be more appropriate if higher lateral design loads are required. Selection of the most economical pile size will depend on the magnitude of both vertical and lateral loads and associated tolerable deflections, and can be further evaluated as building design progresses.

Piles installed through compressible soils such as the Strata Pt and O are subject to downward frictional loading (downdrag) by settling soils contacting the pile. Downdrag acts to increase pile loads. Settlement,

resulting in downdrag, could be caused by an increase in site grades or changes in the groundwater level from future dewatering activities. We recommend an allowance of 40 tons per pile for downdrag. Since the proposed piles will develop resistance primarily by end bearing in the till or rock strata, the piles must have sufficient structural capacity to accommodate this additional load.

A minimum center to center spacing of no less than 3 times the pile diameter or diagonal dimension is recommended between piles. No group reduction factors are necessary for axial design loads at that spacing. For lateral loading, group effects must be considered at piles spacing less than 6 times the diameter. Group reduction factors depend on actual pile group arrangement and pile spacing.

All foundations must bear below a 1V:1H influence line extending up from the bottom of the NYCT structure. Piles through the zone of influence must be sleeved down to the influence line to avoid load transfer to the subway structure. Considering the depth of the proposed basement, the foundations along the west side of the proposed development on either site may be within the NYCT influence zone and require provisions to avoid transferring load to the subway structure.

Building Settlement

Settlement of deep foundations bearing on or in bedrock will be negligible and will include elastic shortening of piles. For piles bearing in soil, settlements can be estimated once foundation loads are determined and a foundation type is chosen.

Cellar Slab Support and Uplift Protection

The top of the proposed basement slab is planned at El. +1. The slab will bear on the fill stratum which may undergo settlement, including differential settlement, from the underlying organic soil deposits which vary in thickness across the site. Therefore, the basement slab should be designed as a structural slab supported by the building foundations.

Assuming a 12 inch slab thickness, the bottom of slab will be 4 feet below the design groundwater level and will encounter hydrostatic uplift loading. In addition, elevator and sump pits and the underground fuel tank will extend below the design groundwater level. Where the substructure is submerged, groundwater will produce a hydrostatic uplift pressure that must be resisted by the dead load of the structure or other positive measures provided to resist or relieve excess uplift pressure.

We recommend using a minimum factor of safety of 1.2 in evaluating uplift resistance under the normal design water level. Uplift resistance should be calculated using only the dead weight of the structure in place. Live load within the structure should not be taken as a resisting force to counter uplift pressures. If the dead weight of the structure is not sufficient or the slab design cannot accommodate the full uplift pressure, tiedown anchors, tension piles or other positive measures must be provided to resist the excess uplift pressures.

Foundation Walls

Permanent foundation walls should be designed to withstand long-term, at rest earth pressures, surcharge pressure, and water pressure, consistent with NYC Building Code requirements. At-rest soil and water pressures can be calculated using equivalent fluid pressure of 60 pounds per cubic foot (pcf) above the design groundwater level and 95 pcf below the groundwater level. Foundation walls must also accommodate surcharge pressures in accordance with the NYC Building Code or temporary rise in groundwater level of five feet above the design groundwater level such as may occur due to a water main break or during a flood. Surcharge pressures are based on a uniform vertical loading of 600 psf. This can be converted to lateral pressures of 240 psf to a depth of 10 feet, and 100 psf from 10 to 20 feet deep.

The use of elevated stress levels is appropriate in the design of foundation walls for temporary load conditions.

Waterproofing

We understand the basement is intended as habitable space, including building support, mechanical areas, storage, and parking. In order to provide a dry basement, it will be necessary to install waterproofing below slabs and outside below-grade substructures that extend below the water level. We recommend using a membrane waterproofing system below the bottom slab/mat and outside foundation walls below El. +5, including walls and bottom slabs of elevator/mechanical pits that extend below the water table. We recommend waterstops at construction joints. The waterproofing system must be carefully designed and detailed, and construction inspection is vital to provide proper quality control. It has been our experience that waterproofed cellars may eventually develop leaks, in some cases due to slab cracking or gaps in the membrane despite good construction practice and inspection. Remedial grouting may be needed to stem minor leakage. At a minimum, the remainder of the height of below grade walls should be dampproofed.

PRELIMINARY CONSTRUCTION CONSIDERATIONS

Cellar construction will require excavation to depths of about 15 to 19 feet below sidewalk level and to within a few feet of the groundwater table measured at the time of our investigation. Deeper local excavation is anticipated for construction of elevators and other mechanical pits and a fuel tank. Temporary works including excavation support and underpinning, dewatering, and monitoring systems are required to facilitate below grade construction

Soil Excavation

Basement and foundation construction requires excavation in fill (Stratum F) soils. The bulk of the excavation can be done with conventional earth moving equipment. Existing intact foundations from previous buildings or other demolition debris on the site may require removal using pneumatic hammers. Care is necessary to avoid disturbing the soils beneath the adjacent buildings during demolition work.

Excavation Support

Temporary construction excavations should be sloped as necessary for safety and stability or supported by sheeting and bracing in accordance with OSHA regulations. Open-cut excavation is permissible for shallow excavations, such as for local excavations within the general basement excavation, provided groundwater is properly controlled in advance of excavation and such excavation is stable and does not undermine or cause damage to adjacent structures and facilities. Where such conditions permit, the excavations sides should be sloped no steeper than 1V:1.5H.

The basement excavation will require temporary shoring for earth retention on all faces of the excavation that are not adjacent to existing buildings. The excavation support system must be carefully installed in advance of excavation and must have sufficient stiffness so that lateral movements do not lead to subsidence of sidewalks or damage to the subway structure and buried utilities. Soldier piles and timber lagging braced laterally with tieback anchors or raker bracing are suitable for excavation support provided groundwater is properly controlled. Typically, these walls can be installed within the sidewalk assuming a sidewalk permit is obtained from the NYC DOT. Drilled-in soldier piles are recommended to avoid pile driving and consequent potential for damage to nearby structures and the utilities beneath the sidewalks and streets. On excavation faces that are adjacent to existing buildings, a stiffer excavation support system, such as a secant pile wall, may be needed.

The use of tiebacks will require drilling under the adjacent streets and existing buildings. Plans showing the locations and depths of existing NYCT facilities and utilities in the streets surrounding the property should be prepared to evaluate and inform the contractor if utilities or other underground interferences exist that would restrict the use of tiebacks. An easement from NYC DOT is required for placement of tiebacks into the streets. If tiebacks are installed below the adjacent properties, authorization from the property owners is required. Where tiebacks are not feasible, such as where NYCT facilities are present, internal bracing such as rakers will be necessary.

Recommended parameters for design of excavation support systems are included in Table No. 1. Appropriate surface surcharge pressures per NYC Building Code should be considered such as from adjacent roadways and sidewalks, and potential temporary construction loads. The excavation shoring must be designed by a Professional Engineer licensed in the State of New York with the design submitted for review and approval of NYCT and NYC Department of Buildings (NYC DOB) as part of the foundation permitting process.

Underpinning and Protection of Adjacent Structures

The site is abutted by buildings along the north and south sides and the NYCT subway structure beneath Centre Street. Details of existing foundations must be obtained either by research of building drawings and/or a test pit investigation. In the event that adjacent building foundations bear higher than El. 0, underpinning of the adjacent foundations will be required, or a stiff support of excavation system installed. Excavation will not extend below the subway structure, so underpinning of NYCT facilities will not be required.

Conventional pit underpinning methods are viable provided groundwater is properly controlled. Pit underpinning involves sequenced excavation of small pits beneath the existing foundation. Individual pits are excavated and shored by hand to just below the new foundation depth. The pit is then filled with concrete leaving a 2 to 3-inch gap at the top for future load transfer using steel plates and wedges with drypack. Subsequent pits are excavated and constructed in a sequenced manner to prevent instability and form a continuous wall. Depending on the depth of underpinning, lateral bracing of underpinning pits may be required. Bracing can consist of tiebacks or internal bracing such as inclined rakers, if permission to install tiebacks beneath adjacent buildings is not obtained. If the underpinning pits.

Soils below the adjacent buildings are anticipated to include sands with limited fine grained binder. In this case, grouting of soils below adjacent foundations using microfine cement or sodium silicate is recommended to stabilize the soils in advance of underpinning.

Dewatering and Groundwater Control

The general basement excavation to approximately El. 0 will extend to about the groundwater level measured at the time of our investigation. Depending on the depth of pits, sumps, and the fuel tank, and the thickness of foundation elements, portions of the proposed basement excavation will extend below the groundwater level measured at the time of our investigation. Dewatering during construction will therefore be necessary to provide and maintain dry, undisturbed subgrades for construction. The dewatering system should be designed and maintained with the intent of lowering and maintaining the groundwater level a minimum of two feet below subgrade at all stages of the work. Improperly dewatered soil subgrades are easily disturbed during construction, which will increase settlement and provide poor substructure and foundation performance.

The effects of lowering the water table outside the excavation must be evaluated by the dewatering system designer. The effects of dewatering and extent of depressurization should be monitored with piezometers installed both within and around the excavation. The dewatering system, including

monitoring, should be designed by a Professional Engineer experienced in this work. The NYC Department of Environmental Protection (NYCDEP) requires discharge permits for groundwater extracted from temporary, construction-related sources.

Subgrade Preparation

The basement slab and other substructures will be supported on the deep foundations supporting the building. Nevertheless, care should be exercised to prevent disturbing or loosening the soil in the sides and bottom of excavations to facilitate construction of slabs, pits/sumps, and pile caps. All subgrades should be free of water and inspected and approved for construction by a qualified geotechnical engineer. If soft, spongy, or otherwise unsuitable materials are encountered at the planned subgrade level, those materials should be removed and replaced with compacted Structural Fill or lean concrete.

Pile Installation and Verification Testing

Driven or drilled pile installation must be performed by experienced specialty subcontractors and carefully monitored by a qualified geotechnical engineer to assure the integrity of each pile. The Code requires Special Inspection of pile installation.

We recommend the use of cased drilling methods with internal flush in advancing drilled piles through overburden soils to reduce the risks of ground loss particularly where piles are installed in close proximity to existing structures. The use of drilling methods involving external flush should not be permitted. The use of a percussion hammer or a rotary core drill is appropriate for rock socket construction provided the percussion hammer is only used after the drill casing is properly sealed into sound bedrock. The rock socket should be flushed with clean water following drilling and grouted the same day that drilling is completed to provide a good bond between pile concrete and rock.

The presence of demolition debris in the fill stratum and boulders in the glacial till (Stratum T) should be factored in the selection of pile driving or drilling equipment. Drilling through obstructions and boulders will be slow and may cause significant wear on drilling equipment. The Contractor should expect to pre-excavate and/or spud through the fill to avoid obstructions in order to drive the piles through the fill without damage.

Under the Building Code, driven piles must undergo compression load testing to confirm design loads and pile driving criteria. Static load testing can be supplemented with dynamic testing as described in the Code. Drilled piles or caissons socketed in bedrock do not require load tests provided that each rock socket is inspected by a Professional Engineer using video survey to confirm rock quality. The pile load testing program should include lateral load tests to confirm design loads in excess of one ton per pile.

Backfill Under and Around Structures

Structural Fill is recommended for use beneath structures and slabs, and as backfill adjacent to foundation walls. Structural Fill should conform to NYC Building Code requirements for Controlled Fill, consisting of a well graded sand, gravel, crushed rock, recycled concrete aggregate, or a mixture of these containing no organic matter, wood, brick or other deleterious materials or equivalent materials with a maximum particle size of 3 inches and a maximum of 10 percent passing the No. 200 sieve. Structural Fill should be placed in loose lifts not exceeding 12 inches in thickness (six inches where hand operated equipment is used), at its optimum moisture content plus or minus 2 percent, and compacted to a minimum of 95% of the Modified Proctor maximum dry density (ASTM D 1557).

Pre-Construction Condition Survey and Monitoring during Construction

A pre-construction condition survey of adjacent buildings and NYCT facilities should be made to establish existing conditions. This survey should include photographing existing conditions and installing crack gages over existing cracks on the inside and outside of the structures. A post-construction survey may be needed to verify building conditions.

A program of monitoring vibration and movement of adjacent structures during construction is recommended and required by NYCT. The program should include seismographs and control points on adjacent buildings and NYCT structures to measure construction vibrations, and vertical and lateral movement. Control points should also be established at regular intervals along each side of the excavation support system for similar movement monitoring. Monitoring should occur on a regular basis during demolition, excavation, and foundation construction. Noise monitoring can be considered depending on community issues.

The surrounding streets and sidewalks should also be regularly inspected for cracks, lateral movement, and settlement. If progressive movement is observed, corrective measures must be taken immediately.

Dewatering systems must include the installation of piezometers to monitor groundwater lowering and verify that the required drawdown is achieved in advance of excavation to avoid instability and softening in subgrade soils.

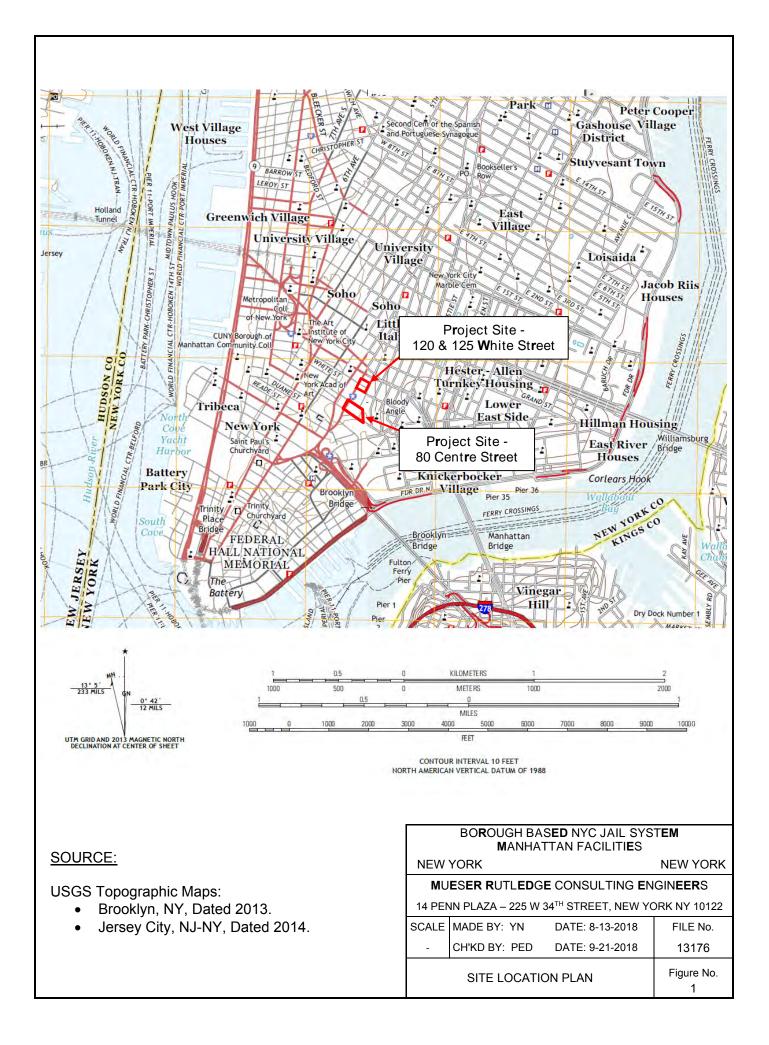
GEOTHERMAL ASSESSMENT

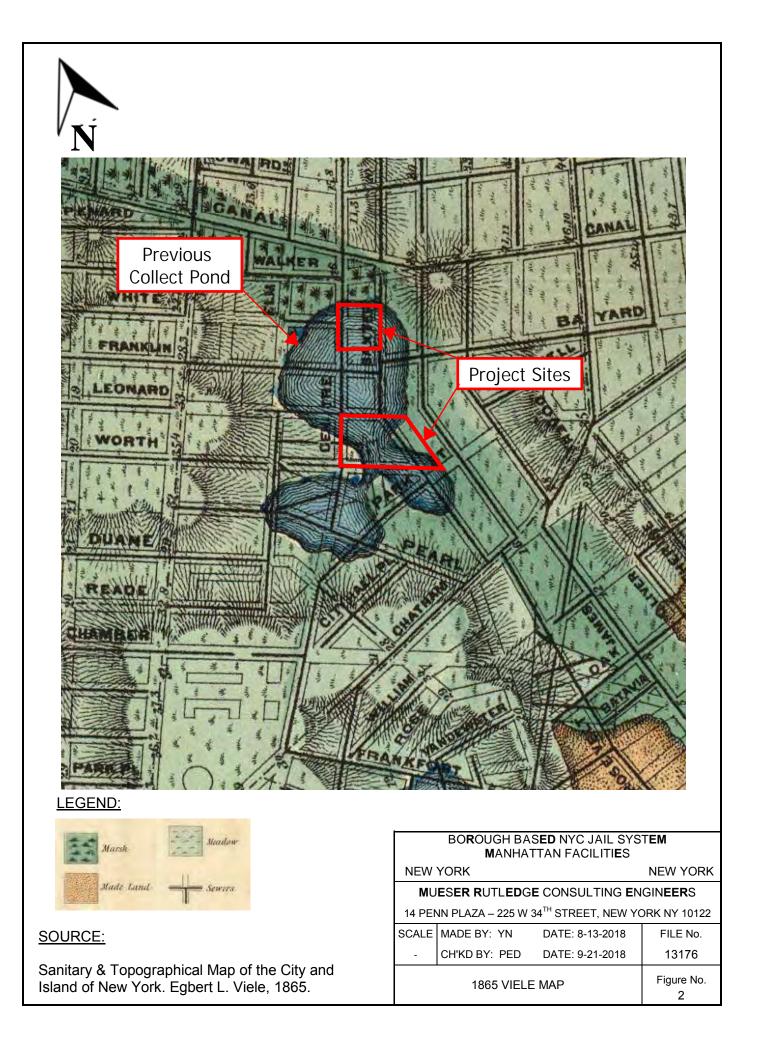
GI Energy performed a desk top evaluation of geothermal heating and cooling solutions. Options considered included closed loop and open loop systems, and energy piles. For the Manhattan - 120 & 125 White Street site, energy piles can be considered since deep foundations will likely be used. General details for the energy piles, a closed loop system using 80 boreholes, and an open loop system using one pair of boreholes are summarized in Appendix C.

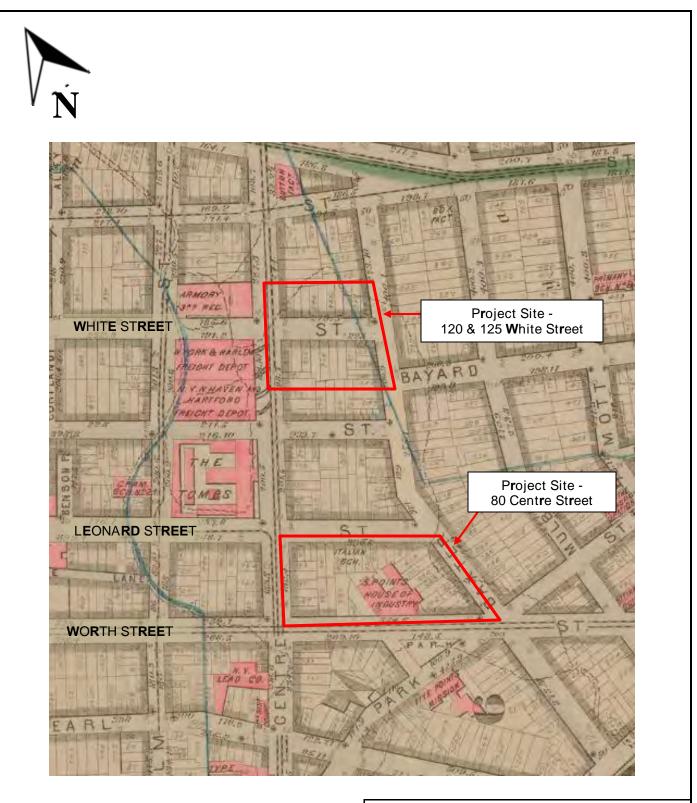
CLOSURE

This report presents the results of our initial investigation and our preliminary recommendations for foundation design and construction for the proposed structure. We will be pleased to answer questions regarding this report and further assist in design and construction of the project as work progresses. Once the building scheme finalized in a future phase, a subsurface investigation that satisfies the requirements of the NYC Building Code will need to be developed and conducted.

