GEOTECHNICAL INVESTIGATION REPORT LA CENTRAL BRONXCHESTER Bronx, New York MRCE File No. 12217

La Central Manager LLC 767 Third Avenue, 33rd Floor New York, NY 10017

Mueser Rutledge Consulting Engineers 14 Penn Plaza – 225 W. 34th Street New York, New York 10122

October 17, 2014



Mueser Rutledge Consulting Engineers

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La Central Manager LLC 767 Third Avenue, 33rd Floor New York, NY 10017

Attention: Ms. Mary Serafy, LEED AP

Re: Geotechnical Investigation Report La Central Bronxchester <u>Bronx, NY</u> MRCE File No. 12217

Greetings:

In accordance with our Proposal Agreement, Mueser Rutledge Consulting Engineers (MRCE) has completed a geotechnical investigation for the referenced project. This Report provides a summary of our investigation and provides foundation related recommendations.

PROJECT DESCRIPTION

The project site is located in the Mott Haven section of The Bronx, New York. The site is bounded by East 153rd Street (also known as Grove Street) on the north, Bergen Avenue on the west and Brook Avenue on the east. An existing New York City Transit (NYCT) subway borders the site to the south. Most of the existing site is vacant land. At the south end of the site, between the subway and Westchester Avenue, there is an existing building and parking lots.

The proposed development plans for the project include five new mixed-use development buildings (Buildings A through E with footprints shown on the attached Drawing No. SK-1). Proposed Building A would be located between the NYCT subway at the south end of the site and Westchester Avenue. It includes a twelve story building with a cellar. Building B is proposed on the lot bounded by Westchester Avenue on the south and East 152nd Street on the north. It includes a thirteen story building also with a cellar. Buildings C, D and E are located on the lot between East 152nd Street and East 153rd Street. Building C will be a thirteen story structure, Building D will be a nine story structure and Building E will be a 25-story structure, each with one cellar. We understand that the buildings will be developed in phases, with Buildings A and B being the early phase buildings.

EXHIBITS

The following Exhibits and Appendices are attached to this Report. Note that the Drawing Nos. for the Boring Location Plan, Contour Plan and Geologic Sections are numbered in a sequence continuing from MRCE's previous Geotechnical Report for the site dated October 5, 2007.

Drawing No. SK-1	Site Plan with Proposed Building Footprints
Drawing No. B-5	Boring Location Plan
Drawing No. C-3	Contour Plan of Rock Stratum
Drawing No. GS-10	Geologic Section J-J
Drawing No. GS-11	Geologic Section K-K
Drawing No. GS-12	Geologic Section L-L
Drawing No. GS-R	Geotechnical Reference Standards
Drawing No. RC-1	Rock Core Classification Criteria
Table No. S-1	Soil Design Parameters
Plate No. L-1	Liquefaction Screening Diagram
Appendix A	MRCE Boring Logs - 2014 Investigation

PREVIOUS SUBSURFACE INVESTIGATIONS

MRCE had performed previous geotechnical investigations at the site in 2005 and 2007 for a proposed development between E. 149th Street and E 153rd Street. They included geotechnical borings, piezometers and test pits, research and review of historical drawings from MRCE office files, research at the NYC Department of Buildings and co-ordination with the NYC Transit Authority (NYCT) for investigation approvals.

The previous MRCE investigation included a detailed investigation at the site of proposed Buildings A and B and a preliminary investigation at the site of Buildings C, D and E. The footprints of the proposed buildings that you provided us for planning the new subsurface investigation are shown in Table No. 1 below. It also shows the number of borings required by the NYC Building Code (Code) based on pile supported structures. The number of borings made by MRCE for each building, as part of the previous investigations, is also shown in the table. No new borings were required to be made for Buildings A and B. For Buildings C, D and E, a total of 16 borings were planned for the present investigation.

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Proposed Building	Footprint Area (sft)	Borings required per NYC Bldg Code	MRCE Borings from Previous Investigation	Required New Borings
А	45,073	17	17	0
В	41,545	16	19	0
С	12,222	7	3	4
D	10,483	6	1	5
Е	15,436	8	1	7

 Table No. 1 – Proposed Building Footprints and Number of Borings

The previous MRCE investigations also included 6 piezometers for measuring groundwater levels at the sites of Buildings A through E and 5 test pits at the sites of Building C and E.

The results of the previous investigations are included in the MRCE Geotechnical Report dated October 5, 2007. We understand that you have a copy of that Report and assume that permission to use MRCE's prior work has been obtained from the previous site developers.

PRESENT SUBSURFACE INVESTIGATION

As discussed in the previous section, a total of 16 borings were planned in the present subsurface investigation for Buildings C, D and E. Three new piezometers were also planned in the present subsurface investigation for measuring groundwater levels. The borings and piezometers were made by Warren George Inc. (WGI) of Jersey City, NJ under sub-contract to MRCE. All borings and piezometers were made under the continuous inspection of our Field Engineer, Mr. Farouk El Khatib who logged each boring/piezometer and prepared a daily field report of the activities. The as-drilled locations and ground surface elevations of the borings and piezometers were surveyed by Howard F. Greenspan Inc. under sub-contract to WGI. Access to the site for the borings and piezometers was arranged by La Central Manager LLC. The boring and piezometer locations are shown on the attached Drawing No. B-5.

The borings and piezometers were made using truck mounted drill rigs and were advanced by wash-rotary techniques using casing and drilling fluid to stabilize the borehole. Piezometer boreholes were stabilized with biodegradable drilling fluid. Representative soil samples were obtained using a 2-inch outside diameter split-spoon sampler driven with a 140 pound manual safety hammer free falling 30 inches. Split-spoon samplers were driven a total of 24 inches at each sample interval. The number of blows required to drive the sampler through four intervals of 6 inches each was recorded. The number of blows for the second and third 6-inch interval is summed to obtain the standard penetration resistance, or N-Value. Where soils were too dense, or gravel, boulders, or other obstructions were encountered, the sampler was driven for 100 blows, and the distance of actual penetration was measured and recorded. Recovered split-spoon soil samples were placed in jars for preservation. Those jars were delivered to our in-house laboratory by WGI for verification of field classifications by our geologist. Individual descriptions of soil samples are provided on the boring logs attached in Appendix A. Information shown on the boring logs includes the Unified Soil Classification System (USCS) symbol for each sample.

Rock was sampled in continuous core runs which were typically five feet in length. Rock cores were obtained with a double tube, N-series diamond-bit core barrel. Our Resident Engineer logged each core run, sketched the jointing patterns, measured recovery and the rock quality designation (RQD) for each core run. The rock core sketches are attached to the boring logs in Appendix A. Recovery is the length of core recovered divided by the length of core run expressed as a percentage. RQD is defined as the sum of lengths of recovered core pieces of intact rock greater than four inches in length between natural breaks expressed as a percentage of the total core run. Core breaks, which occurred as a result of drilling operations or extraction of the core samples, termed mechanical breaks, were not considered when measuring RQD. Rock cores were stored in wooden boxes and shipped by WGI to our laboratory for examination and verification of field classifications by our geologist. Individual descriptions of the rock cores are provided on the boring logs attached in Appendix A

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The vertical datum for the present MRCE Investigation and the project is the North American Vertical Datum (NAVD 1988). The vertical datum for the 2007 MRCE Report was the Borough of Bronx Datum. The conversion used to convert elevations from the Borough of Bronx Datum to the NAVD 1988 Datum is +1.5. For example, El. 0.0 Bronx Datum = +1.5 NAVD Datum.

SUBSURFACE CONDITIONS

The boring logs and subsurface conditions in the area of proposed Building A and B are provided in the 2007 MRCE Report. That Report also discusses the site history and the existing NYCT subway structures. Please take account of the different elevation datums when comparing information between this and our previous Report.

The subsurface conditions in the area of proposed Buildings C, D and E are discussed below. Our interpretation of subsurface conditions is illustrated in the form of Geologic Sections J-J, K-K and L-L on Drawing Nos. GS-10, 11 and 12. In this Report, we have numbered the drawings for the Boring Location Plan, Geologic Sections and Rock Contour Plan sequentially for maintaining continuity of those exhibits with our 2007 Report. The description of the soil terminology used by MRCE is summarized in the Geotechnical Reference Standards shown on Drawing No. GS-R. Rock core classification criteria are described on Drawing No. RC-1. General descriptions of the subsurface strata encountered in the borings are summarized below in order of their occurrence with depth:

Stratum F – Fill (NYC Class 7) – All borings encountered a layer of miscellaneous fill at the surface. The fill generally consists of loose to compact, brown, gray and black fine to medium, to fine to coarse sand, with trace to some silt, gravel, trace wood, vegetation, with widely varying amounts of brick and concrete fragments. Stratum F includes abandoned foundations and brick basement walls. SPT N-Values range from 2 blows per foot (bpf) to refusal (100+ bpf). The higher N-Values are likely indications of obstructions. Experience indicates it is likely that more obstructions are present in Stratum F than encountered during the borings, since the boring samples a small fraction of the subsurface strata. The thickness of the Stratum F ranges from 6 feet to 24 feet, averaging about 15 feet.

Stratum S – Sand (NYC Class 3a, 3b and 6) – In all the borings a thick layer of glacial outwash sand lies below Stratum F. The sand consists of loose to compact fine to coarse sand, with trace to some silt, gravel, occasionally silty or gravelly, trace silt seams, mica. The N-Values range from 4 to 98 bpf, with an average of about 34 bpf. The thickness of the stratum ranges from about 20 feet to 74 feet, averaging about 56 feet. The stratum becomes thinner to the north, where it also contains interlayers of Stratum M described below.

Stratum M – Silt (NYC Class 5b and 6) - Stratum M is a discontinuous glacial lake deposit interbedded at varying depths within Stratum S, occurring in some borings. This stratum consists of medium compact brown or gray fine sandy silt to silt, some fine sand, with trace mica. The N-Values generally range from 12 to 31 bpf, with an average of about 18 bpf. The total thickness of Stratum M ranges from 5 feet to 10 feet, averaging about 7 feet thick. In one boring a 2 foot thick layer of silt lies below the Sand, above the decomposed rock, where the sampler hit refusal upon encountering the decomposed rock. Stratum T – Till (NYC Class 3a and 3b) - In about half of the borings, a layer of glacial till occurs below Stratum S. The till typically consists of medium compact to very compact, brown to gray fine to medium sand, some gravel to gravelly, with some rock fragments, trace to some silt, trace coarse sand, and occasional boulders. The N-Values range from 19 bpf to refusal. The thickness of the stratum ranges from 2.5 feet to 15 feet, averaging about 9 feet thick.

Stratum DR – Decomposed Rock (NYC Class 1d) - Most of the borings encountered a layer of decomposed rock above the bedrock, which was sampled with a split spoon sampler. The layer can be described as a very compact, brown to gray fine to coarse sand with some to trace rock fragments, trace to some silt. The N-Values were generally refusal. The thickness of this stratum ranges from about 1 foot to 8 feet, averaging about 5 feet thick.

Stratum R/WR – Bedrock/Weathered Bedrock (NYC Class 1b to 1d) - Bedrock at the site varies widely in quality. The rock can be described as a white, gray or brown marble, occasionally chloritic schist, that generally ranges from weathered, highly weathered and broken to medium hard, unweathered and moderately jointed, with iron stained and weathered joints. Occasional zones of decomposed rock are present within this stratum. Core recoveries ranged from 3% to 100%, averaging about 78%. RQD ranged from 0% to 95%, with an average of about 35%.

Drawing No. C-3 shows contours of the top of Stratum R/WR. The rock contours shown are based on necessary interpolations between borings and may not represent actual rock elevations and weathering pattern between borings. The top of this stratum ranges in elevation across the site from El. -75 to El. -55. In one prior phase boring (MR-8P) made on the south side of the Building D site, it occurs at El. -33.

Tunnels across Brook Avenue – An architectural survey from a prior phase had identified five underground tunnel structures running east to west under Brook Avenue between East 152nd Street and Grove Street, which may have been part of the depressed rail freight yard which once existed on the other side of Brook Avenue. These tunnels are shown on Drawing No. B-5. MRCE had performed 5 test pits at these tunnel locations on the east side of the site as part of the 2007 investigation. The results of the test pits are provided in the 2007 MRCE Report.

GROUNDWATER

Standpipe piezometers were installed in Borings MR-6P, MR-8P, MR-10P, MR-120P, MR-134P, and MR-146P in the prior MRCE investigations to measure groundwater levels. Three piezometers were installed in the present investigation at locations MR-203P, MR-217P and MR-218P. The groundwater levels ranged from El. +6.0 to El. +4.5 in the Building A site, El. +3.2 to El. +3.6 in the Building B site and El. 2.6 to El. 3.2 in the northernmost site for Buildings C, D and E. All of these elevations provided in this Report are referenced to the NAVD 1988 datum. The water level observations for the prior investigation piezometers were made in 2007. All observations reflect measurements in the August and September months.

Groundwater levels are not static and change in response to many factors, including: precipitation, snowmelt, droughts, nearby construction, pumping from wells, and broken or leaky utilities, among other things. Groundwater levels also vary from year to year and the levels vary seasonally with spring levels typically being high and late summer levels being low.

Design groundwater levels for the different building sites can be selected as follows:

- Building A site: El. +6.5
- Building B site: El. +5
- Buildings C, D and E site: El. +4

Review of the FEMA Flood Map indicates the site is outside the Flood Zone.

FOUNDATION RELATED RECOMMENDATIONS

Foundation related recommendations are provided herein for Buildings A, B, C, D and E.

<u>Design</u>

Foundations - We understand that the proposed cellar levels for the different buildings will be as follows:

- Building A: El. +7.0 and a pool extending deeper
- Building B: El + 1.5
- Buildings C, D and E: El. +5 to + 6.5

We investigated the use of shallow foundations for the buildings. In the Building A site, the Fill extends down as deep as about El. +2. Below the Fill, there is a soft compressible organic silty clay layer which was found in Boring MR-132, down to El. 0. The upper portion of the Sand stratum below the Fill was found to be loose in some borings. These are not suitable conditions for shallow foundation support and hence we recommend that Building A be supported on deep foundations.

In the Building B site, the Fill extends down as deep as about El. -4. The upper portion of the Sand stratum below the Fill was found to be loose in some borings. The soft compressible organic silty clay layer found in the Building A site may also be present in the Building B site (based on proximity to the historic north-south oriented stream, but may not have been encountered by the borings). Based on these reasons, we recommend that Building B also be supported on deep foundations.

In the Building C, D and E site, the Fill extends down as deep as El. -8 at Building C, El. -1 at Building D and El. -3 at Building E. The upper portion of the Sand stratum below the Fill was found to be loose in some borings. Based on these reasons, we recommend that Building B also be supported on deep foundations.

For Building A, within 30 feet from the NYCT structures limits, we recommend using drilled foundations such as mini-piles or caissons socketed into Stratum R/WR in order to minimize vibrations due to pile installation which can adversely impact the NYCT structures. Mini-piles with 9 to 12 inch diameters can have capacities of about 150 to 200 tons and caissons with diameters of 18 to 24 inches can have capacities of about 500 to 1,000 tons. Foundation selection can be done based on the design loads. Permanent casing will be required to be drilled and seated into rock to provide a seal. Rock sockets for the mini-piles and caissons will be constructed in variable quality rock based on the borings. Therefore, we recommend that rock sockets be designed using 50 pounds per square inch (psi) allowable side friction resistance and allowable

end bearing resistance be limited to 8 tons per square foot (tsf) considering that weathered and decomposed rock zones could occur within the socket length. Beyond 30 feet from the NYCT structures limits, we recommend supporting the structure on driven piles to rock (Stratum R/WR) for allowable capacities up to 150 tons in order to have similar bearing conditions as the drilled piles. Steel H-Piles or open ended steel pipe piles would be suitable driven pile types. Sizes and capacities of the piles will depend on the column grids and foundation loading.

For Buildings B, C, D and E, we recommend supporting the structures on driven piles. Based on the foundation loading and column grids, high capacity piles, up to 150 tons, can be used if required, by driving them to rock (Stratum R/WR). For lower capacities, up to 75 tons, piles could be driven to bear in Stratum T or DR. Steel H-Piles or open ended steel pipe piles would be suitable driven pile types.

Pile load tests will be required for the driven piles in accordance with the Code requirements. The drilled mini-piles or caissons socketed into rock will not require load tests, but their sockets must be inspected by a video camera to verify socket integrity.

Steel piles may be subject to corrosion due to miscellaneous fills that can contain cinders or potential stray electric currents. We recommend that 1/16 inch of the steel pile perimeter be considered sacrificial. All pile steel, including steel shells for drilled piles should be isolated from the reinforcing steel in the pile cap.

Lateral capacity of piles will largely be dependent on the diameter of the caissons/minipiles/piles and the stiffness of core beams and/or reinforcing steel within the pile. Reduction factors will be required for the lateral capacity of the pile groups where pile spacing less than 6 diameters are considered. We can perform pile lateral capacity analyses during design for selected pile types and loading requirements.

<u>Basement Walls and Slabs</u> The floor slabs of the buildings should be designed as a structural slab to avoid differential settlement that could result from relying on Fill materials to support the floor. The foundation walls for all structures should be designed to resist earth pressures and surcharges consistent with the Code requirements. Geotechnical parameters provided in attached Table S-1 should be used to calculate the earth pressures.

Basement slabs and walls should be designed to resist hydrostatic groundwater pressures based on the design groundwater levels for the different Buildings provided earlier in this Report. A review of the FEMA flood map indicates the site to be outside the Flood Zone. The basement slabs and walls should be checked for a short term flood event, such as due to a surface flood event or a utility break. Overstresses may be used when analyzing such short term water level rises. We recommend that the basement slab and walls be fully waterproofed up to 2 feet above the design groundwater level. Sheet waterproofing (e.g. HDPE) may be employed. Hydrophilic water stops and groutable tubes should be used for all slab and wall construction joints below the water table. We recommend that a mud mat be placed over the subgrade to form an appropriate surface for placing the basement slab waterproofing membrane.

Where basement slabs and walls are 2 feet above the design water level we recommend that dampproofing be applied to all below grade walls and a six inch gravel layer be placed on the subgrade with a heavy duty polyethylene vapor barrier between the slab and the gravel base to allow for proper drainage under the floor slabs.

<u>Seismic Design</u> We performed a liquefaction screening using the borings data for Building C, D and E in accordance with the Code and found that liquefaction was probable based on the site strata characteristics. We then performed a simplified site specific study using the borings data to reevaluate the liquefaction hazard similar to what was done for our previous 2007 Report. Attached Plate No. L-1 shows a graph of field N-values versus depth from the ground surface along with a screening curve (from the site specific study) corresponding to a Factor of Safety (FS) of 1.1 against liquefaction. The vast majority of the N-Values fall in the safe zone against liquefaction, to the right side of the FS = 1.1 line. Therefore, we conclude that liquefaction does not need to be considered under the design seismic event for the Building C, D and E site. We had derived the same conclusion for Building A and B as part of our previous 2007 Report based on the boring data at those sites and a simplified site specific study. For all the building sites, Seismic Site Class D can be used for design.

Existing Adjacent NYCT Structures We recommend that test pits and a survey be performed to determine the exact locations of the NYCT subway related structures and their foundations on the south side of Building A. Their estimated locations based on available information from NYCT are provided in our 2007 Report. If excavations for Building A will be required within the influence line of the NYCT structures, underpinning of the NYCT structures may be required.

Approvals from the NYCT Outside Projects Group will be required prior to performing test pits. Reviews and approvals for the proposed Building A foundations and excavation support systems will also be required prior to construction. Therefore, we recommend the design of the foundations and excavation support systems for Building A be started early in the design phase of the project. Several rounds of submittals are typically required to secure NYCT approval, a process which can take 3 to 6 months depending on NYCT comments, the number of cycles of re-submittals, and NYCT workload. NYCT approval will be required in order to obtain a permit from NYC Department of Buildings.

Construction

<u>Subsurface Obstructions and Abandoned Structures</u> - Multiple obstructions and abandoned foundations were encountered in Stratum F in many of the borings made at the site and as observed within the test pits. These will need to be removed during excavation to the cellar level subgrades. Appropriate methods and time should be factored into the design and construction planning to allow for advancing driven foundation piles, drilled mini-piles/caissons, and excavation support soldier piles past the obstructions, to their required tip depths. Pre-augering, pre-drilling, pre-trenching and/or spudding may be required prior to installing these elements to minimize the impact of subsurface obstructions on them.

Test pits along Brook Avenue encountered abandoned tunnels which extend within the property lines. The entrances to these tunnels in some cases have been closed off with brick or concrete masonry block walls and in some cases the tunnel entrance backfilled with miscellaneous fill. In order to construct the buildings to property lines along Brook Avenue portions of the tunnels will need to be carefully demolished and shored. Consideration should be given to properly abandoning the tunnels beneath Brook Avenue, for example backfilling with soil and/or flowable

fill. It is not clear who is responsible for the tunnels, although we would recommend notifying the New York City Department of Transportation. The presence of the tunnels should be taken into account for utility and sidewalk work along Brook Avenue.

Collapsed sidewalks along East 152nd Street were observed during the subsurface investigation, which suggests the likelihood of abandoned vaults beneath the sidewalks. These vaults may also be present at other locations at the site. The vaults, where encountered, should be properly abandoned and backfilled.

<u>Support of Excavation</u> - The proposed zoning drawings for the buildings indicate cellar levels in all the buildings. In order to excavate for constructing the cellars, support of excavation systems will be required along the property lines. The excavation for the basement will require an excavation support system such as a braced steel soldier pile and timber lagging system. Tie-backs or internal rakers may be needed to brace the system. Adjacent utilities must be taken into account in the design of the excavation support system. On the south side of Building A, due the presence of NYCT structures, a secant pile excavation support system or underpinning of the NYCT structures may be required within their influence line, based on their exact location and depths with respect to the proposed new cellar wall and slab configuration. Appropriate live load surcharges should be used for design of the excavation support systems as required. The design of excavation support systems and any underpinning system will need to be designed by a professional engineer licensed in the State of New York.

<u>Construction Dewatering Considerations</u> - Where the cellar levels or excavation for pile caps, elevator pits, pool, etc. extend below the groundwater table, dewatering of the excavation will be required to allow their construction in the dry. A larger footprint dewatering will likely be required for Building B based on its proposed cellar elevation. The permeability of the Fill and Sand strata are expected to be moderate to high based on the falling head tests performed in piezometers in our present investigation. The Fill layer in particular can have high permeability where it has larger size materials and miscellaneous debris/demolished remnants of old structures. The construction documents should require the contractor to depress and maintain the groundwater at least two feet below subgrade levels in advance of excavation. New York City Department of Environmental Protection permits will be required for discharge of the construction dewatering effluent. Any contamination of the groundwater and requirement for pre-treatment of the dewatering effluent prior to discharge should be evaluated by an environmental consultant.

<u>Construction Monitoring – Existing NYCT Structures</u> - The NYCT structures on the south side of Building A will have to be monitored during excavation support system and foundation pile installations and substructure construction. A pre-construction condition survey and topographic survey of the NYCT structures will need to be performed prior to construction. The preconstruction condition survey of the NYCT structures should cover the limits of the site and 50 feet east and west of the site. The monitoring will likely include seismographs for vibration monitoring and tiltmeters and/or optical survey for lateral and vertical movement. At similar sites, the NYCT has required remote monitoring using seismographs and tiltmeters spaced at 25 feet along the front faces of their structures with readouts available at the construction site. During the NYCT review process, it may be possible to negotiate with NYCT to reduce the spacing to 50 feet based on the site configuration, but we recommend using the 25 feet spacing for initial budget estimates. NYCT will likely require that monitoring be checked daily and weekly reports be submitted. The monitoring will need to be in place until the substructure construction is completed.

<u>Construction Monitoring – Other existing structures</u> - We recommend that a pre-construction condition survey of existing structures within a 100 foot radius of the building sites be performed prior to construction. Based on the results of the pre-construction condition survey, it may be necessary to monitor some or all of the buildings for vibrations and settlement during the pile driving work.

Lateral movement monitoring of the excavation support system may also be required with the intent of protection of outside utilities and sidewalks/streets.

We trust that this Report provides sufficient information for you to begin the design of the foundations for Building A through E. If you have any questions, please contact us.

We can provide additional design assistance to your team for the design of drilled and driven piles, performance of test pits, design of excavation support and underpinning systems, performance of pre-construction condition surveys and instrumentation and monitoring for vibrations and movement of the existing NYCT and other structures.