EXHIBITS







SOURCE:

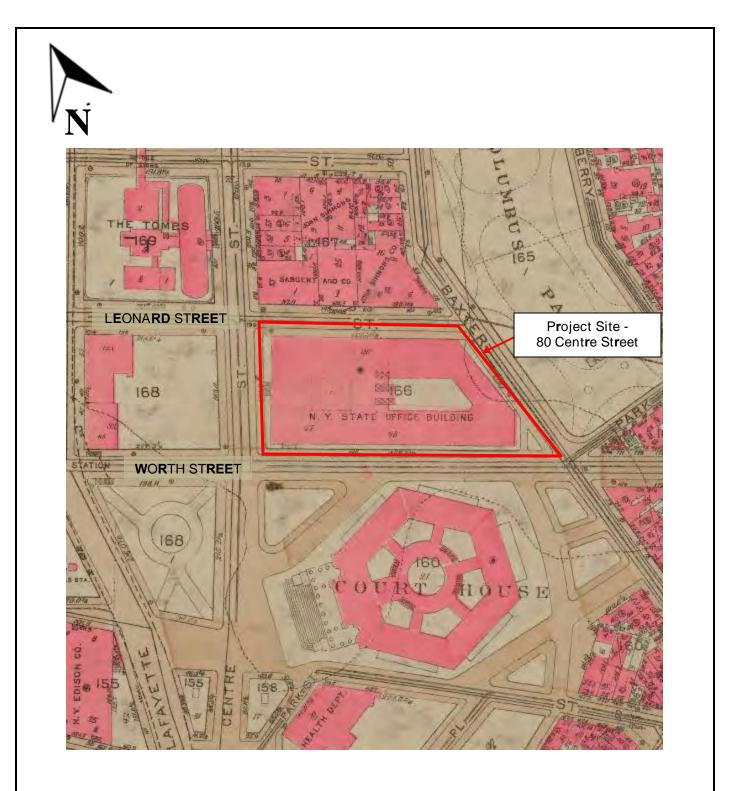
Atlas of the Entire City of New York, by G. W. Bromley & E. Robinson, Dated 1879. (digitalcollections.nypl.org/collections/atlases-ofnew-york-city)

BOROUGH BASED NYC JAIL SYSTEM MANHATTAN FACILITIES NEW YORK NEW

NEW YORK

MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA – 225 W 34TH STREET, NEW YORK NY 10122

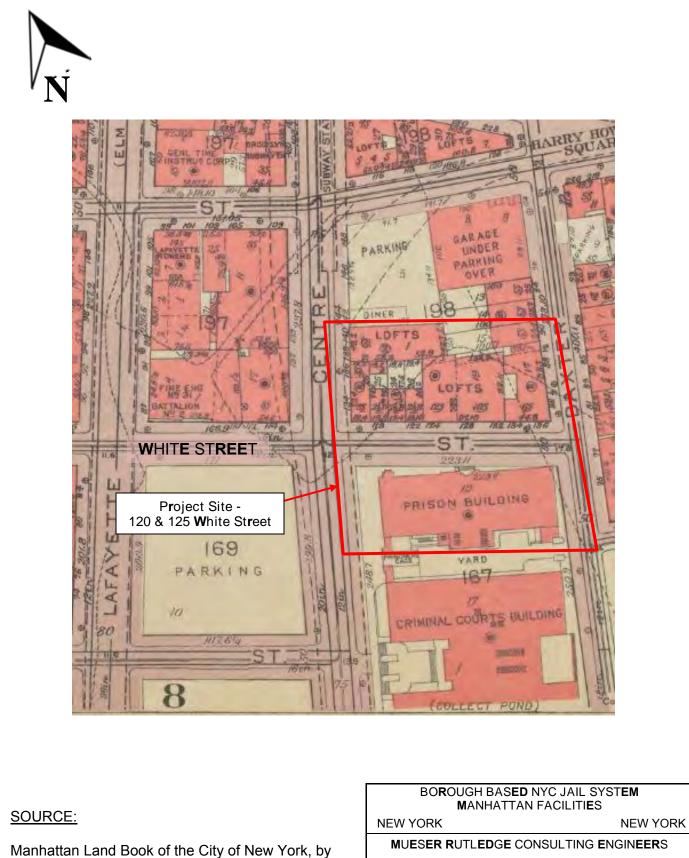
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	1879 BROML	Figure No. 3				



SOURCE:

Land Book of the Borough of Manhattan, City of New York, by G.W. Bromley & Co., Dated 1930. (digitalcollections.nypl.org)

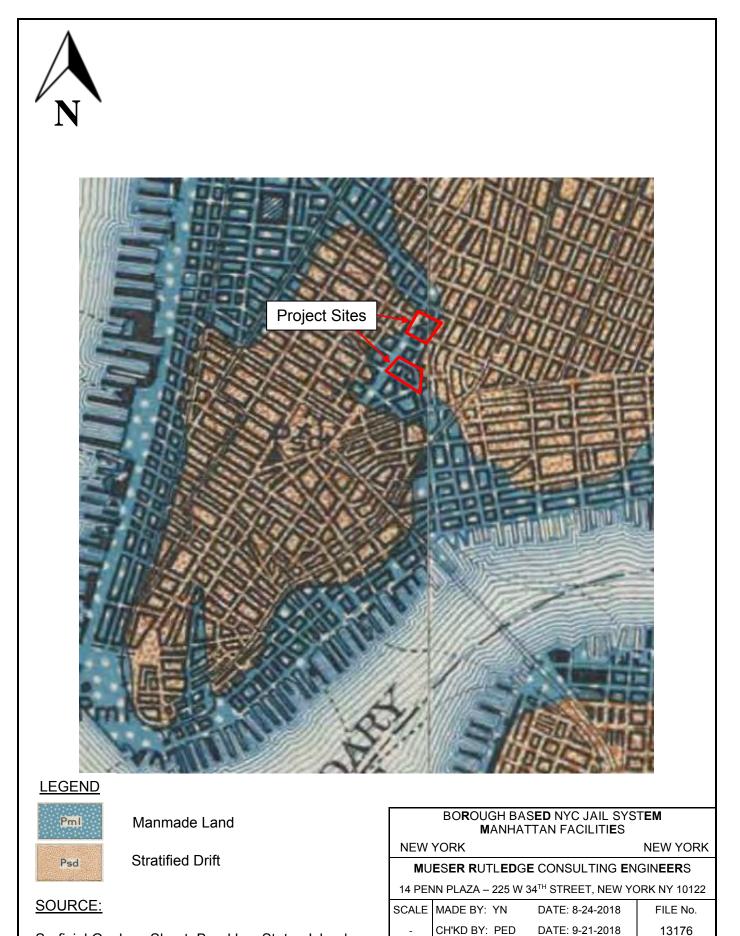
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1930 BROMLEY MAP Figure N 4								



G. W. Bromley & Co., Dated 1955. (digitalcollections.nypl.org)

14 PENN PLAZA – 225 W 34TH STREET, NEW YORK NY 10122

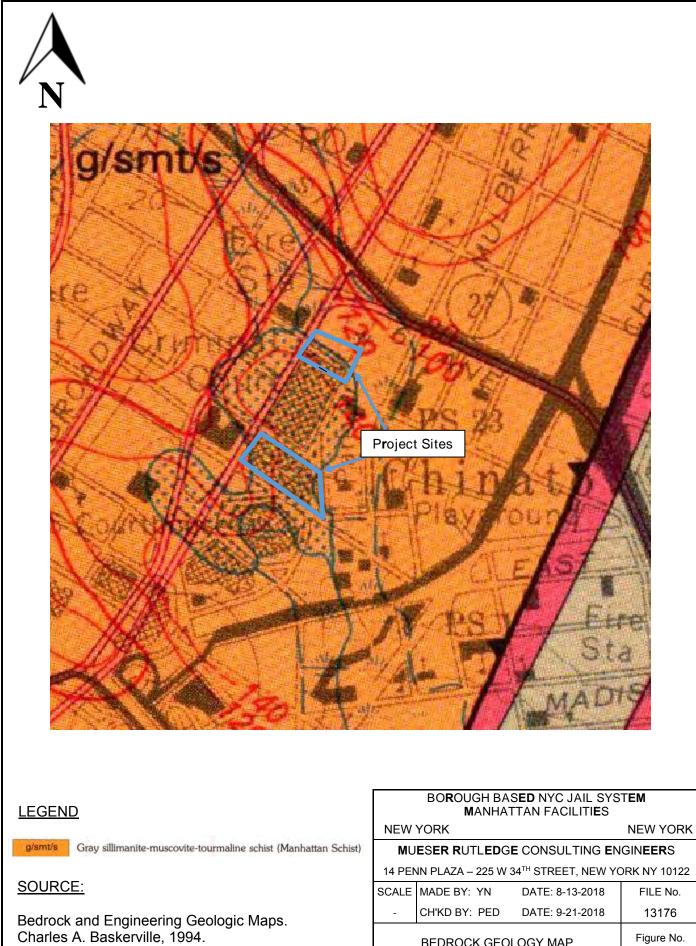
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	Figure No. 5					



Surficial Geology Sheet, Brooklyn, Staten Island Quadrangle, Dated 1901.

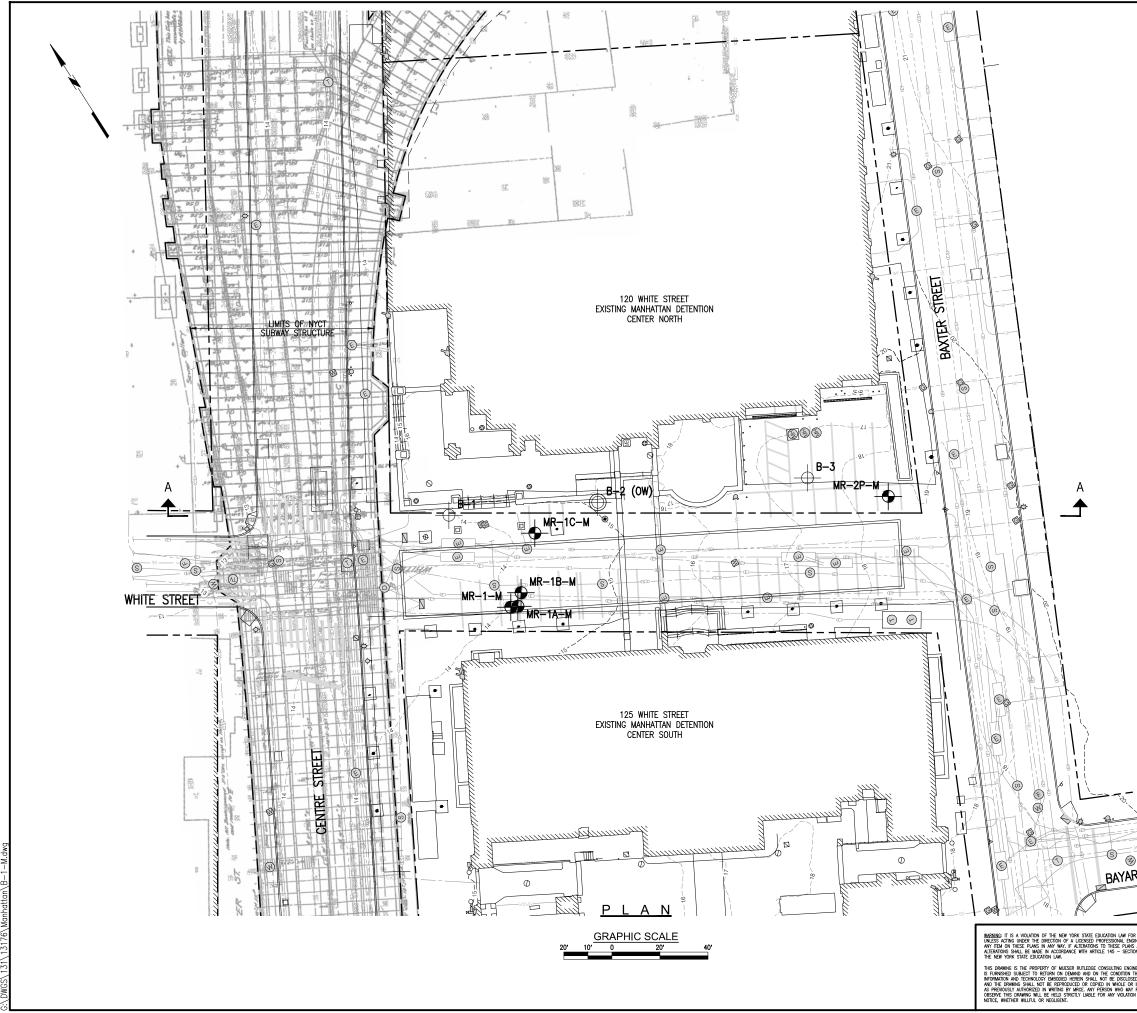
SURFICIAL GEOLOGY MAP

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Figure No.							
6							



BEDROCK GEOLOGY MAP

Figure No. 7

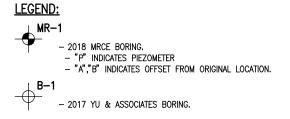


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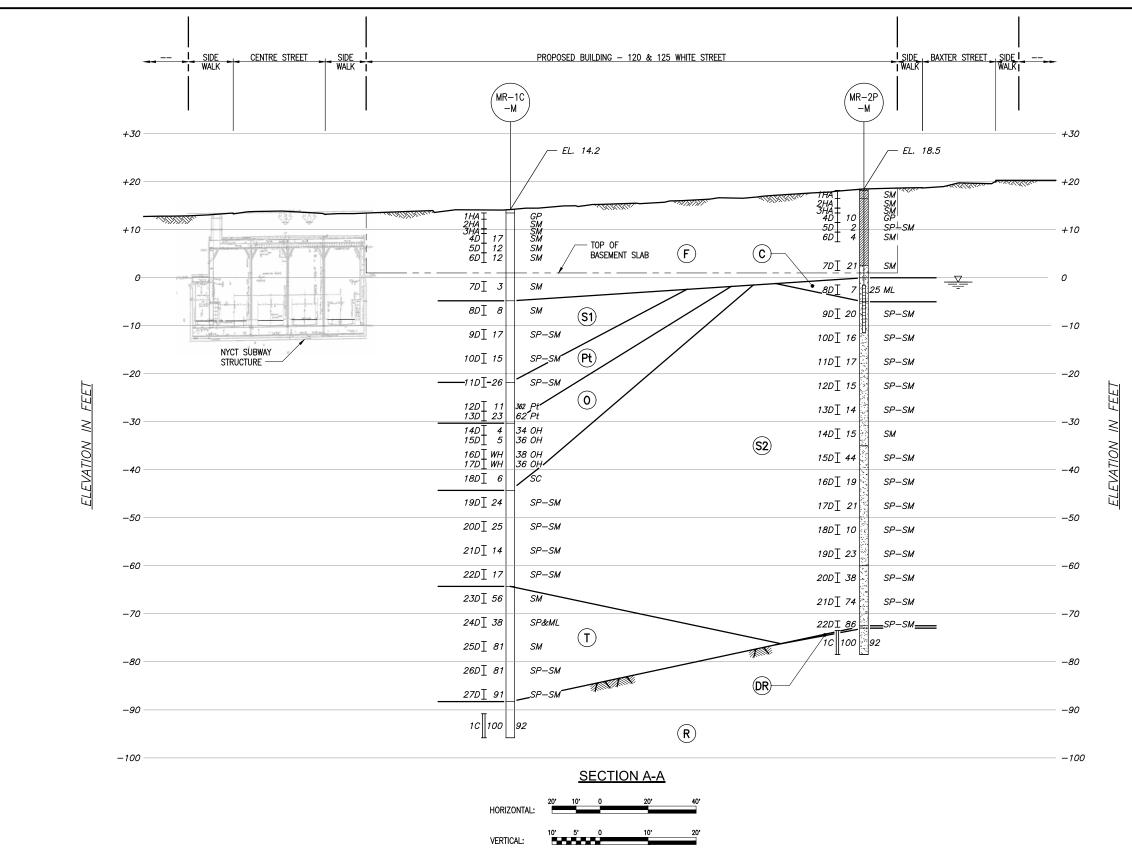
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NOTES:

- 1. BASE PLAN OF EXISTING BUILDINGS AND FEATURES OBTAINED FROM TOPOGRAPHICAL SURVEY, MANHATTAN DETENTION CENTER, PREPARED BY MATRIX NEW WORLD, DATED JUNE 2, 2018, AND GOOGLE MAPS, 2018.
- 2. LOCATIONS OF NYCT STRUCTURES ARE APPROXIMATE AND WERE OBTAINED FROM NYCT RECORDS OF ROUTE 9, SECTION 2.
- 3. ELEVATIONS ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- 4. FOR SECTION A-A SEE DRAWING NO. GS-1-M.
- ALL BORINGS WERE MADE IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE AND THE STANDARD SPECIFICATIONS FOR SUBSURFACE BORING AND SAMPLING BY MUESER RUTLEDGE CONSULTING ENGINEERS (MRCE).
- 2018 BORINGS WERE PERFORMED BY CRAIG TEST BORING BETWEEN AUGUST 14, 2018 AND AUGUST 17, 2018 UNDER CONTINUOUS INSPECTION OF MRCE.
- 7. 2017 BORINGS WERE PERFORMED BY WARREN GEORGE INC. IN APRIL 2017 UNDER THE DIRECTION OF YU & ASSOCIATES.
- 8. FOR MR BORINGS, LOCATIONS WERE MEASURED AND GROUND SURFACE ELEVATIONS WERE ESTIMATED FROM EXISTING SURVEYED REFERENCE POINTS.



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BORING LOCATION PLAN 1 or USD North Coefficient 1 20 & 125 WHITE STREET B-1-M



WARNING: IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ANY TEM ON THESE PLANS IN ANY WWY. IF ALTERNIONS TO THESE PLANS ARE LATERNIONS SHALL BE LANGE IN ACCORDUCE WITH ARTICLE 145 – SECTION 720 THE NEW YORK STATE EDUCATION LAW. THIS DRAWING IS THE PROPERTY OF MUESER RUILEDGE CONSULTING ENGINEERS IS FURNISHED SUBJECT TO RETURN ON DEMAND AND ON THE CONDITION THAT TH NORMATION NAT DEMANLOOF DEMOSED HEREIN SHALL NOT EE DISCUSED OR AND THE DRAWING SHALL NOT EE REPRODUCED OR CORED IN WHOLE OR IN AR S REVOLUSY. JUNHORZED IN WINNIN BY MICE. ANY THESIN WHO MULL OR IN AR OSERVE THIS DRAWING WILL BE HED STROLLY LABLE FOR ANY WOLATION OF T NOTICE, WITHERPE WILLIOU OR REQUERIT.

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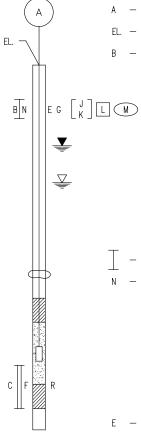
- 1. FOR BORING AND SECTION LOCATION AND PLAN NOTES, SEE DRAWING B-1-M.
- 2. STRATIFICATION AND GROUND SURFACE SHOWN ARE INTERPOLATIONS BETWEEN AND BEYOND BORINGS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
- 3. SEE DRAWING GS-R FOR BORING LEGEND AND SUMMARY OF UNIFIED SOIL CLASSIFICATION SYSTEM. SEE DRAWING RC-1 FOR ROCK CORE CLASSIFICATION CRITERIA.
- 4. BORING LOGS WITH INDIVIDUAL SAMPLE DESCRIPTIONS WERE MADE BY MRCE AND INCLUDED IN APPENDIX A.

GENERAL STRATA DESCRIPTIONS:

- E ALL LOOSE TO MEDIUM COMPACT BROWN, GRAY BROWN, AND DARK GRAY FINF TO COARSE SAND SOUL TO TRUE TO THE DARK GRAY FINE TO COARSE SAND, SOME TO TRACE SILT, TRACE TO SOME GRAVEL, TRACE BRICK FRAGMENTS, CONCRETE,
- UPPER SAND MEDIUM COMPACT TO LOOSE GRAY BROWN, RED (S1)BROWN, AND BROWN COARSE TO FINE SAND, SOME GRAVEL, TRACE SOME SILT.
- $\underline{\textbf{PEAT}}$ MEDIUM DARK BROWN PEAT AND WOOD, SOME FINE TO COARSE SAND. Pt
- ORGANIC SILTY CLAY MEDIUM GRAY ORGANIC SILTY CLAY, TRACE \bigcirc SHELLS, TRACE FINE SAND, GRADING TO RED BROWN CLAYEY FINE SAND, TRACE MICA.
- \bigodot $\frac{\text{CLAY}}{\text{TO}}$ MEDIUM GRAY BROWN SILTY CLAY AND CLAYEY SILT, SOME TO TRACE FINE TO MEDIUM SAND, TRACE GRAVEL
- S2 LOWER SAND MEDIUM COMPACT BROWN, GRAY BROWN, AND RED BROWN FINE TO MEDIUM SAND, TRACE GRAVEL TO GRAVELLY, TRACE SILT, MICA, COARSE SAND.
- $\underline{\text{GLACIAL TILL}}$ COMPACT TO VERY COMPACT BROWN, GRAY BROWN, AND RED BROWN FINE TO COARSE SAND, GRAVELLY TO SOME (T)GRAVEL, SOME TO TRACE SILT, TRACE MICA, TRACE SILT POCKETS.
- **<u>DECOMPOSED ROCK</u>** VERY COMPACT GRAY AND BROWN GRAVELLY FINE TO COARSE SAND, SOME SILT. OR
- R ROCK - HARD UNWEATHERED TO SLIGHTLY WEATHERED GRAY GNEISSIC SCHIST, BLOCKY TO CLOSELY JOINTED WITH WEATHERED JOINTS.

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(WRCE), E USED T EXCEPT E OR HS	GEO	LOGIC SECTION A-A	DRAWING NUMBER

						UNI	FIED SOIL	CLASSIFICAT	ION ((IN	ICLUDI	ING ID	ENTIFIC	CATION	AND D	DESCRI	IPTION)						
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	action Size.	clean gravels Tle or no fines)	GW	WELL GRADED GRAVELS, GRA LITTLE OR NO FI			grain sizes an L intermediate i		100 90					TANDARD SI	EVES	#200	#100 #70 #	#50 #40 #	30 #16	#10 #8	#4	3/8"	3/4" 1" 11/	¹⁷ 2 ^{1/2} 3 100
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40. 200	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	WITH FINES RECIABLE OF FINES)	GM	SILTY GRAVELS, GRAVEL-S	SAND-SILT-MIXTURES.	Nonplastic fine: (for identificati					REQUIRE	MENTS	FOR GW ER THAN 4											60 50 50
RRAINED SOILS LARGER THAN (ED EYE	MORE THAN IS LARGEF /4 -IN. SIZE MAY . 4 SIEVE SIZE)	GRAVELS (APPF AMOUNT	GC	CLAYEY GRAVELS, GRAVEL-S	SAND-CLAY MIXTURES.	(FOR IDENTIFICATI	PLASTIC FINES ON PROCEDURES	SEE CL BELOW)	DER CENT		$C_c = \frac{(D_c)}{D_1}$	₃₀) ² 10 ^{× D} 60	Between 1) For Sw	AND 3										44
COARSE-GRAINED SOILS MATERIAL IS <u>LARGER</u> THAN N E TO THE NAKED EYE	ACTION SIZE. ATION, THE 1/ VIT TO THE NO.	(S)	SW	WELL-GRADED SANDS, G LITTLE OR NO			WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.				$C_{u} = \frac{D}{D}$ $C_{c} = \frac{(D)}{D}$	$(D_{x_0})^2$	er than 6 Between 1							REPRESENTAT SAND SAMP	LES - SW			
THAN HALF OF PARTICLE VISIBLE	변환문학	CLEAN (LITTLE OR	SP	POORLY GRADED SANDS, LITTLE OR NO		PREDOMINANTLY WITH SOME	one size or a i Intermediate siz				.002	.005	.01			GRAI		.5 IN MILLIMI s a	TERS	2.0	5	GR	20 A V E	
MORE TH SMALLEST PAF	<u>SAN</u> THAN HALF OF ALLER THAN I (FOR VISU	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-S	SILT-MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)			CLASSIFICATION CLASSIFICATION CLASSIFICATION CLASSIFICATION COARSE FINE COARSE FINE COARSE GRAIN SIZE PLOT COBBLE 3-12" DEPENDING ON PERCENTAGE OF FINES (FRACTION SMALLER THAN NO. 200 SIEVE SIZE) COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS:						к s е ј 3–12"									
ABOUT THE	S SN	SANDS V (APPR AMOUNT	sc	CLAYEY SANDS, SAND-	-CLAY MIXTURES.	(FOR IDENTIFICATI	PLASTIC FINES ON PROCEDURES	SEE CL BELOW)					LESS TH MORE T 5% TO	HAN 12%		GM,	GP, SW, S GC, SM, S RDERLINE C	SC	JIRING USE (OF DUAL SY	MBOLS, I.E.	: SP-SM, G	P-GM.	
SIEVE SIZE SIEVE SIZE IS						IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN NO. 40 SIEVE SIZE			60														A-UNE	
40. 200 0. 200						DRY STRENGTH (CRUSHING CHARACTERISTICS)	DILATANCY (REACTION TO SHAKING)	TOUGHNESS (CONSISTENCY NEAR PL)		50									СН					
R THAN I THE N	<u>S IX</u>	20	ML	INORGANIC SILTS, SANDY S OR CLAYEY SILTS WITH SL		NONE TO SLIGHT	QUICK TO SLOW	NONE																
ALLEI	ANIT D CL		CL	INORGANIC CLAYS, OF LOW GRAVELLY CLAYS, S SILTY CLAYS, LEA	ANDY CLAYS,	MEDIUM TO HIGH	NONE TO VERY SLOW	MEDIUM		40										/				
FINE-GRAINEI Material IS <u>SM</u>	11011	5 4	OL	ORGANIC SILTS AND ORGA LOW PLASTICI		slight to Medium	SLOW	SLIGHT	PLASTICITY	30														
HALF OF MA ⁻	LAYS	MH INORGANIC SILTS,		INORGANIC SILTS, MICACEOU FINE SANDY OR SILTY SC		slight to Medium	SLOW TO NONE	SLIGHT TO MEDIUM						CL			/					& OH		
THAN	CH INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS. HIGH TO VER HIGH		СН	INORGANIC CLAYS OF HIGH	PLASTICITY, FAT CLAYS.	HIGH TO VERY HIGH	NONE	HIGH		20						/								
MORE			MEDIUM TO HIGH	NONE TO VERY SLOW	SLIGHT TO MEDIUM		10																	
HIGHLY ORGANIC SOILS Pt PEAT AND OTHER HIGHLY ORGANIC SOILS.		ORGANIC SOILS.	READILY IDENTIFIED BY COLOR, ODOR, SPONGY FEEL AND FREQUENTLY BY FIBROUS TEXTURE.			4	CL ML	ML			ML &													
BOUNDARY CLASSIFICATIONS: SOILS POSSESSING CHARACTERISTICS OF TWO GROUPS ARE DESIGNATED BY COMBINATIONS OF GROUP SYMBOLS, I.E.: SP-SC POORLY GRADED SAND WITH CLAY BINDER.				/BOLS,		10		20	31		40 STICITY CH	5 ART FOR	LIQUID		OF FINE G	, Rained So	80 DILS	90		00				
TERMINOLOGY USED IN MRCE SOIL DESCRIPTIONS																								
DEGREE OF COMPACTION FOR NON-PLASTIC SOIL			 		CLAY AND CLAYEY S	<u>и</u> + 									ONSTITUENT SED IN SOII									
Di	DEGREE OF COMPACTION BLOWS PER FOOT		CONSISTENCY		UNCONFINED CO STRENGTH	(TSF)			IDENTIF CHARACT	TERISTICS					E CLASSIFI		-							
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	COMPACT			30 TO 50	STIFF		1.0 TO		PRE	issure Ficult	E FOR RE 'TO REMO	EMOLDING			31% T	0 49% -	SOIL GR	VE FORM O ROUP)F					
	VERY COMPACT		G	REATER THAN 50	HARD		GREATER TH	AN 4.0	CAN	h fing Inot e H fing	BE REMOL	_DED			(EG. SANDY) EQUAL AMOUNT — "AND" (EG. SAND AND GRAVEL)									
* standard penetration resistance using 140 lb. Hammer free falling 30 inches to drive a 2 inch o.d. sput-spoon sampler.				TS ARE DESCRIBED U FOR NON-PLASTIC S		F COMPACTION																		



BORING LEGEND

A -- NUMBER, TYPE AND LOCATION OF BORING

EL. — GROUND SURFACE ELEVATION AT BORING

- NUMBER AND TYPE OF SAMPLE
 - D DRY SAMPLE TAKEN WITH 2 INCH O.D. SPLIT SPOON
- E G $\begin{bmatrix} J \\ K \end{bmatrix}$ L M U UNDISTURBED SAMPLE TAKEN WITH 3 INCH O.D. FIXED PISTON TYPE SAMPLER
 - UD UNDISTURBED SAMPLE EXTRUDED IN FIELD AND PLACED IN JAR DUE TO POOR RECOVERY OR DISTURBANCE
 - S THIN TUBE SAMPLE TAKEN WITH SHELBY TUBE SAMPLER
 - W WASH SAMPLE
 - NR NO RECOVERY
 - LENGTH OF SAMPLE ATTEMPT

STANDARD PENETRATION RESISTANCE. NUMBER OF BLOWS FROM 140 LB. HAMMER FREE FALLING 30 INCHES REQUIRED TO DRIVE 2 INCH O.D. SPLIT SPOON SAMPLER ONE FOOT AFTER INITIAL PENETRATION OF 6 INCHES, UNLESS A SPECIFIC PENETRATION IS INDICATED.

- P PRESSED OR PUSH SAMPLE
- WH SAMPLE TAKEN UNDER WEIGHT OF HAMMER AND RODS
- WR SAMPLE TAKEN UNDER WEIGHT OF RODS
- E AVERAGE NATURAL WATER CONTENT OF SAMPLE, IN PERCENT OF DRY WEIGHT
- G - UNIFIED SOIL CLASSIFICATON GROUP SYMBOL OF SAMPLE
- [J] = ATTERBERG LIQUID LIMIT VALUE K = ATTERBERG PLASTIC LIMIT VALUE

L

С

F

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- COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONFINED COMPRESSION TEST
- M COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST
- GROUNDWATER LEVEL OBSERVED IN BORING ∗- MUD LEVEL
 - GROUNDWATER LEVEL OBSERVED IN PIEZOMETER
 - ROCK CORE NUMBER
 - LENGTH OF CORE RUN
 - LENGTH OF CORE RECOVERED EXPRESSED AS A PERCENT OF THE LENGTH OF CORE RUN
- R ROCK QUALITY DESIGNATION-THE SUM OF THE LENGTHS OF PIECES OF RECOVERED CORE WHICH ARE EQUAL TO OR GREATER THAN FOUR INCHES IN LENGTH, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-SITU SEPARATIONS AND MECHANICAL BREAKS RESULTING FROM CORING ARE IGNORED.
- IMPERVIOUS SEAL
 - SAND FILTER SURROUNDING PIEZOMETER INTAKE ELEMENT
 - INTAKE ELEMENT
 - COBBLE OR BOULDER



GEOTECHNICAL REFERENCE STANDARDS GS-R

TABLE R-1 ROCK CORE CLASSIFICATION CRITERIA

TABLE R-2 WEATHERING AND JOINTING DEFINITIONS

DEGREE OF FABRIC WEATHERING

Unweathered UnW No decomposition

SIW

MdW

HiW

Dec

DEGREE OF JOINT WEATHERING

CHARACTERISTIC

or discoloration rings when struck

Rings when struck

Deteriorated fabric

Thuds when struck Friable, easily

broken by hand

CHARACTERISTIC

Soil-like

Iron Stained

FABRIC WEATHERING

Slightly

Weathered

Moderately Weathered

Weathered

Decomposed

JOINT WEATHERING

Highly

				INTACT SPECIMEN TYPICAL MINIMUM				
HARDNESS/SOUNDNESS CLASSIFICATION	TYPICAL GEOLOGIC CLASSIFICATION	IDENTIFICATION CHARACTERISTICS	NX OR	LARGER	BX OR	COMPRESSIVE STRENGTH		
			REC	RQD	REC	RQD	PSI	
HARD ROCK UNWEATHERED MAY BE JOINTED	-CRYSTALLINE IGNEOUS, OR METAMORPHIC ROCKS -HIGHLY SILICEOUS SEDIMENTARY ROCKS	 UNWEATHERED FABRIC RINGS WHEN STRUCK WITH BAR SHARP AND HARD FRACTURE SURFACE WHEN BROKEN MECHANICALLY MAY BE JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS MAY BE IRON STAINED. DOES NOT DISINTEGRATE UPON EXPOSURE DOES NOT SLAKE IN WATER 	95 OR MORE	85 OR MORE	85 OR MORE	75 OR MORE	3000	
MEDIUM HARD ROCK SLIGHTLY WEATHERED MAY BE CLOSELY JOINTED	AS FOR HARD ROCKS AND: – MODERATELY SILICEOUS SEDIMENTARY ROCKS – CERTAIN CALCAREOUS ROCKS	AS FOR HARD ROCK, EXCEPT: – FABRIC MAY BE IRON STAINED – MAY BE CLOSELY JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS HAVE SLIGHT WEATHERING OR MAY BE IRON STAINED.	70	50	50	40	1500	
INTERMEDIATE ROCK MODERATELY WEATHERED MAY BE CLOSELY JOINTED	AS FOR MEDIUM HARD ROCKS AND: – MOST SEDIMENTARY ROCKS OTHER THAN COMPACTION SHALES – MOST CALCAREOUS ROCKS WHICH ARE NOT POROUS	AS FOR MEDIUM HARD ROCK, EXCEPT: - MODERATELY WEATHERED FABRIC - WEATHERED JOINTS - THUDS WHEN STRUCK BY BAR - CAN BE INDENTED WITH A STEEL NAIL - BREAKS READILY WITH HAMMER - PIECES OF WEATHERED SURFACE CAN BE BROKEN OFF BY HAND - DOES NOT DISINTEGRATE UPON EXPOSURE - UNWEATHERED PIECES DO NOT SLAKE	50	35	35	25	500	
WEATHERED ROCK HIGHLY WEATHERED MAY BE BROKEN	AS FOR INTERMEDIATE ROCKS AND: – COMPACTION SEDIMENTARIES – CALCAREOUS ROCKS WITH SOIL-FILLED CAVITIES	AS FOR INTERMEDIATE ROCK, EXCEPT: – HIGHLY WEATHERED FABRIC – CAN BE BROKEN EASILY, CRUMBLES WITH DIFFICULTY BY HAND – CAN BE SCRAPED BY KNIFE – MAY SOFTEN UPON EXPOSURE – MAY SLAKE IN WATER – STANDARD PENETRATION RESISTANCE EXCEEDS 50 BLOWS/FOOT	TECHNIQUE INCLUDING	LESS THAN 35 COVERED WITH S IS, DESCRIBED A USC GROUP S' DESCRIPTION.	AS FOR SOILS	LESS THAN 25 ROCK)	150	
DECOMPOSED ROCK (RESIDUAL SOILS)	ALL ROCK TYPES	 ROCK TEXTURE AND STRUCTURE OFTEN PRESERVED GENERALLY SOIL-LIKE IN CONSISTENCY CAN BE CRUMPLED BY SLIGHT HAND PRESSURE CAN BE PEELED WITH A KNIFE STANDARD PENETRATION RESISTANCE LESS THAN 50 BLOWS/FOOT 	ROCK TEXTURE AND STRUCTURE OFTEN PRESERVED GENERALLY SOIL—LIKE IN CONSISTENCY CAN BE CRUMPLED BY SLIGHT HAND PRESSURE CAN BE PEELED WITH A KNIFE STANDARD PENETRATION RESISTANCE					

NOTES:

- 1. ROCK CORE DESCRIPTIONS REPRESENT ONLY THE MATERIAL RECOVERED IN THE CORING OPERATIONS.
- GENERAL MINIMUM CORING CHARACTERISTICS ASSUME ROCK CORING WITH A DOUBLE TUBE SERIES "M" OR EQUIVALENT CORE BARREL USING GOOD CORING TECHNIQUES AND EQUIPMENT.
- 3. REC RECOVERY IS THE LENGTH OF CORE RECOVERED, EXPRESSED AS A PERCENTAGE OF THE LENGTH OF CORE RUN.
- 4. RQD ROCK QUALITY DESIGNATION IS THE SUM OF THE LENGTHS OF CORE PIECES FOUR INCHES OR LONGER EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-STU SEPARATIONS; MECHANICAL BREAKS RESULTING FROM CORING AND VERTICAL JOINTS ARE IGNORED.

<u>SKETC</u>	H SYMBOLS	JOINT ORIENTATION AND CONDITION							
	Joint				<u>SURFACE</u> –	CONDITION			
	oonit	Parallel	_		Curved – C	Slick – 1			
XXHHHHX	Healed Joint								
\bigotimes	Broken	Crossing	-	Х	Irregular — I	Smooth – 2			
	Part of Core Not Recovered	Foliation	-	F	Straight — S	Rough – 3			
	Cavities or Vugs in Core	Stratification	_	S					
	Clay	Unfoliated or	_	U					
	Sand	Unstratified							
<u> 1-2-3</u>		Mechanical Break	-	MB					

TABLE R-4 ROCK CORE SKETCH KEY

lron stained joints	FeJ	S Indicates movement of water along joints
Weathered jo	ints WJt:	s Joints are not tight and do not match. Joints have friable edges.
<u>DE(</u> Jointing	<u>GREE OF</u>	JOINTING JOINT FREQUENCY
Massive	Mssv	Less than 1 joint in 4 feet
Blocky	Blky	1 joint every 2 to 4 feet
Moderately	MdJtd	1 joint every foot to 2 feet

Moderately Jointed	MdJtd	1 joint every foot to 2 feet
Jointed	Jtd	1 to 2 joints per foot
Closely Jointed	CIJtd	2 to 4 joints per foot
Broken	Bkn	More than 4 joints per foot

Vertical joints are ignored in RQD and joint frequency evaluations, but are noted in written descriptions and and on core sketches.