Very truly yours,

MUESER RUTLEDGE CONSULTING ENGINEERS

By:

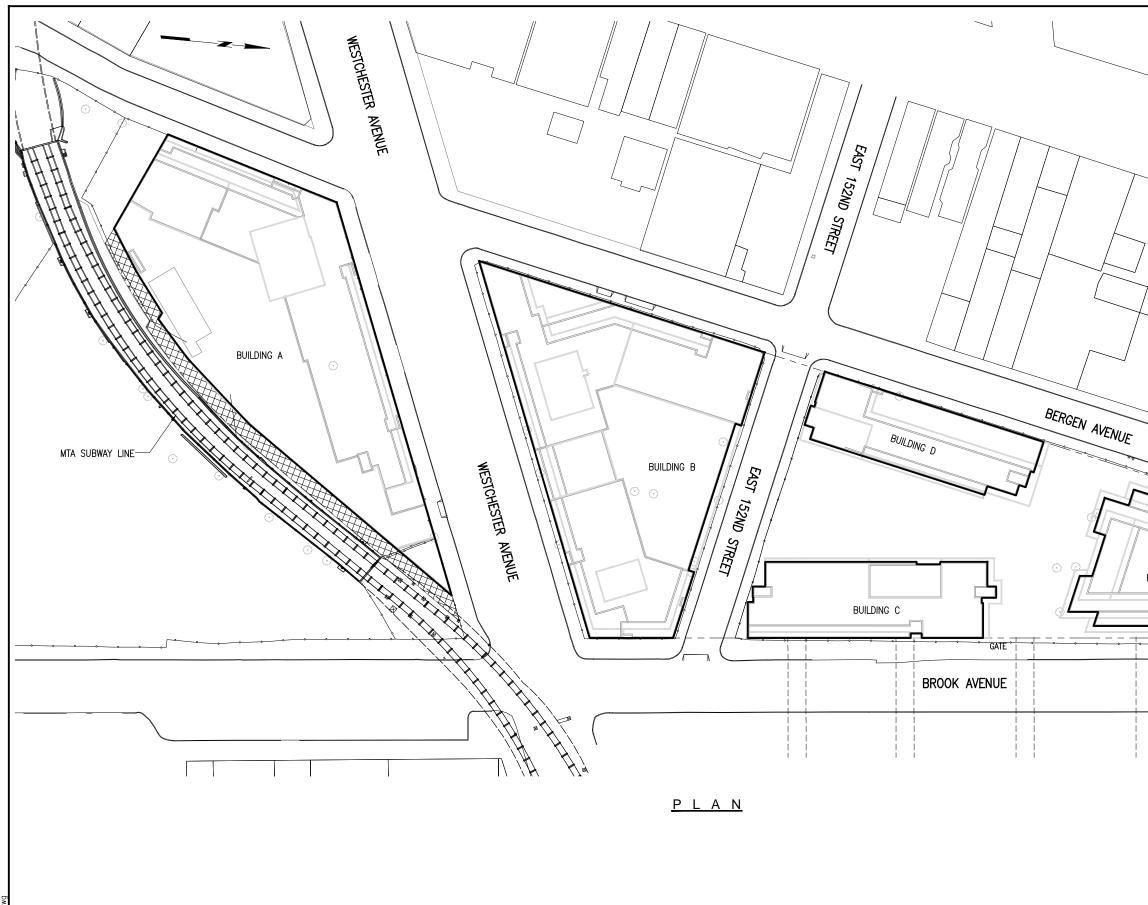
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Attachments HJS:AHB: F:\122\12217\Report\La Central Bronxchester Geotechnical Report.docx

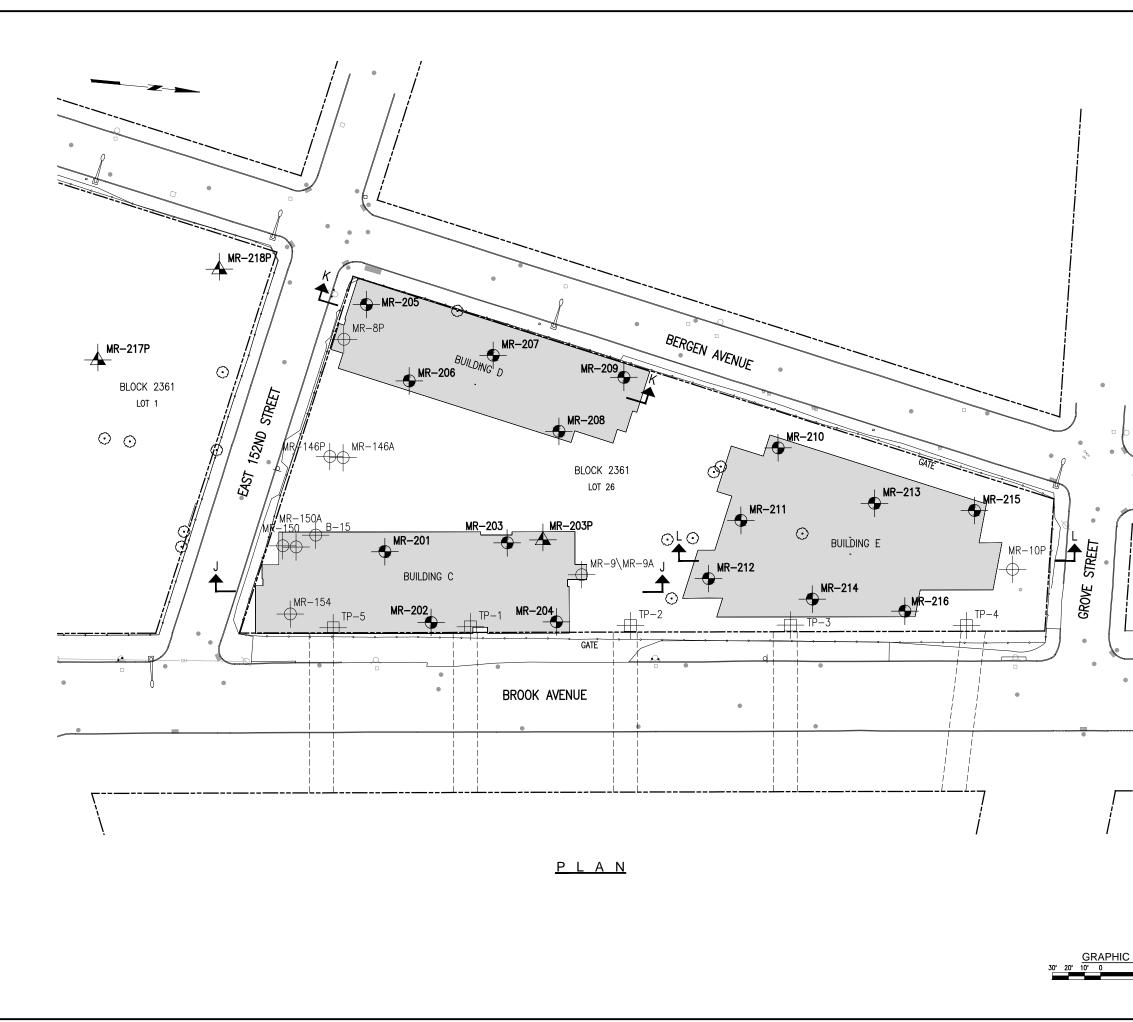
EXHIBITS



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	APHIC MADE BY: L.R. DATE: 10-10-2014 PROPOSED BUILDING FOOTPRINTS	12217 DRAWING NUMBER



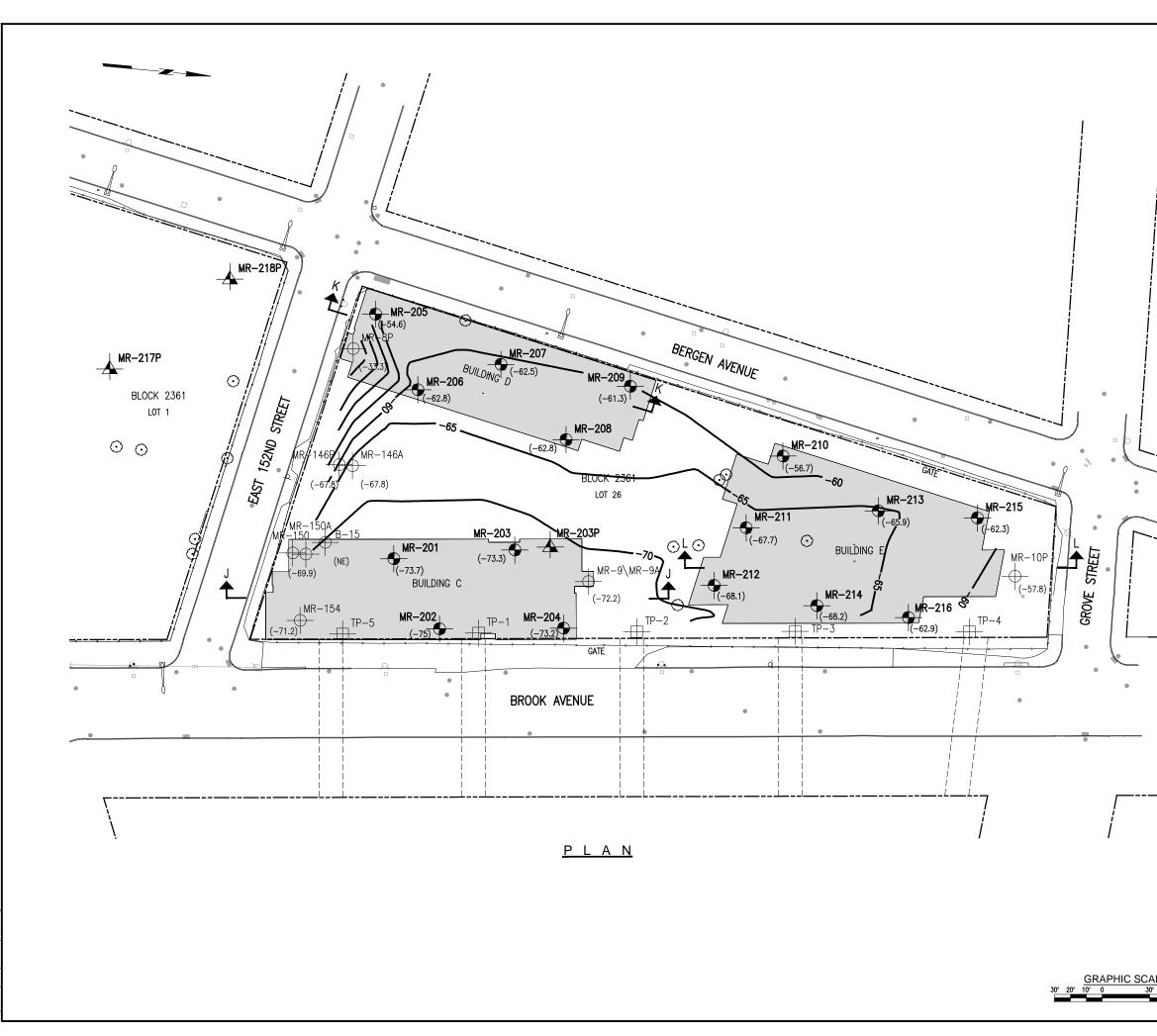
NOTES:

- 1. BASE SURVEY DRAWING AND PROPOSED BUILDING FOOTPRINTS WERE PROVIDED TO MRCE BY LA CENTRAL MANAGER, LLC.
- 2. PROPOSED BUILDING FOOTPRINTS MAY NOT REPRESENT LATEST LAYOUTS.
- ALL BORINGS, PIEZOMETERS, AND TEST PITS SHOWN ON THIS DRAWING WERE MADE UNDER THE CONTINUOUS INSPECTION OF MRCE.
- 2014 BORINGS AND PIEZOMETERS WERE MADE BY WARREN GEORGE INC. AND SURVEYED BY HOWARD F. GREENSPAN ASSOCIATES.
- GEOTECHNICAL INVESTIGATION AT BUILDINGS "A" AND "B" WAS PERFORMED BY MRCE IN 2007. REFER TO MRCE'S GEOTECHNICAL REPORT DATED OCTOBER 2007.
- LOGS FOR ALL 2014 BORINGS AND PIEZOMETERS SHOWN ON THIS DRAWING ARE PROVIDED IN APPENDIX A OF THIS REPORT. FOR LOGS OF BORINGS AND PIEZOMETERS FROM OUR PREVIOUS INVESTIGATIONS, REFER TO OUR 2007 REPORT.
- FOR GEOLOGIC SECTIONS J-J, K-K, L-L, REFER TO DRAWINGS GS-10, GS-11, GS-12 RESPECTIVELY. FOR GEOLOGIC SECTION A-A THROUGH I-I SHOWING PRIOR BORINGS AND PIEZOMETERS AT OTHER BUILDINGS LOCATIONS, REFER TO MRCE REPORT DATED OCTOBER 2007.

LEGEND:

$\begin{array}{c} & & \mbox{MR-200} \\ & & -2014 \mbox{ Boring performed by warren george inc.} \\ & & \mbox{MR-100} \\ & & - \mbox{Existing Boring (2005/2007)} \\ & & \mbox{TP-X} \\ & & - \mbox{Existing test pit (2007)} \\ & & \mbox{MR-203P} \\ & & \mbox{-} \mbox{2014 piezometer installed by warren george inc.} \end{array}$

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	MUESER	ruti	LEDGE C	ONSULTING	ENGINEERS
	14 PENN P	PLAZA	- 225 W.	34TH STREET,	NY, NY 10122
<u>SCALE</u> 30' 60'	SCALE AS NOTED		вү: E.C. вү: H.J.S.	DATE: 09-08-2014 DATE: 09-08-2014	FILE NUMBER
	BOR	RING	LOCATION	PLAN	drawing number B-5

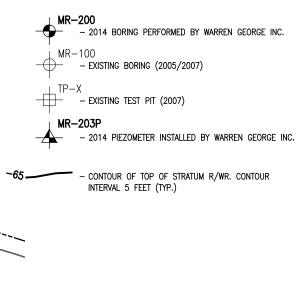


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- 1. FOR GENERAL NOTES, SEE DRAWING NO. B-5.
- CONTOURS REFER TO THE APPROXIMATE SURFACE OF STRATUM R/WR, SEE BORING LOGS FOR STRATA DESCRIPTIONS AND ACTUAL ELEVATIONS AT BORINGS.
- 3. CONTOURS SHOWN ARE BASED ON INTERPOLATIONS BETWEEN BORINGS AND MAY NOT REPRESENT ACTUAL CONDITIONS.
- 4. DATUM FOR CONTOUR ELEVATIONS IS THE NAVD 1988 DATUM.

LEGEND:



	REV.	DATE	BY		DESCRIPTION	N
				LA C	ENTRAL	
	BRON	IX				NEW YORK
		L	A CE	ENTRAL	MANAGER	LLC
	NEW	YORK				NEW YORK
	MUE	ESER	ruti	EDGE C	ONSULTING	ENGINEERS
	14	PENN P	LAZA	– 225 W.	34TH STREET,	NY, NY 10122
		CALE APHIC		ат: L.R. вт: H.J.S.	DATE: 10-10-2014 DATE: 10-10-2014	10017
<u>60'</u>				tour pl/ Stratum		DRAWING NUMBER

EAST 152nd ST.	₽ †*		L	MITS OF BUILDING	0								
	MR-154	MR-2	01	MR-2	02		MR-:	203	MR-2	204 MR-9			
	El. 15.8		EL. 16.3	3	EL. 15.0			EL. 16.7		MR-9A	— EL. 17.7		
+20	1D 34 SM	1D_ 44	SM		/		1D 54 2D 17	SP-SM	1D 22 2D 11	SM 1D 25 GP-GM 2D 43	5 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5	— +20	
+10	1D 34 SM 2D 7 SM 3D 87 SM 4D 16 SM	1D_ 44 2D_ 66 3D∏ 17 4D_ 68	SP–SM — GP–GM GP–GM	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	SM SM GP-GM GP-GM		$\frac{3D}{4D}$ 16	SP–SM SP–SM SP–SM	2D⊥ 11 3D⊥ 13 4D±100/6	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	GP-GM		
	5DI 14 SM (F) 5D[16	GP GP	4D± 100/3* 5D∏ 32	GP-GM GM	F	5D	SP-SM SP-SM	5D] 18	GP−GM 5D] 3	, , , , , , , , , , , , , , , , , , , ,		
0	6D [31 SM	6D] 21	SP-SM	6D] 21	SP-SM		7D <u></u> 18	SP-SM	<u>6D</u>] 18	SP-SM 6DI 27		— <i>o</i>	
	7D] 30 SM	7D] 17	SP-SM	7D] 9	SP-SM		8D] 11	SP-SM	7D∏ 19 8D∏ 19	SP−SM ⁷ D] 20 SP−SM ⁸ D] 12			
-10	8DI 14 SP-SM	8D] 14 9D] 16	SPSM SPSM	8D] 11	SP-SM		9D <u></u> 9 10D <u></u> 16	SP-SM SP-SM	9D] 12	SP-SM 9D] 2		— -10	
-20	9D] 12 SP-SM 10D] 17 SP-SM	30 18 100 18	3F-3M 	9D <u>1</u> 13	SP-SM		11D <u>1</u> 15	SP-SM	10D <u>1</u> 26	SP-SM 10D 15		— <i>–20</i>	<u> </u>
	11D[18 SM	- 11D[18	SP-SM	10D] 16 11D] 16	SP-SM SP-SM	(S)	12D] 18	SP-SM	11D] 26	SM 11D] 37	SP-SM S		N + L
-30	120] 24 SP-SM	12D <u></u> 26	SPSM	12D1 17	SP-SM		13D <u></u> 21	SP-SM	12D] 15	<u>SP-SM</u> 12D∏ 19		— <i>–30</i>	
	13D] 17 SP-SM) 13D[16	SP-SM	13DŢ 16	SP-SM		14D∐ 18	SP-SM	13D] 18	SP-SM 13D∏ 19			VA / / C
-40	14D 17 SM	14D <u>↓</u> 40	SPSM	14D] 20	SP-SM		15D <u></u> 22	SP-SM	14D <u> </u> 20	<u>SP-SM</u> 14D <u></u> 23		— -40 L	FLE
	15D] 15 SP-SM	15D] 24	SP–SM	15D] 20	SP-SM		16D∏ 25	SP-SM	15DŢ 16	_{SP−SM} 15D] 23 _{SP−SM} 16D] 3			
-50	16D 14 SP-SM	16D <u>] 32</u> 17D] 34	SPSM SPSM	16D] 19	SP-SM		17D <u></u> 34 18D∏ 46	SP-SM SM	<u>16D</u> <u>16</u> 17D 19	SP-SM 17D 39		— –50	
-60	17D] 23 SP-SM 18D] 20 SM	170 1 34 18D 1 17		17D] 25	SP-SM		19D∏ 26	SP-SM	18D] 21			— -60	
	19D [87 SM (T)		SM	18D] 37 	SP-SM SP-SM		20D] 55	SP-SM	19D] 31	SP- <u>SM</u> 19D <u></u> 25			
-70	20D 1188/12	(DR) 20D 1160/10	- SP_SM	20D 1 48	SP-SM T		21D =100/4 *	SP-SM	20D] 78	SP-SM-20D=100/	$\frac{3P-SM}{DR}$	— -70	
			38	10 92	41	X		27	1C 89	40 1C 96			
-80	20 100 50	<u>- 210 2.5 </u> П)	2C 91			20 10	0	20 91	56		— -80	
25		2C 100	64	ШШ			3C 100	48					
-90		1		C SECTION IC SCALE 10'	<u>J-J</u> 20' ■							— –90	
NOTES: 1. FOR LOCATIONS FOR BORINGS/ SOME BORINGS PROJECTED ON	/PIEZOMETERS, REFER TO DRAWING NO. B-5.	<u>GENERAL STRATA DE</u> F EIL - LOOSE TO COM									REV. DATE BY	DESCRIPTION	N
2. ELEVATIONS ARE REFERENCED		S <u>SAND</u> – LOOSE TO CO GRAVEL, SILT SEAMS, I	MPACT, FINE TO C /ICA	COARSE SAND, WITH	SILT,							ENTRAL	
3. STRATIFICATIONS SHOWN ARE N REPRESENT ACTUAL SUBSURFAC	IECESSARY INTERPOLATIONS AND MAY NOT CE CONDITIONS.	M <u>SILT</u> – MEDIUM COMP/ WITH FINE SAND, MICA	CT, BROWN OR GI	ray fine sandy si	T TO SILT						BRONX		
4. DETAILED SOIL AND ROCK DES IN APPENDIX A.	SCRIPTIONS ARE SHOWN ON BORING LOGS	T IIL - MEDIUM COMP/ MEDIUM SAND, WITH	CT TO VERY COMF GRAVEL, ROCK F	PACT, BROWN TO GI FRAGMENTS, SILT, C	RAY FINE TO OARSE SAND							MANAGER	LLC
	FOR BORING LEGEND AND SUMMARY OF YSTEM.	AND OCCASIONAL BOU	DERS									ONSULTING	
5. REFER TO DRAWING NO. GS-R UNIFIED SOIL CLASSIFICATION S		DR <u>DECOMPOSED ROCK</u> - COARSE SAND WITH R	OCK FRAGMENTS, S	SILT							14 PENN PLAZA – 225 W.		
UNIFIED SOIL CLASSIFICATION S	FOR ROCK CLASSIFICATION CRITERIA.				-						SCALE	DUTE 00 00 0011	1 CU 7
UNIFIED SOIL CLASSIFICATION S	FOR ROCK CLASSIFICATION CRITERIA.	R/WR ROCK/WEATHERED ROC OCCASIONALLY CHLORF WEATHERED AND BROK MODERATELY JOINTED,	IC SCHIST, RANGIN EN TO MEDIUM HA	NG FROM WEATHERE ARD, UNWEATHERED	D, HIGHLY AND						SCALE MADE BY: E.C. GRAPHIC CH'KD BY: H.J.S.	DATE: 09-08-2014 DATE: 09-08-2014	1 4 0



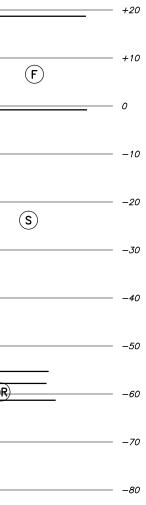
	_EAST 152nd ST	£ ≪		limit of building d		
		MR-205	MR-206	(MR-207)	(MR-208)	(MR-209)
	+20	EL. 16.4	— EL. 17.2	EL. 17.5		EL. 17.2
		1D 15 SM 2D 10 SP-SM F 3D 4 SM 4D 9 SP-SM 5D 23 SP-SM	1D 8 2D 16 GP-GM 3D 4 SP-SM 4D 13 SM	1D 12 SP-SM 2D 12 SP-SM 3D 10 SP-SM 4D 10 SP-SM 5D 15 SM 6D 9 SM	ID 74 SP- 2NP 136 SP- 3D=20/2 SP-	$SM \qquad 3D \neq 00/1^* \qquad GP - GM$
	+10	4D 9 SP-SM 5D 23	4D 13 SM 5D 20 SM 6D 6 SM	4D 10 SP-SM 5D 15 SM 6D 9 SM	4DT 6 SP- 5D 16 SP- 6DT 34 SP-	-SM 5D=100/4" GP-GM
	0	7D] 4 SP-SM	7D] 12 SP-SM	7D] 11 SP-SM	7D + 96 GP-	-GM 6NR- 50 SP-SM
	U U	BDŢ 7 SP-SM	8DI 12 SP-SM	BD] 30 SP-SM	8D] 20	
	-10	9D] 17 SP-SM	9D] 12 SP-SM	9D] 18 SP—SM	9D] 15 SP-	-SM 8D 6 SP-SM
FEET		10D[14 SP-SM (S	100 I 12 SP-SM	10D] 24 SP-SM	(S) 10DI 18 SP-	
	-20		11D <u>]</u> 24 SP-SM	11D] 13 SP-SM	11D[13 SP-	-SM 10D 16 SM
NI N		12D] 17 SP-SM	12D] 21 SP-SM	12D] 24 SM	12D] 24 SP-	
4 <i>TIC</i>	-30	13D] 15 SP-SM	13D] 37 SP-SM	13D] 37 SP-SM	13D] 26 SP-	-SM 12D 18 SP-SM
ELEVATION		- 14DI 14 SM	14D] 29 SP-SM	14D] 35 SP-SM	14D] 31 SP-	
Щ	-40	15D]_25 SP_SM	15D] 24 SP-SM	15D] 43 SP-SM	15D] 32 SP-	-SM 14D 18 SP—SM
		16D] 30 SP-SM	16D] 32 SP-SM	16D∏ 40 SP-SM	16D] 33	
	-50	17D 15 SP-SM	17D] 24 SP-SM	17D] 49 SP-SM	17D] 98 SP-	-SM 16D 16 SM
		<u>18D±100/6</u>		18D] 37 SM	18D] 43	
	-60	1C 15 7 DR 19D 170/12 SP-SM	19D] 70 SP-SM			
			WR 1C 50 37		\mathbf{R} WR 1C 3 0	19NR=100/0 ⁺ NR019 1C 100 42
	-70	20NR 100/1" 3C 80 40	20 45 0	26 93 44	20 90 68	2C 100 58
			3C 85 47	ш Ц	3C 100 95	
	-80		<u> </u>		ш Ц	

GEOLOGIC SECTION K-K

	G	RAPH	IC SCALE	
10'	5'	0	10'	20'

NOTES: 1. FOR GEOLOGIC SECTION NOTES AND STRATA DESCRIPTION, REFER TO DRAWING GS-10.

18.7



H											
REV.	DATE	BY		DESCRIPTION							
			LA CI	ENTRAL							
BRC	NX				NEW YORK						
	LA	A CE	ENTRAL	MANAGER	LLC						
NEW	/ YORK				NEW YORK						
MU	IESER	RUTL	EDGE C	ONSULTING	ENGINEERS						
14	PENN P	LAZA	– 225 W.	34TH STREET,	NY, NY 10122						
	SCALE	MADE B	IY: E.C.	DATE: 09-03-2014	FILE NUMBER						
AS	NOTED	CH'KD	by: H.S.	DATE: 09-03-2014	12217						
					DRAWING NUMBER						
	GEOI	GS-11									

		 -						LIMITS O	F BUILDING E						
		M	R-212	MR-	-211		MR-	214		MR-	216		MR-2	215	
	+20 —			EL. 16.9	- EL. 1	7.3		— EL. 16.8			EL. 17.	1		EL.	17.7
	+10 —	1D_ 15 2D_ 18 3D_ 34 4D_ 13 5D_ 2 6D_ 38	 SP-SI SP-SI SP-SI SP-SI SP-SI SP-SI	M 3D 12 M 4D 10 M 4D 10	/ SP-SM SP-SM GP-GM SP-SM SM	(F)	1D 21 2D 55 3D 23 4D ±100/6 5D ⊥109/9*	/ SP-SM SP-SM GP-GM GP-GM		1D 23 2D 14 3D 10% 4B 105 6D 11 11	/ SP-SM SP-SM SF-SM SF-SM GP-GM	F	1D 52 2D 12 3D 5 4D 10 5D 50 6D 14	SP–SM SP–SM SP–SM SP–SM SP–SM SP–SM	1D 2D 3D 4D 5D
	0 —	7D10 8D15		.	SP-SM		6D <u></u> 18 7D] 15	SP-SM SP-SM		7D <u> 11</u> 8D[44	SP-SM GP-GM		7D] 16 8D] 35	SP–SM SP–SM	6D]
	-10 -	9D] 22 10D] 20	SP-SI	8D∏ 14 M 9D∏ 13 M 10D∏ 15	SP–SM SP–SM SP–SM			SM SM		9D[31 10D[18	SM SM	S	9D] 20 10D] 38	SP-SM SM	8D] 9D]
FEET	-20 -		SP-SI	M 11D <u></u> 5 12D∏ 19	SP-SM SM&ML	(S)	<u>10D</u> 14 11D 22	ML SM	- (M)	11D] 27 12D] 26	SM ML	(M)	11D] 28	SM	_100] 110]
ELEVATION IN	-30 -	13D] 34	SM		SP-SM		<u>12D</u> 14 13D 32	ML SM	\bigcirc	<u>13D</u> 32 14D 17	SM SM		13D] 37 14D] 31	SP-SM SP-SM	12D∏ 13D∓
ELEVA	-40 -	15D] 60 16D] 2	SM	15D <u></u> 17 16D <u></u> 22	SM SP-SM		14D <u></u> 41 15D <u></u> 47	SP-SM SM		15D] 36	SP-SM SP-SM	S	15D] 38	SP-SM SP-SM	14D] 15D]
	-50 -	170] 43 170] 43 180] 29	SM	170 1 29 170 29 180 20	SP-SM-		16D] 37	SM SP-SM SP-SM		17D] 21 18D] 22	SP-SM	(T)	17D 22 18D 19	SP-SM	16D]
	-60 -	19D] 46 	SP-SI	10 25	0 SM	T)	1ZD[61 18D[33 19DI100	SP-SM SP-SM		19DI100/5*	GP-GM	0	19DI100/6	SM	18D
	-70 -	700 L +0/.		€ <u>20</u> 50	17		100 100 100			1C 100 20D 40	64 0 DR		1C 81 2C 93	16 57	
	-80 -	2C 66	40	3C 88	15	R	20 100	33		20 100	³² R / WR				

GEOLOGIC SECTION L-L

0 57 0 107 20'

NOTES: 1. FOR GEOLOGIC SECTION NOTES AND STRATA DESCRIPTION, REFER TO DRAWING GS-10.