TABLE R-3 ABBREVIATIONS FOR ROCK CORE CLASSIFICATION

Blocky	Blky	Intermediate	Int
Broken	Bkn	Light	Lt
Brown	brn	Lignite	lign
Calcareous or Calcite	calc	Limestone	lms
Cavities	cvts	Jointed	Jtd
Chlorite	chl	Joints	Jts
Clay, Clayey	cl	Massive	Mssv
Closely Jointed	ClJtd	Medium Hard	MdHd
Coating on joint surface	coat	Mica, Micaceous	Mic
Crushed	crsh	Moderately Jointed	MdJtd
Dark	dk	Moderately Weathered	MdW
Decomposed	Dec	Pockets	pkts
Ditto	do	Quartz	qtz
Dolomite, Dolomitic	Dol	Recovery	Rec
Iron stained Joints	FeJts	Rock Quality Designation	RQD
Iron Stained	FeStn	Sand	sa
Feldspar	feld	Sandstone	SS
Foliation	Fol	Schist, Schistose	sch
Fractured	frct	Shale	sh
Fragments	fgmts	Shear zone	Sz
Gneiss, Gneissic	gns	Siliceous	sil
Gouge	gog	Silt	si
Granite, Granitic	gr	Slickensided	slks
Gray	gry	Slightly Weathered	SIW
Hard	Hd	Unweathered	UnW
Highly Weathered	HiW	Weathered	Wthd
Hornblende	Hbl	Weathered Joints	WJts
Injected	inj	Vein	Vn
Interbedded	Intrbd	Vertical Joints	VJts

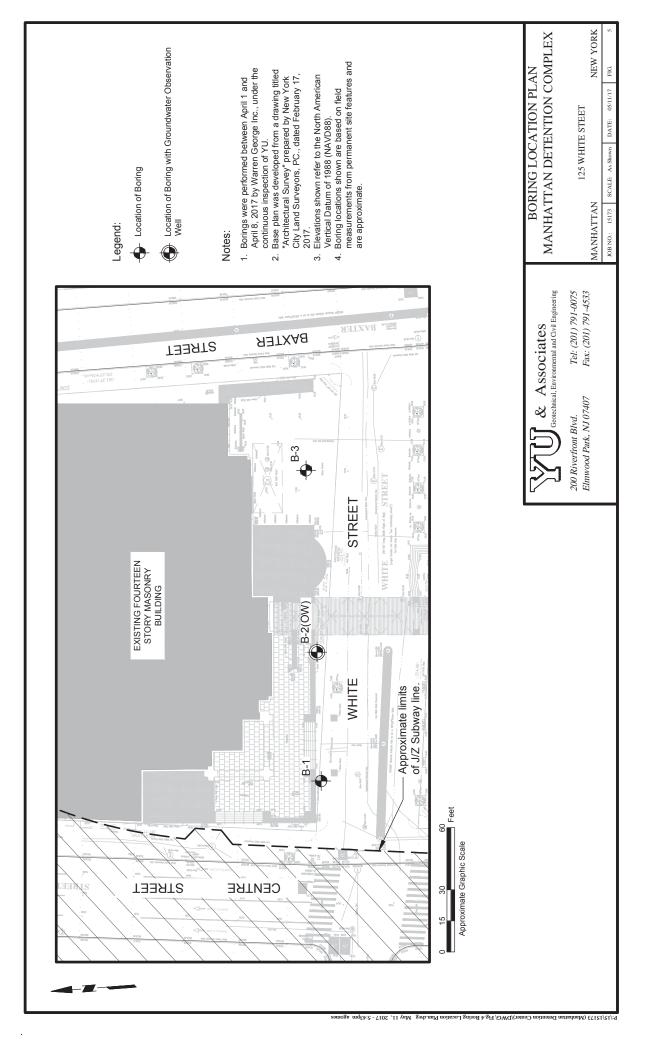


ROCK CORE CLASSIFICATION CRITERIA

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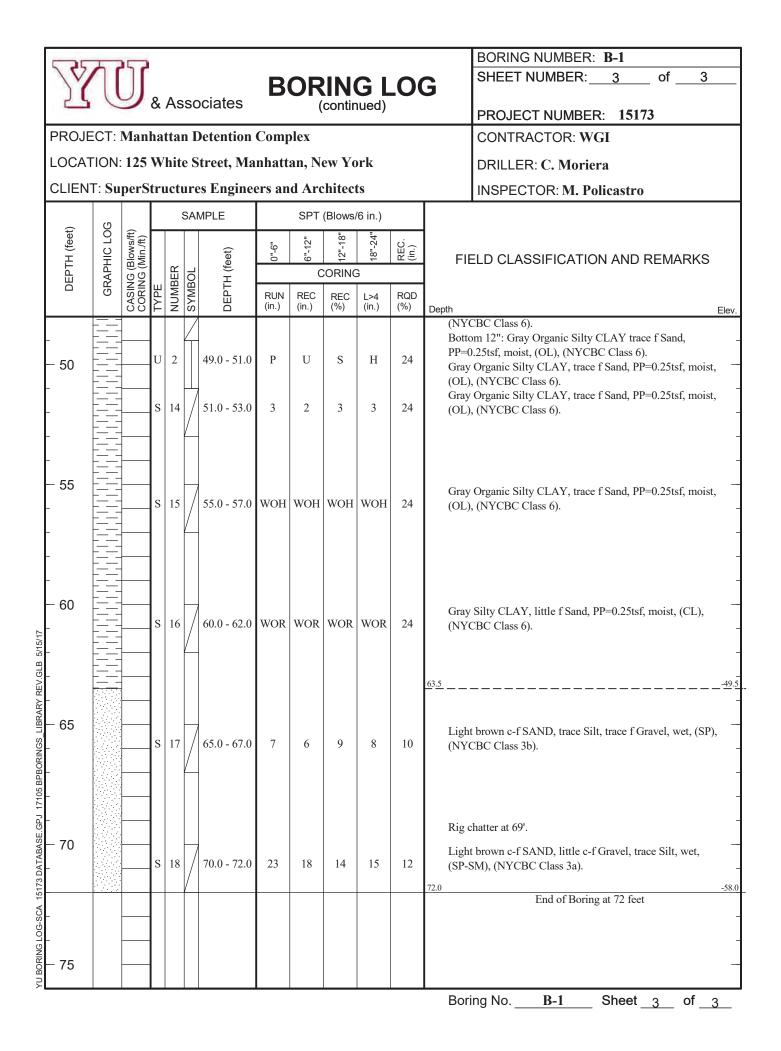
APPENDIX A

BORING RECORDS - 2017 YU INVESTIGATION



	1												BORING NUMBER: B-1
V							R		RIN	CI	\cap	2	SHEET NUMBER: <u>1</u> of <u>3</u>
25	U	J	&	As	so	ciates	D	Or		GL	_01	3	
			~			olatoo							PROJECT NUMBER: 15173
						Detention							LOCATION: See Plan
						treet, Ma							COORD. Not Surveyed
						s Engine		d Ar	chitec	ts			SURFACE ELEV.: 14.0± feet
DRILLE					en	George	inc.						□ surveyed ⊠ estimated from: 2017 Survey
INSPE					าร	tro							DATUM: NAVD88
						ud Rotar	v	START DATE: 4/2/17 TIME: 9:00 am					
						Truck M	·	d Dri	ll Rig				FINISH DATE: 4/2/17 TIME: 4:30 pm
		C	asin	ig 2	" S	plit Spoon 3	" Split S	Spoon	Gr	ab	Core	e Barrel	Backfill Type:Soil Cuttings.
Type/S	ymbo		HW			s 🛛	S*[]	G	\boxtimes	(Observation Well Installed Server YES INO
I.D.		4	4.0"]	1.375"	2.37	5"					Estimated Groundwater Level el -1 ±
O.D.		4	4.5"			2.0"	3.0'	'					Based On Soil Moisture
Length			35'			24"	24"	,					Mud Level (X) Observation Well Reading
Hamme		. 14	140 lbs 140 lbs					bs	Drill Ro	od Size	(OD): 2	2.625"	NOTES: See Groundwater Records in Appendix C
Hamme	er Fal						30"	,	Hamm	er Type	e: Autor	natic	_for B-2 (OW).
				5	SAN	MPLE		SPT	(Blows	/6 in.)			
(feet)	GRAPHIC LOG	(Blows/ft) (Min./ft)						6"-12"	12"-18"	18"-24"			
DEPTH (feet)	DHIC	i (Blov) (Min		R	_	DEPTH (feet)	.90			,	REC. (in.)	FIE	ELD CLASSIFICATION AND REMARKS
DEI	GRA	CASING (CORING (Щ	NUMBER	SYMBOL	ТН					DOD	{	
	Ŭ	CAS	ТҮРЕ	NUI	SΥΝ	DEF	RUN (in.)	REC (in.)	REC (%)	L>4 (in.)	RQD (%)	Depth	Elev.
												4" Pa	iver, 4" Concrete, 6" Subbase.
	×											1.2	12.8
-		SPIN										Hand	cleared to 5' for utility clearance.
-													-
\mathbf{F}		SPIN											L
5	<u>~</u> _ △]	SPIN											
- 5	**	SPIN	c	1	7	50 70	5	2	5	2	0		n c-f SAND, little Silt, little c-f Gravel, frequent brick
5 -		85	S	1		5.0 - 7.0	5	2	5	3	8	tragm	nents, moist, (SM), (FILL NYCBC Class 7).
2					\square							Brow	n c-f SAND, little Silt, little c-f Gravel, moist, (SM),
-		38	s	2	/	7.0 - 9.0	4	3	4	10	8		L NYCBC Class 7).
	Å₽ ⁴ ਯ	12											
		14	s	3		9.0 - 11.0	5	6	5	4	10		n c-f SAND, some Silt, trace f Gravel, moist, (SM),
- 10		18		5	$\left \right $	9.0 - 11.0				+		(FILL	L NYCBC Class 7).
- -	a de. a *te ⊳				\vdash								-
-		20											-
		25											
j	≜∰ ⊡⊳	20											1
-		18	1										1
- 15		_										No sa	ample recovery, sample obtained using 3" spoon.
_		17	s	4/5	/	15.0 - 17.0	5	5	7	10	0		
ā		25											<pre>c c-f SAND, trace Silt, trace f Gravel, (SP-SM), (FILL BC Class 7).</pre>
		30											
2		37											-
-													-
2	*	36											

												BORING NUMBER: B-1
V	11	ו					R	N R		GI	0	G SHEET NUMBER: of
24	10	J	&	As	SC	ociates		(contir	nued)		PROJECT NUMBER: 15173
PROJI	ECT:	Man	ha	ttai	n E	Detention	Comp	olex				CONTRACTOR: WGI
LOCA	TION:	125	W	hit	e S	treet, Ma	nhatt	an, N	ew Yo	ork		DRILLER: C. Moriera
CLIEN	IT: Su	perS	tru	icti	ure	es Enginee	ers an	d Arc	chitect	ts		INSPECTOR: M. Policastro
	(1)			;	SAI	MPLE		SPT	(Blows/	/6 in.)		
(feet)	GRAPHIC LOG	vs/ft) ./ft)	h			<u> </u>		6"-12"	12"-18"	18"-24"	REC. (in.)	-
DEPTH (feet)	PHIC	3 (Blov		К	٦L	(feet	.0"-6"				RE (in	FIELD CLASSIFICATION AND REMARKS
DE	GRA	CASING (Blows/ft) CORING (Min./ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN	REC	REC	L>4	RQD	
	×		F	ž	s /	DE	(in.)	(in.)	(%)	(in.)	(%)	Depth Elev Black-Brown c-f SAND, little Clayey Silt, moist, (SM), (FILL
-		45 40	S	6		20.0 - 22.0	6	5	5	9	6	NYCBC Class 7).
-					/							
-	*	42										
-	*	50										
- 25		47	s	7	7	25.0. 27.0	2	1	1	12		No sample recovery.
-		80	З	/		25.0 - 27.0	2	1	1	13	0	
-		27										
-		32										
- 30		30										
_ 30		25	s	8	$\left[\right]$	30.0 - 32.0	16	12	11	11	4	Brown c-f SAND, little Silt, little c-f Gravel, wet, (SM), (FILL NYCBC Class 7).
_	***	29										
		38										
1/01/0		36										
- 35		48										Brown Organic SILT, and m-f Sand, trace f Gravel, wet, (OL),
х 7 Ч	*		S	9		35.0 - 37.0	6	8	6	8	1	(FILL NYCBC Class 7).
					H							37.0 Brown PEAT, little Silty Clay, wet, (PT), (NYCBC Class 6).
			S	10		37.0 - 39.0	3	2	4	8	12	
<u>6</u> - 40					\vdash				_	_		Brown PEAT, little Silty Clay, wet, (PT), (NYCBC Class 6).
С – Э			S	11	$\left \right $	40.0 - 42.0	3	3	5	9	4	
I ABAS			U	1	ľ	42.0 - 44.0	Р	U	c	н	10	Brown PEAT, little Silty Clay, wet, (PT), (NYCBC Class 6).
				1		42.0 - 44.0	Р		S	П	10	
			s	12	7	44.0 - 46.0	4	7	7	8	24	Brown-Black PEAT, little Silt, PP=3.0tsf, moist, (PT), (NYCBC Class 6).
- 45			ן ֿ									
												47.0 -33.
			s	13	\mathbb{Z}	47.0 - 49.0	3	2	1	1	24	Top 12": Dark Gray Organic Silty CLAY, PP=1.75tsf, (OH),
												Boring No. <u>B-1</u> Sheet <u>2</u> of <u>3</u>



													BORING NUMBER: B-2 (OW)
∇		1					D		RIN (\cap	2	SHEET NUMBER: <u>1</u> of <u>3</u>
24	U	J	ጲ	A۹	so	ciates	D			GL	.01	3	
)		u.	/ \3	30	olates							PROJECT NUMBER: 15173
PROJE	CT: N	lan	hat	ttai	n D	etention	Comp	olex					LOCATION: See Plan
						treet, Ma							COORD. Not Surveyed
						s Engine		d Are	chitect	ts			SURFACE ELEV.: 14.5± feet
					ren	George	Inc.						□ surveyed ⊠ estimated from: 2017 Survey
DRILLE						t							DATUM: NAVD88
						ud Rotar	V	START DATE: 4/1/17 TIME: 8:00 am					
							•	d Dri	FINISH DATE: 4/1/17 TIME: 8:00 am				
	L . 17												Backfill Type:Soil Cuttings / #2 Sand.
Type/Sy	mbo		HW	-		s 🛛	S*		G		-	日	Observation Well Installed XYES NO
I.D.	11100		4.0"	-		1.375"	2.37		0				Estimated Groundwater Level el -1 ±
0.D.		-	1.5"	-		2.0"	3.0						Based On 🔄 Soil Moisture
Length			15'	_		24"	24'						
Hamme	r \N/t			-	1		1401		Drill Ro	nd Siza	(OD): (0.625"	Observation Well Reading NOTES: See Groundwater Records in Appendix C.
Hamme			140 lbs 140 lbs 30" 30"				30'		Hamm		. ,		
Tiamine	1 I all		50				30				. Autor	latic	
t	g	()			SAN	NPLE		SPT	(Blows				
l (fee	CLO	ows/f				et)	0	6"-12"	12"-18"	18"-24"	REC. (in.)		
DEPTH (feet)	GRAPHIC LOG	G (Bl		ER	Ы	H (fee							ELD CLASSIFICATION AND REMARKS
ä	GR	CASING (Blows/ft) CORING (Min./ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN	REC	REC	L>4	RQD		
		υu	\vdash	Z	S	Ω	(in.)	(in.)	(%)	(in.)	(%)	Depth 4" Pa	Elev. Elev.
_	-											1.2	13. 3
đ	₩ A												
												Hand	l cleared to 5' for utility clearance.
- 4.													-
- 6	* • •												-
-5	/ ∆ C ⊠ ∢ C											01	-
-/0-		SPIN										Obsti	ruction at 5', drilled to 6'.
		SPIN	s	1	\square	6.0 - 8.0	32	48	22	1		No.a	-
2 >		SPIN	З	1	/	6.0 - 8.0	32	48		1	0	INO Sa	ample recovery, Gravel in tip.
					\vdash							Dark	gray c-f SAND, some f Gravel, little Silt, frequent brick,
	≭rd □⊵∄	SPIN	S	2	/	8.0 - 10.0	12	8	4	5	4	conci	rete, glass and slate fragments, petroleum odor, moist,
		SPIN					1), (FILL NYCBC Class 7).
Ę i		SPIN	s	3	7	10.0 - 12.0	50	62	35	30	20		gray c-f SAND, some c-f Gravel, little Silt, frequent
	* .	SPIN	ß	3	/	10.0 - 12.0	30	02	33	50	20		c, concrete, glass and slate fragments, moist, (SM), (FILL _ BC Class 7).
					\vdash		1						vn GRAVEL, some c-f Sand, little Silt, frequent concrete
		SPIN	s	4	/	12.0 - 14.0	5	18	11	9	6		nents, moist, (GM), (FILL NYCBC Class 7).
2L [*	SPIN			Ц								
≤ [∖®^ ₩_⊳	SPIN	s	5	/	14.0 - 16.0	14	15	23	16	2		vn m-f SAND, trace Silt, wet, (SP), (FILL NYCBC Class
				5	/	1.10 10.0						7).	-
					\vdash							Brow	vn c-f SAND, little Silt, little f Gravel, moist, (SM), (FILL
	≙_⁴ -		S	6	/	16.0 - 18.0	10	12	15	17	6		BC Class 7).
il l'					Ц							_	
	*		s	7	/	18.0 - 20.0	13	16	17	23	22		vn c-f SAND, some c-f Gravel, little Silt, moist, (SM), L NYCBC Class 7).
					/	0.0							
- L P.	· Hirs V				V		1		1				

	1											BORING NUMBER: B-2 (OW)			
Y	1		•				B	OR	IN	Gι	.00	SHEET NUMBER: <u>2</u> of <u>3</u>			
2	2	9	&	As	SC	ociates		(contir	ued)		PROJECT NUMBER: 15173			
PROJE	CT:]	Man	ha	ttai	n D	Detention	Comp	olex				CONTRACTOR: WGI			
LOCAT	TION:	125	W	hite	e S	treet, Ma	nhatt	an, N	ew Yo	ork		DRILLER: C. Moriera			
CLIEN	T: Su	perS	trı	icti	are	es Engine	ers an	d Arc	hitect	ts		INSPECTOR: M. Policastro			
-	U				SAN	MPLE		SPT	(Blows/	'6 in.)					
DEPTH (feet)	GRAPHIC LOG	(Blows/ft) (Min./ft)	Γ			t)	.910	6"-12"	12"-18"	18"-24"	REC. (in.)				
ЕРТН	APHI	G (Blc G (Mi		КШ	٦Г	H (fee	-0				ЦÜ	FIELD CLASSIFICATION AND REMARKS			
DE	GR	CASING (CORING	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN	REC	REC	L>4	RQD				
	Å.		Ĺ	z	ن ا	Ω	(in.)	(in.)	(%)	(in.)	(%)	Depth Elev. Brown c-f GRAVEL, trace c-f Sand, trace Silt, wet, (GP),			
			S	8		20.0 - 22.0	10	10	21	19	6	(FILL NYCBC Class 7).			
					\square										
	* •														
- 25												Brown c-f GRAVEL, little c-f Sand, little Silt, wet, (GM),			
			S	9		25.0 - 27.0	10	17	17	12	6	(FILL NYCBC Class 7).			
					Ц										
	× n ≥														
- 30												Top 10": Brown-black Silty CLAY, occasional organic matter,			
			s	10		30.0 - 32.0	19	30	40	58	22	PP=0.25tsf, moist, (OL), (FILL NYCBC Class 7).			
					Ц							Bottom 12": wood. 32.0 D = D = 7.0 C = -7.0 C = -7.0 C = -7.0			
			s	11		32.0 - 34.0	3	5	5	4	8	Brown PEAT, trace f Gravel, moist, (PT), (NYCBC Class 6).			
					Ц										
- 35															
55			S	12	/	35.0 - 37.0	3	3	5	9	14	Brown-black PEAT, moist, (PT), (NYCBC Class 6).			
					[
	<u> </u>											38.524			
40															
- 40			s	13	$\left \right $	40.0 - 42.0	WOH	WOH	WOH	WOH	20	Gray Organic CLAY & SILT, occasional f Sand partings, PP=0.5tsf, moist, (OL), (NYCBC Class 6).			
											20	11 -0.566, IIOISE, (OL), (INTODE CId58 0).			
			U	1	Π	42.0 - 44.0	Р	U	S	Н	0	No sample recovery.			
				1		12.0 - ++.0	1		6	11	U				
			s	14		44.0 - 46.0	WOU	WOIT	WOIT	WOU	24	Gray Silty CLAY, occasional f Sand partings, PP=0.25tsf,			
- 45			5	14	$\left \right/\right $	44.0 - 46.0	WUH	WUH	WUH	WUH	24	moist, (OL), (NYCBC Class 6).			
	⊢				Н							Gray Silty CLAY, occasional f Sand partings, PP=0.25tsf,			
			U	2		46.0 - 48.0	Р	U	S	Н	17	moist, (OL), (NYCBC Class 6).			

Boring No. <u>B-2 (OW)</u> Sheet <u>2</u> of <u>3</u>

5.25	T											BORING NUMBER: B-2 (OW)
V							R	OR	IN	GI	0	SHEET NUMBER: <u>3</u> of <u>3</u>
25	C	9	&	As	sc	ociates		(contin	GL ued)		PROJECT NUMBER: 15173
PROIE	CT	Manl	hat	tai	nΓ	Detention	Comr	lev				CONTRACTOR: WGI
							-		v.V.].		
						treet, Ma						DRILLER: C. Moriera
CLIEN	I : Suj	perS	tru			es Enginee	ers an	d Arc	INSPECTOR: M. Policastro			
t	g				SAN	MPLE		SPT	(Blows/			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft) CORING (Min./ft)				et)	.9-"0	6"-12"	12"-18"	18"-24"	REC. (in.)	
L L L	APH	G (Bl		ER	OL	DEPTH (feet)	0				E C	FIELD CLASSIFICATION AND REMARKS
ā	GR	ASIN ORIN	TYPE	NUMBER	YMB	EPTI	RUN	REC	REC	L>4	RQD	
		υu		z	ഗ /		(in.)	(in.)	(%)	(in.)	(%)	Depth Elev. Gray CLAY & SILT, little f Sand, PP=0.25tsf, wet, (OL),
-			S	15		48.0 - 50.0	WOH	WOH	WOH	WOH	12	(NYCBC Class 6).
- 50					\square							No sample recovery.
-			S	16		50.0 - 52.0	3	5	5	5	0	-
-												-
-												
-												
- 55					\neg							Light brown c-f SAND, trace Silt, little f Gravel, wet, (SP),
-			S	17		55.0 - 57.0	8	12	7	14	8	(NYCBC Class 3b).
-												-
-												Rig chatter 58'-59'.
-												-
- 60												Brown c-f SAND, and c-f Gravel, trace Silt, wet, (SP-SM),
<u>_</u>			S	18		60.0 - 62.0	15	20	18	24	4	(NYCBC Class 3a).
												62.0 -47.5 End of Boring at 62 feet
												m
												-
- 65												-
												-
												-
												-
												-
- 70												
6/16												
- 75												-

	-											BORING NUMBER: B-3	
V	1	ו					D		RIN (\frown	SHEET NUMBER: of _	3
ρÇ	U	J	ጲ	Δc	sn	ciates	D	Ur		GL		9	
_			<u>u</u>	/ \0	00	olates						PROJECT NUMBER: 15173	
						Detention						LOCATION: See Plan	
						treet, Ma						COORD. Not Surveyed	
						es Engine		d Ar	chitec	ts		SURFACE ELEV.: 17.5± feet	
DRILLE					en	George	Inc.					─────────────────────────────────────	ey
INSPE					' 85	tro						DATUM: NAVD88	-
						ud Rotar	v	START DATE: 4/8/17 TIME: 8:	15 am				
						Truck M	•	d Dri	ll Rig	FINISH DATE: 4/8/17 TIME: 1:			
		С	asir	ng 2	" S	plit Spoon	3" Split S	Spoon	Gr	ab	Core	e Barrel Backfill Type:Soil Cuttings.	
Type/S	ymbo	ol 🗌	HW	r		s 🛛 👘	S*]	G	\boxtimes	0	C Observation Well Installed YES	X NO
I.D.		4	4.0"			1.375"	2.37	5"				Estimated Groundwater Level <u>el -</u>	·1 ±
O.D.		4	4.5"			2.0"	3.0	'				Based On Soil Moisture	
Length			30'			24"	24'	'				X Observation Well Rea	ading
Hamm	er Wt	. 140/	/300) lbs	1	40 lbs	140 1	bs	Drill Ro	od Size	(OD): 2		ppendix C
Hamm	er Fal		30"			30"	30'	1	Hamm	er Type	e: Autor	natic/ Donut for B-2 (OW).	
	(1)				SAN	MPLE		SPT	(Blows	/6 in.)			
DEPTH (feet)	GRAPHIC LOG	ws/ft) n./ft)					0"-6"	6"-12"	12"-18"	18"-24"	REC. (in.)		
PTH	PHIC	CASING (Blows/ft) CORING (Min./ft)		К	٦	DEPTH (feet)	<u></u>				Ξ.	FIELD CLASSIFICATION AND REMA	ARKS
DE	GR/	RING	TYPE	NUMBER	SYMBOL	РТН	RUN	REC	REC	L>4	RQD		
		Ϋ́Ο Ο Ο	≽	NN	SY	DE	(in.)	(in.)	(%)	(in.)	(%)	Depth	Elev.
												4" Paver, 1" Asphalt, 11" Concrete, 6" Subbase.	_
	- <u>A</u> - A											1.8	15.7
													_
	老日											Hand cleared to 5' for utility clearance.	
	* * 0≜ * ⊳												-
- 5					\neg							Red-brown c-f SAND, little c-f Gravel, trace Silt, f	frequent
2 5 –	* •	• /	S	1	/	5.0 - 7.0	6	11	15	19	6	brick and concrete fragments, dry, (SP-SM), (FILL	NYCBC _
		26			Ц							Class 7).	
		30	s	2		7.0 - 9.0	12	20	24	30	12	Brown c-f SAND, trace f Gravel, trace Silt, frequer fragments, dry, (SP-SM), (FILL NYCBC Class 7).	
		32	1	_									-
		28		-	\square	0.0						Brown c-f SAND, little Silt, trace f Gravel, frequer	nt brick
- 10		48	S	3	$\left \right/ \right $	9.0 - 11.0	13	30	97	60	10	fragments, moist, (SM), (FILL NYCBC Class 7).	
-					Н		1						-
	者。	180					1						-
		200					1						
Ď.		160					1					300 lb. hammer used to advance casing from 11' to	16' below
	₩.□⊳	185	1				1					existing grade.	_
<u> </u>	 4.00 △ .00 △ .00 △ .00 △ 				\vdash		1					Brown c-f SAND, little Silt, trace f Gravel, moist,	(SM), (FILL
_		176	S	4	/	15.0 - 17.0	12	15	19	12	6	NYCBC Class 7).	-
5	THE REAL	SPIN			И		1						_
6		SPIN											
		SPIN											-
-	* *	SPIN											_
		51 110										L	

Y		J	&	As	sc	ociates	B	OR	Contir	GL nued)	-0(BORING NUMBER: B-3 SHEET NUMBER: 2 of 3 PROJECT NUMBER: 15173
PROJE	ECT:]	Man	ha	ttai	n D	Detention	Comp	lex				CONTRACTOR: WGI
	FION:	125	W	hit	e S	treet, Ma	nhatt	an, N	ew Yo	ork		DRILLER: C. Moriera
	T: Su	perS	trı	ıctı	are	es Enginee	ers an	d Arc	hitec	ts		INSPECTOR: M. Policastro
	(1)			;	SAN	MPLE		SPT	(Blows/	/6 in.)		
DEPTH (feet)	GRAPHIC LOG	G (Min./ft)		R	DL	DEPTH (feet)	6"	6"-12	"12"-18 ORINO	18"-24"	REC. (in.)	FIELD CLASSIFICATION AND REMARKS
DE	GR	CASING (CORING (ТҮРЕ	NUMBER	SYMBOL	EPTH	RUN	REC	REC	L>4	RQD	
				Z 5	s	20.0 - 22.0	(in.) 9	(in.) 6	(%)	(in.) 12	(%)	Depth Elev. Dark gray Silty CLAY, and m-f Sand, frequent (75%) wood fibers, moist, (OL), (FILL NYCBC Class 7).
		SPIN			Ц							
		SPIN SPIN										23.560
		SPIN										-
25		SPIN	s	6	7	25.0 - 27.0	18	20	19	21	9	Brown c-f SAND, trace Silt, trace f Gravel, wet, (SP-SM), (NYCBC Class 3a).
		SPIN				20.0 27.0	10	20	15	21		(NTCDC Class 3a).
		SPIN										
		SPIN										
- 30		SPIN										_
00			s	7		30.0 - 32.0	11	13	15	16	10	Brown c-f SAND, trace Silt, wet, (SP), (NYCBC Class 3b).
					Ц							
35												Brown c-f SAND, trace Silt, wet, (SP), (NYCBC Class 3a).
			s	8		35.0 - 37.0	15	18	20	19	10	blown e-i braidb, date blit, wei, (bi), (ivi ebe class 5a).
					Ц							
40					\vdash							Red-brown m-f SAND, trace Silt, wet, (SP), (NYCBC Class
			S	9		40.0 - 42.0	9	10	9	11	12	3b).
					\square							
45					\vdash							Red-brown c-f SAND, trace Silt, wet, (SP), (NYCBC Class
			S	10	$\left \right/ \right $	45.0 - 47.0	11	10	12	12	10	3b).
					\vdash							
	<u>Princip</u>											Boring No. <u>B-3</u> Sheet <u>2</u> of <u>3</u>

	T											BORING NUMBER: B-3		
V							R	N R		GI	\mathbf{O}	SHEET NUMBER: <u>3</u> of <u>3</u>		
24	C	J	&	As	sc	ociates		(contir	ued)	-00	PROJECT NUMBER: 15173		
PROJE	CT:	Man	hat	ttai	n D	Detention	Comr	olex				CONTRACTOR: WGI		
						treet, Ma	-		ew Vo	rk		DRILLER: C. Moriera		
CLIEN	1. Su	pers				es Enginee	ers an		INSPECTOR: M. Policastro					
et)	Ю	(tt)			SAN	MPLE			(Blows			FIELD CLASSIFICATION AND REMARKS		
DEPTH (feet)	GRAPHIC LOG	lows/ /lin./ft				set)	.90	6"-12"	12"-18"	18"-24"	REC. (in.)			
DEPT	RAPI	NG (F NG (P		BER	BOL	DEPTH (feet)		C	ORINO	3				
	Ū	CASING (Blows/ft) CORING (Min./ft)	ТҮРЕ	NUMBER	SYMI	DEP-	RUN (in.)	REC (in.)	REC (%)	L>4 (in.)	RQD (%)	Depth Elev.		
-												-		
- 50			s	11	7	50.0 - 52.0	9	15	20	19	6	Red-brown c-f SAND, little c-f Gravel, trace Silt, wet,		
-				11		50.0 - 52.0	,	15	20	17	0	(SP-SM), (NYCBC Class 3a) 52.0 -34.5		
												End of Boring at 52 feet		
-												-		
-												-		
- 55														
-												-		
-												-		
-												-		
-												-		
- 60														
-												-		
-												-		
F												1		
- 65												1		
- 65												-		
												1		
F														
- 70												-		
F														
												1		
F												1		
												1		
- 75														
	1								1					

APPENDIX B

MRCE BORING LOGS

	BC	RING LOG			ING NO.									
BORC	DUGH BASEL		_											
		NEW YORK, NEW YORK	S											
C A N 47				RES										
	BLOWS/6"	SAMPLE DESCRIPTION	STRATA			REWARKS								
A 0.2 2.0	HAND AUGER	Gray gravelly fine to coarse sand, trace silt (Fill) (SP-SM)	** F	0.2 2 5		**Brick tiles from 0' to 2'. Hand auger from 0.2' to 2'. Obstruction at 2';								
				10		concrete; potential utility. Borehole offset to Boring MR-1A-M. End of Boring at 2'.								
				15		-								
				20										
				25										
				30										
				35										
												40		
				45										
				50										
	SAMI D. DEPTH IA 0.2	BOROUGH BASED SAMPLE D. DEPTH BLOWS/6" IA 0.2 HAND	BOROUGH BASED NYC JAIL SYSTEM - MANHATTAN FACILITY NEW YORK, NEW YORK SAMPLE SAMPLE BLOWS/6" A 0.2 HAND Gray gravelly fine to coarse sand, trace silt	BOROUGH BASED NYC JAIL SYSTEM - MANHATTAN FACILITY NEW YORK, NEW YORK SI SAMPLE SAMPLE DESCRIPTION D. DEPTH BLOWS/6" STRATA IA 0.2 HAND Gray gravelly fine to coarse sand, trace silt ***	BOROUGH BASED NYC JAIL SYSTEM - MANHATTAN FACILITY SURFAC NEW YORK, NEW YORK SURFAC 0 DEPTH 0 02 HAND Gray gravely fine to coarse sand, trace silt 20 AUGER (Fill) (SP-SM) 1	SHEET 10 SURFACE LEV. RES. ENGR. 2. DEPTH BLOWS/6" SAMPLE DESCRIPTION STRATA DEPTH BLOWS/6" 2.0 AUGER (Fill) (SP-SM)								

PROJECT BOROUGH BAS LOCATION BORING LOCATION			ED NYC JAIL SYSTI NEW YORK, NE SEE BORING LOCA	W YORK	TAN FACILITY	BORING NO. SHEET 2 FILE NO. SURFACE ELEV. DATUM	MR-1-M OF 2 13176 		
TYPE OF TRUCK SKID BARGE OTHER	TRACI	TYPE C RIG DURING MECH/ HYDR OTH	RING EQUIPMENT / FFEED CORING ANICAL AULIC HER	CAS DIA., IN. DIA., IN. DIA., IN.	ING USED	DEPTH, FT. FROM DEPTH, FT. FROM DEPTH, FT. FROM DEPTH, FT. FROM	X NO TO TO TO TO TO X NO		
TYPE AND SIZE O D-SAMPLER U-SAMPLER S-SAMPLER CORE BARREL CORE BIT DRILL RODS			WATER LEV	DIAMETER TYPE OF I TYPE AND CASING H SAMPLER	R of rotary bit Drilling Mud Uger Used Diameter, IN. Ammer, LBS. Hammer, LBS.	X YES NO NO NO NO NO NO NO NO NO NO NO NO NO N			
DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER		CONDITIONS OF OB			
PIEZOM	ETER INS	TALLED	YES X	NO SKET	TCH SHOWN ON	I			
Standpipe Intake eli Filter:		TYPE TYPE MATERIAL		ID, IN. OD, IN. OD, IN.	LEN	GTH, FT GTH, FT GTH, FT	TOP ELEV.		
3.5" DIA. DF 3.5" DIA. U- CORE DRIL	SAMPLE B LING IN RO	e Boring Oring DCK	LIN. FT LIN. FT LIN. FT		NO. OF 3" SHELE NO. OF 3" UNDIS OTHER: HAND A	2'			
BORING CONTRACTOR DRILLER REMARKS			NICK BEEHLER OBSTRUCTION		IG GEOTECHNIC HELPERS HOLE OFFSET		ES NEIPERT -M.		

	BOREHOLE BACKFILLED WITH CUTTINGs & CONCRETE, & PATCHED WITH ASPHALT.												
RESIDENT ENGINEER	YUTA NAKAMUR	DATE	08-14-18										
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	PATRICK DC	NALDSON									
MRCE Form BS-1		_	BORING N	O . MR-1-M									

-				RING LOG		BOR	ING NO.	
							ET 1 OF	
PROJEC		BORC	OUGH BASED	NYC JAIL SYSTEM - MANHATTAN FACILITY	_		ILE NO.	
LOCATIC	DN:			NEW YORK, NEW YORK	รเ		E ELEV.	
					1			YUTA NAKAMURA
DAILY		SAM		SAMPLE DESCRIPTION			CASING	REMARKS
PROGRESS	NO.	DEPTH	BLOWS/6"		STRATA	DEPTH	BLOWS	Hand auger from 0.2'
07:30 08-14-18					-	2		to 2'.
Tues., Cldy.						-		Obstruction at 2';
74°F, 07:45					-			concrete.
					-	5		Borehole offset to
								Boring MR-1B-M.
								End of Boring at 2'.
					-			-
					-	10		-
						10		
					-			
					-			-
					-			
						15		
								-
					-			-
								-
					-	20		-
					-			-
						25		-
					•	25		
					-			
					-			
						30		
					-			-
					-			-
					-			
					-	35		
					-			-
					-			-
					-	40		-
						70		
					-			
					-			-
						45		
								-
						50]
								4

					E	ORING NO.	MR-1A-M
					S	HEET	2 OF 2
PROJEC [®]		DROUGH BASE	ED NYC JAIL SYS				13176
LOCATIO			NEW YORK, N				
BORING	LOCATION	NS	SEE BORING LOC	ATION PLAN	C		NAVD 88
		BOF		T AND METHOD	S OF STABILIZIN	<u>G BOREHOLE</u>	
		TYPE O	F FEED				
TYPE O	F BORING	RIG DURING	CORING	CAS	SING USED	YES	X NO
TRUCK		MECH	ANICAL	DIA., IN.		DEPTH, FT. FRC	то то
SKID		HYDR	AULIC	JLIC DIA., IN.			М ТО
BARGE				DIA., IN.		DEPTH, FT. FRC	МТО
OTHER	TRACK - C	ME-55					
		ND SIZE OF		DBII	LING MUD USED	YES	X NO
		ND SIZE OF					X NO
D-SAMPLE					R OF ROTARY BIT, I	N	
U-SAMPLE S-SAMPLE				I IPE OF I	DRILLING MUD	. <u></u>	
CORE BAF				4	UGER USED	X YES	NO
CORE BIT					DIAMETER, IN.		5" HAND AUGER
DRILL ROI	DS						
				CASING H	IAMMER, LBS.	AVERA	GE FALL, IN.
				SAMPLER	HAMMER, LBS.	AVERA	GE FALL, IN.
			WATER LE	VEL OBSERVA	TIONS IN BOREH	OLE	
DATE	TIME	DEPTH OF		DEPTH TO			
DATE	TIME	HOLE	DEPTH OF CASIN	G WATER	(CONDITIONS OF	OBSERVATION
					NO W	ATER LEVEL OB	SERVATIONS MADE.
PIEZON	IETER INS	TALLED	YES X	NO SKE	TCH SHOWN ON		
STANDPIP	PE:	TYPE		ID, IN.	LENG	STH, FT.	TOP ELEV.
INTAKE EL		TYPE		OD, IN.		GTH, FT.	TIP ELEV.
FILTER:		MATERIAL		OD, IN.	LENG	GTH, FT.	BOT. ELEV.
DA							
)ry sample J-sample b		LIN. FT LIN. FT.		NO. OF 3" SHELBY NO. OF 3" UNDIST		
	ILLING IN R		LIN. FT.		OTHER: HAND AU		2'
					STIEN. HAND AU		£
	CONTRAC			CRA	IG GEOTECHNIC		
	DRILLER NICK BEEH				HELPERS		YLES NEIPERT
REMARK	.s				HOLE OFFSET TO		
DEGIDEN					NGS & CONCRET	E, & PATCHED DAT	
-	ICATION C		CHERYL J.	UTA NAKAMUR			TRICK DONALDSON
			GILKILJ.			··· · · · · · · · · · · · · · · · · ·	