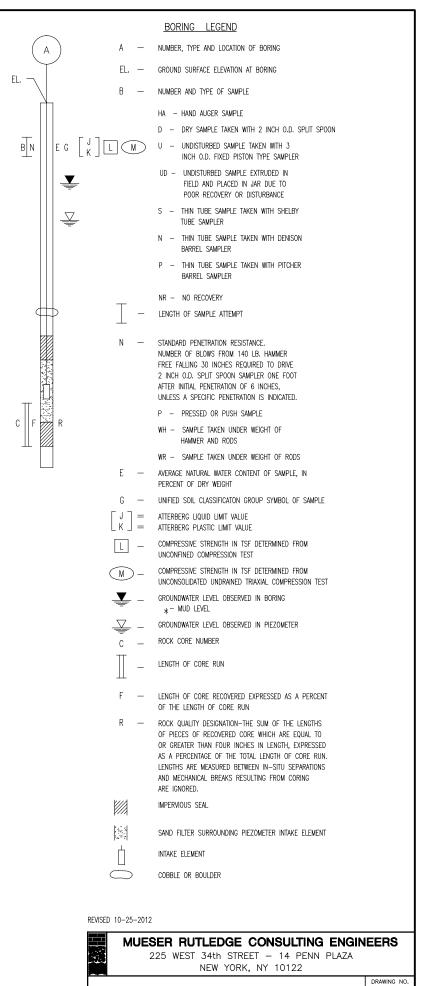
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(MR-10P)	GROVE STREET	
— EL. 17.		+20
DT 26 SM DT 7 SM DT24/10 SM DT24/10 SM	 F)	
D_100/2 SM D_100/2 SM D_ 3 SM		+10
D] 16 SM		
DI 12 ML M	C	,
DI 16 SM		-10
DI 13 SM (S)	_	
DI 9 ML M		-20
		N H
D] 22 SP-SM D] 4 9 SM+ML		-20 -30 -40 -40
DI 39 SM		EVAT
D] 47 SM		-40 -40
р] 36 ЅМ		-50
D=100/5" SM (DR)		
D=100/2"SM C 53 0		-60
	R	
/		-70
		-80
	REV. DATE BY DESCRIPTION	
	LA CENTRAL BRONX	NEW YORK
	LA CENTRAL MANAGER	LLC
	NEW YORK	NEW YORK
	MUESER RUTLEDGE CONSULTING 14 PENN PLAZA - 225 W. 34TH STREET, N	NY, NY 10122
	SCALE MADE BY: E.C. DATE: 09-08-2014 AS NOTED CHYKD BY: H.J.S. DATE: 09-08-2014	FILE NUMBER
	GEOLOGIC SECTION L-L	DRAWING NUMBER

GS-12	
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						UN	IFIED SOIL	CLASSIFICAT	ON ((INCL	UDING	IDENTI	IFICATI	ON ANE) DESCI	RIPTION	1)							
M	AJOR DIVISIONS	6	GROUP SYMBOLS	TYPICAL N	MES	(EXCLUDING F	NTIFICATION PE PARTICLES LARC ACTIONS ON ES	ROCEDURES GER THAN 3 IN. STIMATED WEIGHTS							LABORAT	ORY CLA	SSIFICATIO	ON CRITERI	A					
1		2	3	4			5			HYDRO	METER ANAL	YSIS ——			-+-							SIEVE	ANALYS	JS
	RACTION SIZE.	GRAVELS R NO FINES)	GW	WELL GRADED GRAVELS, GR. LITTLE OR NO F			n grain sizes an Ll intermediate		100 90				J.S. STANDAR	SIEVES	#200	#100 #70	#50 #40	₩30 #16	#10 #8		3/8*	3/4" 1"		
SIEVE SIZE	HALF OF COARSE FRACTION R THAN NO. 4 SIEVE SIZE. Y BE USED AS	CLEAN ((LITTLE OR	GP	POORLY GRADED GRAVELS, LITTLE OR NO F			ONE SIZE OR A INTERMEDIATE SIZ		80 1H1 70				RE P(PRESENTATI ORLY GRAD ND SAMPLE	/E									
0	HAN MA	/ITH FINES CIABLE DF FINES)	GM	SILTY GRAVELS, GRAVEL-	SAND-SILT-MIXTURES.		es or fines with 10n procedures	LOW PLASTICITY SEE ML BELOW)	$\begin{array}{c} \textbf{m} \\ $				GW	TANDARD SLEVES #200 #100 #10 #40 #30 #16 #10 #8 #4 3/8 3/4 1 REPRESENTATIVE Image: state sta										
E TO THE NAKED EYE	Image: Second and Second an						$\begin{array}{c} \overrightarrow{C}_{c} = (\overrightarrow{D}_{30})^{-} \\ \overrightarrow{D}_{10} \times \overrightarrow{D}_{60} \\ \overrightarrow{C}_{c} = (\overrightarrow{D}_{10} \times \overrightarrow{D}_{60})^{-} \\ \overrightarrow{C}_{c} = (\overrightarrow{D}_{10} \times \overrightarrow{D}_{10} \times \overrightarrow{D}_{10})^{-} \\ \overrightarrow{C}_{c} = (\overrightarrow{D}_{10} \times \overrightarrow{D}_{10} \times \overrightarrow{D}_{10})^{-} \\ \overrightarrow{C}_{c} = (\overrightarrow{D}_{10} \times \overrightarrow{D}_{10} \times \overrightarrow{D}_{10})^{-} \\ \overrightarrow{C}_{c} = (\overrightarrow{D}_{10} \times \overrightarrow{D}_{10})^{-} $																	
E TO THE NA	NOLLYCIAL SANDS, GRAVELLY NOLLYCIAL SANDS, GRAVELLY NOLLYCIAL SANDS, GRAVELLY UTTLE OR NO FINES. SW UTTLE OR NO FINES. UTTLE OR NO FINES. POORLY GRAPED SANDS, GRAVEL					wide range in grain sizes and substantial amounts of all intermediate particle sizes. $c_u = \frac{D_{60}}{D_{10}}$ Greater $c_u = \frac{C_{00}}{D_{10}}$ Greater $c_u = $			ater that 															
THAN HALF OF PARTICLE VISIBL ANIDS	SU HA CONTRACTOR CONTR						ONE SIZE OR A INTERMEDIATE SIZ	RANGE OF SIZES ES MISSING.	9.001 .002 .005 .01 .02 .05 .1 .2 .5 .1.0 2.0 5 10 VINIFIED SOILS CHAY O.P S.H.T S.A.N.D S.A.N.D S.A.N.D					G	RAV	ΕL								
MORE TH SMALLEST PAR SANI	(SILTY SANDS, SAND-SILT-MIXTURES. (SILTY SANDS, SAND-SILT-MIXTURES. (SILTY SANDS, SAND-SILT-MIXTURES. (SILTY SANDS, SAND-SILT-MIXTURES. (SILTY SANDS, SAND-SILT-MIXTURES. (SILTY SANDS, SAND-CLAY MIXTURES.				NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)				C	EPENDING	ON PERCEN	TAGE OF FIN	ES (FRACT	IZE PLOT ON SMALLE			ARSE	FINE	COBE	<u>o a r s</u> BLE 3—1: .DER > 1:	2"			
ABOUT THE S	MORE THAN H IS SMALLER (FC	SANDS W (APPRE AMOUNT	SC	CLAYEY SANDS, SAND	-CLAY MIXTURES.	(FOR IDENTIFICAT	PLASTIC FINES 10N PROCEDURES	SEE CL BELOW)				LES MOF	is than 5% Re than 1 To 12%	5	G' Gi	W, GP, SW, M, GC, SM,	SP SC	UIRING USE		SYMBOLS, I.	.E.: SP-SM,	GP-GM.		
SIEVE SIZE IS /		1					CATION PROCED	OURES ON 40 SIEVE SIZE		60														
NU. 200						DRY STRENGTH (CRUSHING CHARACTERISTICS	DILATANCY (REACTION TO) SHAKING)	TOUGHNESS (CONSISTENCY NEAR PL)		50								СН						
THE	<u>CLAYS</u> AIT IS	50	ML	INORGANIC SILTS, SANDY OR CLAYEY SILTS WITH SI		NONE TO SLIGHT	QUICK TO SLOW	NONE																
> <u>SMALLEK</u>		LESS THAN	CL	INORGANIC CLAYS, OF LOW GRAVELLY CLAYS, S SILTY CLAYS, LE	ANDY CLAYS,	MEDIUM TO HIGH	NONE TO VERY SLOW	MEDIUM	TY INDEX	40									/					
Malekial is <u>sm</u> a		E	OL	ORGANIC SILTS AND ORG LOW PLASTIC		SLIGHT TO MEDIUM	SLOW	SLIGHT	PLASTICITY	30														
5	IS AYS	N 50	МН	INORGANIC SILTS, MICACEO FINE SANDY OR SILTY SI		SLIGHT TO MEDIUM	SLOW TO NONE	slight to Medium					CL											
IHAN HALF	silts and clays	GREATER THAN	СН	INORGANIC CLAYS OF HIGH	PLASTICITY, FAT CLAYS.	HIGH TO VERY HIGH	NONE	HIGH		20											H & OH			
MOKE		GREA	OH	ORGANIC CLAYS OF MEDIU ORGANIC SIL		MEDIUM TO HIGH	NONE TO VERY SLOW	SLIGHT TO MEDIUM		10														
HIGHL	Y ORGANIC SOILS		Pt	PEAT AND OTHER HIGHL	Y ORGANIC SOILS.		ed by Color, OC Uently by Fibro	ior, spongy feel US Texture.		7 4	CL-ML				- & OL									
				ESSING CHARACTERISTICS OF ⁻ WITH CLAY BINDER.	WO GROUPS ARE DESIGNA	ATED BY COMBINATION	NS OF GROUP SYN	/BOLS,		10	20		30 F	40 PLASTICITY	CHART FC	50 LIQUID		7 OF FINE (0 GRAINED	80 SOILS	90)	100	
					TE	ERMINOLOGY USE	D IN MRCE SO	L DESCRIPTIONS																
	DEGREE OF	COMPACTION F	OR NON-PLAS	TIC SOIL			CONSISTENCY OF	CLAY AND CLAYEY SI	<u>1</u> +							PTION OF	CONSTITUEN	г Г						
DEGR	REE OF COMPACTIO	ON	BLO	WS [*] PER FOOT	CONSISTENCY		UNCONFINED C STRENGTH				DENTIFICATION				PERCEN		JSED IN SC							
	DEGREE OF COMPACTION			T0.40		SIRENGIH (ISF)																		

DEGREE OF COMPACTION	FOR NON-FLASTIC SUL		CONSISTENCE OF CLAT AND CLATET	<u>SILI</u>	DESCRIPTION OF CONSTITUENT
DEGREE OF COMPACTION	BLOWS [*] PER FOOT	CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TSF)	IDENTIFICATION CHARACTERISTICS	PERCENTAGES AS USED IN SOIL SAMPLE CLASSIFICATIONS
LOOSE	0 TO 10	SOFT	LESS THAN 0.5	EASILY REMOLDED WITH SLIGHT FINGER PRESSURE	1% to 12% - "TRACE"
MEDIUM COMPACT	11 TO 29	MEDIUM	0.5 TO 1.0	REQUIRES SUBSTANTIAL PRESSURE FOR REMOLDING	13% ТО 30% – "SOME" 31% ТО 49% – ADJECTIVE FORM OF
COMPACT	30 TO 50	STIFF	1.0 TO 4.0	DIFFICULT TO REMOLD WITH FINGERS	SOIL GROUP (EG. SANDY)
VERY COMPACT	GREATER THAN 50	HARD	GREATER THAN 4.0	CANNOT BE REMOLDED WITH FINGERS	EQUAL AMOUNT - "AND" (EG. SAND AND GRAVEL)
 * STANDARD PENETRATION RESISTANCE U: HAMMER FREE FALLING 30 INCHES TO 0.D. SPLIT-SPOON SAMPLER. 		+ NONPLASTIC SILTS ARE D AS PRESENTED FOR NON	ESCRIBED USING DEGREE OF COMPACTION PLASTIC SOIL.		



GEOTECHNICAL REFERENCE STANDARDS GS-R

HARDNESS/SOUNDNESS			GENERAL MINIMUM CORING CHARACTERISTICS				INTACT SPECIMEN TYPICAL MINIMUM COMPRESSIVE	DEGREE		BRIC WEATHERING
CLASSIFICATION	TYPICAL GEOLOGIC CLASSIFICATION	IDENTIFICATION CHARACTERISTICS	NX OR	LARGER	BX OR	SMALLER	STRENGTH	FABRIC WE	ATHERING	<u>CHARACTERISTIC</u>
			REC	RQD	REC	RQD	PSI	Unweather	red Un'	or discoloration
HARD ROCK	-CRYSTALLINE IGNEOUS, OR METAMORPHIC ROCKS -HIGHLY SILICEOUS SEDIMENTARY ROCKS	 UNWEATHERED FABRIC RINGS WHEN STRUCK WITH BAR SHARP AND HARD FRACTURE SURFACE WHEN BROKEN MECHANICALLY 	95 OR MORE	85 OR MORE	85 OR MORE	75 OR MORE	3000	Slightly Weathered	SIW	rings when struck W Iron Stained Rings when struck
MAY BE JOINTED		 MAY BE JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS MAY BE IRON STAINED. DOES NOT DISINTEGRATE UPON EXPOSURE 						Moderately Weathered	È	Thuds when struck
		– DOES NOT SLAKE IN WATER						Highly Weathered	ViH L	W Friable, easily broken by hand
MEDIUM HARD ROCK	AS FOR HARD ROCKS AND:	AS FOR HARD ROCK, EXCEPT:	70	50	50	40	1500	Decompos	sed De	ec Soil-like
SLIGHTLY WEATHERED MAY BE CLOSELY JOINTED	 MODERATELY SILICEOUS SEDIMENTARY ROCKS CERTAIN CALCAREOUS ROCKS 	 FABRIC MAY BE IRON STAINED MAY BE CLOSELY JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS HAVE SLIGHT WEATHERING OR MAY BE IRON STAINED. 						<u>DEGRE</u> JOINT WEATH		INT_WEATHERING CHARACTERISTIC
INTERMEDIATE ROCK	AS FOR MEDIUM HARD ROCKS AND:	AS FOR MEDIUM HARD ROCK, EXCEPT:	50	35	35	25	500	lron stained joints	d Fea	JtS Indicates movement of water along joints
MODERATELY WEATHERED MAY BE CLOSELY JOINTED	 MOST SEDIMENTARY ROCKS OTHER THAN COMPACTION SHALES MOST CALCAREOUS ROCKS WHICH ARE NOT POROUS 	 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 						Weathered .	joints WJt	
		– DOES NOT DISINTEGRATE UPON EXPOSURE – UNWEATHERED PIECES DO NOT SLAKE						<u>D</u> Jointing	EGREE O	F JOINTING JOINT FREQUENCY
WEATHERED ROCK	AS FOR INTERMEDIATE ROCKS AND:	AS FOR INTERMEDIATE ROCK, EXCEPT:	LESS THAN	LESS THAN	LESS THAN	LESS THAN	150	Massive	Mssv	Less than 1 joint in 4 fee
HIGHLY WEATHERED	 COMPACTION SEDIMENTARIES CALCAREOUS ROCKS WITH 	 HIGHLY WEATHERED FABRIC CAN BE BROKEN EASILY, CRUMBLES 	50	35	35	25		Blocky	Blky	1 joint every 2 to 4 feet
MAY BE BROKEN	SOIL-FILLED CAVITIES	WITH DIFFICULTY BY HAND – CAN BE SCRAPED BY KNIFE – MAY SOFTEN UPON EXPOSURE	TECHNIQUE	OVERED WITH S S, DESCRIBED A	AS FOR SOILS			Moderately Jointed	MdJtd	1 joint every foot to 2 fee
		– MAY SLAKE IN WATER – STANDARD PENETRATION RESISTANCE	INCLUDING ADDED TO	USC GROUP SY DESCRIPTION.	MBOLS. (WTHD	ROCK)		Jointed	Jtd	1 to 2 joints per foot
		EXCEEDS 50 BLOWS/FOOT						Closely Jointed	CIJtd	2 to 4 joints per foot
DECOMPOSED ROCK	ALL ROCK TYPES	 ROCK TEXTURE AND STRUCTURE OFTEN PRESERVED GENERALLY SOIL—LIKE IN CONSISTENCY 	TECHNIQUE	(RECOVERED W S AND DESCRIB USC GROUP S	ED AS FOR SOI	ILS		Broken	Bkn	More than 4 joints per foo
(RESIDUAL SOILS)		 CAN BE CRUMPLED BY SLIGHT HAND PRESSURE CAN BE PEELED WITH A KNIFE STANDARD PENETRATION RESISTANCE LESS THAN 50 BLOWS/FOOT 		DESCRIPTION.	(010)			frequency e	evaluations,	nored in RQD and joint s, but are noted in writter on core sketches.

NOTES:

- 1. ROCK CORE DESCRIPTIONS REPRESENT ONLY THE MATERIAL RECOVERED IN THE CORING OPERATIONS.
- 2. 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-SITU SEPARATIONS; MECHANICAL BREAKS RESULTING FROM CORING AND VERTICAL JOINTS ARE IGNORED.

TABLE R-4 ROCK CORE SKETCH KEY

<u>SKETC</u>	H SYMBOLS	JOII	NT C	DRIENTA	ATION AND COND	NTION
	Joint				<u>SURFACE</u> –	CONDITION
		Parallel	-	//	Curved – C	Slick – 1
XXHHHKK	Healed Joint	0		V	lrregular — I	Smooth – 2
\bigotimes	Broken	Crossing	-	Х	in cyului 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		0		
<u> H-E-S</u>		Mechanical Break	-	MB		

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	CIJtd	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	SØ
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

2

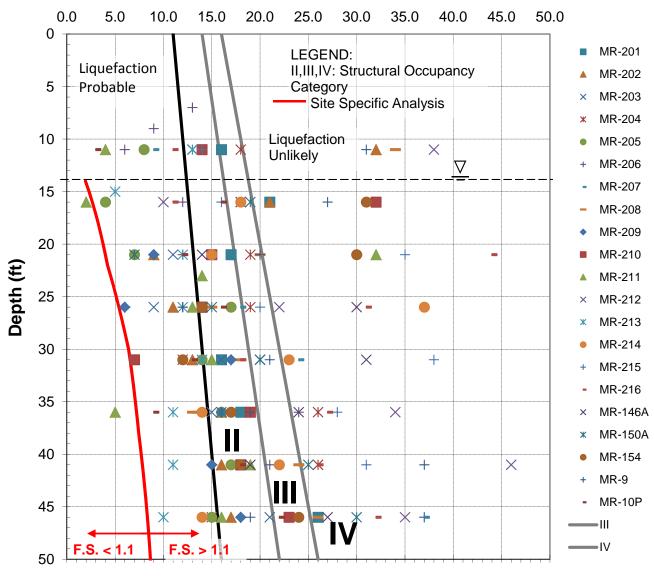
Design Parameter	Soil Strata								
	F	S	Μ	Т					
	Fill	Sand	Silt	Till					
Effective Unit Weight (pcf) Above Water Table, γ Below Water Table,γ'	115 53	120 58	120 58	125 63					
Angle of Internal Friction, ϕ	30	32	30	36					
Earth Pressure Coefficients Active, $K_a = tan^2(45 - \phi/2)$ At Rest, $K_0 = 1 - \sin \phi$ Passive $K_p = tan^2(45 + \phi/2)$	0.33 0.5 3.0	0.31 0.47 3.25	0.33 0.5 3.0	0.26 0.41 3.85					

La Central Bronxchester Table S-1 – Soil Design Parameters

Notes:

- 1. Surcharges consistent with NYC Building Code requirements must be added to the earth pressures. For construction surcharge loads, use 600 psf vertical surcharge applied as a lateral surcharge of 240 psf in upper 10 feet depth followed by 110 psf over the next 10 feet depth.
- 2. For basement walls restrained at the top and bottom (rigid wall), use at rest earth pressures. For walls restrained at the bottom and free at the top (flexible), use active earth pressures.
- 3. Design groundwater level elevations:
 - Building A site: El. +6.5
 - Building B site: El. +5
 - Buildings C, D and E site: El. +4

Liquefaction Screening Diagram NYC Building Code



Blowcounts (blows per foot)

PLATE NO. L-1

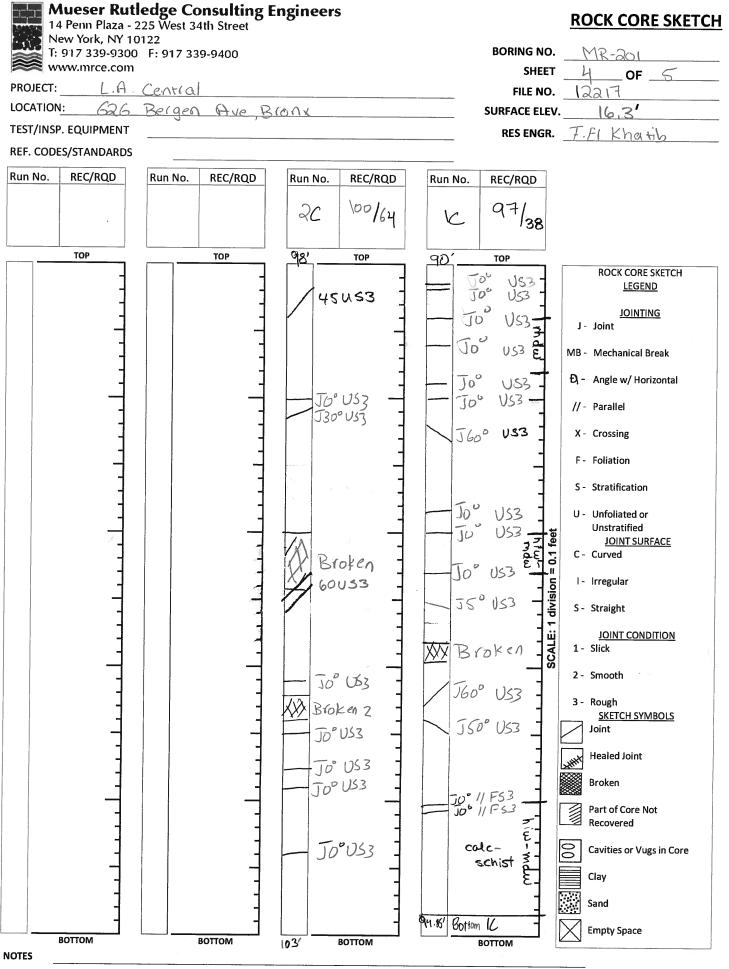
APPENDIX A

			B	DRING LOG			ING NO.	
PROJEC	T:			LA CENTRAL			ET 1 OF	
OCATI				BRONX, NEW YORK			ILE NO.	
	514.			BRONA, NEW FORK	S(URFACE ELEV		
DANA		CANA			1	RES	RES. ENGR. FAROUK E	
DAILY	NO	SAM				}	CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
07:00	1D	0.0	28-21	Brown gray fine to medium sand & brick, some			DRILLED	REC=6"
08-04-14		2.0	23-25	silt, trace vegetation (Fill) (SM)			AHEAD	
Monday	2D	2.0	28-40	Brown fine to medium sand & brick, trace silt			4" 3"	
Sunny		4.0	26-60	(Fill) (SP-SM)				
80°F						5		
	3D	5.0	4-11	Brown gravel & brick, some fine to coarse				REC=3"
		7.0	6-2	sand, trace silt (Fill) (GP-GM)	F			
	4D	7.0	28-24	Gray concrete & fine to coarse sand, trace silt	•			REC=4"
		9.0	44-12	(Fill) (GP-GM)			· · · · · · · · · · · · · · · · · · ·	
						10		
	5D	10.0	17-10	Red brick (Fill) (GP)				REC=1"
		12.0	6-7					
						49 E		
						13.5		
	6D	15.0	10-12	Brown fine to medium sand, trace silt (SP-SM)		15	+	
		17.0	9-9	brown line to medium sand, trace sitt (SP-SM)				
		17.0	3-3		-			
		10 10000 10000 1000 1000 1000 1000						
	70	20.0	0.0			20		
	7D	20.0	8-8	Brown medium to fine sand, trace silt, mica				
		22.0	9-8	(SP-SM)				
					-	25		
	8D	25.0	6-7	Brown black fine to medium sand, trace coarse				
		27.0	7-8	sand, silt (SP-SM)	-			
					-			
					-			
[-	30		
ľ	9D	30.0	6-8	Brown fine to medium sand, trace silt, mica	-	30		
ľ		32.0	8-8	(SP-SM)	-			
-	-		00					
ŀ					S _			
-								
-	10D	35.0	7-7	Ton 6": Prown modium to fine cond, the se		35		
_		37.0	11-12	Top 6": Brown medium to fine sand, trace	-			
-		57.0	11-12	coarse sand, silt, mica (SP-SM)				
-				Bot 4": Brown fine sand, some silt, trace mica				
-				(SM)				
-	140	40.0				40		
-	11D	40.0	9-9	Brown fine sand, trace silt, silty clay seam,				
i 		42.0	9-12	mica (SP-SM)				
_								
					[
						45		
	12D	45.0		Brown fine to medium sand, trace coarse				
		47.0		sand, silt (SP-SM)				
					-			
						50		
	13D	50.0	10-8	Do 12D (SP-SM)		50		
		52.0	8-11	(

BORING NO.