BORING NO. MR-1A-M

				RING LOG			ING NO. ET 1 OF	
PROJEC	т۰	BODC		NYC JAIL SYSTEM - MANHATTAN FACILITY			FILE NO.	
LOCATIC		BURC	JUGH BASEL	NEW YORK, NEW YORK			E ELEV.	
LOCATIC	JIN.			NEW TORK, NEW TORK				YUTA NAKAMURA
DAILY		SAM	21 F				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
08:40		52	220110/0		0	22	220110	Hand auger from 0.2'
08-14-18						2		to 2'.
Tues., Clear								Obstruction at 2';
76°F, 08:50								concrete.
						5		Borehole offset to
								Boring MR-1C-M.
								End of Boring at 2'.
								-
						10		
								-
								-
						15		1
								-
								-
						20		-
								-
								-
						25		-
						23		
						30		
								-
								-
						35		-
								-
								-
						40		
								-
								-
								-
						45		
]
								4
						50		-
						50		
								-
L	1	I		L	1	I	I	

PROJEC [.] LOCATIO	DN		ED NYC JAIL SYST		SI AN FACILITY FI	ORING NO. HEET ILE NO. URFACE ELE	2 	MR-1B-M OF 2 13176 14.2±	
BORING	LOCATION	N <u></u> S	SEE BORING LOCA	TION PLAN	D			NAVD 88	
		<u>BOF</u> TYPE O	RING EQUIPMENT	AND METHOD	S OF STABILIZING	G BOREHOLE	L		
TYPE O	F BORING	RIG DURING		CAS	ING USED	YES		X NO	
TRUCK		MECHA		DIA., IN.		DEPTH, FT. FR		ТО	
SKID		HYDR		DIA., IN.		DEPTH, FT. FR		ТО	
BARGE			1ER	DIA., IN.		DEPTH, FT. FR	OM	то	
OTHER	TRACK - C	IVIE-55							
	TYPE A	ND SIZE OF		DRILL	ING MUD USED	YES		X NO	
D-SAMPLE					OF ROTARY BIT, IN	۱.			
U-SAMPLE S-SAMPLE				TYPE OF D	RILLING MUD				
CORE BAF	RREL				UGER USED DIAMETER, IN.	X YES	5" H	NO AND AUGER	
DRILL ROI	DS				AMMER, LBS			ALL, IN	
DATE	TIME	DEPTH OF	WATER LEV	EL OBSERVAT					
DATE		HOLE	DEPTH OF CASING					-	
					NO WA	ATER LEVEL OF	BSERV	ATIONS MADE.	
PIEZON		TALLED	YES X	NO SKET	CH SHOWN ON				
STANDPIP	PE:	TYPE		ID, IN.	LENG	TH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE		OD, IN.		TH, FT.		TIP ELEV.	
FILTER:		MATERIAL		OD, IN.	LENG	TH, FT		BOT. ELEV.	
PA	Y QUANTI	TIES							
3.5" DIA. D	RY SAMPLE	EBORING	LIN. FT.		NO. OF 3" SHELBY	TUBE SAMPLE	S		
3.5" DIA. U	J-SAMPLE B	ORING	LIN. FT.		NO. OF 3" UNDISTU	JRBED SAMPLI	ES		
CORE DRI	ILLING IN R	OCK	LIN. FT.		OTHER: HAND AUC	GER	_	2'	
BORING	CONTRAC	TOR		CRAI	G GEOTECHNICA	L DRILLING			
DRILLER		١	NICK BEEHLER		HELPERS	Ν	MYLES	NEIPERT	
REMARK	(S	0.00			RUCTION AT 2'.		~ \		
RESIDEN			HOLE BACKFILLED) WITH CUTTIN ITA NAKAMUR		<u>, & PATCHEL</u> DA		1 ASPHALT. 08-14-18	
			CHERYL J. N					K DONALDSON	

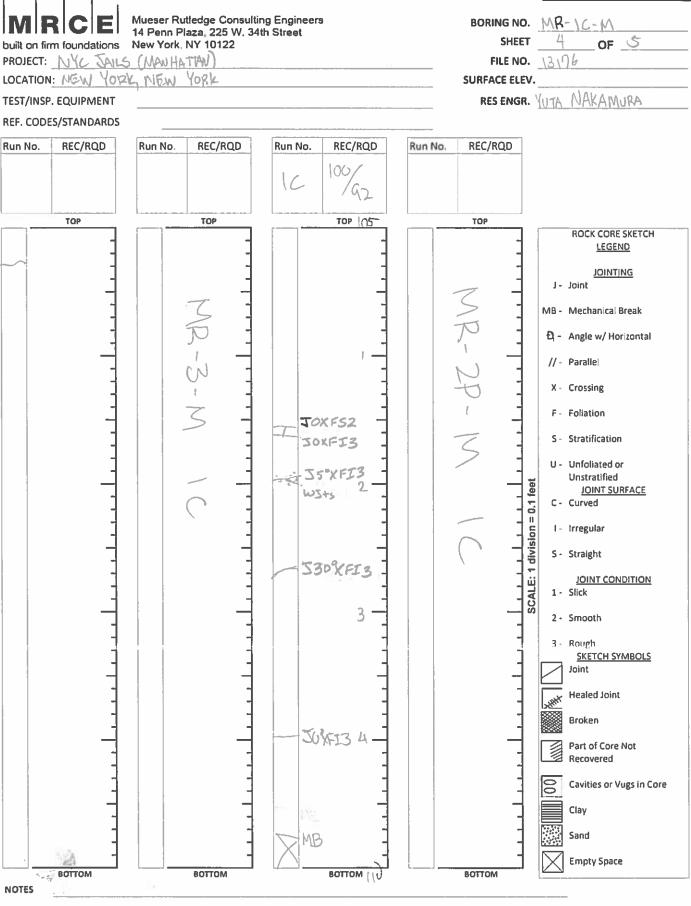
BORING NO. MR-1B-M

	-	D D D D				-	ET 1 OF	5
PROJEC	-	BORO	UGH BASE	O NYC JAIL SYSTEM - MANHATTAN FACILITY			ILE NO.	13176
	DN:			NEW YORK, NEW YORK	S		E ELEV.	14.2±
	T			1	1	RES	. ENGR.	YUTA NAKAMUR
DAILY		SAMF		SAMPLE DESCRIPTION			CASING	REMARKS
PROGRESS	NO.	DEPTH	BLOWS/6"		STRATA			
08:50	1HA	0.7	HAND	Gray concrete & gravel, some coarse to fine	**	0.7		**Brick tiles & concret
08-16-18		2.0	AUGER	sand, trace silt (Subbase) (GP)				from 0' to 0.7'.
Thursday	2HA	2.0	HAND	Brown fine to coarse sand, some gravel, silt,			4"	Hand auger from 0.7'
Clear		4.0	AUGER	trace concrete, brick fragments (Fill) (SM)				to 5'.
78°F	3HA	4.0	HAND	Brown fine to medium sand, some silt, trace		5		
		5.0	AUGER	gravel, brick fragments (Fill) (SM)				
	4D	5.0	11-8	Brown fine to medium sand, some silt, brick				
		7.0	9-9	fragments (Fill) (SM)				
	5D	7.0	5-4	Do 4D (Fill) (SM)				
		9.0	8-9		F	10	36	
	6D	9.0	4-3	Brown fine to medium sand, some silt, brick				
		11.0	9-3	fragments (Fill) (SM)			24	
							17	
							34	
						15	41	
	7D	15.0	1-2	Brown fine to coarse sand, some silt, brick				
		17.0	1-5	fragments (Fill) (SM)				
							38	Rig chatter from 18.5
						19		to 20'.
						20	26	Mud color change at
	8D	20.0	6-4	Gray brown fine to medium sand, some silt,				First attempt: REC=0
		22.0	4-4	gravel (SM)				gravel in tip.
								Second attempt: 3" S
							67	REC=15".
						25	76	
	9D	25.0	22-11	Red brown fine to coarse sand, some gravel,				REC=3"
		27.0	6-4	trace silt (SP-SM)				Rig chatter from 27' to
					S1			28'.
								Rig chatter from 29' to
						30		30'.
	10D	30.0	12-10	Gray brown & red brown coarse to fine sand,				REC=3"
		32.0	5-8	some gravel, trace silt (SP-SM)				Rig chatter from 30' to
							66	35'.
							51	
						35	125	
	11D	35.0	15-12	Brown wood & gray brown coarse to fine sand,		36		REC=4"
		37.0	14-13	some gravel, trace silt (SP-SM)				Drilling mud color
			-					change at 38'.
						40		
	12D	40.0	3-4	Dark brown peat & wood (Pt)	Pt			WC=364, pp=0.25 to
		42.0	7-9					0.50
	13D	42.0	9-11	Dark brown peat, some fine to coarse sand (Pt)				WC=62
		44.0	12-10					
						44.5		
	14D	45.0	WH-1	Medium gray organic silty clay (OH)				WC=34, pp=0.5 to
	_	47.0	3-1					0.75
15	15D	47.0	3-3	Medium gray organic silty clay, trace shells (OH)				WC=36, pp=0.25 to
		49.0	2-2		Ο			0.50
						50		
								ł
								4
	1 1				1	1		I

DAILY SAMPLE				D NYC JAIL SYSTEM - MANHATTAN FACILITY NEW YORK, NEW YORK	SHEET 2 OF FILE NO. SURFACE ELEV. RES. ENGR.		5 13176 14.2± YUTA NAKAMURA	
DAILY				SAMPLE DESCRIPTION			CASING	REMARKS
PROGRESS	NO.	DEPTH	BLOWS/6"		STRATA	DEPTH	BLOWS	
Cont'd	16D	50.0 52.0	WH/24"	Medium gray organic silty clay, trace shells (OH)				WC=38, pp=0.05
08-16-18 Thursday	17D	52.0	WH/18"	Medium gray organic silty clay, trace fine sand				WC=36, pp=0.5
Clear	170	54.0	3	(OH)				W0-00, pp-0.0
78°F			-		0	55		
	18D	55.0	WR-3	Red brown clayey fine sand, trace mica (SC)				
		57.0	3-3					
						58.5		
						60		
	19D	60.0	10-12	Red brown fine to medium sand, trace silt,		00		
		62.0	12-11	mica (SP-SM)				
	200	05.0	47 47	Drown fine to medium conductors ailtheorem		65		
	20D	65.0 67.0	17-17 8-7	Brown fine to medium sand, trace silt, coarse sand, mica (SP-SM)				
		07.0	0-7					
					S2			
13:45						70		
07:40	21D	70.0	7-6	Do 20D (SP-SM)				Drilling mud added.
08-17-18		72.0	8-7					
Friday								
Clear 80°F						75		Minor rig chatter from
001	22D	75.0	8-8	Do 20D, trace gravel (SP-SM)		10		76' to 80'. Drilling mud added.
		77.0	9-6					
						78.5		
	23D	80.0	17-17	Brown & light brown fine to coarse sand, some		80		Rig chatter from 83' to 85'.
	230	82.0	39-14	gravel, silt (SM)				00.
		02.0	00 11					
						85		
	24D	85.0	21-19	Red brown coarse to fine sand, some gravel,				REC=3"
		87.0	19-7	silt pockets (SP&ML)				Minor rig chatter from 86' to 90'.
								00 10 30.
						90		
	25D	90.0	39-48	Gray brown fine to coarse sand, some gravel,	Т			REC=1"
		92.0	33-32	silt (SM)				
								Rig chatter & hard
						95		drilling from 93.5' to 95'.
	26D	95.0	33-38	Red brown fine to coarse sand, some gravel,		35		Minor rig chatter from
		97.0	43-28	trace silt (SP-SM)				90' to 95'.
						400		
						100		

	BORING LOG DJECT: BOROUGH BASED NYC JAIL SYSTEM - MANHATTAN FACILITY						ING NO. ET 3 OF	MR-1C-M 5
	T:	BORC	OUGH BASED	NYC JAIL SYSTEM - MANHATTAN FACILITY			ILE NO.	13176
OCATIO	-	Dorite		NEW YORK, NEW YORK	S	SURFACE ELEV.		. 14.2±
					_ 0	RES. ENGR.		
DAILY		SAM					CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH		REMARKS
Cont'd	27D	100.0	37-43	Gray brown fine to coarse sand, some gravel,	т			
08-17-18 Friday		102.0	48-23	trace silt (SP-SM)	-	102.5		Hard drilling at 102.5
Clear			-					
80°F	1C	105.0	RFC=100%	Hard unweathered to slightly weathered gray		105	5*	Drilled ahead to 105. *Coring time in
-	10	110.0		gneissic schist, moderately jointed to closely	R		6*	minutes per foot.
				jointed, weathered joints			6* 2*	
09:55						110		End of Boring at 110
			-					
-								WC=Water Content in percent of dry
								weight.
						115		nn-Deelvet
-								pp=Pocket Penetrometer
-			-					Unconfined Compres
·						120		sive Strength in tsf.
-						120		
r								
·								
						125		
·								
-								
-			-			400		
						130		
-								
-								
·						135		
ļ								
-			-					
-								
ł						140		
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			-			145		
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-								
-						150		
			4					

ROCK CORE SKETCH

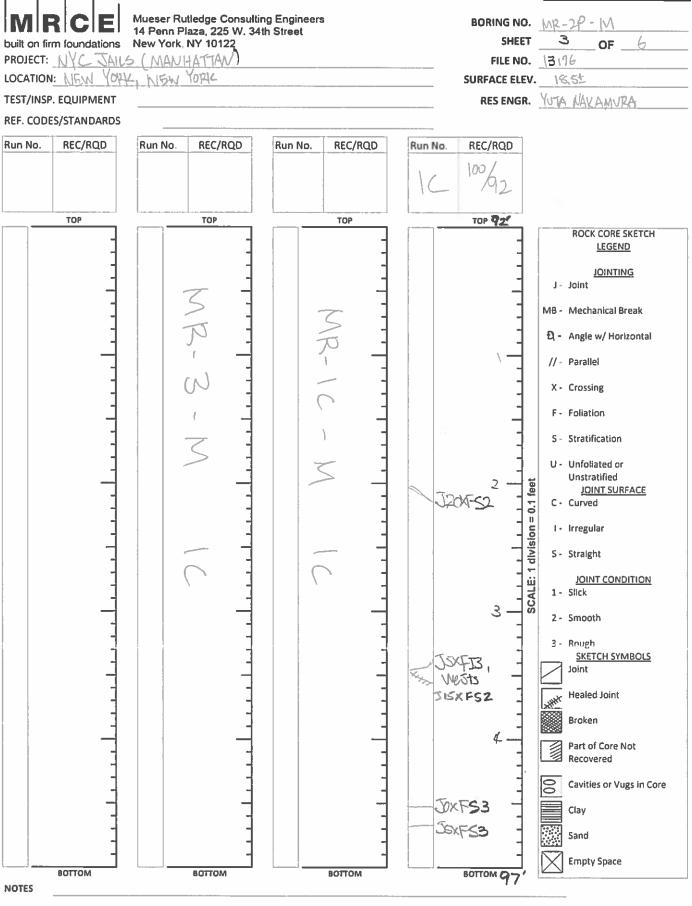


						BORING NO.	M	MR-1C-M	
						SHEET	5 O	F 5	
PROJECT	т во	ROUGH BAS	ED NYC JAIL S	YSTEM - MANHAT	TAN FACILITY	FILE NO.	13	176	
LOCATIO	DN		NEW YORK	I, NEW YORK		SURFACE ELE	:V.	14.2±	
BORING	LOCATION		SEE BORING I	OCATION PLAN		DATUM	NAV	D 88	
		50					-		
				ENT AND METHO	DS OF STABILIZ	ING BOREHOLI	<u>–</u>		
			OF FEED						
-	F BORING	RIG DURING			SING USED	X YES			
TRUCK					. 4	_ DEPTH, FT. FR			5
SKID						_ DEPTH, FT. FR		TO	
BARGE			THER	DIA., IN.		DEPTH, FT. FR	ROM	TO	
OTHER	TRACK - CI	VIE-55							
		ND SIZE OF		DRII	LING MUD USE	D X YES	N	0	
D-SAMPLE		" O. D. SPLIT	SPOONS		R OF ROTARY BI	I, IN.	2-15/16, 3		
U-SAMPLE				I YPE OF	DRILLING MUD		EZ MUD/QU	IK GEL	
S-SAMPLE CORE BAF			,		AUGER USED	X YES	N	0	
CORE BIT					D DIAMETER, IN.	X IL3	4" HAND AU		
DRILL RO								JOLIN	
210221002				*CASING	HAMMER, LBS.	140 AVEF	RAGE FALL, IN	. 30	
					R HAMMER, LBS.		RAGE FALL, IN		
						AFETY/AUTOMA		-	
							·		
			WATER	LEVEL OBSERVA	TIONS IN BORD				
DATE	TIME	DEPTH OF		DEPTH TO		CONDITIONS OF	F OBSERVATIO	 N	
DATE		HOLE	DEPTH OF CA	SING WATER	OBOEINAIN				
					NO	WATER LEVEL OF	BSERVATIONS	MADE.	
PIEZON	METER INS	TALLED	YES	X NO SKE	TCH SHOWN O	N			
		<u></u>							
STANDPIP		TYPE		ID, IN.		NGTH, FT.	TOP E		
INTAKE EL	LEMENT:	TYPE		OD, IN.		NGTH, FT.	TIP E		
FILTER:		MATERIAL		OD, IN.	LE	NGTH, FT.	BOT.	ELEV	
<u>PA</u>	Y QUANTII	IES							
	ORY SAMPLE		LIN. FT.			BY TUBE SAMPL			
	J-SAMPLE B		LIN. FT.	100		STURBED SAMPL	_ES		
CORE DRI	ILLING IN RO	DCK	LIN. FT.	5	OTHER: HAND	AUGER		5'	
		TOP							
DRILLER	CONTRAC		NICK BEEHLE		AIG GEOTECHN		EIPERT/STE\		
REMARK			-	OIL CUTTINGS & (
								08-17-18	
-			CHERY	L J. MOSS					
MRCE Form B			0.121.11			· · ·	BORING NO		M

	-	F A - -					ET 1 OF	
ROJEC	-	BORC	OUGH BASEI	D NYC JAIL SYSTEM - MANHATTAN FACILITY			ILE NO.	
OCATIO	DN:			NEW YORK, NEW YORK	SI		E ELEV.	
DAILY PROGRESS	NO.	SAMF DEPTH	PLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	перти	CASING	REMARKS
10:00	1HA	0.3	HAND	Brown & gray brown fine to coarse sand, some	**			**Brick tiles from 0' t
08-14-18		2.0	AUGER	silt, tr gravel, brick fragments, concrete (Fill) (SM)		0.0	AHEAD	
Tuesday	2HA	2.0	HAND	Brown coarse to fine sand, some silt, trace			4"	Hand auger from 0.3
Clear		4.0	AUGER	gravel (Fill) (SM)				to 5'.
74°F	3HA	4.0	HAND	Brown & gray brown fine to coarse sand, some		5		
		5.0	AUGER	silt, tr gravel, concrete, brick fragments (Fill) (SM)				1
	4D	5.0	7-6	Red brick fragments (Fill) (GP)				REC=3"
		7.0	4-6					
	5D	7.0	2-1	Black fine to coarse sand, some gravel, trace				REC=3"
	02	9.0	1-12	brick fragments, silt, concrete (Fill) (SP-SM)	F	10	15	
	6D	9.0	12-3	Light brown & brown fine to coarse sand, some	•			Drilling mud added.
	00	11.0	1-1	silt, gravel, trace brick fragments (Fill) (SM)			27	REC=4"
		11.0					45	
							45	
						15	56	
	7D	15.0	14-9	Brown fine to medium sand, some silt, trace		10		REC=6"
	10	17.0	12-16	gravel, coarse sand, concrete (Fill) (SM)				
		17.0	12-10					
						18.5		
						20		
	8D	20.0	2-3	Medium gray brown clayey silt, some fine sand,		20		WC=25, pp=0.75
	00	20.0	2-3 4-3	trace gravel (ML)	С			wc-25, pp-0.75
		22.0	4-5					
						23.5		
						25.5		
	9D	25.0	13-9	Brown fine to medium sand, trace silt, mica		25		
	90	25.0	11-11	(SP-SM)				
		27.0	11-11	(3F-3N)				
								-
						30		-
	10D	30.0	7-7	Do 9D (SP-SM)				
		32.0	9-10					
								_
								-
						35		
	11D	35.0	8-7	Do 9D (SP-SM)				Drilling mud added.
		37.0	10-8					
					S2			1
					-			1
						40]
	12D	40.0	7-7	Do 9D (SP-SM)]
		42.0	8-8]
]
]
						45]
	13D	45.0	6-6	Do 9D (SP-SM)				1
		47.0	8-7					1
								1
								1
						50]
	14D	50.0	7-5	Brown fine to medium sand, some silt, trace				
		52.0	10-12	silt pockets, gravel (SM)			V	

			<u>BC</u>	RING LOG			ING NO.	<u>MR-2P-M</u> 6
PROJEC	т۰) NYC JAIL SYSTEM - MANHATTAN FACILITY			ET 2 OF	13176
		BORG		NEW YORK, NEW YORK				
OCATIC	JN.			New YORK, New YORK			E ELEV. 6. ENGR.	
DAILY		SAM		SAMPLE DESCRIPTION			CASING	REMARKS
PROGRESS	NO.	DEPTH	BLOWS/6"		STRATA	DEPTH	BLOWS	
Cont'd			-				DRILLED AHEAD	
08-14-18			-				AHEAD 4"	
Tuesday Clear			-				4	
74°F			-			55		
	15D	55.0	17-25	Gray brown gravelly coarse to fine sand, trace				Drilling mud added.
	-	57.0	19-25	silt (SP-SM)				REC=1"
			-					Gravel in tip; possibl
			-					wash.
						60		Rig chatter from 57'
	16D	60.0	9-9	Gray brown fine to coarse sand, some gravel,				60'.
13:45		62.0	10-11	trace silt (SP-SM)				16D: REC=4"
07:20			-					
8-15-18						~~		
Wednesday	17D	65.0	12-10	Brown fine to coarse sand, some gravel, trace		65		REC=3"
Clear 72°F	170	67.0	11-8	silt (SP-SM)				REC-3
121		07.0	11-0				52	_
			-				44	
						70	▼ 48	
	18D	70.0	3-4	Brown gravelly coarse to fine sand, trace silt	S2		,	REC=3"
		72.0	6-6	(SP-SM)				Drilling mud added.
	400	75.0	11.0	During a second to find a second time a survey with		75		
	19D	75.0 77.0	11-9 14-9	Brown coarse to fine sand, trace gravel, silt (SP-SM)				WC=Water Content in percent of dry
		11.0	14-5	(SF-SM)				weight.
			-					weight.
						80		pp=Pocket
	20D	80.0	14-18	Brown fine to medium sand, trace silt, mica				Penetrometer
		82.0	20-17	(SP-SM)				Unconfined Compres
								sive Strength in tsf.
	040	05.0	04.04			85		
	21D	85.0 87.0	24-34 40-35	Do 20D (SP-SM)				Silt in spoon tip. REC=4"
		07.0	40-33					***Decomposed rock
								from 91' to 91.5'.
			-			90		Spoon bouncing at
	22D	90.0	22-36	Brown fine to coarse sand, trace rock fragments,		91		91.3'.
		91.3	50/4"	silt (SP-SM)	***	91.5		Drilled to 92'.
	1C	92.0	REC=100%				6*	
		97.0 RQD=92%		to jointed, weathered joints	R	<u>a-</u>	7*	*Coring time in
					N	95	7* 9*	minutes per foot.
10.00						97	9^ 7*	End of Poring at 07
10:20			-			31	1	End of Boring at 97'.
						100]
			-					

ROCK CORE SKETCH



PIEZOMETER RECORD



Mueser Rutledge Consulting Engineers 14 Penn Plaza, 225 W. 34th Street

PROJECT:

NYC JAILS (MANHAPTAN)

LOCATION:

- SEE SKETCH ON BACK

PIEZOMETER OR BORING NO. MR-2P-M SHEET 4 OF 6 FILE NO. 13176 INSTALLATION DATE 8/15, 8/16 RESENGR. Y UTA NAKAMUZA

PIEZOMETER LOCATION:

STRATA DEPTH PIEZOMETER PIEZOMETER TYPE PVC INSTALLATION (FT) DETAILS **INTAKE POINT** GROUND depth to bottom, ft = -97SURFACE depth to top, ft = 16 LACTS length, ft = $\boxed{33}$, ft = 0.33ELEV. 18.51 = L diameter, in = 4 0 = 2R SOIL STANDPIPE/RISER CUTTIP6 elevation of rim, ft = 18.0^{\pm} diameter, in = 2, ft = 0.11= 2r 16 185 **READING TIME** DEPTH - RIM **ELEVATION** C 20 REMARKS TO WATER OF WATER 23,5 DATE CLOCK 8/6 0135 1813 -0.3 POST-TAISTALLATION 18.91 -0.9 1355 END OF DAY 30 8/17 18.91 -0.9 1030 5 18.9 -0.9 8120 1425 SOIL SAND ŋ&\$ 55 91 DR 915 R -99'

SAND AAVD GRAVEL

3989999 BENTONITE GROUT

GROUND SURFACE ELEV. 18.51

PIEZOMETER NO. MR-2P-IM

IRC on firm four	ndations New Y	nn Plaza, 225 \ /ork, NY 10122	1 0	's 🗌	BOREHOLE OR	T	TER NO. <u>MR-2P- M</u> TEST NO. 1 FILE NO. <u>13176</u>
JECT:	NYU JAILS NEW YORK	(MANHAT]	<u>ANI)</u>				. Y. NAKAMURA
		I JEW YUR	K		CALC. BY	<u> </u>	
OMETER LO	ICATION:				CH'KD BY	CU	DATE
							CET NO OF
					INTAKE POINT		07
					De	pth to bottom	
)]						Depth to top	p, ft =]b n, ft =♡ =
					Diameter, in =	Lengu Ц	
				·			
-					STANDPIPE/RISER		
						tion of rim, ft	and the second se
					Diameter, in =		ft =
					BOREHOLE		_
						Depth of casing	
					Diameter, in =		ft ==
) <u> </u>					Depth to which st	andnine/casin	g
0	ELAPS	SED TIME, At,	MIN.	10			$f_{t} = 19.3^{1} =$
	READING TIME			INITIAL UNBALANCED			REMARKS
DATE	CLOCK	Δt MIN.	TEST DEPTH, RIM TO WATER Z _t (ft.)	HEAD	UNBALANCED HEAD H _t = Z _t - Z _{STATIC} (ft.)	HEAD RATIO H _t /H _o	Falling Head Test
8/20	1425	STATIC	18.9			-	STATIC WATER LEVEL
	1435	0.00	19.3				
	1436	1.00	19.2				
	1431)	2.00	19.1				
	1438	3.00	19.05				
	1439	4.00	19.0]			
	1440	5,00	18.95				
	1445	[0.00	18.9				
	1450	15.00	18.9				
]			
				1			
		-					

NOTES

PIEZOMETER NO. MR-29-M

							BORING N	NO.	MR-2P-N	Ν
							SHEET	6	OF	6
PROJEC	T BO	ROUGH BASE	ED NYC JAIL SYS	EM -	MANHAT	FAN FACILIT	Y FILE NO.		13176	
LOCATIO	DN		NEW YORK, N	EW YO	ORK		SURFACE	ELEV.	18.5	5±
BORING	LOCATION	l\$	SEE BORING LOC	ATION	I PLAN		DATUM		NAVD 88	
							-			
		50			METHOD					
				AND	METHOD	S OF STABI	LIZING BUREI	HOLE		
			OF FEED		~ ~ ~					
-	F BORING	RIG DURING			-	ING USED		YES	NO	
TRUCK					DIA., IN.		DEPTH, F	-	0 TC	
SKID			AULIC X		DIA., IN.		DEPTH, F		TC	
BARGE			HER		DIA., IN.		DEPTH, F	I. FROM	TC	
OTHER	TRACK - CI	VIE-55								
		ND SIZE OF			DRILI		SED X	YES	NO	
D-SAMPLE		D. SPLIT SPOO	N			R OF ROTARY		L	3-7/8, 2-15/16	
U-SAMPLE		<u>D. 01 EIT 01 00</u>					· · · · · · · · · · · · · · · · · · ·		MUD/QUIK GEL	
S-SAMPLE										
CORE BAF	RREL NX D	OUBLE BARREI			А	UGER USED) X	YES	NO	
CORE BIT	NX D	IAMOND			TYPE AND	DIAMETER, II	N.	5"	HAND AUGER	
DRILL ROD	DS NWJ									
					*CASING H	AMMER, LBS	. 140	AVERAGE	FALL, IN.	30
					*SAMPLER	R HAMMER, LB	3S. 140	AVERAGE	FALL, IN.	30
					*HAMMER	TYPE (DONU	T/SAFETY/AUTC	DMATIC):	AUTOMAT	IC
			WATER LE		BSERVA	TIONS IN BO	REHOLE			
		1								
DATE	TIME	DEPTH OF			EPTH TO		CONDITIO	NS OF OBS	ERVATION	
08-15-18	10:50	HOLE 97	DEPTH OF CASIN	<u>،</u> د	NATER 19.4		POST-DRILLIN			
00-10-10	10.50	97			19.4			ZOMETER F		
							OLL I ILZ		CECORD.	
				_						
PIEZON	IETER INS	TALLED X	YES	NO	SKE	ICH SHOWN	ON	SEE	SHEET NO. 4	1
STANDPIP	۶E	TYPE	PVC		ID, IN.	1-3/4	LENGTH, FT.	20	TOP ELEV.	18±
INTAKE EL		TYPE	SLOTTED PVC		OD, IN.		LENGTH, FT.	10	TIP ELEV.	-12±
FILTER:		MATERIAL	SAND		OD, IN.		LENGTH, FT.	14	BOT. ELEV.	-12±
					- ,		- , <u>-</u>			
PA	Y QUANTII	TIES								
3 5" DIA D	RY SAMPLE	BORING	LIN. FT.	87		NO OF 3" SH	IELBY TUBE SA	MPI ES		
	I-SAMPLE B		LIN. FT.	01			NDISTURBED SA			
	LLING IN RO		LIN. FT.	5		OTHER: HAN			5'	
				-					•	
BORING	CONTRAC	TOR			CRA	IG GEOTECH	HNICAL DRILL	ING		
DRILLER			NICK BEEHLER			HELPERS	S	MYLE	S NEIPERT	
REMARK	S			ZOME	TER INST	ALLED UPO		ON.		
RESIDEN		ER	Y	UTA N	IAKAMUR	A		DATE	08-15	-18
CLASSIF	ICATION C	HECK:	CHERYL J.	MOSS	6	TYPING C	HECK:	PATRI	CK DONALDS	ON
MRCE Form B	S-1					=		BOR	ING NO.	MR-2P-M

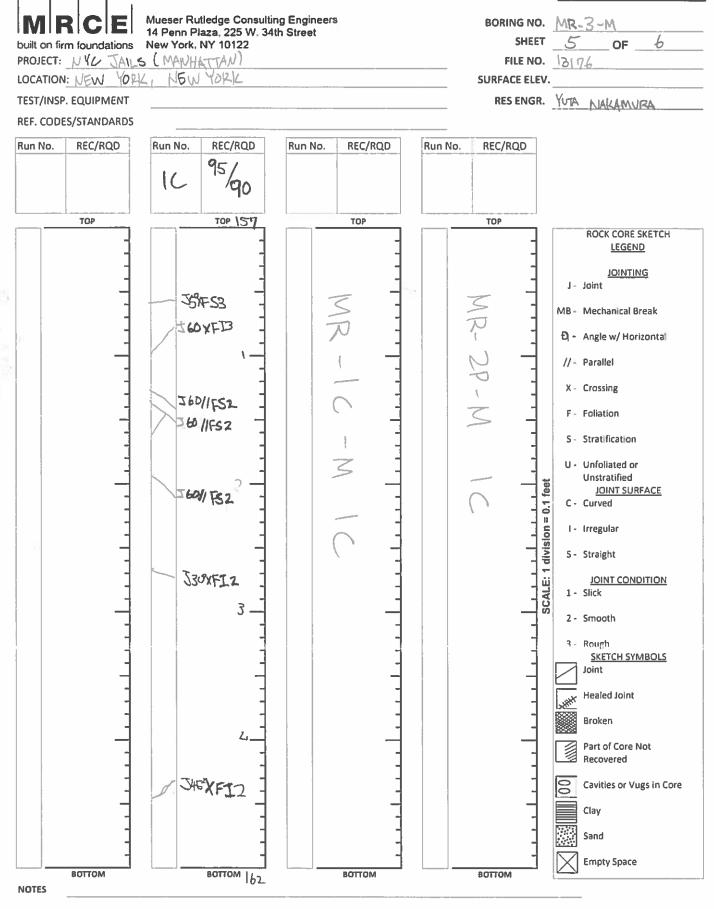
: -	BORO	UGH BASEL	ROJECT: BOROUGH BASED NYC JAIL SYSTEM - MANHATTAN FACILITY								
:				-		e no.					
			NEW YORK, NEW YORK	รเ	JRFACE E	ELEV.					
				RES. ENGR.		YUTA NAKAMURA					
	SAMP		SAMPLE DESCRIPTION			ASING	REMARKS				
	DEPTH	BLOWS/6"			DEPTH BL						
HA				**			**Concrete from 0' to				
					A						
HA						4"	Hand auger from 0.5'				
				-		_	to 5'.				
HA					5						
				-		_	Rig chatter from 5' to				
4D						_	REC=4"				
				-		_					
5D					10	-					
				F	10						
6D				-			REC=4"				
	11.0	6-2	medium sand, trace silt (GP-GM)	-			Minor rig chatter from				
							12.5' to 15'.				
				-			-				
	1 - 0				15						
			-			_	REC=2"				
	17.0	3-2	gravel (Fill) (SC)	-		-					
				-							
				C	20	30					
				C		_	WC=20, pp=0.5				
	22.0	2-3	fine to medium sand (CL)		22						
				-							
				-							
					25	1 11/					
			Brown fine to medium sand, trace silt (SP-SM)								
	27.0	23-18		-			-				
				-							
		0.40		-	30						
00				-			Drilling mud added.				
	32.0	13-14	(SP-SM)	-			-				
-+											
-+					25		-				
10	25.0	0.40			30						
U			DO TUD (SP-SM)				-				
	31.0	16-12		S2			-				
-+							-				
					40		-				
20	40.0	7.0			40						
			UU IUU (38-311)								
-+	42.0	11-9									
-+					15						
20	45.0	0.00	Do 10D, traco groval (SD CM)		45						
			DO TOD, Trace gravel (SP-SM)								
-+	47.0	14-12					-				
							-				
-+					50		-				
					50						
1	1			1	1		1				
		2.0 1A 2.0 4.0 1A 4.0 5.0 D 5.0 7.0 D 7.0 9.0 D 9.0 11.0 D 15.0 17.0 D 20.0 22.0 D 20.0 22.0 D 20.0 22.0 0 0 0 22.0 10 22.0 0 0 22.0 10 22.0 0 0 22.0 10 10 10 10 10 10 10 10 10 1	2.0 AUGER HA 2.0 HAND 4.0 HAND HA 4.0 HAND 1A 4.0 HAND HA 4.0 HAND 5.0 1-6 1.113 D 7.0 3-2 9.0 3.3 0 D 9.0 6-6 11.0 6-2 0 11.0 0 17.0 11.0 5-3 0 17.0 11.0 5-3 0 17.0 11.0 5-3 0 12 2.0 2-3 0 19-21 23-18 0 0 32.0 10 35.0 9-10 13-14 10 35.0 9-10 16-12 0 7-8 11-9 37.0 10 35.0 9-22 9-22	2.0AUGER HAND 4.0concrete, silt (Fill) (SP-SM) Dark gray & gray brown gravelly coarse to fine sand, tr silt, concrete, brick fgmts (Fill) (SP-SM) (Gray brown fine to coarse sand, some gravel, silt, trace concrete, brick fragments (Fill) (SM) Dark gray gravelly fine to coarse sand, some silt (Fill) (SM) Dark gray gravelly fine to coarse sand, some silt (Fill) (SM) Dark gray gravelly fine to medium sand, trace coarse sand, gravel (Fill) (SM)D7.03-29.03-3D9.06-6Hown silty fine to medium sand, trace coarse sand, gravel (Fill) (SM)D15.017.03-29.05-317.03-29.05-317.03-29.122.017.03-29.21-217.03-29.122.017.03-29.219-2117.023-189.1013-141035.09-1016-121035.09-1035.09-101037.016-121042.011-91011-91011-91011-91011-91011-91011-91011-91011-911-911-912-1013-141415-1215-1315-14 <t< td=""><td>2.0 AUGER concrete, silt (Fill) (SP-SM) 14 2.0 HAND Dark gray & gray brown gravelly coarse to fine sand, tr silt, concrete, brick fgmts (Fill) (SP-SM) 14 4.0 HAND Gray brown fine to coarse sand, some gravel, silt, trace concrete, brick fgmts (Fill) (SM) 15.0 1-6 Dark gray gravely fine to coarse sand, some gravel, silt, trace concrete, brick fragments (Fill) (SM) 0 5.0 1-6 Dark gray gravely fine to medium sand, trace coarse sand, gravel (Fill) (SM) 0 7.0 3-2 Dark brown silty fine to medium sand, trace coarse sand, gravel (Fill) (SM) 0 9.0 3-3 Dark gray gravel (Fill) (SM) 0 9.0 6-6 Red brick fragments, some brown fine to medium sand, trace silt (GP-GM) 11.0 6-2 Medium gray brown silty clay, trace to some fine to medium sand, trace silt (SP-SM) C 12.0 19-21 Brown fine to medium sand, trace silt (SP-SM) C 12.0 13-14 Brown fine to medium sand, trace silt, mica (SP-SM) S2 10 35.0 9-10 15-12 Do 10D (SP-SM) S2 10 35.0 9-10 <td< td=""><td>In O.3 Trinto Dark gray (gray for even (gray (</td><td>N D Data gray gravely course to fine sand, tace 2.0 AUGER Concrete, sill (Fill) (SP-SM) 44 4.0 HAND Dark gray gravely fine to coarse sand, some gravel, 5.0 AUGER Sand, tr sill, concrete, sill (Fill) (SM) 5.0 AUGER Sand, tr sill, concrete, sind, frace concrete, brick fragments (Fill) (SM) 0 5.0 AUGER Sand, gray gravel (Fill) (SM) 0 7.0 11-13 Sill (Fill) (SM) 0 3.3 coarse sand, gravel (Fill) (SM) 0 9.0 6-6 Red brick fragments, some brown fine to 11.0 6-2 medium sand, trace silt (GP-GM) 38 11.0 6-2 gravel (Fill) (SC) 38 11.0 6-2 gravel (Fill) (SC) 38 11.0 22.0 2-3 fine to medium sand, trace silt (SP-SM) 10 22.0 2-3 fine to medium sand, trace silt (SP-SM) 10 30.0 9-10 Brown fine to medium sand, trace silt, mica 33 10 35.0 9-10 Do</td></td<></td></t<>	2.0 AUGER concrete, silt (Fill) (SP-SM) 14 2.0 HAND Dark gray & gray brown gravelly coarse to fine sand, tr silt, concrete, brick fgmts (Fill) (SP-SM) 14 4.0 HAND Gray brown fine to coarse sand, some gravel, silt, trace concrete, brick fgmts (Fill) (SM) 15.0 1-6 Dark gray gravely fine to coarse sand, some gravel, silt, trace concrete, brick fragments (Fill) (SM) 0 5.0 1-6 Dark gray gravely fine to medium sand, trace coarse sand, gravel (Fill) (SM) 0 7.0 3-2 Dark brown silty fine to medium sand, trace coarse sand, gravel (Fill) (SM) 0 9.0 3-3 Dark gray gravel (Fill) (SM) 0 9.0 6-6 Red brick fragments, some brown fine to medium sand, trace silt (GP-GM) 11.0 6-2 Medium gray brown silty clay, trace to some fine to medium sand, trace silt (SP-SM) C 12.0 19-21 Brown fine to medium sand, trace silt (SP-SM) C 12.0 13-14 Brown fine to medium sand, trace silt, mica (SP-SM) S2 10 35.0 9-10 15-12 Do 10D (SP-SM) S2 10 35.0 9-10 <td< td=""><td>In O.3 Trinto Dark gray (gray for even (gray (</td><td>N D Data gray gravely course to fine sand, tace 2.0 AUGER Concrete, sill (Fill) (SP-SM) 44 4.0 HAND Dark gray gravely fine to coarse sand, some gravel, 5.0 AUGER Sand, tr sill, concrete, sill (Fill) (SM) 5.0 AUGER Sand, tr sill, concrete, sind, frace concrete, brick fragments (Fill) (SM) 0 5.0 AUGER Sand, gray gravel (Fill) (SM) 0 7.0 11-13 Sill (Fill) (SM) 0 3.3 coarse sand, gravel (Fill) (SM) 0 9.0 6-6 Red brick fragments, some brown fine to 11.0 6-2 medium sand, trace silt (GP-GM) 38 11.0 6-2 gravel (Fill) (SC) 38 11.0 6-2 gravel (Fill) (SC) 38 11.0 22.0 2-3 fine to medium sand, trace silt (SP-SM) 10 22.0 2-3 fine to medium sand, trace silt (SP-SM) 10 30.0 9-10 Brown fine to medium sand, trace silt, mica 33 10 35.0 9-10 Do</td></td<>	In O.3 Trinto Dark gray (gray for even (gray (N D Data gray gravely course to fine sand, tace 2.0 AUGER Concrete, sill (Fill) (SP-SM) 44 4.0 HAND Dark gray gravely fine to coarse sand, some gravel, 5.0 AUGER Sand, tr sill, concrete, sill (Fill) (SM) 5.0 AUGER Sand, tr sill, concrete, sind, frace concrete, brick fragments (Fill) (SM) 0 5.0 AUGER Sand, gray gravel (Fill) (SM) 0 7.0 11-13 Sill (Fill) (SM) 0 3.3 coarse sand, gravel (Fill) (SM) 0 9.0 6-6 Red brick fragments, some brown fine to 11.0 6-2 medium sand, trace silt (GP-GM) 38 11.0 6-2 gravel (Fill) (SC) 38 11.0 6-2 gravel (Fill) (SC) 38 11.0 22.0 2-3 fine to medium sand, trace silt (SP-SM) 10 22.0 2-3 fine to medium sand, trace silt (SP-SM) 10 30.0 9-10 Brown fine to medium sand, trace silt, mica 33 10 35.0 9-10 Do				