				ORING LOG			ING NO	
ROJEC	ст∙			LA CENTRAL			ET 2 O	-
				BRONX, NEW YORK	_		ILE NO	
	011.			BRONA, NEW YORK	S	URFAC		
DAILY		SAL	MPLE			RES	I manufacture and the second s	R. FAROUK EL KHAT
PROGRESS	NO.	DEPTH	1	SAMPLE DESCRIPTION	OTDAT/	DEDT	CASIN	
Cont'd					STRATA	DEPTF	-	
08-04-14								
Monday			_				AHEAI 3"	
Sunny							3	
80°F						55		
	14D	55.0	20-20	Brown fine to medium sand, trace silt, mica				_
		57.0	20-18	(SP-SM)				_
	15D	60.0	0.12			60		
	130	62.0	9-13 11-9	Do 14D (SP-SM)				
		02.0	11-5			ļ		
					S	65		
	16D	65.0	15-18	Do 14D (SP-SM)	-	05		-
		67.0	14-19					
			_					-
	470	70.0	10.1-			70		-
	17D	70.0	12-17	Brown gray fine sand, trace silt, mica (SP-SM)				
		72.0	17-19					
			_					_
						75		
	18D	75.0	8-7	Brown gray fine sand, some silt, trace mica		75		
		77.0	10-8	(SM)				-
								-
-			-			78.5		-
	400					80		-
-	19D	80.0	8-31	Brown gray fine to medium sand, some rock				1
ŀ		82.0	46-40	fragments, silt, trace coarse sand (SM)	Т			-
ŀ			-					
15:00						0.5		
07:00	20D	85.0	39-60	Brown fine to coarse sand, some white rock		85		
08-05-14		86.3	100/4"	fragments, trace silt (Decomposed Rock)				
Tuesday				(SP-SM)	DR			
Sunny								
85°F	10	00.0				90		
-	1C	90.0 95.0	REC=97%				2.5*	*Coring time in
-		95.0	RQD=38%	moderately weathered gray marble, jointed to			2.5*	minutes per foot.
-				broken, iron stained & weathered joints Bot 1': Weathered moderately weathered to	-		2*	White wash.
				highly weathered green calc schist, blocky, WJts	-	05	1.5*	
-	21D	95.0	REC=2.5'	Brown fine to medium sand, some rock	-	95	4*	
-		98.0		fragments, trace silt (Decomposed Rock)	R/WR		0.5* 1*	
				(SP-SM)	-		0.5*	
	2C	98.0	REC=100%	Medium hard slightly weathered gray marble.	ŀ			Brown wash.
		103.0	RQD=64%	jointed to broken, iron stained & weathered	-	100	2*	
				joints	-			

			<u>B(</u>	DRING LOG		BOR	ING NO.	MR-201
PROJEC	· T ·					SHE	ET 3 OF	
LOCATIO							ILE NO.	
LOOAIR	JN.			BRONX, NEW YORK	S		E ELEV.	
DAILY		SAM				RES	. ENGR.	FAROUK EL KHATIB
PROGRESS	NO.	DEPTH	BLOWS/6"				CASING	
Cont'd		DEI III	BLOWGIO	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
08-05-14							3*	
Tues., Sunny	,				R/WR	103	2.5*	
85°F, 14:00						103	3*	End of Boring at 103'.
						105		
						100		
						110		
				54				
						115		
						115		
						120		
-								
-								
						125		
						120		
_								
-								
						100		
-						130		
-								
					-			
					-			
Ļ						135		
						440		
-						140		
					-			
						145		
-								
						150		
						100		



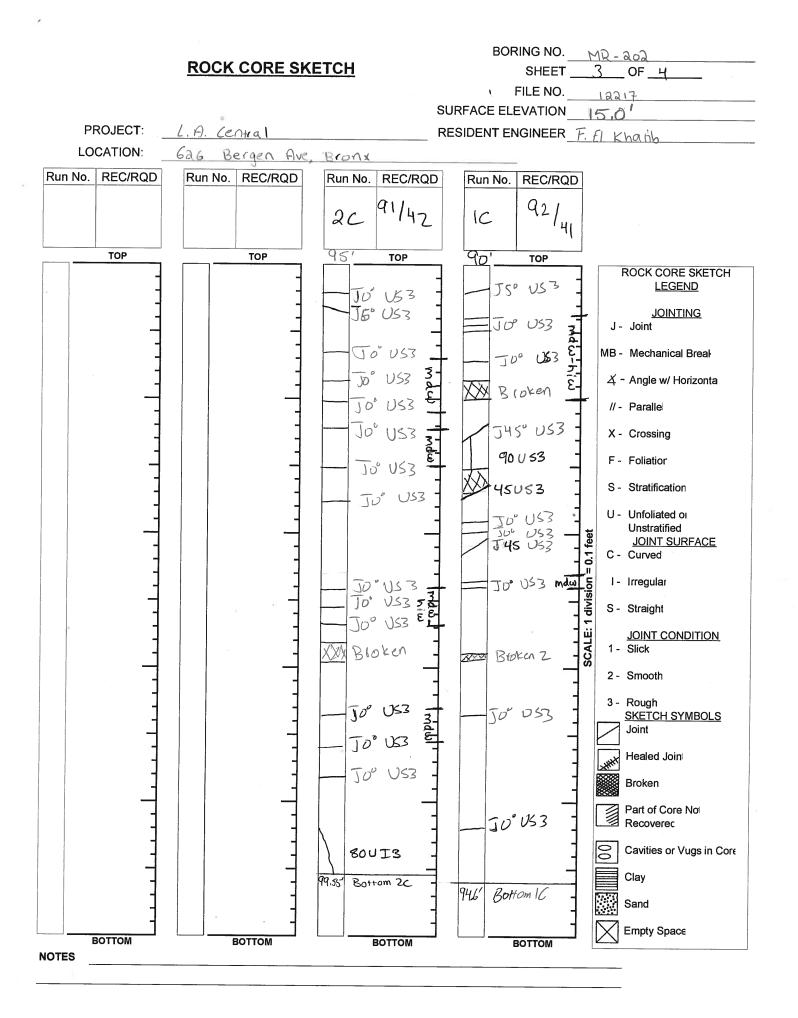
MUESER RUTLEDGE CONSULTING ENGINEERS

						BORING	NO.	MR	-201
	-					SHEET	5	OF	5
PROJEC			LA CEN			FILE NO.		1221	7
LOCATIC			BRONX, NE			SURFAC	E ELEV.		16.3
BORING	LOCATION		SEE BORING L	OCATION PL	AN	DATUM		NAVD	88
BORING			DS OF STABILIZ		-				
DOMINO		TYPE OF		LING BUREHU	<u>_E</u>				
	BORING RIG	= +.		040000	1055		1		
TRUCK	ACKER A			CASING			YES	NO	
SKID	NORLIN	HYDRAUL		DIA., IN.		DEPTH, F		0	TO 15
BARGE		OTHER				DEPTH, F		0	TO 90
OTHER		OTTIER		DIA., IN.		DEPTH, FI	. FROM		ТО
	D SIZE OF:			DRILLIN	G MUD USED	Х	YES	NO	
D-SAMPLE	and the first sector was a sector of	D. SPLIT SPOON	l	DIAMET	ER OF ROTARY BI	T, IN.		3-7/8	3
U-SAMPLE				TYPE OI	DRILLING MUD			QUIK M	UD
S-SAMPLE	P10-00								
		UBLE TUBE "M	' SERIES	AUGER	USED		YES	X NO	
CORE BIT	second data and an and a	AMOND		TYPE AN	D DIAMETER, IN.				
DRILL ROD	DS NWJ								
					HAMMER, LBS.		AVERAGE	E FALL, IN.	30
					ER HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*USED S	AFETY HAMMER.				
WAIERL		ERVATIONS IN							
DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER					
08-04-14	15:00	85	15	13		CONDITION			
08-05-14	06:25	85	15	13.35			OF THE D		
				10.00		OVENIN		LEVEL.	
					·				
PIEZOME	<u>FER INSTAI</u>	LED	YES X	NO SK	ETCH SHOWN O	N			
STANDPIPE	Е: Т	YPE		ID, IN.					
NTAKE ELE		YPE		OD, IN.		STH, FT.		TOP ELEV.	
FILTER:				OD, IN.	And the second s	STH, FT.		TIP ELEV.	
				OD, IN.	LENG	STH, FT.		BOT. ELEV	•
PAY QUAN	TITIES								
	RY SAMPLE I	BORING	LIN. FT.		NO. OF 3" SHELE				
	SAMPLE BO		LIN. FT.		NO. OF 3" UNDIS				
			LIN. FT.		OTHER:	TURBED 54	AMPLES		
			Lin. 11.		OTHER.				
BORING C	ONTRACTO)R		,					
ORILLER			MMY WILSON		HELPERS	GE, INC.	14/11/14		
REMARKS		511						M ROSADO	ر
	ENGINEER	२		ROUK EL KHAT				00	0E 14
	ATION CHI		CHERYL J. N	and in the second se	TYPING CHECK				-05-14
ARCE Form BS-						` .		RYL J. MO	
							BUR	ING NO.	MR-201

			BC	DRING LOG			ING NO.	
ROJECT	·.						ET 1 OF	
							ILE NO.	
	Ν.			BRONX, NEW YORK	S	URFAC	E ELEV.	15.0
1						RES	. ENGR.	FAROUK EL KHATIE
DAILY	i	SAMF					CASING	
1	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
10:30	1D	0.0	8-31	Brown fine to medium sand, some gravel,	1		DRILLED	
-31-14		2.0	11-2	brick, silt, tr coarse sand, vegetation (Fill) (SM)			AHEAD	
nursday	2D	2.0	3-3	Brown fine to coarse sand, some gravel, silt,			4"	REC=6"
Sunny		4.0	2-3	trace brick (Fill) (SM)			ī	
79°F						5		
	3D	5.0	6-9	Brown brick & concrete, trace coarse to fine				DEC-4
		7.0	5-6	sand, silt (Fill) (GP-GM)	_			REC=4"
	4D	7.0	8-100/3"	Do 3D (Fill) (GP-GM)	F			
		7.8	0 100/0					REC=3"
						4.0		
-	5D	10.0	5.04	Proug block concerts 0 to the second		10		
	50	the second se	5-21	Brown black concrete & brick, some fine to				
		12.0	11-11	medium sand, silt (Fill) (GM)				
								Rig chatter at 13'.
						13.5		Brown wash.
_						15	1	
	6D	15.0	8-11	Brown fine to medium sand, trace gravel, silt				REC=3"
		17.0	10-7	(SP-SM)				
						20		
	7D	20.0	3-3	Brown fine to medium sand, trace silt, mica				
		22.0	6-7	(SP-SM)	-			
					-			
						05		
	BD	25.0	3-5	Do 7D, trace gravel (SP-SM)		25		
		27.0	6-7					
		21.0	0-7		-			
-								
-								
-	D	20.0	4 5			30		
-	10	30.0	4-5	Brown medium to fine sand, some gravel,				
		32.0	8-7	trace silt (SP-SM)				
					S			
					-			
						35		
10	0D	35.0	8-9	Brown gravelly fine to medium sand, trace	H			
		37.0		coarse sand, silt (SP-SM)	-			
					-			
					-			
						40		
1	1D	40.0	8-6	Brown fine to coarse sand, some gravel, trace				
		42.0		silt (SP-SM)	-			
					-			
					-	AF		
12	2D	45.0	7-7	Gray brown fine to medium sand, trace silt,		45		
		47.0		mica (SP-SM)	-			
			10-10		-			
					_			
13		50.0	07	Do 12D (SD SM)		50		
13		50.0 52.0		Do 12D (SP-SM)				
		UZ.U	9-11					

BORING NO. MR-202

	-					SHE	ET 2 OF	= 4
ROJEC				LA CENTRAL		I	ILE NO	. 12217
OCATIC	DN:			BRONX, NEW YORK	S	URFAC	E ELEV	. 15.0
						RES	. ENGR	. FAROUK EL KHA
DAILY		1	IPLE				CASING	-
ROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH		
Cont'd			_					
7-31-14								
hursday								
Sunny								-
9°F, 14:50						55		50 g
07:00	14D	55.0	8-9	Gray brown fine sand, trace silt, mica (SP-SM)				-
8-01-14		57.0	11-9					_
Friday								-
tly Cloudy								
77°F						60		-
	15D	60.0	8-9	Do 14D, trace gravel (SP-SM)				4
		62.0	11-11	, , , , , , , , , , , , , , , , , , , ,				-
			-					-
			-			65		-
	16D	65.0	9-8	Brown fine to medium sand, trace silt, mica		05		-
		67.0	11-11	(SP-SM)				-
ľ					S			-
ŀ								-
			-			70		-
ŀ	17D	70.0	12-10	Do 16D, trace coarse sand (SP-SM)		70		
ŀ		72.0	15-16					
-		12.0	10 10					
-								
-					-	76		
	18D	75.0	16-15	Do 16D (SP-SM)		75		
-	100	77.0	22-22	DO 10D (OF-0N)				
-		77.0	22-22					
-								
-						- 00		
F	19D	80.0	16-17	Do 16D (SP-SM)		80		
-	100	82.0	15-18	D0 10D (3F-SW)				
F		02.0	10-10					
-					-			
-						83.5		
-	20D	85.0	17-23	Brown fine to medium cond, come group and	-	85		
-		87.0		Brown fine to medium sand, some gravel, rock fragments, trace silt (SP-SM)				
-		51.0	20-02	nayments, take sill (SP-SIVI)	T			
F								
F	1C	90.0	REC=92%	Top 1': Weathored moderately weath and t	-	90		Hard drilling.
-		95.0		Top 1': Weathered moderately weathered to			2*	
		55.0		slightly weathered brown marble, broken, WJts				White wash.
				Bot: Medium hard slightly weathered to				*Coring time in
-				moderately weathered gray marble, jointed to			2*	minutes per foot.
┣-	2C	95.0		closely jointed, weathered joints & FeStnJts	R/WR -	95	1.5*	
-	20	95.0		Intermediate slightly weathered to highly			1.5*	
-		100.0	RQD=42%	weathered gray marble, jointed to broken,			2*	
				weathered joints & iron stained joints			2*	
1:00							2*	
1.00						100	2.5* 1	End of Boring at 100'.
					ſ			



MUESER RUTLEDGE CONSULTING ENGINEERS

				BORING		BORING	NO	MR	-202		
	-					SHEET	4	OF	4		
PROJECT				NTRAL		FILE NO.		1221	7		
LOCATION			BRONX, NEW YORK				E ELEV.		15.0		
BORING	LOCATION	l .	SEE BORING	G LOCATION P	LAN	DATUM		NAVD	88		
BORING											
DOMING				LIZING BOREHC	<u>)LE</u>						
TYPE OF BORING RIG DURING CO						1.000.000.000.000.000.000.000.000.000.0					
			CORING	CASING		Х	YES	NO			
TRUCK	ACKER			DIA., IN	. 4	DEPTH, FT	FROM	0	TO 1		
SKID		HYDRAU		X DIA., IN	•	DEPTH, FT	. FROM		то		
BARGE		OTHER		DIA., IN	•	DEPTH, FT	FROM		то		
OTHER		· · · · · · · · · · · · · · · · · · ·							1999 - 19		
	D SIZE OF:	:		DRILLIN	IG MUD USED	Х	YES	NO			
D-SAMPLE		D. SPLIT SPOC	N	DIAMET	ER OF ROTARY BI	Γ, IN.		3-7/8	}		
U-SAMPLE	R			TYPE C	F DRILLING MUD			QUIK MUD			
S-SAMPLE						-					
CORE BAR	REL NX D	OUBLE TUBE "N	/" SERIES	AUGER	USED		YES	X NO			
CORE BIT	NX DI	AMOND		TYPE A	ND DIAMETER. IN.		0				
DRILL ROD	S NWJ					-					
			1999	*CASIN	G HAMMER, LBS.	140		E FALL, IN.	20		
					ER HAMMER, LBS.			E FALL, IN. E FALL, IN.	30		
					SAFETY HAMMER.	140	AVERAGE	E FALL, IN.	30		
WATER L	EVEL OBS	ERVATIONS I	N BOREHOLE	0020							
		DEPTH OF	DEPTH OF	DEPTH TO							
DATE	TIME	HOLE	CASING	WATER		CONDITION					
07-31-14	15:00	55	15	6.4							
08-01-14	07:00	55	15	12.35							
				.2.00		OVERING		LEVEL.			
house a second											
			1								
PIEZOMET	ER INSTA		YES	X NO SK							
			120	X NO SK	ETCH SHOWN O	IN					
STANDPIPE	. ·	TYPE									
NTAKE ELE		TYPE		ID, IN.		TH, FT			•		
FILTER:		MATERIAL		OD, IN.	A	TH, FT.		TIP ELEV.			
	1			OD, IN.	LENG	TH, FT.		BOT. ELEV	'		
		DODULO									
	Y SAMPLE		LIN. FT.		NO. OF 3" SHELE	BY TUBE SAI	MPLES				
3.5" DIA. U-SAMPLE BORING LIN. FT.				NO. OF 3" UNDISTURBED SAMPLES							
	LING IN ROO	CK	LIN. FT.		OTHER:						
	ONTRACT	OR			WARREN GEORO	E, INC.					
DRILLER		J	IMMY WILSON		HELPERS		WILLIA	M ROSADO)		
REMARKS			BOF	REHOLE BACKFI							
RESIDENT	ENGINEE	R		AROUK EL KHA	E BACKFILLED WITH DRILL CUTTINGS. K EL KHATIB DATE 08-0'				.01_14		
	ATION CH	the second se	CHERYL	the second se	TYPING CHECK		DATE 08-01- CHERYL J. MOSS				
IRCE Form BS-1											
							BOK	ING NO.	MR-202		

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

			BC	DRING LOG			ING NO.	
PROJECT:							ET 1 OF	
LOCATION:						FILE NO.		
				BRONX, NEW YORK	SURFACE ELE		E ELEV.	16.7
						RES	. ENGR.	FAROUK EL KHATIB
DAILY		SAM	PLE				CASING	the second se
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
09:00	1D	0.0	11-29	Brown fine to medium sand, some gravel,			DRILLED	
08-04-14		2.0	25-14	brick, tr silt, wood, vegetation (Fill) (SP-SM)			AHEAD	
Monday	2D	2.0	11-12	Brown fine to medium sand, some brick, trace			4" 3"	REC=4"
Sunny		4.0	5-6	gravel, silt, vegetation (Fill) (SP-SM)			1 I	
80°F	3D	4.0	4-4	Brown fine to medium sand, some gravel,		5		REC=3"
		6.0	12-19	trace brick, silt (Fill) (SP-SM)				1120-5
1	4D	6.0	4-3	Do 3D (Fill) (SP-SM)	_			REC=4"
-		8.0	7-17		F			REC=4
-	5D	8.0	7-7	Do 3D (Fill) (SP-SM)				
1		10.0	5-17			40		REC=6"
F	6D	10.0	6-9	Do 3D (Fill) (SP-SM)		10		
i -	00	12.0	0-5 4-5					REC=5"
		12.0	4-0					
-								
-						13.5		
-	-70	15.0	05 40			15		
-	7D	15.0	35-10	Brown fine to medium sand, trace gravel, silt				Brown wash.
_		17.0	8-9	(SP-SM)				
-								
-								
_						20	+	
	8D	20.0	4-5	Brown fine to medium sand, trace silt, mica				
		22.0	6-6	(SP-SM)				
_					-			
						25		
	9D	25.0	4-4	Do 8D (SP-SM)	-			
		27.0	5-6		-			
						30		
	10D	30.0	6-9	Do 8D (SP-SM)	-			
		32.0	7-8		-			
-					S			
-					-	25		
-	11D	35.0	6-7	Do 8D (SP-SM)		35		
		37.0	8-9					
		01.0	00		-			
-								
						40		
-	12D	40.0	8-9	Do 8D (SP-SM)		40		
	120	42.0	9-9	D0 0D (3F-3N)				
		72.0	5-5					
						4=		
<u> </u>	13D	45.0	10-11	Do 8D (SP-SM)	_	45		
		45.0 47.0	10-11					
		-1.0	10-11					
-		50.0	7-9	Do 8D (SP-SM)	_	50		
				141011138-300				
	14D	52.0	9-11					

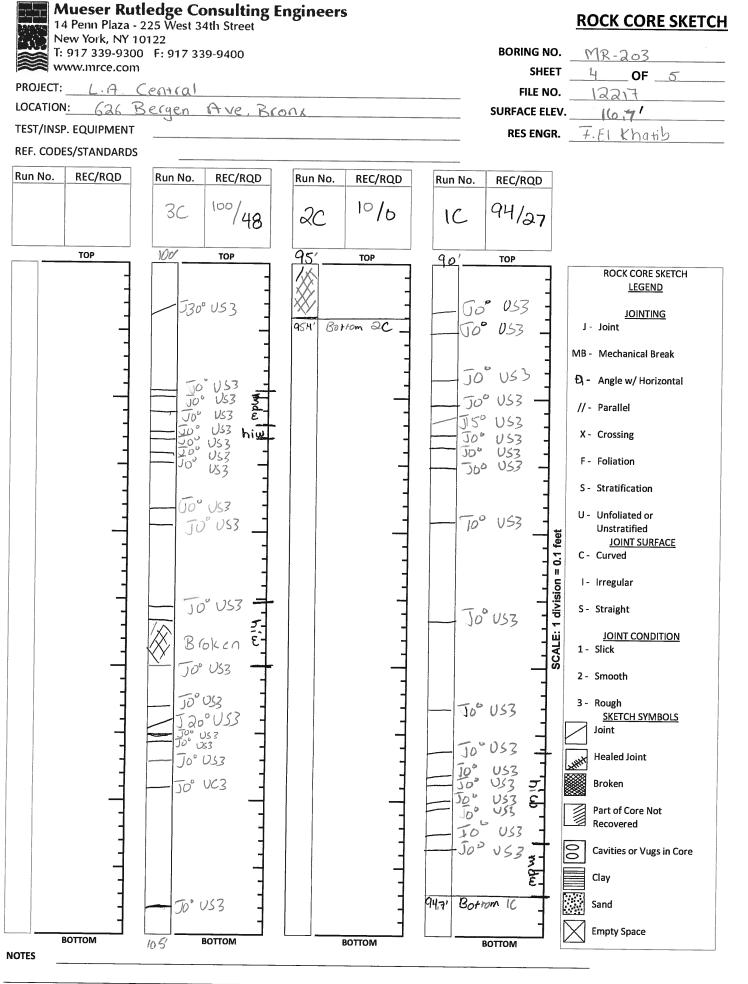
BORING NO. MR-203

BORING LOG						BORING NO. MR-203 SHEET 2 OF 5				
PROJECT:				LA CENTRAL			ILE NO			
LOCATION:		BRONX, NEW YORK				URFAC				
								. FAROUK EL KHA		
DAILY		SAN	IPLE				CASING			
PROGRESS Cont'd	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS		
08-04-14			_				DRILLEI			
Monday			_				AHEAD 3"			
Sunny			-				3			
80°F						55				
	15D	55.0	9-11	Do 8D (SP-SM)		- 55		_		
		57.0	11-12					_		
								_		
								_		
	400	00.0	10.10			60		_		
	16D	60.0	12-12	Brown fine to medium sand, trace silt, mica]		
		62.0	13-14	(SP-SM)				_		
			_					_		
			-			05		-		
	17D	65.0	13-16	Do 16D (SP-SM)		65		-		
15:00		67.0	18-19		-			-		
07:00					S					
8-05-14								-		
Fuesday			-			70		-		
Sunny	18D	70.0	20-19	Brown fine sand, some silt, trace mica (SM)						
85°F		72.0	27-30							
			-					-		
	100	75.0	10.10			75				
	19D	75.0 77.0	16-12	Brown fine to coarse sand, some gravel, trace						
		77.0	14-14	silt (SP-SM)			_			
			-							
						80				
	20D	80.0	13-18	Brown fine to medium sand, trace silt, mica		ov				
ſ		82.0	37-36	(SP-SM)			_			
						83.5	_			
Ļ	045					85				
-	21D	85.0	100/4"	Brown fine to coarse sand, some white rock						
-		85.3		fragments, trace silt (Decomposed Rock)	DR					
-				(SP-SM)						
-					-	90				
-	1C	90.0	REC=94%	Top 3.7': Medium hard slightly weathered gray		30	2.5*	*Coring time in		
		95.0	RQD=27%	marble, jointed to broken, iron stained & WJts			2.5*	minutes per foot.		
				Bot 1.3': Weathered moderately weathered to			3*	White brown wash;		
-				highly weathered gray marble, broken, iron				Gray wash.		
	20	05.0		stained & weathered joints		95	3.5 *	-		
	2C	95.0 99.0		Do 1C Bottom	R/WR		1*			
-		ອອ.ບ	RQD=0%				1*			
15:00							0.5*	- , , , , , , , , , , , , , , , , , , ,		
07:00					-	100		Tip of core barrel brok		
06, Wed	3C	100.0	REC=100%	MdHd slightly weathered to highly weathered	-	100	0.5*	between 99' & 100'.		
		105.0		gray marble, jointed to broken, FeStn & WJts						

MUESER RUTLEDGE CONSULTING ENGINEERS	
BORING LOG	

BORING LOG						BOR	ING NO.	MR-203	
						SHE	ET 3 OF	5	
PROJECT: LOCATION:				LA CENTRAL	FILEN				
				BRONX, NEW YORK	SL		E ELEV.		
								FAROUK EL KHATIB	
DAILY		SAM	PLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH			
Cont'd							3*	White wash.	
08-06-14							2*	Winto Wash.	
Wednesday					R/WR			Brown green wash.	
Partly Cloudy								White wash.	
80°F, 09:30						105		End of Boring at 105'.	
							-	End of boring at 100.	
						110			
						115			
-									
-									
-						120			
-									
-									
-									
-						125			
-									
-					-				
-									
					-	100			
ŀ						130			
-									
-									
-					-				
-						135			
					-	135			
					-				
-					-				
					-				
					-	140			
					-				
					-				
						145			
					-				
_									
					-				
						150			
					-				

BORING NO.



BOR-3_JAN2013

						BORING	NO.	MR	-203			
PROJEC	+					SHEET	5	OF	5			
LOCATIO			LA CENT			FILE NO.		1221	7			
			BRONX, NEV			SURFAC	E ELEV.		16.7			
BURING	LOCATION	N S	EE BORING L	OCATION PL	AN	DATUM		NAVD	88			
BORING		NT AND METHOD			-							
<u></u>		TYPE OF FE		ING BOREHOL	<u>.</u>							
TYPE OF I							1					
TRUCK	ACKER			CASING		and the second sec	YES	NO				
SKID	AONLIN	82 MECHANICA HYDRAULIC		DIA., IN.	4	DEPTH, FT		0	TO 20			
BARGE		OTHER	X	DIA., IN.	3	_DEPTH, FT		0	TO 95			
OTHER		OTHER		DIA., IN.		DEPTH, FT	. FROM		то			
TYPE AN	D SIZE OF:	:		DRILLING	MUD USED	X	YES	NO				
D-SAMPLE	R 2" O.	D. SPLIT SPOON			R OF ROTARY BI		120	3-7/8				
U-SAMPLE	R				DRILLING MUD	.,						
S-SAMPLE	R					-		GOININ				
CORE BAF	RREL NX DO	OUBLE TUBE "M" S	ERIES	AUGER L	ISED		YES	X NO				
CORE BIT	some supplications of an anop-plants	AMOND		TYPE AN	D DIAMETER, IN.	,	. 20					
DRILL ROD	DS NWJ											
				*CASING	HAMMER, LBS.	140	AVERAGE	FALL, IN.	30			
					R HAMMER, LBS.			FALL, IN.	30			
					FETY HAMMER.							
WATER L	EVEL OBS	ERVATIONS IN E	OREHOLE									
DATE	-	DEPTH OF	DEPTH OF	DEPTH TO								
DATE	TIME	HOLE	CASING	WATER		CONDITION	S OF OBS	SERVATION				
08-04-14	14:00	67	20	-	THE BOR	EHOLE COLI	APSED B	ELOW THE	CASING.			
						7						
PIEZOMET	TER INSTA	LLED	ES X	NO SKE	TCH SHOWN O	N						
		L	L									
STANDPIPE		TYPE		ID, IN.	LENG	STH, FT.		TOP ELEV.				
INTAKE ELE	EMENT:	TYPE		OD, IN.		TH, FT.		TIP ELEV.				
FILTER:	Г	MATERIAL		OD, IN.		TH, FT.		BOT. ELEV				
									·			
<u>PAY QUAN</u>												
3.5" DIA. DR			N. FT.	-	NO. OF 3" SHELE	BY TUBE SAM	NPLES					
3.5" DIA. U-\$			1. FT.		NO. OF 3" UNDIS			-				
CORE DRILI	LING IN ROO		I. FT.		OTHER:		57					
		סר										
DRILLER	UNIRAUI		IC DAMOS	M	ARREN GEORO	GE, INC.						
REMARKS		LOU	IS RAMOS		HELPERS			IN MUNOZ				
	ENGINEE	5			ED WITH DRILL	CUTTING	S.					
CLASSIFIC				OUK EL KHATI			ATE	08-06-14				
			CHERYL J. M	OSS	TYPING CHECK	:	CHE	RYL J. MOS	SS			
MRCE Form BS-1							BORI	NG NO.	MR-203			

Mueser Rutledge Consulting Engineers 14 Penn Plaza - 225 West 34th Street New York, NY 10122 T: 917 339-9300 F: 917 339-9400 www.mrce.com

OJECT: CATION: ZOMETER LOCATION: SEE SKETCH ON BACK		R-203 (check F	ilen)	INSTALLATION RES E	E NO. <u>12217</u> DATE <u>07/31/14</u> INGR. <u>F. El Khati</u> l
STRATA GROUND SURFACE ELEV. 7.2 F	3' [0,00 3' [0,00 0,	r) etting >VC ePullets	depth de diameter, in = <u>STA</u>	AKE POINT to bottom, ft = pth to top, ft = length, ft = 2, ft = NDPIPE/RISER ion of rim, ft = 2, ft =	<u>35</u> <u>25'</u> <u>10</u> = L
	· · · · · · · · · · · · · · · · · · ·	READING TIME DATE CLOCK	DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
<u>عہ</u> ح 3 <u>ہ</u>	16' - 25 -25 -25 -25 -25 -25 -25 -25 -	07/31/14 14:55 08/01/14 06:55 08/04/14 06:30 08/04/14 06:30 08/04/14 06:30 08/04/14 06:30 08/05/14 06:35 08/05/14 06:45 08/05/14 06:45 08/ 11/14 12:30	16.2'		belove adding pell after installars after G.Shrs af performing falling head test