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ROJEC	-	BOKC		D NYC JAIL SYSTEM - MANHATTAN FACILITY			ILE NO.	13176
OCATIC)N:			NEW YORK, NEW YORK	S		E ELEV.	
				1		RES	. ENGR.	YUTA NAKAMURA
DAILY	NO.	SAMF DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	перти		REMARKS
PROGRESS Cont'd	14D	50.0	9-7	Brown fine to medium sand, trace gravel, coarse	SINAIA	DEFIN	BLOWS	
08-20-18		52.0	8-7	sand, silt, mica (SP-SM)				
Monday			-					
Cloudy								
69°F						55		
	15D	55.0	8-8	Do 14D (SP-SM)				
		57.0	11-9					Rig chatter from 57' to
								58'.
						60		
	16D	60.0	5-6	Brown fine to medium sand, trace silt, coarse				
		62.0	8-7	sand, mica (SP-SM)				Drilling mud added.
						0 E		
	17D	65.0	4-5	Do 16D (SP-SM)		65		
	170	67.0	4-5 6-6	D0 10D (SF-SM)				
		07.0	00					
						70		
	18D	70.0	8-6	Brown fine to coarse sand, trace silt, mica				
		72.0	8-7	(SP-SM)				
						75		
	19D	75.0	8-7	Brown fine to medium sand, trace silt, coarse				
		77.0	9-8	sand, mica (SP-SM)	S2			Drilling mud added.
						00		
	20D	80.0	7-7	Brown fine to coarse sand, some gravel, trace		80		
	200	82.0	7-5	silt, mica (SP-SM)				
						85		
	21D	85.0	6-6	Brown fine to coarse sand, trace silt, mica,				
		87.0	6-7	gravel (SP-SM)				
						90		Minor rig chatter at 90
	22D	90.0	7-7	Do 21D (SP-SM)				-
		92.0	9-9					
								Dig obottor from 041 to
						95		Rig chatter from 94' to 95'.
	23D	95.0	7-7	Do 21D (SP-SM)		33	1	Rig chatter from 96' to
		97.0	7-7					97'.
						100		

PROJEC				D NYC JAIL SYSTEM - MANHATTAN FACILITY NEW YORK, NEW YORK	SHEET 3 OF FILE NO. SURFACE ELEV. RES. ENGR.			13176 20± YUTA NAKAMURA
DAILY	NO	SAMF		SAMPLE DESCRIPTION	OTDATA	DEDTU	CASING	REMARKS
PROGRESS Cont'd 08-20-18 Monday Cloudy	NO. 24D	DEPTH 100.0 102.0	BLOWS/6" 7-8 9-7	Brown coarse to fine sand, trace gravel, silt, mica (SP-SM)	STRATA		BLOWS	-
69°F 25D 105.0 17-13 E				Brown fine to medium sand, trace silt, mica (SP-SM)		105		Rig chatter at 105'. Drilling mud added.
	26D	110.0 112.0	14-13 16-14	Do 25D (SP-SM)		110		
	27D	115.0 117.0	10-7 13-15	Brown fine to coarse sand, trace silt, mica (SP-SM)		115		-
	28D	120.0 122.0	7-7 9-9	Do 27D (SP-SM)	S2	120		
29D 125.0 7-7 Do 127.0 10-9			Do 27D (SP-SM)		125		Drilling mud added.	
	30D	130.0 132.0	6-6 8-7	Do 27D (SP-SM)		130		
137.0 8-11			Do 27D, trace gravel (SP-SM)		135		Drilling mud added.	
			Brown gravelly fine to coarse sand, some silt (SM)		139 140		Rig chatter from 139' to 140'. Rig chatter from 140' to 144'.	
	33D	145.0 24-22 147.0 26-21		Brown fine to coarse sand, some gravel, trace silt (SP-SM)	т	145		Minor rig chatter from 145' to 149'.
						150		-

				RING LOG			ING NO. ET 4 OF	MR-3-M 6
PROJEC	T:	BORC	UGH BASEF	NYC JAIL SYSTEM - MANHATTAN FACILITY			ILE NO.	13176
	-	Done		NEW YORK, NEW YORK	S		E ELEV.	20±
					_ 0			
DAILY	NO	SAM		SAMPLE DESCRIPTION			CASING	REMARKS
PROGRESS	NO. 34D	DEPTH 150.0	BLOWS/6" 16-24	Prown find to modium cand, come ailt, trace	SIRAIA	DEPTH	BLOWS	
14:00	34D	150.0	44-31	Brown fine to medium sand, some silt, trace mica (SM)	-			
07:20					Т			
08-21-18 Tuesday						155		Rig chatter at 155'.
Clear	35D	155.0	50/1"	Gray and brown gravelly fine to coarse sand,	-	155		Spoon bouncing at
68°F	000	155.1	00/1	some silt (SM)	DR	157		155'; drilled to 157'.
001	1C	157.0	REC=95%	Hard unweathered to slightly weathered gray		107	8*	35D: REC=1"
	10	162.0		gneissic schist, moderately jointed to closely				Rig chatter from 155'
		102.0		jointed, weathered joints	R	160		to 157'.
ł						100		*Coring time in
10:00						162		minutes per foot.
								End of Boring at 162'
						165		WC=Water Content
t								in percent of dry
								weight.
								5
								pp=Pocket
						170		Penetrometer
t								Unconfined Compres
								sive Strength in tsf.
								Ū
						175		
İ								
						180		
Ī								
						185		
ļ						190		
						405		
						195		
						200		
						200		
1								

ROCK CORE SKETCH



2

SHEET 6 OF 6 PROJECT BOROUGH BASED NYC JAIL SYSTEM - MANHATTAR FACILITY FILE NO. 13176 JOCATION NEW YORK. NEW YORK SURFACE ELEV. 202 BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING CORING CASING USED X YES NO TOPE OF BORING LOCATION PLAN DA. IN 4 DEPTH, FT. FROM 0 TO 25 SMIDE MECHANICAL DIA. IN DEPTH, FT. FROM TO DESTING LOCATION TO DESTING LOCATION TO 25 SMID TO DESTING LOCATION DUMANT TO DESTING LOCATION TO DESTING LOCATION TO DESTING LOCATION TO DESTING LOCATION DUMANT TO DESTING LOCATION DESTING LOCATION								BORING N	0.	MR-3	-M	
LOCATION NEW YORK, NEW YORK SURFACE ELEV. 20± BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF PEED TYPE OF BORING RIG DURING CORING CASING USED X YES NO TYPE OF BORING RIG DURING CORING CASING HOMONG CORING CASING HOMONG CORING DIA. IN DIA. IN DOBLE DATE DIA. IN DOBLE DATE DIAMETER OF ORIGARY BIT, IN QUEST SPOON DIAMETER OF ORIGARY BIT, IN QUEST SPOON DIAMETER OF ORIGARY BIT, IN AUGER USED X YES NO CORE BAREL NUMUMETER, IN. AUGER USED X YES NUMUMETER, IN. CORE BAREL <td colspa<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>SHEET</td><td>6</td><td>OF</td><td>6</td></td>	<td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>SHEET</td> <td>6</td> <td>OF</td> <td>6</td>								SHEET	6	OF	6
BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING COLINE CORING TYPE OF FEED TYPE OF FEED TYPE OF BORING CORING CASING USED X YES NO TRUCK MECHANICAL DIA., IN. 4 DEPTH, FT, FROM TO SIND HYDRAULC X DIA., IN. DEPTH, FT, FROM TO TYPE AND SIZE OF DIAL IN. DEPTH, FT, FROM TO OTHER Z'O. D. SPLIT SPOON USAMPLER CORE BARREL X VES NO CORE BARREL NVJ OLINE MAMMER (LBS. 140 AVERAGE FALL, IN AUGER USED NUL OLINE CONDITIONS OF OBSERVATION OR ORLING MUDUSEE DATE TIME DEPTH OF CASING BWATER OLINE CONDITIONS OF OBSERVATION	PROJEC	T BO	ROUGH BASE				TAN FACILITY					
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF PEED TYPE OF BORING RG RG RIG RIG CASING USED YES NO TRUCK MECHANICAL DIA, IN 4 DEPTH, FT, FROM 0 TO 25 SKID HYDRAULC X DIA, IN DEPTH, FT, FROM TO 0 0 70 25 SKID HYDRAULC X DIA, IN DEPTH, FT, FROM TO 0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td>ELEV.</td><td></td><td></td></t<>								-	ELEV.			
TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA, IN. 4 DEPTH, FT. FROM 0 TO 25 SKID HYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM 0 TO 25 SKID OTHER DIA, IN. 4 DEPTH, FT. FROM TO 0 0 0 25 D D 30 TO 25 D D A IN. DEPTH, FT. FROM TO 0 TO 25 D D A IN. DEPTH, FT. FROM TO D D D SAMPLER DEPTH, FT. FROM TO D D D D SAMPLER NO D D DEPTH, PT. FROM D D SAMPLER NO D SAMPLER NO D SAMPLER MADE D D D D D D D D D D D D D D D	BORING	LOCATION		SEE BORING L		N PLAN		DATUM		NAVD 88	}	
TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA, IN. 4 DEPTH, FT. FROM 0 TO 25 SKID HYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM 0 TO 25 SKID OTHER DIA, IN. 4 DEPTH, FT. FROM TO 0 0 0 25 D D 30 TO 25 D D A IN. DEPTH, FT. FROM TO 0 TO 25 D D A IN. DEPTH, FT. FROM TO D D D SAMPLER DEPTH, FT. FROM TO D D D D SAMPLER NO D D DEPTH, PT. FROM D D SAMPLER NO D SAMPLER NO D SAMPLER MADE D D D D D D D D D D D D D D D								_				
TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA, IN. 4 DEPTH, FT. FROM 0 TO 25 SKID HYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM 0 TO 25 SKID OTHER DIA, IN. 4 DEPTH, FT. FROM TO 0 0 0 25 D D 30 TO 25 D D A IN. DEPTH, FT. FROM TO 0 TO 25 D D A IN. DEPTH, FT. FROM TO D D D SAMPLER DEPTH, FT. FROM TO D D D D SAMPLER NO D D DEPTH, PT. FROM D D SAMPLER NO D SAMPLER NO D SAMPLER MADE D D D D D D D D D D D D D D D			BO	RING EQUIPM	ENT AND	METHOD	S OF STABILIZI	ING BOREH	OLE			
TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA, IN. 4 DEPTH, FT, FROM 0 TO 25 SKID HYDRAULIC X DIA, IN. DEPTH, FT, FROM 0 TO 25 BARGE OTHER OTHER DIA, IN. DEPTH, FT, FROM TO 0 TO 25 SAMPLER OT. D. SPLIT SPOON DIALING MUD USED X YES NO USAMPLER 2'O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 2-15/16, 3-7/8 0 USAMPLER CORE BAREL X.DOUBLE BARREL AUGER USED X YES NO CORE BAREL IX.DOUBLE BARREL AUGER USED X YES NO 0 VERANDROND TYPE AND DUMATER, IN. 4' HAND AUGER 30 ''HAMMER TYPE (DONUTSAFETVAUTOMATIC: AUTOMATIC DRILL RODS NWJ ''CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 ''HAMMER TYPE (DONUTSAFETVAUTOMATIC: NO WATER OBSERVATION NO WATER OBSERVATIONS MADE. - - DATE DEPTH OF CASIN							<u> </u>		<u></u>			
TRUCK MECHANICAL DIA, IN 4 DEPTH, FT, FROM 0 TO 25 SKID HYDRAULC X DIA, IN DEPTH, FT, FROM TO 0 70 25 SKID OTHER TRACK - OME-S5 DIA, IN DEPTH, FT, FROM TO 0 70 25 TYPE AND SIZE OF DRILLING MUD USED X YES NO 245/16, 3-7/8 USAMPLER 2*0.0. SPLIT SPOON DIAMETER OF ROTARY BIT, IN 2-45/16, 3-7/8 NO USAMPLER X* DOUBLE BARREL AUGER USED X YES NO CORE BARREL NX DUMOND TYPE OF DRILLING MUD QUIK GEL/EZ MUD SAMPLER DRILL RODS NWJ "CASING HAMMER, LBS. 140 AVERAGE FALL, IN 30 "GASING HAMMER, LBS. 140 AVERAGE FALL, IN 30 - - MAIL RODS NWJ "CASING HAMMER, LBS. 140 AVERAGE FALL, IN 30 THAME TYPE (DONUT/SAFETY/AUTOMATIC): AUTOMATIC AUTOMATIC AUTOMATIC DATE DEPTH OF DEPTH OF CASING MATER NO WATER OBSERVATI	TYPE OI					CAS	ING USED	X	YES	NO		
SKID HYDRAULIC X DIA., IN DEPTH, FT. FROM TO BARGE TRACK-CME-55 OTHER DIA., IN DEPTH, FT. FROM TO TYPE AND SIZE OF DRILLING MUD USED X YES NO D:SAMPLER 2*0.D. SPLIT SPOON DIMMETER OF ROTARY BIT, IN 2-15/16, 3-7/8 CORE BARREL XDOUBLE BARREL AUGER USED X YES NO CORE BARREL NX DUMUTER OF ROTARY BIT, IN 2-15/16, 3-7/8 NO CORE BARREL NX DOUBLE BARREL AUGER USED X YES NO CORE BARREL NX DUMUTO TYPE OF DRILLING MUD QUIK GELEZ MUD 30 CORE BARREL NX DUMUTO TYPE AND DIAMETER, IN. 4* HAND AUGER 30 CORE BARREL NX DUMOND TYPE (OND UTSAFETY/AUTOMATIC): AUTOMATIC WATER CONDITIONS OF OBSERVATION MATER NO WATER OBSERVATIONS MADE: 30 DATE TIME DEPTH OF CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 VETANDEPIE TIME DEPTH OF CASING DEPTH TO CONDITIONS OF OBSERVATION 30	-							· · · · · · ·			TO 25	
OTHER TRACK - CME-55 TYPE AND SIZE OF DRILLING MUD USED X YES NO D-SAMPLER 2* O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 2-15/16, 3-7/8 USAMPLER TYPE OF DRILLING MUD QUIK GEL/EZ MUD SSAMPLER NX DIAMOND DUIX GEL/EZ MUD CORE BARREL NX DIAMOND TYPE OF DRILLING MUD QUIK GEL/EZ MUD CORE BARREL NX DIAMOND TYPE AND DIAMETER, IN. 4" HAND AUGER DRILL RODS NWJ "CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "GASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "HAMMER, LBS. 140 AVERAGE FALL, IN. 30 DATE TIME DEPTH OF DEPTH OF CASING DEPTH OF MATER NO WATER OBSERVATIONS MADE INTO MATER	SKID		HYDR	AULIC	Х			-			го	
TYPE AND SIZE OF DRILLING MUD USED X YES NO D-SAMPLER 2'O. D. SPLIT SPOON DUAMETER OF ROTARY BIT, IN. 2:15/16, 3:7/8 U-SAMPLER	BARGE		ОТ	HER		DIA., IN.		-			го	
DIAMPLER 2' O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 2-15/16, 3-7/8 U-SAMPLER	OTHER	TRACK - CI	ME-55			-		-				
DIAMPLER 2' O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 2-15/16, 3-7/8 U-SAMPLER												
U-SAMPLER			ND SIZE OF			DRIL	LING MUD USE	DX	YES	NO		
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APPENDIX C

GEOTHERMAL ASSESSMENT

Manhattan - 125 White Street - geothermal options



NY Correctional Facilities				Likely Out	tout	
Site 1 Manhattan		No	Depth (FT)	Heating	Cooling	Remarks
Boreholes	Yes	80	400-500	1920- 2400kBtu/Hr	160- 200T	Assumed Heating output 60Btu/ft & Cooling Output 2.0 - 2.5T/ borehole
Energy Piles	Yes	195	100	1131kBtu/hr	68.25T	Assume average spacing is 25 x 25 ft grid, average configuration is a 3-pile cluster, each pile 100feet with single loop = 195 piles. The resulting total geo pile/ borehole length used iis 19,500 feet.
Open Loop Well	Yes	1 pair	350-400	112T		Based upon a Flow rate of 190 GPM

gienergy



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