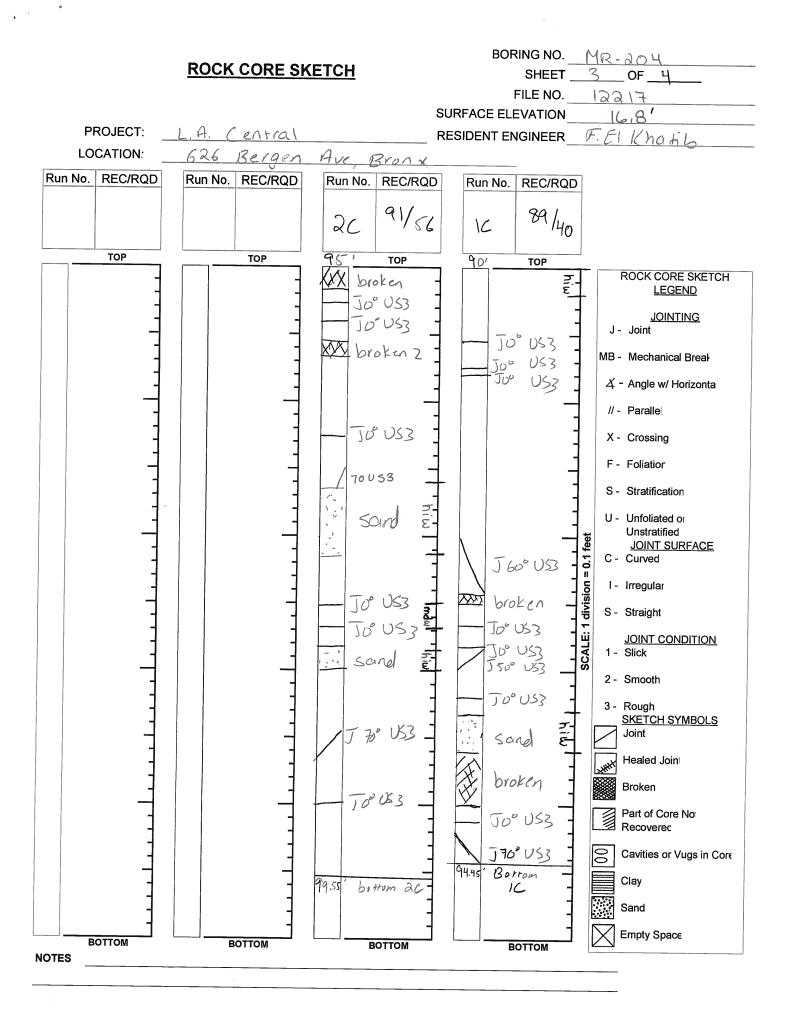
14 Penn Plaza - New York, NY 1	ledge Consulting E 225 West 34th Street 0122 F: 917 339-9400	ngineers			
www.mrce.com				BORING NO.	MR- 203P
PROJECT /	I			SHEET 2	OF 2
	.A. Central			FILE NO	12217
BORING LOCATION	6 Bergen Ave, Br	yno		SURFACE ELEV.	7.2
Doning Location	- check play			DATUM	NAND 88
TEST/INSPECTION EQUIP REFERENCE CODES/STAN					
BORING EQUIPMENT AND	METHODS OF STABILIZING TYPE OF FEED	BOREHOLE			
TYPE OF BORING RIG	DURING CORING	CASING US	ED	X YES	
TRUCK Acker 82	MECHANICAL	DIA., IN.	ц <i>ч</i>	DEPTH, FT. FROM	NO
SKID	HYDRAULIC	DIA., IN.			<u>6'</u> TO <u>15'</u>
BARGE	OTHER	DIA., IN.		DEPTH, FT. FROM DEPTH, FT. FROM	TO
OTHER					то
TYPE AND SIZE OF: D-SAMPLER			AUD USED OF ROTARY BIT, IN RILLING MUD		NO
S-SAMPLER		TTPE OF D		_ (ev	<u>e(+</u>
CORE BARREL		AUGER USE	-D	VEC	
CORE BIT			DIAMETER, IN.	YES	NO
DRILL RODS NWI		TIFE AND L	DIAMETER, IN.		
WATER LEVEL OBSERVATION	ONS IN BOREHOLE		MMER, LBS. IAMMER, LBS. IMMER		EFALL, IN. <u>30</u> EFALL, IN hammed
		NG DEPTH TO WATER		CONDITIONS OF O	RSERVATION
PIEZOMETER INSTALLED	YES	NO SKET	CH SHOWN ON	MR-203	3P, Sheet 1
STANDPIPE: TYP	E	ID, IN.	LEN	GTH, FT.	TOP ELEV.
INTAKE ELEMENT: TYP		OD, IN.		GTH, FT.	TIP ELEV.
FILTER: MAT	ERIAL	OD, IN.		GTH, FT.	BOT. ELEV.
PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING	LIN. FT.				
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY		
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	TURBED SAMPLES	
			STIEN.		
BORING CONTRACTOR		WGI			
DRILLER	Louis Romas		HELPERS	Franklin	Munoz.
RESIDENT ENGINEER	FIEL Khat				
	ILI LIAN			DATE	07/31/14

				DRING LOG			ING NO. ET 1 OF	
ROJEC [.]	T:			LA CENTRAL			ILE NO.	
DCATIC	DN:			BRONX, NEW YORK	e		E ELEV.	
					- 30			
DAILY		SAM	PLE		1	RES		FAROUK EL KHAT
ROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	OTDATA	DEDTU	CASING	
07:00	1D	0.0	7-13	Brown fine to medium sand, some gravel,	STRATA	1 1	BLOWS	
7-30-14		2.0	9-4	brick, silt, trace wood, vegetation (Fill) (SM)			DRILLED	
ednesday	2D	2.0	2-5	Orange brick, some fine to medium sand, trace			AHEAD	
Sunny		4.0	6-12	silt (Fill) (GP-GM)			4" 3"	
75°F		1.0	0-12			_		
	3D	5.0	7-5	Orange brick some coores to fine send these		5		
		7.0	8-7	Orange brick, some coarse to fine sand, trace silt (Fill) (GP-GM)	1			REC=6"
i	4D	7.0	100/6"	Brown coarse to fine sand, some gravel, brick,				
-		7.5	100/0	trace silt (Fill) (SP-SM)				REC=3"
-					F	10		
F	5D	10.0	13-13	Proven groupl come score to fin the	•	10		
-	00	12.0	5-14	Brown gravel, some coarse to fine sand, trace				
-		12.0	5-14	brick, wood, silt (Fill) (GP-GM)				
-								Rig chatter at 13'.
								Dark gray wash.
-	60	45.0	-			15	•	
F	6D	15.0	7-11	Gray gravelly fine to coarse sand, trace brick,				
-		17.0	7-22	silt (Fill) (SP-SM)				
						18.5		
						20		
	7D	20.0	8-10	Gray fine to medium sand, trace silt (SP-SM)	[Petroleum odor.
		22.0	9-8					
_								
_								
_						25		
	8D	25.0	7-9	Brown fine to medium sand, trace silt (SP-SM)	-			
_		27.0	10-9	. ,	-			
					-			
_						30		
	9D	30.0	5-5	Do 8D, trace gravel, mica (SP-SM)	-			
_		32.0	7-9	· · · ·				
					1			
					-	35		
-	10D	35.0	6-8	Brown fine to medium sand, some gravel, trace	S -			
		37.0		coarse sand, silt, mica (SP-SM)				
					-			
					-			
					-	40		
	11D	40.0	8-13	Brown fine sand, some silt, trace mica (SM)	-			
		42.0	13-12		-			
					-			
						45		
1	12D	45.0	5-6	Brown fine sand, trace silt, mica (SP-SM)				
		47.0	9-9					
					-	50		
1	3D	50.0	5-7	Brown fine to medium sand, trace silt, coarse	-			
		52.0		sand, gravel (SP-SM)	ļ			

BORING NO. MR-204

				ORING LOG			ING NO		
PROJEC	т٠					SHEET 2 OF 4			
OCATIC							ILE NO		
.004110	JN.			BRONX, NEW YORK	S		E ELEV		
	1	0.44				RES	. ENGR	. FAROUK EL KHAT	
DAILY		F)	IPLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd							DRILLEI	þ	
07-30-14							AHEAD		
Vednesday			_				3"		
Sunny									
75°F	440	55.0				55			
	14D	55.0	6-7	Do 13D (SP-SM)					
		57.0	13-14			-			
			-						
	PROFESSION OF A COMPANY & COMPANY		_						
	15D	60.0	6-6			_ 60			
	130	62.0		Brown fine to medium sand, trace silt (SP-SM)					
		02.0	10-11						
,								-	
			-			0-		_	
	16D	65.0	5-7	Do 15D (SP-SM)		65		-	
	100	67.0	9-11	00 100 (3F-310)				-	
		01.0	0-11		S				
			-						
-			-			70		~	
1	17D	70.0	8-8	Do 15D (SP-SM)			<u>_</u>		
		72.0	11-10					-	
							·		
			-			75			
	18D	75.0	7-10 11-14						
		77.0							
					-				
_									
-	100					80			
-	19D	80.0	9-17	Brown fine to medium sand, trace silt, coarse					
-		82.0	14-21	sand, mica (SP-SM)					
-									
-						83.5			
-	20D	85.0	30-45	Proven fine to medium and a set	-	85			
-	200	87.0	33-29	Brown fine to medium sand, some rock					
-		07.0	00-23	fragments, trace silt (SP-SM)	Т				
F								Rig chatter at 88'.	
14:45						90	_	Hord drilling	
07:00	1C	90.0	REC=89%	Intermediate slightly weathered to highly		30	3*	Hard drilling.	
7-31-14		95.0	RQD=40%	weathered gray marble, moderately jointed to	-			White wash.	
hursday				broken, iron stained & weathered joints				*Coring time in	
Sunny				, .	-			minutes per foot.	
79°F					DANS	95	2*		
	2C	95.0	REC=91%	Medium hard to weathered slightly weathered	R/WR -		1.5*		
		100.0	RQD=56%	to highly weathered gray marble, jointed to			1.5*		
-				broken, iron stained & weathered joints			1.5*		
							2		
10:00						100	2.5* 1	End of Boring at 100'.	
	1							-	

MR-204

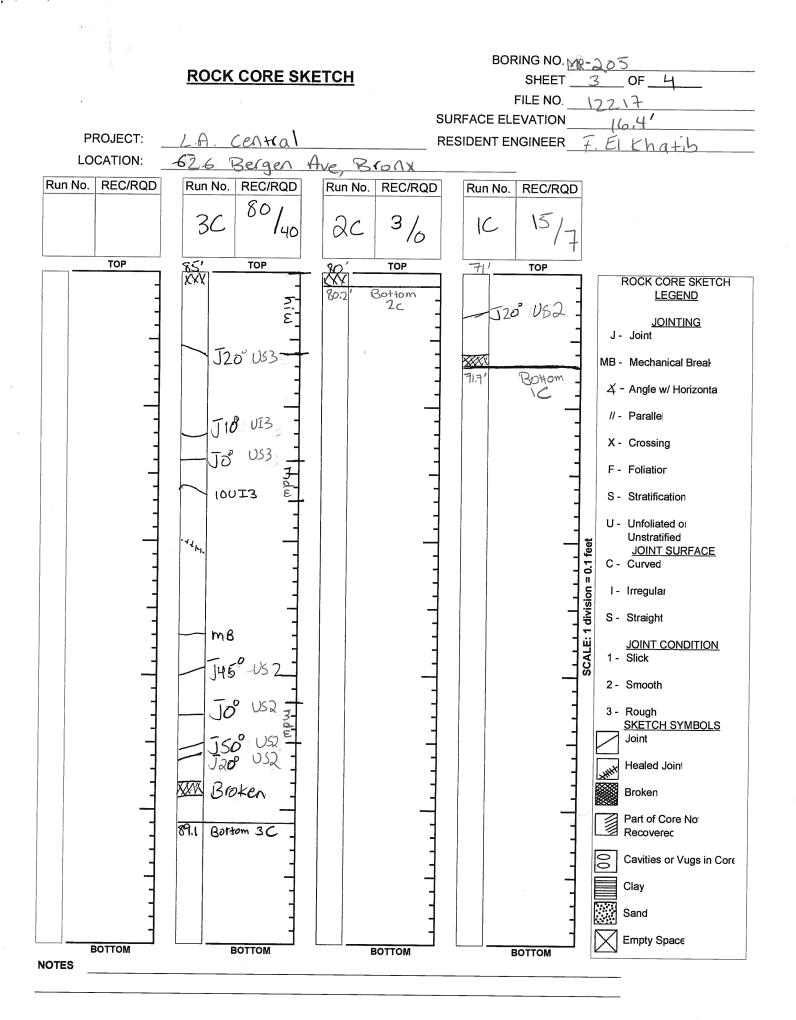


						BORING N	NO.	MR	-204
	+					SHEET	4		4
PROJEC			LACEN			FILE NO.		1221	7
LOCATIC			BRONX, N			SURFACE	ELEV.		16.8
BORING	LOCATION		SEE BORING	LOCATION PL	.AN	DATUM		NAVD	88
BORING					. –				
DOMING			ODS OF STABIL	IZING BOREHO	<u>LE</u>				
	BORING RIG			0.4.0.1.10					
TRUCK	ACKER A	-		CASING		······	YES	NO	
SKID				DIA., IN		DEPTH, FT.		0	TO 15
BARGE		OTHER		X DIA., IN.		DEPTH, FT.		0	TO 90
OTHER				DIA., IN.		DEPTH, FT.	FROM		ТО
	D SIZE OF:			DRILLIN	G MUD USED	X	YES	NO	
D-SAMPLE		D. SPLIT SPOO	N	DIAMET	ER OF ROTARY BI	T, IN.		3-7/8	
U-SAMPLE	R			TYPE O	F DRILLING MUD	-		QUIK ML	JD
S-SAMPLE						_		and the second sec	
	REL NX DO	OUBLE TUBE "N	1" SERIES	AUGER	USED		YES	X NO	
CORE BIT		AMOND		TYPE A	ND DIAMETER, IN.	Laurence of			
DRILL ROD	NWJ								
				*CASING	HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*SAMPL	ER HAMMER, LBS.	the second se		E FALL, IN.	30
				*USED S	AFETY HAMMER.				·····
WATER L	EVEL OBS	ERVATIONS II	N BOREHOLE						
DATE		DEPTH OF	DEPTH OF	DEPTH TO					
DATE	TIME	HOLE	CASING	WATER		CONDITIONS	S OF OBS	ERVATION	
07-30-14	14:50	90	90	14			OF THE D		
07-31-14	06:40	90	90	14	OVERNIGHT N				TO CASING
						BEING OF	N TOP OF	ROCK.	
PIEZOMET	ER INSTA		YES		FTOLLOLIONANIO				
				(NO SK	ETCH SHOWN O	N			
STANDPIPE	: -	TYPE		ID, IN.		TU FT			
INTAKE ELE		TYPE		0, IN.	And and a second s	STH, FT.		TOP ELEV.	
FILTER:		MATERIAL		OD, IN. OD, IN.		TH, FT.		TIP ELEV.	
				OD, IN.	LENG	TH, FT.		BOT. ELEV.	
PAY QUAN	TITIES								
3.5" DIA. DF		BORING	LIN. FT.						
3.5" DIA. U-			LIN. FT.		NO. OF 3" SHELE NO. OF 3" UNDIS				
CORE DRIL			LIN. FT.			IURBED SAI	MPLES		
					OTHER:				
BORING C	ONTRACTO	OR		,					
DRILLER			MMY WILSON			SE, INC.	14/11 1 1 4		
REMARKS		J				OUTTIMO		M ROSADO	1
RESIDENT		2							
CLASSIFIC			CHERYL J.	AROUK EL KHA			ATE		31-14
MRCE Form BS-			UNERTE J.	. 11000				RYL J. MOS	
	•						ROR	ING NO.	MR-204

			R	ORING LOG		BOR	RING NO.	MR-205
PROJEC	ידי						ET 1 OF	
OCATI						I	FILE NO.	12217
.OCATI	UN:			BRONX, NEW YORK	S	URFAC	E ELEV.	16.4
	1		_			RES	. ENGR.	FAROUK EL KHAT
DAILY		SAM	1				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"		STRATA	DEPTH	BLOWS	REMARKS
10:30	1D	0.0	3-8	Brown medium to fine sand, some gravel, silt,				REC=4"
07-17-14		2.0	7-4	trace brick, vegetation (Fill) (SM)			AHEAD	
Thursday	2D	2.0	6-5	Brown black fine to coarse sand, some				REC=5"
Sunny		4.0	5-7	gravel, tr brick, silt, veg, wood (Fill) (SP-SM)				
72°F	3D	4.0	8-2	Brown black fine to coarse sand, some silt,	_	5		REC=5"
		6.0	2-3	trace brick (Fill) (SM)	F			
	4D	6.0	5-5	Brown black fine to coarse sand, some gravel,				
		8.0	4-3	trace silt, vegetation (Fill) (SP-SM)				
	5D	8.0	30-11	Gray brown fine to coarse sand, trace gravel,				
		10.0	12-13	brick, silt (Fill) (SP-SM)		10		
	6D	10.0	5-5	Brown fine to medium sand, trace silt (SP-SM)		10		
		12.0	3-5					
			00					
	7D	15.0	3-2	Do 6D (SP-SM)		15		
	10	17.0		D0 0D (3P-3M)				
		17.0	2-5					
	0.5					20	•	
	8D	20.0	5-3	Do 6D (SP-SM)				
		22.0	4-5					
						25		
	9D	25.0	7-9	Do 6D (SP-SM)				
[27.0	8-8		-			
[-			
-								
ŀ								
-	10D	30.0	9-7	Do 6D (SP-SM)		30		
-	100	32.0		D0 0D (3F-3M)	S			
-		02.0	7-7					
-								
-								
-	11D	35.0	7.0			35		
-	שוו			Do 6D (SP-SM)				
-		37.0	10-12					
_								
						40		
	12D	40.0	9-8	Do 6D (SP-SM)				
_		42.0	9-9		-			
L					F			
					F	45		
	13D	45.0	9-7	Brown medium to fine sand, trace silt (SP-SM)	F			
		47.0	8-8					
					-			
-						50		
-	14D	50.0	9-7	Brown fine sand, some silt (SM)		50		
-			7-9					
		52.0	9-7 7-9					

BORING NO. MR-205

				DRING LOG			RING NO EET 2 OI		
PROJEC	T:			LA CENTRAL			FILE NO		
LOCATIO	ON:			BRONX, NEW YORK	_		E ELEV		
DAILY		SAM	1PLE			RE		. FAROUK EL KHAT	
PROGRESS	NO.	DEPTH	1	SAMPLE DESCRIPTION	OTDAT		CASING		
Cont'd			520110,0	SAMPLE DESCRIPTION	SIRAI	DEPTH	BLOWS		
07-17-14							DRILLE		
Thursday			-				AHEAD		
Sunny			-				3"		
72°F, 14:45						EE			
07:30	15D	55.0	9-11	Brown fine sand, trace silt (SP-SM)		55			
07-18-14		57.0	14-15					-	
Friday								~	
Sunny			-						
75°F					S	60		-	
	16D	60.0	15-15	Do 15D, trace mica (SP-SM)		00		_	
		62.0	15-17					_	
								_	
						65			
	17D	65.0	8-7	Do 16D (SP-SM)		00		-	
		67.0	8-9					-	
								-	
		for the second				68.5		-	
					м	70		-	
_	18D	70.0	100/6"	Top 3": Brown fine sandy silt (ML)		70.3	6*	* *Coring time in	
		70.5		Bot 3": Gray fine sand, sm gravel, tr silt (SP-SM)	DR	71	6*	minutes per foot.	
	1C	71.0	1.0 REC=15%	C=15% Weathered highly weathered white marble,			3*		
		76.0					4*		
				-		75	6*		
-									
-	19D	76.0	70-70	Brown fine to coarse sand, some rock fragments,			V		
-		77.5	100/6"	trace silt (Decomposed Rock) (SP-SM)					
44.45								Rig chatter at 79'.	
14:45	2C	00.0				80		Hard drilling at 80'.	
10:15 07-21-14	20	80.0		Weathered highly weathered brown marble,			0.5*	Brown wash through-	
Monday		85.0	RQD=0%	broken, weathered joints	R/WR			out coring.	
Sunny							0.5*		
77°F							0.5*		
-	20NR	85.0	100/1"	No recovery		85	0.5*		
F	-0111	85.1	100/1	no recovery				White wash at 86'.	
-	3C	85.1	REC=80%	Top 1': Do 2C			3*		
-		90.1		Bot: Medium hard to intermediate slightly			3*		
				weathered to moderately weathered white gray			2.5*		
14:30				marble, jointed to broken, iron stained &	-	90 90.1	3.5*		
-				weathered joints	-	90.1		End of Boring at 90.1'.	
-									
					ŀ				
					-	95			
					ŀ				
					-				
					-				
					-				
						100			
					F				
					-				

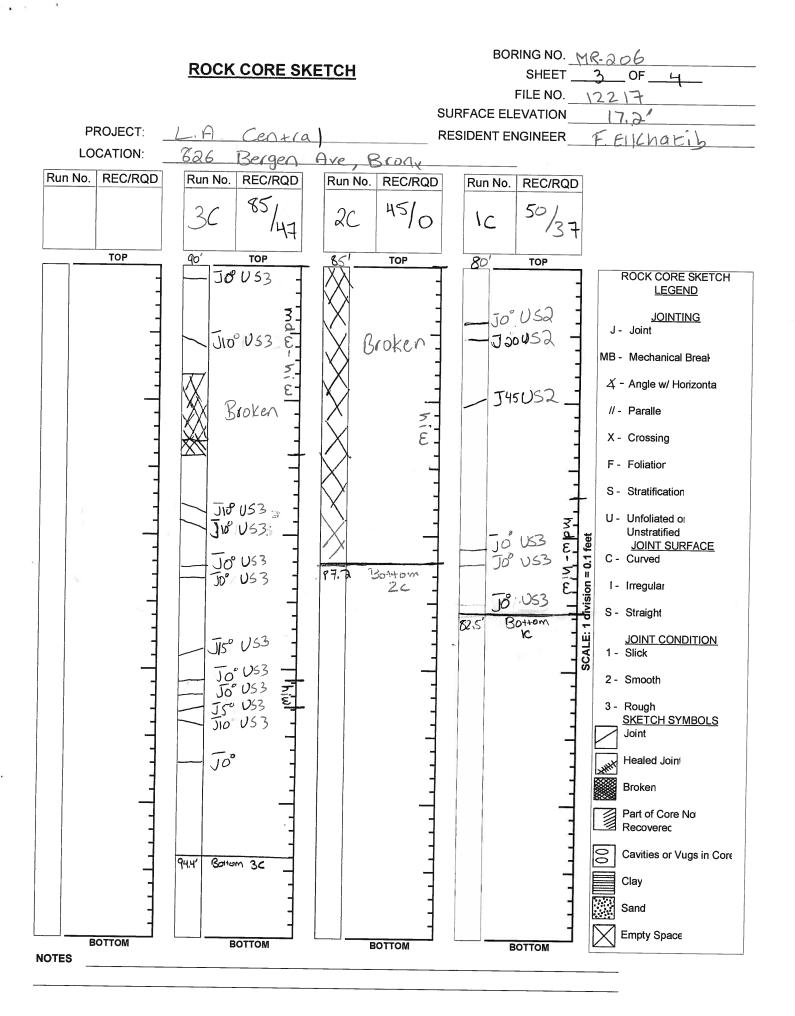


						BORING	NO.	MR-2	205	
	Ŧ					SHEET	4	OF		4
PROJEC			LA CENTRA			FILE NO.		12217		
			RONX, NEW Y			SURFAC	E ELEV.	•	16.4	
BURING	LOCATION	N SEE	BORING LOC	ATION PLAN		DATUM		NAVD 8	8	
BORING		NT AND METHODS OI								
DOMINO		TYPE OF I		BOREHOLE						
TYPE OF F				040100			1	[]		
TRUCK		ACKER AD2 MECHANIC		CASING			YES	NO		
SKID		HYDRAUL		DIA., IN.	Part	DEPTH, FT		0	ТО	20
BARGE		OTHER		,		DEPTH, FT		0	то	76
OTHER		OTTER		DIA., IN.		DEPTH, FT	F. FROM		то	
TYPE ANI	D SIZE OF	•		DRILLIN	G MUD USED	X	YES			
D-SAMPLE		D. SPLIT SPOON			ER OF ROTAR		TES	NO		
U-SAMPLE			V black					3-7/8		
S-SAMPLE	R		and a final state of the state		DIVICENS	50		EASY MU	U	
CORE BAR	REL NX D	OUBLE TUBE "M" SERIE	S	AUGER			YES			
CORE BIT		AMOND			ID DIAMETER,		160	X NO		
DRILL ROD	S NWJ									
				*CASING	HAMMER, LB	S 140			20	
					ER HAMMER, LD			E FALL, IN.	30	
					AFETY HAMM		AVERAGI	E FALL, IN.	30	Pipidarenera
WATER L	EVEL OBS	ERVATIONS IN BORE	HOLE	OOLD O		ER.				
			DEPTH OF	DEPTH TO						
DATE	TIME	DEPTH OF HOLE	CASING	WATER		CONDITION	S OF OBS	ERVATION		
					NO WA	TER OBSER			EHOLF	=
							APSE AT			
07-18-14	08:16	57	20	12.3		AFTER CLE				
07-18-14	14:50	80	76	20.7		EN	D OF DAY	<i>'</i> .	· · · · · · · · · · · · · · · · · · ·	
07-21-14	10:20	80	76	12.3			SHT MUD			
07-21-14	14:45	90	76	21		END	OF BORI	NG.		
		[]		****						
PIEZOMET	ER INSTA	LLED	YES X	NO SKI	ETCH SHOW	'N ON				
07410000	_									
STANDPIPE		TYPE		ID, IN.	LI	ENGTH, FT.		TOP ELEV.		
INTAKE ELE		TYPE		OD, IN.	LI	ENGTH, FT.		TIP ELEV.		
FILTER:		MATERIAL		OD, IN.	LI	ENGTH, FT.		BOT. ELEV	•	
								-		
PAY QUAN										
3.5" DIA. DR			_IN. FT		NO. OF 3" SH	IELBY TUBE	SAMPLES			
3.5" DIA. U-8			-IN. FT.		NO. OF 3" UN	DISTURBED	SAMPLES			
CORE DRILI	LING IN RO	CK I	.IN. FT.		OTHER:					
		~~								
BORING C	ONTRACT				RREN GEOR	GE, INC.				
DRILLER		EDWIN FELICIA			HELPERS	RAMON	FELICIA	NO/DAVID H	HARR	₹IS
REMARKS		HARRIS WORK	ED ON 07-21-14.	BOREHOLE E	BACKFILLED	WITH BORE	HOLE M	ATERIAL.		
RESIDENT		R	FAR	OUK EL KHATI	3	E	DATE	07-2	1-14	
CLASSIFIC		ECK:	CHERYL J. N	MOSS	TYPING CH	ECK:	CHER	YL J. MOS	S	
MRCE Form BS-1	1							ING NO.		205

			BC	DRING LOG			ING NO.	
PROJEC	T:			LA CENTRAL			ET 1 OF	
OCATIO				BRONX, NEW YORK	_		ILE NO.	
00/1110				BRONA, NEW YORK	S		E ELEV.	
DAILY	1	CAM			1	RES		FAROUK EL KHA
DAILY		SAM	1				CASING	
ROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
10:30	1D	0.0	2-4	Brown fine to coarse sand, some gravel, brick,			DRILLED	REC=6"
07-17-14		2.0	4-7	trace silt (Fill) (SP-SM)			AHEAD	
Thursday	2D	2.0	7-7	Brown brick, some fine to coarse sand, trace	F		4" 3"	REC=6"
Sunny		4.0	9-13	silt (Fill) (GP-GM)	F			
72°F	3D	4.0	2-2	Brown fine to coarse sand, some brick, gravel,		5		
		6.0	2-2	trace silt (Fill) (SP-SM)		6		
	4D	6.0	6-9	Brown silty fine sand, trace gravel, mica (SM)				-
		8.0	4-4	- , , ,				-
	5D	8.0	5-7	Brown fine sand, some silt (SM)				-
		10.0	13-24			10	-1-1	
	6D	10.0	2-3	Brown fine to medium sand, some silt, trace				
		12.0	3-2	coarse sand, gravel (SM)				
						15		
	7D	15.0	5-6	Brown fine to medium sand, trace silt, gravel		15		
		17.0	6-5	(SP-SM)				
		17.0	0-5	(3F-3NI)				
	8D	20.0	E 7			20		
	80	20.0	5-7	Brown fine to coarse sand, trace silt, mica				
		22.0	5-3	(SP-SM)				
_						25		
-	9D	25.0	5-6	Brown fine to coarse sand, trace silt, gravel				
		27.0	6-3	(SP-SM)				
					S	30		
	10D	30.0	6-5	Brown fine to coarse sand, some gravel, trace	-			
Ī		32.0	7-9	silt (SP-SM)				
-						35		
-	11D	35.0	7-12	Brown fine to medium sand, trace coarse sand,		- 35		
-		37.0		gravel, silt, layers of fine sand, some silt	+			
-		01.0		(SP-SM)				
-								
-						40		
-	12D	40.0	11-9	Brown fine to medium sand, trace silt (SP-SM)	-	40		
-	120	42.0	12-9	Brown line to medium sand, trace sitt (SP-SM)				
-		42.0	12-5					
14:45					-			
	120	45.0	40.00			45		
	13D	45.0		Brown fine sand, trace silt, mica (SP-SM)				
7-18-14		47.0	17-13					
Friday								
Sunny								
75°F						50		
_	14D	50.0		Do 16D, trace gravel (SP-SM)				
		52.0	17-22					

BORING NO. MR-206

			BC			ING NO.			
PROJEC	T:			LA CENTRAL			ET 2 OF	12217 17.2 FAROUK EL KHAT REMARKS Rig chatter at 74'. Rig chatter at 74'. Rig chatter at 77'.	
				BRONX, NEW YORK			FILE NO. E ELEV.		
DAILY		SAM	PLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH			
Cont'd			-				DRILLED		
07-18-14			-				AHEAD		
Friday Sunny			-				3"	-	
75°F						55			
	15D	55.0	11-11	Brown fine sand, trace silt (SP-SM)				-	
		57.0	13-16					-	
			~						
		Not Public and product the second	1						
	16D	60.0	8-15	Do 15D, trace mica (SP-SM)		60			
		62.0	17-20						
	175				S	65			
	17D	65.0	9-11	Brown fine to medium sand, trace silt (SP-SM)	3				
		67.0	13-16						
					-				
-						70			
-	18D	70.0	15-17	Brown fine sand, trace silt, mica (SP-SM)		10			
		72.0	2.0 23-25		-				
							Rig chatter at 74'.		
	19D	75.0	35-30	Gray brown fine to coarse sand, some rock		75			
	100	77.0	40-64	fragments, trace silt (SP-SM)	-			Rig chatter at 77'	
								rig challer at 77.	
-	10					80		Hard drilling at 79.5'.	
-	1C	80.0 85.0	REC=50%	Intermediate to weathered slightly weathered	_			*Coring time in	
-		05.0	RQD=37%	to highly weathered white gray marble, jointed, iron stained & weathered joints			2* 1*	minutes per foot.	
				non stamed & weathered joints	-		1*		
-					-	85	2*		
	2C	85.0	REC=45%	Weathered highly weathered brown marble,			1*		
_		90.0	RQD=0%	broken, iron stained & weathered joints			1*		
-					R/WR		2*		
-					-	90	1* 1*		
-	3C	90.0	REC=85%	Top 1.9': Weathered moderately weathered	-	30	1*		
		95.0	RQD=47%	to highly weathered brown marble, broken,	-		2*		
-				iron stained & weathered joints			1*		
14:00				Bot 2.5': Medium hard slightly weathered to			2*		
14:00				moderately weathered white marble, jointed to		95	1* [End of Boring at 95'.	
-				closely jointed, iron stained & weathered joints	-				
_					-				
					-				
						100			

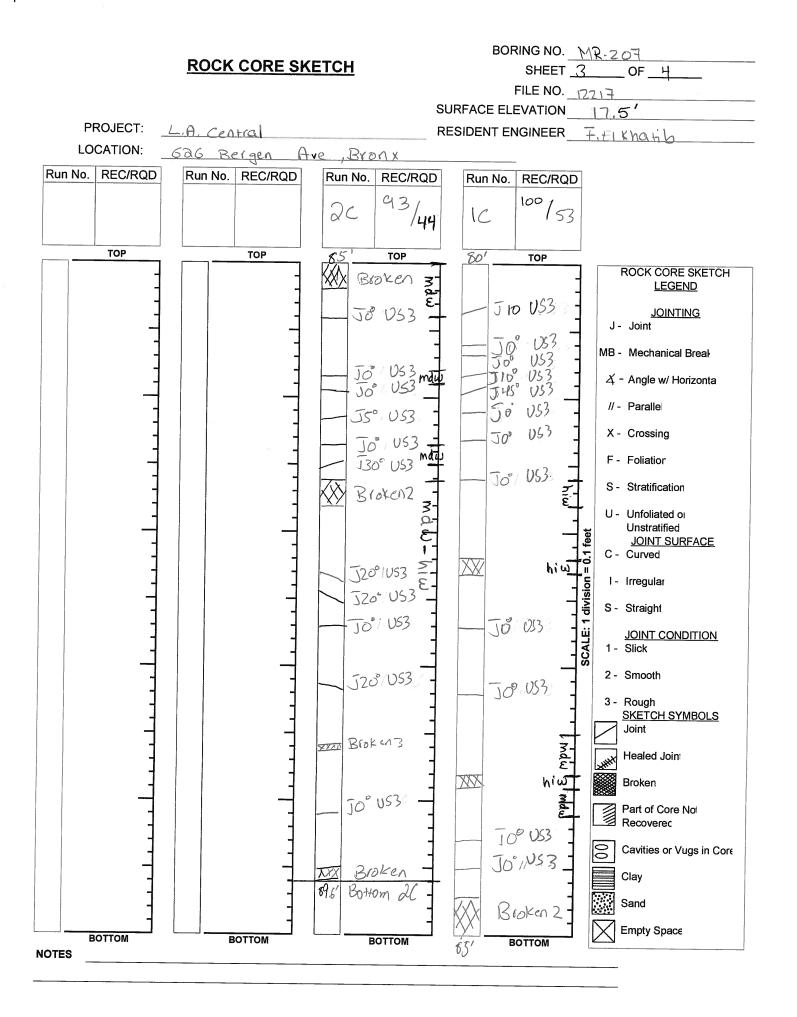


						BORING	NO.	MR	-206	
PROJEC	т					SHEET	4			4
LOCATIC						FILE NO.		1221		
	LOCATIO	N	BRONX, NE			SURFACE	E ELEV.		17.2	
Donino	LOUATIO		SEE BORING L	OCATION PL	AN	DATUM		NAVD	88	
BORING	EQUIPME	NT AND METHO	DS OF STABILIZ		E					
		TYPE OF			<u></u>					
TYPE OF E				CASING	USED	V	YES			
TRUCK	ACKER			DIA., IN.	4	DEPTH, FT		NO	то	40
SKID		HYDRAUL	IC X		3	DEPTH, FT		0	то то	10
BARGE		OTHER		DIA., IN.		DEPTH, FT			то –	80
OTHER									10	
	D SIZE OF	:		DRILLING	G MUD USED	X	YES	NO		
D-SAMPLE	R 2" O.	D. SPLIT SPOON		DIAMETE	R OF ROTARY BI	T, IN.		3-7/8		
U-SAMPLE				TYPE OF	DRILLING MUD			EASY M		
S-SAMPLE						-				
	REL NX D	OUBLE TUBE "M"	SERIES	AUGER L	ISED		YES	X NO		
CORE BIT		IAMOND		TYPE AN	D DIAMETER, IN.					
DRILL ROD	NWJ					-				
				*CASING	HAMMER, LBS.	140	AVERAGE	FALL, IN.	30	
				*SAMPLE	R HAMMER, LBS.			FALL, IN.	30	T in the unst
				*USED SA	FETY HAMMER.					
WATER L	EVEL OBS	ERVATIONS IN	BOREHOLE							
DATE	TIME	DEPTH OF	DEPTH OF	DEPTH TO						
07-17-14	15:00	HOLE 42	CASING	WATER		CONDITION	S OF OBS	ERVATION		
07-18-14	07:00	42	10	10.4			D OF DAY			
07-18-14	14:45	95	10	13.4		OVERNIC				
07-10-14	14.45	95	80	13.5		END O	F BOREH	OLE.		
•			······							
			·····							
PIEZOMET	ER INSTA	LLED	YES X	NO SKE	TCH SHOWN O	N				
	_									
STANDPIPE		TYPE		ID, IN.	LENG	STH, FT.		TOP ELEV.		
		TYPE		OD, IN.	LENG	TH, FT.		TIP ELEV.		
FILTER:		MATERIAL		OD, IN.	LENG	TH, FT.		BOT. ELEV	•	
3.5" DIA. DR			_IN. FT.		NO. OF 3" SHELE	BY TUBE SAM	IPLES			
3.5" DIA. U-8			_IN. FT		NO. OF 3" UNDIS	TURBED SA	MPLES			
CORE DRILI	LING IN RO	СК І	-IN. FT.		OTHER:					
DRILLER	UNIKACI				ARREN GEORO	· · · · · · · · · · · · · · · · · · ·				
			RANO/LOUIS R		HELPERS	JULIAN	SAMSON	I/FRANKLII	N MUN	ΟZ
			LIN WORKED O	IN 07-18-14. BC	DREHOLE BACK			HOLE MAT	ERIAL.	
RESIDENT CLASSIFIC				OUK EL KHAT			ATE		18-14	
			CHERYL J. N	IUSS	TYPING CHECK	K:		CHERYL J. MOSS		
MRCE Form BS-1							BOR	ING NO.	MR-2	206

			<u>B(</u>	ORING LOG		BOR	ING NO	D. MR-207
							ET 1 O	
PROJEC				LA CENTRAL			ILE NO	-
OCATIO	ON:			BRONX, NEW YORK	S	URFAC		
	1					RES	. ENGF	R. FAROUK EL KHAT
DAILY		SAM	PLE				CASIN	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH		
08:00	1D	0.0	7-7	Brown fine to coarse sand, some gravel, brick,			DRILLE	
07-21-14		2.0	5-4	trace silt (Fill) (SP-SM)			AHEAD	
Monday	2D	2.0	5-5	Brown fine to coarse sand, some brick, trace			4" 3"	
Sunny		4.0	7-5	gravel, silt (Fill) (SP-SM)				
77°F	3D	4.0	8-5	Brown fine to coarse sand, some gravel, trace		5		REC=3"
		6.0	5-5	brick, silt, vegetation (Fill) (SP-SM)	F	_ _		
	4D	6.0	5-7	Brown gravelly fine to medium sand, trace silt,				
	n	8.0	3-4	brick, vegetation (Fill) (SP-SM)				REC=6"
	5D	8.0	6-8	Brown silty fine sand, some brick, trace gravel				_
		10.0	7-7	(Fill) (SM)		10		
	6D	10.0	3-5			10		
	00	12.0	3-5 4-8	Brown fine to medium sand, some silt, trace				
		12.0	4-0	mica (SM)			¥	
-								Brown wash at 14'.
-		45.0				15		
-	7D	15.0	7-6	Brown fine to medium sand, trace silt, mica				
-		17.0	5-6	(SP-SM)				
-		Non-I and an of the ofference of the other						
-								-
						20		-
	8D	20.0	11-15	Brown fine to coarse sand, trace gravel, silt				-
		22.0	15-15	(SP-SM)	-			-
				. ,				-
					-			-
					-	25		-
	9D	25.0	14-10	Brown fine to medium sand, trace silt, coarse	-	25		-
		27.0	8-11	sand, mica (SP-SM)	-			-
			• • • •					-
								-
-		-			-			
H	10D	30.0	13-12			30		
-	100	32.0		Do 9D (SP-SM)	S			
-		32.0	12-8		Ŭ			
_								
-								
⊢		05.0				35		
	11D	35.0	8-7	Brown fine to coarse sand, trace silt, gravel				
		37.0	6-7	(SP-SM)				
-								
_								
_						40		
	12D	40.0	10-12	Brown fine sand, some silt, trace silt seams,	-			
		42.0		mica (SM)	-			
				. ,	-			
					+	45		
	13D	45.0	11-16	Brown fine sand, trace silt (SP-SM)		40		
		47.0	21-19		-			
					_			
					_			
	4D	50.0	14-16			50		
	40			Brown fine sand, trace silt (SP-SM)				
		52.0	19-19		1			

BORING NO. MR-207

				DRING LOG			ING NO.	
PROJEC	T:			LA CENTRAL			ET 2 OF	
LOCATIO				BRONX, NEW YORK			FILE NO.	
				BRORK, NEW FORK	3		E ELEV.	
DAILY		SAM	PLE			RES		FAROUK EL KHA
PROGRESS	NO.	DEPTH	1	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							DRILLED	
07-21-14							AHEAD	
Monday			-				3"	-
Sunny	-							
77°F	15D	55.0	17.10			55		
	150	55.0	17-19 24-13	Do 14D (SP-SM)				
		57.0	24-13					
			-					
						60		
	16D	60.0	15-21	Brown fine to medium sand, trace silt (SP-SM)				
		62.0	19-22					
					S			
						65		
	17D	65.0	20-23	Brown fine to medium sand, trace silt, mica				
		67.0	26-26	(SP-SM)				
-								
•	18D	70.0	12-11	Brown silty fine sand, trace silt seams (SM)		70		
-		72.0	26-24	brown sity line sand, trace sit seams (SIVI)				
-								Dig obotton of 72
								Rig chatter at 73'.
						75		
	19D	75.0	100/3"	Brown fine to medium sand, trace rock				REC=3"
-		75.3		fragments, silt (SP-SM)				
					DR			
14;30								
07:15	1C	80.0	REC=100%	Medium hard to intermediate slightly weathered		80	- +	Hard drilling at 80'.
07-23-14		85.0	ROD=53%	to moderately weathered white gray marble,			3.5* 4*	A. //- 1/ I
ednesday				jointed to broken, iron stained & weathered	-			White wash. *Coring time in
Sunny				joints	-			minutes per foot.
83°F					DAND	85	4*	
1	2C	85.0	REC=93%	Intermediate slightly weathered to moderately	R/WR		6*	
-		90.0		weathered white gray marble, closely jointed,			5.5*	
-				iron stained & weathered joints			7*	
10:00							7*	
						90	<u>5*</u> I	End of Boring at 90'.
-								
					-			
						95		
Ļ								
-								
-								
-						400		
-					-	100		

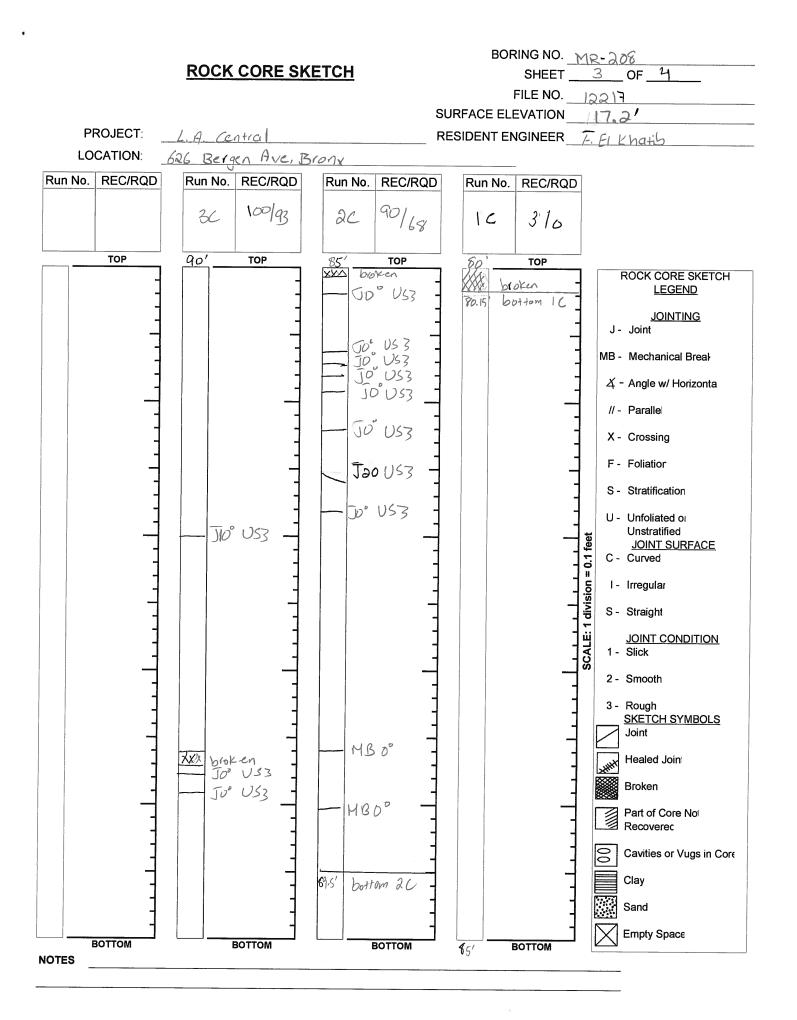


						BORING	NO.	MR	-207	
	-					SHEET	4	OF		4
PROJEC				NTRAL		FILE NO.		1221	7	
LOCATIC				IEW YORK		SURFAC	E ELEV.		17.5	
BORING	LOCATION		SEE BORING	G LOCATION 	PLAN	DATUM		NAVD	88	
BORING					o. –					
DOMINO		TYPE OF		LIZING BOREH	OLE					
	BORING RIG			04.01		printing over an environment	1			
TRUCK	ACKER				IG USED		YES	NO		
SKID	AUNEN	HYDRAU		DIA., I	Real and the second sec	DEPTH, FT		0	ТО	12
BARGE		OTHER	-10	X DIA., I		DEPTH, FT		0	то	80
OTHER		UTHER		DIA., I	N	DEPTH, FT	. FROM		ТО	
							1			
	D SIZE OF:			DRILL	ING MUD USED	X	YES	NO		
D-SAMPLE		D. SPLIT SPOOI	N		TER OF ROTARY B	IT, IN.		3-7/8		
U-SAMPLE				TYPE	OF DRILLING MUD			REVER	Т	
S-SAMPLE										
		OUBLE TUBE "M	" SERIES	AUGE	R USED		YES	X NO		
CORE BIT		AMOND		TYPE	AND DIAMETER, IN.					
DRILL ROD	DS NWJ									
				*CASI	NG HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30	
				*SAMP	LER HAMMER, LBS.	. 140	AVERAGE	E FALL, IN.	30	
				*USED	SAFETY HAMMER.				_	
WATER L	EVEL OBS	ERVATIONS IN	BOREHOLE							
DATE		DEPTH OF	DEPTH OF	DEPTH TO	0					
DATE	TIME	HOLE	CASING	WATER		CONDITION	S OF OBS	ERVATION		
07-21-14	14:45	80	80	12.7		EN	D OF DAY	Y.		
07-22-14	07:00	80	80	9.2		OVERNI	GHT MUD	LEVEL.		
07-23-14	07:00	80	80	9.2		OVERNI	GHT MUD	LEVEL.		
	TER INSTA		YES	X NO S	KETCH SHOWN C	DN				
STANDPIPE	E: 7	ГҮРЕ		ID, IN.	I ENG	GTH, FT.		TOP ELEV.		
INTAKE ELE	EMENT: 1	TYPE		OD, IN.		GTH, FT.		TIP ELEV.		
FILTER:	N	MATERIAL		OD, IN.		GTH, FT.		BOT. ELEV.		
				00, 111		Jin, i i				
PAY QUAN	ITITIES									
3.5" DIA. DR	Y SAMPLE	BORING	LIN. FT.		NO. OF 3" SHEL					
	SAMPLE BO		LIN. FT.		NO. OF 3" UNDIS					
	LING IN ROO		LIN. FT.			STURBED SA	MPLES			
					OTHER:					
BORING C	ONTRACTO)R								
DRILLER			OUIS RAMOS		WARREN GEOR	G⊑, INC.				
REMARKS		<u>L</u>			HELPERS			LIN MUNOZ		
	ENGINEE	2			ED WITH BOREH					
			۲ CHERYL J	AROUK EL KH			DATE		23-14	
MRCE Form BS-1			UNERTLU	. 10033	TYPING CHECI	\ :		RYL J. MOS		
	•						BOR	ING NO.	MR-	207

			BC	DRING LOG		BOR	ING NO.	MR-208
	_					SHE	ET 1 OF	4
PROJEC				LA CENTRAL			FILE NO.	
LOCATIO	DN:			BRONX, NEW YORK	S		E ELEV.	
						RES	1	FAROUK EL KHATI
DAILY		SAM					CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA		BLOWS	
07:00	1D	0.0 2.0	11-51	Brown fine to medium sand, some brick, trace				REC=6"
07-31-14	2NR	2.0	23-6 7-38	gravel, silt, vegetation, wood (Fill) (SP-SM)			AHEAD	•
Thursday Sunny	ZININ	4.0	98-100/2"	No recovery			4" 3"	
79°F	3D	4.0	21-100/2"	Prown find to opprovide and & briefs trade provid		_		
751	50	4.7	21-100/2	Brown fine to coarse sand & brick, trace gravel, silt, vegetation (Fill) (SP-SM)		5		REC=2"
	4D	6.0	2-3	Brown brick, some fine to coarse sand, trace				
		8.0	2-3 3-4	silt (Fill) (SP-SM)				REC=1"
	5D	8.0	5- 4 5-7	Black brown fine to coarse sand & brick,	F			
	00	10.0	9-14	trace silt (Fill) (SP-SM)	Г	10		
	6D	10.0	14-16	Brown brick & gravel, some fine to coarse sand,		10		
		12.0	18-17	trace silt, wood (Fill) (SP-SM)				
			10 11					Drown week
								Brown wash.
						15		
	7D	15.0	2-1	Brown fine to medium sandy gravel, trace silt		15		
		17.0	95-14	(GP-GM)		17	_ _	
						- 17		
						20		
	8D	20.0	9-9	Brown fine to medium sand, trace silt, mica		20		
ĺ		22.0	11-12	(SP-SM)				
					-	25		
	9D	25.0	6-8	Brown fine to coarse sand, trace silt (SP-SM)		20		
		27.0	7-9					
						30		
ſ	10D	30.0	7-9	Do 9D, trace gravel (SP-SM)				
-		32.0	9-10					
					-			
ľ					-			
					S	35		
[11D	35.0	7-7	Brown fine to medium sand, trace coarse				
		37.0	6-8	sand, silt (SP-SM)				
					-			
						40		
	12D	40.0		Do 11D (SP-SM)	Γ			
		42.0	12-11		-			
_								
Ļ								
Ļ						45		
	13D	45.0	12-12	Brown fine to medium sand, trace silt (SP-SM)				,
-		47.0	14-14					
-								
-								
-	440	50.0	40.45			50		
F	14D	50.0		Do 13D (SP-SM)				
		52.0	14-15					

MR-208

				DRING LOG			ING NO	
ROJEC	т∙			LA CENTRAL			ET 2 OF	
OCATIC					-		ILE NO	
.00//110	// N .			BRONX, NEW YORK	S		E ELEV	
DAILY		SAM				RES	1	. FAROUK EL KHA
PROGRESS	NO.	DEPTH					CASING	
Cont'd	NO.	DEFIN	BLOWS/6	SAMPLE DESCRIPTION	STRATA	DEPTH		
07-31-14			-			·	DRILLED	
Thursday			-				AHEAD	
Sunny			-				3"	-
79°F						55		_
	15D	55.0	14-14	Do 13D (SP-SM)		- 55		-
		57.0	18-20					-
								-
								-
						60		_
[16D	60.0	11-15	Do 13D (SP-SM)				-
		62.0	18-14					-
								-
								-
]			65		-
	The second	32-48	Do 13D (SP-SM)	S			-	
		67.0	50-46					
Ļ						70		
-	18D	70.0	27-25	Brown fine sand, trace silt, mica (SP-SM)				
Ļ		72.0	18-18					
-								
Ļ								
Ļ	400					75		
-	19D	75.0	20-22	Brown fine to medium sand, trace silt (SP-SM)				
-		77.0	20-31					
-								
14:45					-			
07:00	1C	80.0	REC=3%	Woothgrod highly weathers double as anti-		80		Hard drilling at 80'.
07.00	10	85.0	RQD=0%	Weathered highly weathered white marble, broken, iron stained & weathered joints			1*	*Coring time in
Friday		00.0		broken, non stanled & weathered joints	-			minutes per foot.
Cloudy					ļ		1* 1*	
77°F					-	85	1*	
	2C	85.0	REC=90%	Medium hard unweathered to slightly weathered	-	00		
		90.0		white marble, moderately jointed to closely	-		4.5*	White wash.
-				jointed, iron stained & weathered joints	R/WR		4.5*	
							4.5*	
-					-	90	4.5*	
	3C	90.0	REC=100%	Medium hard unweathered to slightly weathered	-		3*	
		95.0	RQD=95%	white marble, moderately jointed, iron stained	-		4*	
				& weathered joints	-		3.5*	
							3*	
11:30					-	95		End of Boring at 95'.
					-			
-					F			
						100		
1					Г			



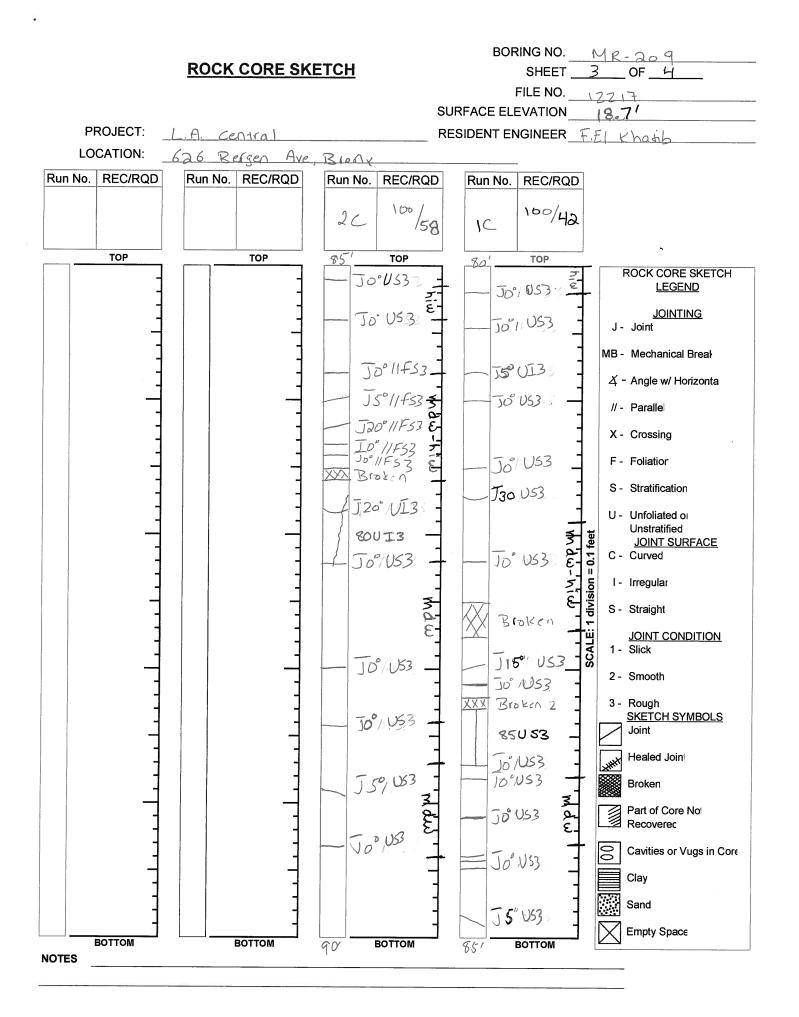
							BORING	NO	MF	208	
	-				• •		SHEET	4	OF		4
PROJEC	-			CENTR			FILE NO.		12217		
			BRONX				SURFACI	E ELEV.		17.2	
BORING	LOCATIO	N	SEE BORI	NG LOO	CATION PL	AN	DATUM		NAVD	88	
BORING			HODS OF STA	אולו ווס		-					
DOMINO			DF FEED	BILIZIN	<u>G BOREHUL</u>	. <u>E</u>					
	BORING RIC		G CORING								
TRUCK	ACKER				CASING		An approximate of the second sec	YES	NO		
SKID	MOREN	HYDRA		х	DIA., IN.	4	DEPTH, FT		0	_то	25
BARGE		OTHER		^	DIA., IN.	3			0	то	80
OTHER					DIA., IN.		DEPTH, FT	. FROM		то	
TYPE AN	D SIZE OF	:				G MUD USED	V	VEO			
D-SAMPLE		D. SPLIT SPC	ION			R OF ROTARY BI		YES	NO		
U-SAMPLE						DRILLING MUD	I, IIN.		3-7/8		
S-SAMPLE	R								QUIK M	UD	
CORE BAR	REL NX D	OUBLE TUBE	"M" SERIES		AUGER L	ISED	[]	YES	X NO		
CORE BIT		AMOND				D DIAMETER, IN.		TES	X NO		
DRILL ROD						D DIAMETER, IN.			19.1		
					*CASING	HAMMER, LBS.	300		E FALL, IN.		
						R HAMMER, LBS.			E FALL, IN. E FALL, IN.	24	
						AFETY HAMMER.		AVERAGE	E FALL, IN.	30	
WATER L	EVEL OBS	ERVATIONS	IN BOREHOLI	Ξ	0020 0,						
		DEPTH OF			DEPTH TO						
DATE	TIME	HOLE	CASING	G	WATER		CONDITION	S OF OBS	ERVATION		
07-13-14		80	80			CASING IS	ON TOP OF	ROCK.	WATER IS A	T TOP O	OF
								CASING.			
PIEZOMET	ER INSTA	LLED	YES	XN	O SKE	TCH SHOWN O	N				
STANDPIPE	=.	TYPE									
INTAKE ELE		TYPE			ID, IN.		TH, FT.		TOP ELEV	•	
FILTER:		MATERIAL			OD, IN.		TH, FT.		TIP ELEV.		
					OD, IN.	LENG	TH, FT.		BOT. ELEV	′	
PAY QUAN	ITITIES										
3.5" DIA. DR			LIN. FT.								
3.5" DIA. U-S						NO. OF 3" SHELE					
CORE DRILL			LIN. FT.			NO. OF 3" UNDIS	TURBED SA	MPLES			
		CK	LIN. FT.			OTHER:					
BORING C	ONTRACT	OR			1.4						
DRILLER		UIV	LOUIS RAMO	<u>c</u>	V		j⊨, INC.				
REMARKS						HELPERS	0		LIN MUNO	Ζ	
RESIDENT		P	B(
CLASSIFIC										-01-14	
MRCE Form BS-			CHERY		00	TYPING CHECK	.:		RYL J. MO		
MINUL FUIM BS-	1							BOR	ING NO.	MR-	208

MUESER RUTLEDGE CONSULTING ENGINEERS	
BORING LOG	

			BC	DRING LOG		BOR	ING NO.	MR-209
ROJEC	• т •					SHE	ET 1 OF	4
				LA CENTRAL		F	ILE NO.	12217
OCATIO	JN:			BRONX, NEW YORK	S	URFAC	E ELEV.	18.7
	1			1		RES	. ENGR.	FAROUK EL KHATI
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
07:00	1D	0.0	17-48	Brown fine to coarse sand, some orange	errerit.		DRILLED	
07-22-14		2.0	99-43	brick fgmts, trace silt, vegetation (Fill) (SP-SM)			AHEAD	
Tuesday	2D	2.0	80-86	Do 1D (Fill) (SP-SM)			4" 3"	
Sunny		4.0	53-14				4 3	Deduurals at 41
84°F						5		Red wash at 4'.
	3D	5.0	100/1"	Gray brown gravel & brick fragments, some		5		Rig chatter at 5'.
		5.1		coarse to fine sand, trace silt (Fill) (GP-GM)				Red wash at 6'.
	4D	7.0	100/5"	Orango brick fragmente trace sit (Pill) (GP-GW)				Rig chatter at 6'.
		7.9	100/5	Orange brick fragments, trace coarse to fine				
		1.5		sand, silt (Fill) (GP-GM)				Rig chatter at 9'.
	5D	10.0	400/48		F	10		Brick red wash at 10'.
	50	and the second se	100/4"	Do 4D (Fill) (GP-GM)				
		10.3						Light brown wash &
								rig chatter at 13'.
								Loss of fluid at 14'.
						15		Rig chatter at 15' & 16
								Very hard drilling at
								15' & 16'. Took sampl
	6NR	17.0	50/1"	No recovery				at 17'. Clear wash at
		17.1						17'. Clear wash at
						19.5		
1	7D	20.0	5-4	Brown fine to medium sand, trace gravel, silt,		19.5		Very hard drilling at 18
-		22.0	5-5	mica (SP-SM)				Normal drilling at 19.5'
			00					
-								
-							*	
+	8D	25.0	4.0			25		
	00	the second se	4-2	Brown fine to medium sand, trace silt (SP-SM)				REC=2"
-		27.0	4-4					
-								
-								
-						30		
_	9D	30.0	9-8	Brown fine sand, some silt, trace mica (SM)				
		32.0	9-9	, , , , , , , , , , , , , , , , , , ,	-			
					-			
					ŀ			
					-	35		
	10D	35.0	7-7	Do 9D (SM)				
		37.0	9-7		S			
			• •		-			
F					-			
-								
-	11D	40.0	7-7	Do 9D (SM)	-	40		
		42.0	8-10					
-		72.0	0~10					
Sec. March 1								
	100	45.0	40.0			45		
	12D	45.0	10-9	Brown fine sand, trace silt (SP-SM)				
		47.0	9-8					
			1					
			1					
					-	50		
	100	50.0	7-7	Brown fine to coarse sand, trace gravel, silt				
-	13D	00.0						

Г: • N :			LA CENTRAL			ET 2 OF	
IN:						FILE NO.	
			BRONX, NEW YORK	S		E ELEV.	
					RES	. ENGR.	FAROUK EL KHA
	SAM	1				CASING	
NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
		-				DRILLED	
						AHEAD	
		-				3"	
140	55.0		Desum fine to use discussion to the		55		
140							-
	57.0	9-10					
		-					
		-		Î	60		
15D	60.0	- 6-7	Brown fine to medium sand trace silt mice		- 00		
	the second se						
				S			
		-					
		-			65		
16D	65.0	6-6	Brown fine sand, some silt (SM)				
	67.0	10-10					
		-					
					70		
17D		-					
	72.0	15-17	silt, mica (SP-SM)				
		_					
		-					Rig chatter at 74'.
100				T	75		
18D				1			
	77.0	32-82	gray rock fragments (SM)		76.5		
		-		P			
				DK			
	80.0	100/0"			80		
JUL		100/0	No recovery				White wash. Brown
1C		REC=100%	Intermediate slightly weathered to highly				wash at 82.5'.
							White wash.
					85		writte wash.
2C	85.0	REC=100%		R/WR			
	90.0	RQD=58%	to slightly weathered white gray marble.				
			joints	ſ			
				-	90		End of Boring at 90'.
					95		
				[[
					100		
	17D 18D 9NR 1C	57.0 15D 60.0 62.0 16D 65.0 67.0 17D 70.0 72.0 18D 75.0 77.0 9NR 80.0 80.0 1C 80.0 85.0 2C 85.0	57.0 9-10 15D 60.0 6-7 62.0 7-9 16D 65.0 6-6 67.0 10-10 17D 70.0 11-10 17D 70.0 11-10 18D 75.0 30-38 77.0 32-82 32-82 9NR 80.0 100/0" 80.0 100/0" 80.0 1C 80.0 REC=100% 2C 85.0 REC=100%	57.0 9-10 mica (SP-SM) 15D 60.0 6-7 62.0 7-9 16D 65.0 67.0 10-10 17D 70.0 17D 70.0 17D 11-10 18D 75.0 30-38 Brown fine to coarse sand, trace gravel, silt, mica (SP-SM) 18D 75.0 18D 77.0 18D 77.0 100/0" No recovery No REC=100% REC=100% REC=100% REC=100% REC=100% REC=100% Intermediate slightly weathered to highly weathered bighly weathered bighly weathered to broken, iron stained & weathered joints 2C 85.0 90.0 RQD=58%	57.0 9-10 mica (SP-SM) mica (SP-SM) S 15D 60.0 6-7 Brown fine to medium sand, trace silt, mica (SP-SM) S 16D 65.0 6-6 Brown fine sand, some silt (SM) S 17D 70.0 11-10 White brown fine to coarse sand, trace gravel, silt, mica (SP-SM) T 18D 75.0 30-38 Brown fine to coarse sand, some silt, black gray rock fragments (SM) T 18D 77.0 32-82 gray rock fragments (SM) DR 9NR 80.0 100/0" No recovery Intermediate slightly weathered to highly weathered to slightly weathered white gray marble, jointed to broken, iron stained & weathered joints RWR 90.0 85.0 REC=100% RQD=58% No recovery RWR 90.0 90.0 RQD=58% No recovery RWR Intermediate to weathered white gray marble, jointed to broken, iron stained & weathered joints RWR	57.0 9-10 mica (SP-SM) 60	14D 55.0 9-9 Brown fine to medium sand, trace gravel, silt, mica (SP-SM) 55 55 15D 60.0 6-7 Brown fine to medium sand, trace silt, mica 56 60 16D 65.0 6-6 Brown fine to medium sand, trace silt, mica 56 60 16D 65.0 6-6 Brown fine to medium sand, trace silt, mica 70 65 17D 70.0 11-10 White brown fine to coarse sand, trace gravel, silt, mica (SP-SM) 70 74 17D 70.0 15-17 White brown fine to coarse sand, some silt, black gray rock fragments (SM) 74 74 18D 75.0 30-38 Brown fine to coarse sand, some silt, black gray rock fragments (SM) 76.5 9NR 80.0 100/0" No recovery 1* 100/0" RCD=42% Intermediate slightly weathered to highly weathered while gray marble, jointed to broken, iron stained & weathered 3* 90.0 RQD=58% S5 3.5* 90.0 2.5* 90 2.5* 90 2.5* 90 2.5*

BORING NO. MR-209



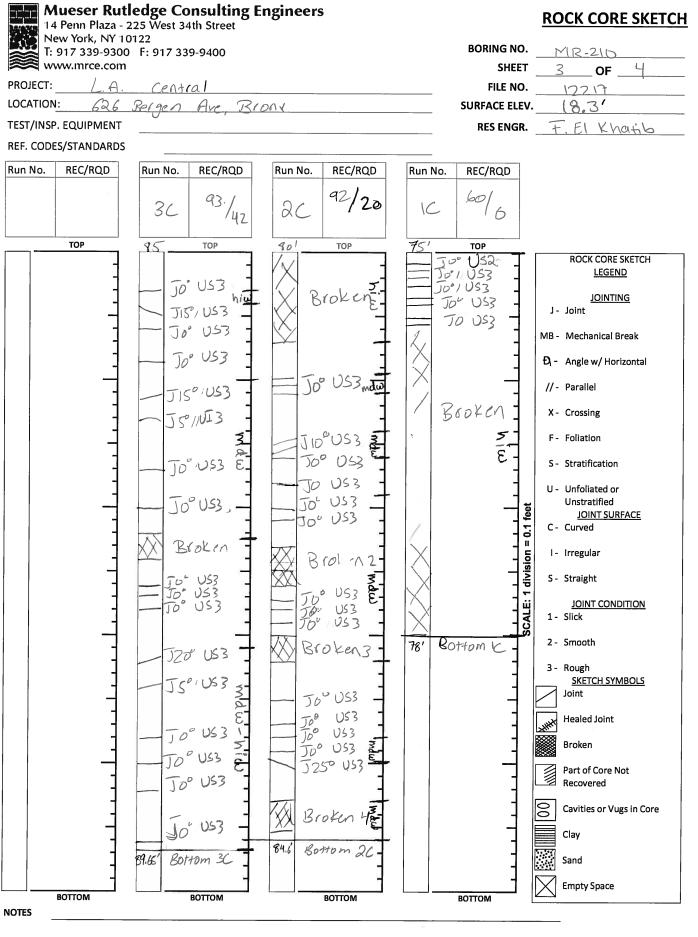
								BORING	NO.	MR-	209
								SHEET	4	OF	4
PROJEC	-				CENT			FILE NO.		12217	7
LOCATIO						/ YORK		SURFAC	E ELEV.		18.7
BORING	LOCATIO	N		SEE BORI	NG LC	CATION PL	.AN	DATUM		NAVD 8	38
BORING I	EQUIPME	NT AN	D METHO	DS OF ST	ABILIZI	NG BOREHO	LE				
			TYPE OF	FEED							
TYPE OF E	BORING RI	G	DURING C	ORING		CASING	USED	Х	YES	NO	
TRUCK	ACKER	AD2	MECHANI	CAL		DIA., IN	4	DEPTH, F	T. FROM	0	TO 24
SKID			HYDRAUL	.IC	Х	DIA., IN	3	DEPTH, F	T. FROM	0	TO 80
BARGE			OTHER			DIA., IN		DEPTH, F	T. FROM		то
OTHER											
		_								[*************************************	
TYPE ANI							G MUD USED	Х	YES	NO	
D-SAMPLE		. D. SPI	LIT SPOON	J			ER OF ROTARY BI	T, IN.		3-7/8	
U-SAMPLE						TYPE O	F DRILLING MUD			REVER	Т
S-SAMPLE									7	}	
CORE BAF				" SERIES		AUGER			YES	X NO	
CORE BIT			ND			TYPE A	ND DIAMETER, IN.				
DRILL ROE	DS NWJ					10100					
							G HAMMER, LBS.	140		E FALL, IN.	30
							ER HAMMER, LBS.	140		E FALL, IN.	30
				BOREHO	E	"USED 8	SAFETY HAMMER.				
			PTH OF	DEPTH		DEPTH TO					
DATE	TIME		HOLE	CASIN		WATER		CONDITIO		SERVATION	
07-22-14	15:00		77	24		4.2	END OF			IG THE BORE	FHOLE
07-23-14	07:00		77	24		15.9			IGHT MUD		
								······			

PIEZOME	TER INST	ALLED	2	YES	Х	NO SK	ETCH SHOWN C	N			
STANDPIPI	E:	TYPE				ID, IN.	LENC	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE				OD, IN.	LENC	GTH, FT.		TIP ELEV.	
FILTER:		MATE	RIAL			OD, IN.	LENC	GTH, FT.		BOT. ELEV.	•
PAY QUAI											
3.5" DIA. DI				LIN. FT.			NO. OF 3" SHEL	BY TUBE S	AMPLES		
3.5" DIA. U-			i	LIN. FT.			NO. OF 3" UNDIS	STURBED S	SAMPLES		
CORE DRIL	LING IN R	OCK		LIN. FT.			OTHER:				
	UNIRAC	IOR					WARREN GEOR	GE, INC.			
			JA	ACOB HAR			HELPERS			D HARRIS	
				BO			ED WITH BOREH	OLE MATE			
		1.00		01155		OUK EL KHA			DATE		23-14
		HECK:		CHER	YL J. M	055	TYPING CHEC	K:		ERYL J. MO	
MRCE Form BS	-1								BOF	RING NO.	MR-209

MUESER RUTLEDGE CONSULTING ENGINEERS	
BORING LOG	

				DRING LOG		BOR SHE			
ROJEC	T:			LA CENTRAL			FILE		
OCATIC				BRONX, NEW YORK	S	URFAC			
									FAROUK EL KHATI
DAILY		SAM	PLE		1			SING	1
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH			
11:00	1D	0.0	6-18	Brown fine to medium sand & brick, trace	ononn	DEIT		LED	In the second se
07-23-14		2.0	65-5	gravel, silt, wood, vegetation (Fill) (SP-SM)				EAD	
Wednesday	2D	2.0	5-6	Brown fine to medium sand, some brick, trace				3"	REC=3"
Sunny		4.0	5-4	silt (Fill) (SP-SM)			Í	Ī	
83°F	3D	4.0	2-3	Brown fine to medium sand, trace brick, silt,	-	5			REC=3"
		6.0	6-5	gravel (Fill) (SP-SM)	F				1
	4 D	6.0	5-5	Brown medium to fine sand, some gravel,					-
		8.0	4-6	brick, trace silt (Fill) (SP-SM)					n
	5D	8.0	3-3	Brown fine to medium sand, trace brick, silt					REC=1"
		10.0	3-3	(Fill) (SP-SM)		10	+		
	6D	10.0	5-7	Brown silty fine sand, trace gravel (SM)					
		12.0	7-9						
									-
						15			
	7D	15.0	20-19	Brown fine to coarse sand, some gravel, trace					
		17.0	13-7	silt (Fill) (SP-SM)					-
						20			
	8NR	20.0	11-9	No recovery					
		22.0	6-8						
									-
						25			
	9D	25.0	4-7	Brown fine to coarse sand, trace gravel, silt					
		27.0	7-6	(SP-SM)					
						30			
	10D	30.0	5-4	Do 9D (SP-SM)	e				
		32.0	3-3		S			_	
						35			
	11D	35.0	9-9	Do 9D (SP-SM)					
		37.0	10-11						
						40			
	12D	40.0	9-8	Do 9D (SP-SM)					
		42.0	10-10						
						45			
	13D	45.0	10-11	Brown fine to coarse sand, some gravel, trace					
ĺ.		47.0	12-16	silt (SP-SM)					
					[50			
	14D	50.0	10-9	Brown fine to coarse sand, trace gravel, silt					
		52.0	9-11	(SP-SM)	1			†	

						SHE	ET 2 OF	4
PROJEC	T:			LA CENTRAL			FILE NO.	
	DN:			BRONX, NEW YORK	S	URFAC		
								FAROUK EL KHA
DAILY		SAM	PIF				CASING	TANOUN EL NIA
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	OTDATA	DEDTU	BLOWS	
Cont'd			BLOTTOR		SIIVAIA	DEPIN	DRILLED	REMARKS
07-23-14							AHEAD	
Nednesday		·	~				3"	
Sunny							Ĩ	
83°F			17-23			55		
	15D	55.0		Brown fine to medium sand, trace silt (SP-SM)				•
		57.0	16-19					
			16-19				60	
						60		
	16D	60.0		Brown fine sand, some silt, rock fragments				
14:50		62.0	36-25	(SM)				
07:00			-		S			
07-24-14			-					
Thursday	470	05.0	17-21 21-29	Brown fine cond trace ailt mice (CD CM)		65		
Sunny	17D	65.0		Brown fine sand, trace silt, mica (SP-SM)				
80°F		67.0						
			-					
-						70		
ł	18D	70.0	17-28 100/3" REC=60%	Brown fine sand, some silt, trace mica (SM)		70		
-	100	71.3		Weathered highly weathered dark green chloritic marble, broken, weathered joints Top 0.7': Do IC Bot 3.9': Weathered moderately weathered gray marble, closely jointed to broken, iron				-
-		11.0						
								Hard drilling at 74'.
						75		Haru unling at 74.
	1C	75.0				10	3.5*	
-		80.0	RQD=0%					Light brown gray wa *Coring time in
-								
								minutes per foot.
					R/WR	80	4*	
	2C	80.0						White wash.
		85.0					3*	
							2*	
L				stained & weathered joints			2*	
-			DE0 655			85	2.5*	
-	3C	85.0		Weathered slightly weathered to moderately			2*	
-		90.0	RQD=22%	weathered gray white marble, jointed to broken,			3*	
-				iron stained & weathered joints	-		3*	
12:05					-	00	2.5*	
12.00						90	4.5*	End of Boring at 90'.
-					-			
-								
L					-	+		
					-	95		
					-			
-								
						100		

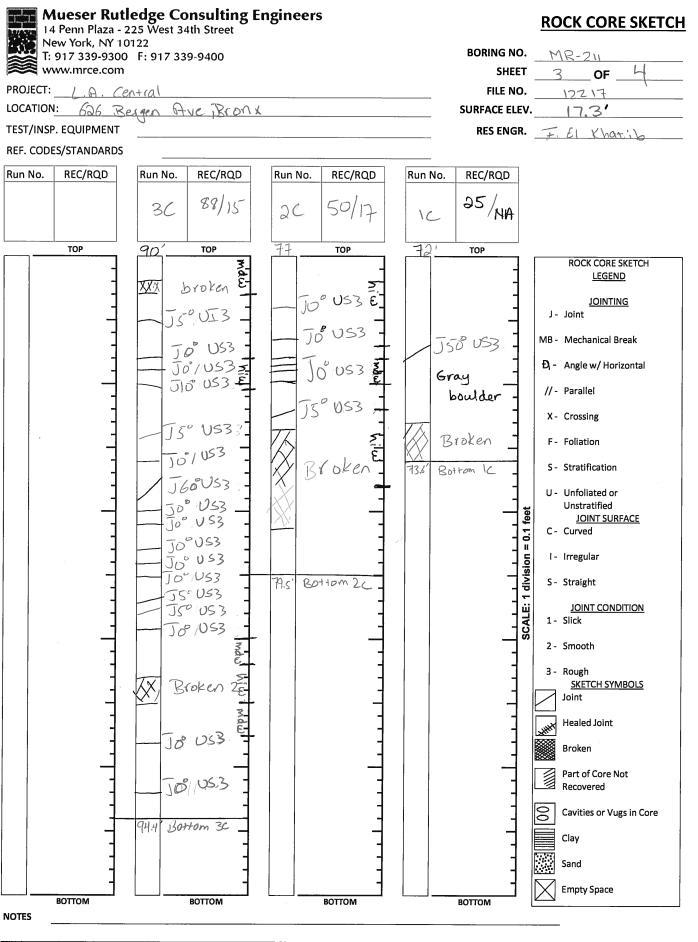


BOR-3 JAN2013

						BORING	NO.	MR-	210
	_					SHEET	4	OF	4
PROJEC				NTRAL		FILE NO.		12217	7
LOCATIC			· · · · · · · · · · · · · · · · · · ·	NEW YORK		SURFAC	E ELEV.		18.3
BORING	LOCATIO	N	SEE BORING	J LOCATION F	PLAN	DATUM		NAVD	88
PODINC									
DOMING		TYPE OF		LIZING BOREH	OLE				
				CACIN		N.			
TRUCK	ACKER			DIA., I		L	YES	NO	TO 40
SKID	AONEN	HYDRAU		X DIA., I		DEPTH, F		0	TO 10
BARGE	·	OTHER		DIA., I		DEPTH, FI		0	TO 75
OTHER	9790	Omen		טוא., וו		DEPTH, F			ТО
	D SIZE OF			DRILL	ING MUD USED	Х	YES	NO	
D-SAMPLE		D. SPLIT SPOO	N	DIAME	TER OF ROTARY BI	T, IN.		3-7/8	
U-SAMPLE	ER			TYPE	OF DRILLING MUD			REVER	Т
S-SAMPLE									
		OUBLE TUBE "N	" SERIES	AUGEI	R USED		YES	X NO	
CORE BIT	harden and the state of the sta	IAMOND		TYPE	AND DIAMETER, IN.				
DRILL ROE	DS NWJ								
				*CASI	NG HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*SAMF	LER HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*USED	SAFETY HAMMER.				
WATERL	EVEL OBS	SERVATIONS II					n		
DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER					
07-23-14	14:55	62	10	12.6		CONDITION			
07-24-14	07:00	62	10	15.2			ND OF DAY		
			10	10.2		OVERIN		LEVEL.	
			-				N.		
				·····					
						· · · · · · · · · · · ·			
PIEZOME	TER INSTA	ALLED	YES	X NO S	KETCH SHOWN O	N			
STANDPIP	E:	TYPE		ID, IN.		GTH, FT.		TOP ELEV.	
INTAKE EL		ТҮРЕ		OD, IN.		STH, FT.		TIP ELEV.	
FILTER:		MATERIAL		OD, IN.		STH, FT.		BOT. ELEV.	
				00,					·
PAY QUAN	NTITIES								
3.5" DIA. DF	RY SAMPLE	BORING	LIN. FT.		NO. OF 3" SHELE	BY TUBE SA	MPLES		
3.5" DIA. U-	SAMPLE B	ORING	LIN. FT.	······································	NO. OF 3" UNDIS				
CORE DRIL	LING IN RC	ОСК	LIN. FT.		OTHER:				
DOD									
BORING C	ONTRACI				WARREN GEOR	GE, INC.			
DRILLER		L	OUIS RAMOS		HELPERS			LIN MUNOZ	2
REMARKS					LED WITH BOREH	OLE MATE	RIAL.		
RESIDENT		and the second sec		FAROUK EL KH			DATE		24-14
CLASSIFIC		HECK:	CHERYL	J. MOSS	TYPING CHECH	K:	CHE	RYL J. MO	SS
MRCE Form BS-	-1						BOR	ING NO.	MR-210

	- .						ET 1 OF		
PROJEC				LA CENTRAL			ILE NO.		
LOCATIC	DN:			BRONX, NEW YORK	SURFACE ELEV				
		-				RES	. ENGR.	FAROUK EL KHATI	
DAILY		SAM		-			CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
10:00	1D	0.0	10-16	Brown fine to coarse sand & brick, trace silt,			DRILLED	REC=6"	
07-23-14		2.0	10-9	vegetation (Fill) (SP-SM)			AHEAD		
Wednesday	2D	2.0	5-4	Do 1D (Fill) (SP-SM)			4"	REC=1"	
Sunny		4.0	3-7						
83°F						5			
	3D	5.0	21-8	Gray concrete & brick, some coarse to fine				REC=2"	
		7.0	4-4	sand, trace silt (Fill) (GP-GM)					
	4D	7.0	9-6	Brown fine to coarse sand & brick & concrete				REC=4"	
		9.0	4-3	fragments, trace silt (Fill) (SP-SM)					
						10			
	5D	10.0	10-2	Brown fine to medium sand, some gravel,	F				
		12.0	2-4	brick, silt, trace wood (Fill) (SM)					
			- 7						
		·				15			
	6D	15.0	2-1	Brown fine to medium sand, some gravel,		15			
	00	17.0	1-2					REC=6"	
		17.0	1-2	trace brick, wood, silt (Fill) (SP-SM)					
								Black wash at 18.5'.	
	710		10.17			20	*	White wash at 19'.	
	7NR	20.0	19-17	No recovery					
		22.0	15-10						
	8D	22.0	6-6	Brown fine to medium sand, trace silt, mica,					
		24.0	8-8	gravel (SP-SM)					
						25			
	9D	25.0	5-6	Brown fine sand, trace silt (SP-SM)					
		27.0	7-9						
						30			
	10D	30.0	5-8	Brown fine to coarse sand, trace gravel, silt					
		32.0	7-6	(SP-SM)					
-									
-						35			
	11D	35.0	4-2	Do 10D (SP-SM)					
		37.0	3-4		S				
ŀ									
-						40			
	12D	40.0	9-9	Brown fine sand, some silt, silt layers (SM&ML)		-70			
ŀ		42.0	10-13						
ŀ			10 10						
ŀ					-				
Ļ						45			
ŀ	13D	45.0	9-8	Brown fine to modium conductors accord		40			
ŀ		45.0	9-8 8-11	Brown fine to medium sand, trace coarse sand,					
-		47.0	0-11	gravel, silt (SP-SM)					
ŀ									
F	140	50.0				50			
-	14D	50.0		Brown fine sand, trace silt, mica (SP-SM)					
		52.0	9-11						

			BC			ING NO.		
PROJEC	т۰						ET 2 OF	
OCATIC								
.OUAIIC	JIN.			BRONX, NEW YORK	SURFACE ELEV			
		0.114			-1	RES	1	FAROUK EL KHAT
DAILY PROGRESS Cont'd	NO.	SAM DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	
07-23-14 Vednesday Sunny								
83°F	15D	55.0	6-8	Brown fine sand, some silt (SM)		55		-
		57.0	9-12		S			
_	105					60		-
	16D	60.0 62.0	9-9 13-12	Brown fine to medium sand, trace silt, mica (SP-SM)				-
						63.5 65		Rig chatter at 64'.
	17D	65.0 67.0	27-18 11-6	Brown fine to coarse sand, some gravel, trace silt (SP-SM)				
			11.0	Brown fine to medium sand, some gravel, trace silt (SP-SM) Gray boulder	_	70		
	18D	70.0	11-8		Т			
14:50 07:00 07-24-14 Thursday Sunny	10	72.0	12-35				4*	Hard drilling at 72'.
	1C	72.0 77.0	REC=25% RQD=NA				2*	Brown wash.
		77.0				75	3* 0.5*	*Oprimer time a tim
						75		*Coring time in minutes per foot.
80°F						77		minutes per 100t.
						80		
-	19D	80.0 81.4	24-27 100/5" REC=50%	Brown fine to coarse sand, some rock fragments, silt (Decomposed Rock) (SM)	DR			
-								
ŀ	2C	85.0		Weathered highly weathered to slightly		85	4*	Hard drilling at 85'.
ŀ	2.5	90.0		weathered fightly weathered to slightly weathered gray marble, closely jointed to			4* 3*	
t			broken, iron stained & weathered joints			2.5*	-	
				,			2.5*	
					Ban	90	2*	
	3C	90.0	REC=88%	Weathered slightly weathered to highly	R/WR			Light brown wash.
Ļ		95.0		weathered gray marble, closely jointed to			5*	-
-				broken, iron stained & weathered joints			3.5*	
10:25							4.5*	
10:35						95	4.5*	End of Boring at 95'.
-						100		



							BORING	NO.	MR-2	211
							SHEET	4	OF	4
PROJECT	Γ		LA	CENTF	RAL		FILE NO.		12217	
LOCATIO	N		BRON	X, NEW	YORK		SURFACI	E ELEV.	•	17.3
BORING I	LOCATIO	N	SEE BOR	ING LO	CATION PL	AN	DATUM		NAVD 8	8
BORING E	EQUIPME		THODS OF ST OF FEED	ABILIZI	NG BOREHO	<u>LE</u>				
TYPE OF B		G DURI	NG CORING		CASING	USED	X	YES	NO	
TRUCK	ACKER	AD2 MECH	IANICAL		DIA., IN.	4	DEPTH, FI	_	and the second second	TO 20
SKID		HYDR	AULIC	Х	DIA., IN.		DEPTH, FT			то
BARGE OTHER		OTHE	R		DIA., IN.		DEPTH, FI	r. From		ТО
	O SIZE OF	:			DRILLIN	G MUD USED	X	YES	NO	
D-SAMPLE	R 2" O.	D. SPLIT SP	OON		DIAMET	ER OF ROTARY BI	T, IN.		3-7/8	
U-SAMPLE	R				TYPE O	F DRILLING MUD			REVERT	•
S-SAMPLE	R									
CORE BAR	REL NX D	OUBLE TUB	E "M" SERIES		AUGER	USED		YES	X NO	
CORE BIT	NX D	IAMOND			TYPE AI	ND DIAMETER, IN.				
DRILL ROD	S NWJ									
					*CASING	G HAMMER, LBS.	140	AVERAGE	EFALL, IN.	30
					*SAMPL	ER HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
					*USED S	SAFETY HAMMER.				
WATER L	EVEL OBS	1	IS IN BOREHC							·····
DATE	TIME	DEPTH C			DEPTH TO					
07-23-14	14:55	HOLE 72	CASI 24		WATER 3.6				ERVATION	
07-23-14	07:00	72	24		13			IGHT MUD	· · · · · · · · · · · · · · · · · · ·	LEVEL).
01-24-14	07.00	16	27		15		OVEIN			

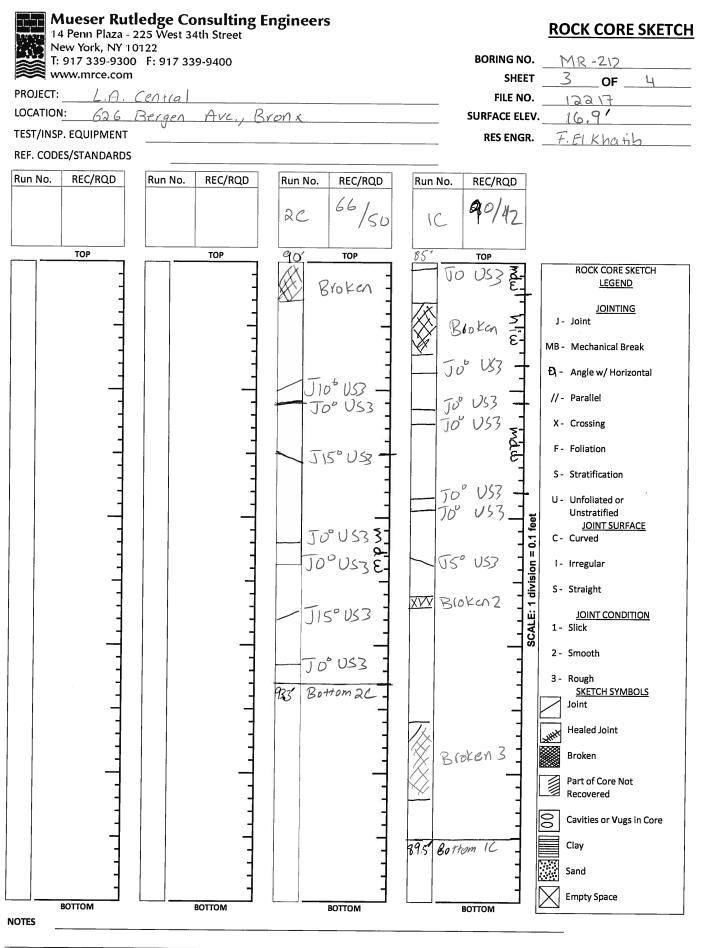
PIEZOME	TER INST	ALLED	YES	X	NO SK	ETCH SHOWN C	N			
STANDPIP	E:	TYPE			ID, IN.	1 ENG	GTH, FT.		TOP ELEV.	
INTAKE EL		TYPE			OD, IN.		GTH, FT.		TIP ELEV.	·
FILTER:		MATERIAL			OD, IN.	and a second	STH, FT.		BOT. ELEV.	
		-								
PAY QUA	NTITIES									
3.5" DIA. DF	RY SAMPLE	E BORING	LIN. FT.	_		NO. OF 3" SHEL	BY TUBE S	AMPLES		
3.5" DIA. U-SAMPLE BORING			LIN. FT.			NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRIL	LING IN RO	OCK	LIN. FT.			OTHER:				
BORING C		TOR				WARREN GEOR	GE INC			
DRILLER			JACOB HAF	RIS		HELPERS	OL, 1110.		D HARRIS	
REMARKS					E BACKEILL	ED WITH BOREH				
RESIDEN		FR			OUK EL KHA			DATE	07-	24-14
CLASSIFIC		1	CHE	RYL J. N		TYPING CHEC	κ·		ERYL J. MOS	
MRCE Form BS			0.1.2						RING NO.	MR-211
	-							201		

			<u> </u>	DRING LOG			ING NO. ET 1 OF		
PROJEC	T:			LA CENTRAL			FILE NO.		
				BRONX, NEW YORK			E ELEV.	. 16.9	
				BROWN, NEW TORK	_ 3				
DAILY		SAMI				RES		FAROUK EL KHAT	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	OTDATA	DEDTU	CASING		
10:30	1D	0.0	15-5	Brown fine to medium sand, some brick, trace	SIRAIA	DEPTH	BLOWS	REMARKS	
07-29-14		2.0	10-8	wood, silt (Fill) (SP-SM)				REC=4"	
Tuesday	2D	2.0	7-9	Brown fine to medium sand & brick, trace			AHEAD 4"	REC=6"	
Sunny		4.0	9-13	gravel, silt (Fill) (SP-SM)			4	REC=0	
77°F	3D	4.0	13-13	Do 2D (Fill) (SP-SM)		5		DE0-2"	
	00	6.0	21-11					REC=2"	
	4D	6.0	5-5	Do 2D (Fill) (SP-SM)		·			
		8.0	8-10	D0 2D (1 11) (3P-3W)	F			REC=4"	
	5D	8.0	5-10	Do 2D (Fill) (SP-SM)	Г				
	50	10.0	11-4	D0 2D (Fill) (3F-3N)		40			
	6D	10.0	10-19	Brown find to modium cond. come concrete		10			
	00	12.0	19-19	Brown fine to medium sand, some concrete,					
		12.0	19-29	trace gravel, silt, wood (Fill) (SP-SM)					
						45			
	7D	15.0	5-6	Prown fine to ecore condicare around these		15			
	10	17.0	5-0 4-4	Brown fine to coarse sand, some gravel, trace				REC=3"	
			4-4	silt (SP-SM)					
	8D	20.0	77	Brown find to modium conditions groupli aith		20	<u> </u>		
	00		7-7	Brown fine to medium sand, trace gravel, silt,					
		22.0	8-10	mica (SP-SM)					
						05			
	9D	25.0	9-11	Drown fine to medium and trace all wing		25			
	90	25.0		Brown fine to medium sand, trace silt, mica					
		27.0	11-11	(SP-SM)					
-									
-									
-	100	20.0	67			30			
-	10D	30.0	6-7	Do 9D, trace coarse sand (SP-SM)					
ŀ		32.0	13-15						
-									
-					S	0F			
ŀ	11D	35.0	12-15	Do OD, traco groval (CD CM)		35			
-		37.0	12-15	Do 9D, trace gravel (SP-SM)					
-		37.0	19-17						
ŀ									
-						40			
ŀ	12D	40.0	18-21	Brown fine sand some silt trace miss (OM)		40			
-	120	42.0	25-27	Brown fine sand, some silt, trace mica (SM)					
-		72.0	20-21						
-									
-						AE			
-	13D	45.0	13-18	Brown silty fine sand (SM)		45			
F	100	47.0	17-24	Brown sity inte sand (GWI)					
-		U.17	17-24						
-									
-						50			
-	14D	50.0	8-18	Brown fine sand, some silt (SM)	-	50			
ŀ		52.0	16-21	Brown mile sand, some sill (SIVI)	-				

MRCE Form BL-1

BORING NO. MR-212

			BC	DRING LOG			ING NO.		
PROJEC	T:			LA CENTRAL			ET 2 OF	D. 12217	
OCATIO				BRONX, NEW YORK	G		E ELEV.		
DAILY		SAM	PLE		1		CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd							220110	T C III / T T C	
07-29-14									
Tuesday		10-01-01-0	~						
Sunny			_						
77°F	450	55.0	10.00			55			
	15D	55.0 57.0	18-33	Do 14D (SM)			n		
		57.0	27-26	8					
14:30			-			60			
07:00	16D	60.0	8-9	Do 14D (SM)		00	<u> </u>		
07-30-14		62.0	12-29						
ednesday			-						
Sunny									
75°F					S	65			
	17D	65.0	12-18	Brown fine to medium sand, trace silt (SM)					
		67.0	25-22						
			-						
-	18D	70.0	12-14	Do 17D, trace mica (SP-SM)		70			
	100	72.0	12-14	Do 17D, trace mica (SP-Sivi)					
		12.0	10-10						
						75			
	19D	75.0	19-24	Brown fine to medium sand, trace silt, gravel					
		77.0	22-27	(SP-SM)					
						78.5			
	005					80			
-	20D	80.0	32-48	Brown gray fine to medium sand, some rock					
-		81.1	100/1"	fragments, trace silt (Decomposed Rock)	DR				
-				(SP-SM)					
-						85			
-	1C	85.0	REC=90%	Intermediate weathered slightly weathered to		00	4*	Light brown wash.	
ŀ		90.0		highly weathered white marble, jointed to				*Coring time in	
ŀ				broken, iron stained & weathered joints				minutes per foot.	
							2.5*		
					R/WR	90	4*		
-	2C	90.0		Intermediate slightly weathered to moderately	IN WWIX		7.5*		
		95.0	RQD=40%	weathered gray marble, jointed to closely			13*		
-				jointed, iron stained & weathered joints			6*		
12:00						05	3*		
.2.00						95	4*	End of Boring at 95'.	
-									
						100			



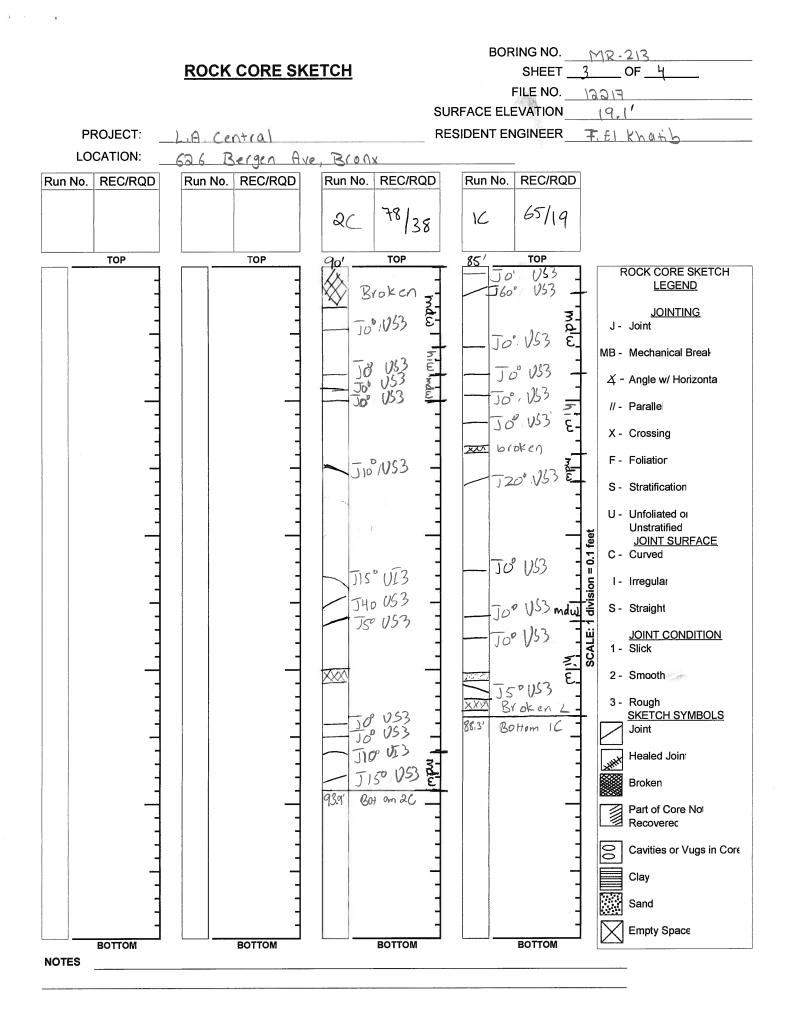
BOR-3_JAN2013

							BORING	NO.	MR-	212
							SHEET	4	OF	4
PROJEC [®]			The second se	CENTRA			FILE NO.		12217	
LOCATIO			BRONX	•			SURFAC	E ELEV.		16.9
BORING	LOCATION		SEE BORII	NG LOC	ATION PLA	N	DATUM		NAVD	88
BORING	FQUIPMEN	T AND MET	HODS OF STA		BOREHOLI	=				
			OF FEED		DORLINOLI	=				
TYPE OF E	BORING RIG	-	GCORING		CASING L	JSED	Х	YES	NO	
TRUCK	ACKER				DIA., IN.	4	DEPTH, F		0	TO 20
SKID		HYDRA	ULIC	х	DIA., IN.		DEPTH, F			то
BARGE		OTHER			DIA., IN.		DEPTH, F			то
OTHER							-			-
								-1		
	D SIZE OF:					MUD USED	L	YES	NO	
D-SAMPLE		D. SPLIT SPO	ON				Γ, IN.		3-7/8	
U-SAMPLE					TYPE OF	DRILLING MUD			QUIK ML	JD
S-SAMPLE		OUBLE TUBE					[VEO		
CORE BAR			W SERIES					YES	X NO	
DRILL ROE						DIAMETER, IN.				
DIVICE IVOL					*CASING	HAMMER, LBS.	300		E FALL, IN.	24
						R HAMMER, LBS.	140		E FALL, IN.	30
						FETY HAMMER.	140			
WATER L	EVEL OBS	ERVATIONS	IN BOREHOL	E						
		DEPTH OF	DEPTH	OF	DEPTH TO					
DATE	TIME	HOLE	CASIN	G	WATER		CONDITION	NS OF OBS	ERVATION	
07-29-14	14:45	60	20		5			ND OF DA		
07-30-14	06:50	60	20		12.9		OVERN	IGHT MUD	LEVEL.	
					t					
PIEZOME	TER INSTA	LLED	YES	X NO	D SKE	TCH SHOWN O	N			
STANDPIP	E .	TYPE								
INTAKE EL		TYPE			ID, IN.		STH, FT.			
FILTER:		MATERIAL			OD, IN.		STH, FT.			
					OD, IN.	LENG	STH, FT.		_BOT. ELEV	•
PAY QUA	NTITIES									
3.5" DIA. DI	RY SAMPLE	BORING	LIN. FT.			NO. OF 3" SHELI	BY TUBE SA	AMPLES		
3.5" DIA. U-	-SAMPLE BO	ORING	LIN. FT.			NO. OF 3" UNDIS	STURBED S	AMPLES		
CORE DRIL	LING IN RC	СК	LIN. FT.			OTHER:				
	CONTRACT	08			V	VARREN GEOR	GE, INC.			
DRILLER			LOUIS RAMC			HELPERS			LIN MUNO	Ζ
REMARKS		D	В			LED WITH DRIL				00.44
	T ENGINEE CATION CH		CUEDY	FARO YL J. MO	UK EL KHAT			DATE		-30-14
MRCE Form BS			CHER		00	TYPING CHECI	`		ERYL J. MO	
WINGE FORM BS	- 1							BOF	RING NO.	MR-212

			<u></u>	DRING LOG			ING N ET 1			
ROJEC				LA CENTRAL			FILE N			
OCATIC	DN:			BRONX, NEW YORK	S	URFAC				
					•				. FAROUK EL KHA	
DAILY		SAM	PLE		1	CASING				
ROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEDTU				
11:25	1D	0.0	9-16	Brown fine to medium sand, some brick,	SIRAIA	DEPTH				
07-24-14	10	2.0	6-5	gravel, trace silt, vegetation, wood (Fill) (SP-SM)					REC=6"	
	2D	2.0	1				AHE			
Thursday	20		3-2	Brown fine to medium sand, some brick, trace			4" 3	3"	REC=3"	
Sunny		4.0	5-5	gravel, silt, wood (Fill) (SP-SM)						
80°F			_			5				
	3NR	5.0	3-4	No recovery					Gravel stuck at botto	
		7.0	6-5		F				of spoon.	
	4D	7.0	4-10	Orange brick, trace coarse to fine sand, silt						
		9.0	14-5	(Fill) (GP-GM)						
						10			Rig chatter at 10'.	
	5NR	10.0	7-6	No recovery						
		12.0	7-6						-	
									4	
						13.5				
	6D	14.0	6-3	Black organic silty fine sand, trace wood						
	-00	14.0	0-3 2-5			15				
		10.0	2-0	(Fill) (SM)						
	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -									
						20				
	7D	20.0	7-8	Brown medium to fine sand, some gravel,						
		22.0	4-7	trace coarse sand, silt (SP-SM)						
						25				
	8D	25.0	8-6	Brown fine to medium sand, trace gravel,				-	REC=6"	
-		27.0	6-8	coarse sand, silt (SP-SM)						
-										
-										
-					ſ	20				
-	9D	30.0	9-6	Brown fine to modium conditions all mice	-	30				
	30			Brown fine to medium sand, trace silt, mica	-					
-		32.0	8-9	(SP-SM)	-					
-					S					
-										
	105					35				
-	10D	35.0	5-5	Do 9D, trace coarse sand (SP-SM)	ſ					
		37.0	6-7							
					F					
					F					
						40				
	11D	40.0	7-6	Brown fine to medium sand, some gravel,	ł					
		42.0	5-5	trace coarse sand, silt, mica (SP-SM)	-					
-					Ļ					
-					-					
F					_	45				
-	12D	45.0	6-4	Brown fine to coarse sand, some gravel, trace	-	40				
-	120	45.0 47.0	6-4 6-10		-				REC=6"	
+		47.0	0-10	silt (SP-SM)	-					
_										
-										
_						50				
	13D	50.0	7-8	Brown silty fine sand (SM)	Γ					
		52.0	12-13							

MR-213

						SHE	ET 2 OF	4	
PROJEC				LA CENTRAL		I	FILE NO.		
OCATIO	DN:			BRONX, NEW YORK	S	URFAC	E ELEV.		
	·I					RES	6. ENGR.	FAROUK EL KHAT	
DAILY		SAM					CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd							DRILLED		
07-24-14 Thursday							AHEAD	-	
Sunny							3"		
80°F						55			
	14D	55.0	8-6	Brown fine to medium sand, trace gravel, silt,					
		57.0	8-8	mica (SP-SM)	S				
	450	00.0				60			
44.45	15D	60.0 62.0	11-11 12-15	Brown fine to medium sand, some silt, trace					
14:45 07:00		02.0	12-15	mica (SM)					
07-25-14						63.5			
Friday						65			
Sunny	16D	65.0	16-14	Brown gravelly fine to medium sand, trace					
80°F		67.0	12-17	coarse sand, silt (SP-SM)					
-			2.						
	470					70			
	17D	70.0	13-12	Brown gravelly fine to medium sand, trace	Т				
		72.0	8-10	coarse sand, silt, mica (SP-SM)	-				
						75			
	18D	75.0	20-14	Do 17D (SP-SM)		10			
		77.0	13-12						
						78.5			
	105					80			
	19D	80.0	100/2"	Brown fine to medium sand, trace silt, rock	-				
		80.5		fragments (Decomposed Rock) (SP-SM)	DR				
-					-	85		Hard drilling.	
	1C	85.0	REC=65%	Weathered highly weathered to slightly				*Coring time in	
-		90.0		weathered gray marble, closely jointed to	-			minutes per foot.	
				broken, iron stained & weathered joints			3*	·	
-							3*		
	20	00.0			R/WR	90	3*		
	2C	90.0 95.0	REC=78%	Weathered slightly weathered to moderately			2*		
-		90.0	RQD=23%	weathered gray marble, closely jointed to broken, iron stained & weathered joints			3* 3*		
ŀ				BIOREN, NON SIGNED & WEALHERED JUILLS			2.5*		
14:30						95		End of Boring at 95'.	
							0.0	Line of Doring at 30.	
Ļ						100			
-									

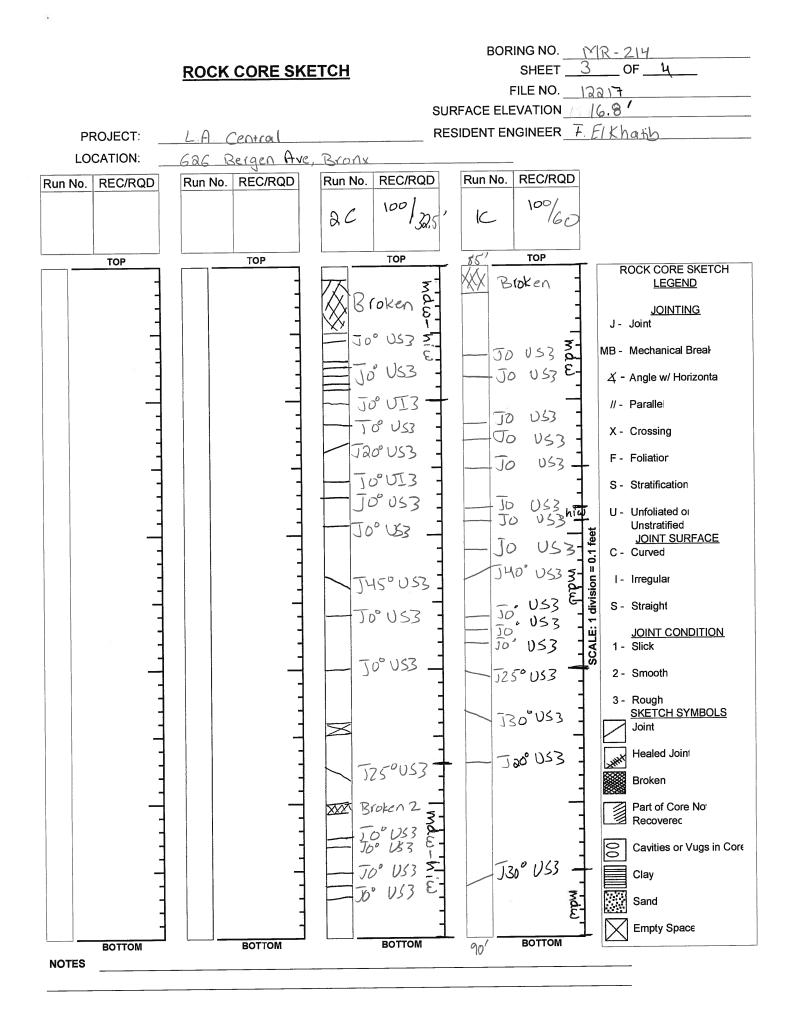


							BORING	NO	MR-	213	
							SHEET	4	OF		4
PROJECT	•		LA CEN	NTRAL			FILE NO.		12217	7	
LOCATIO	N		BRONX, N				SURFACE	ELEV.		19.1	
BORING L			SEE BORING	LOCATI	ON PLA	N.	DATUM		NAVD 8	38	
						_					
BORING E		IT AND METHO		<u>IZING BO</u>	REHOLI	=					
		TYPE OF F					~	V=0			
					CASING L			YES	NO	70	
TRUCK	ACKER A				DIA., IN.	4			0	TO	20
SKID		HYDRAUL	C		DIA., IN.	3			0	TO	85
BARGE		OTHER			dia., in.		DEPTH, FT	. FROM		ТО	
UTHER											
TYPE AND	SIZE OF			r	ORILLING	MUD USED	X	YES	NO		
D-SAMPLE		D. SPLIT SPOON	l			R OF ROTARY BI	L] · = •	3-7/8		
U-SAMPLE	0.0111 ···					DRILLING MUD	.,		QUIK ML		
S-SAMPLE								~			
		OUBLE TUBE "M	SERIES	A	AUGER U	ISED		YES	X NO		
CORE BIT				7	TYPE AN	D DIAMETER, IN.	L				
DRILL ROD	S NWJ					· · · · •					
				*	CASING	HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30	
				*	SAMPLE	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30	
						AFETY HAMMER.					
WATER L	EVEL OBS	ERVATIONS IN	BOREHOLE								
		DEPTH OF	DEPTH OF	DEF	РТН ТО						
DATE	TIME	HOLE	CASING	W	ATER		CONDITION	IS OF OBS	SERVATION		
07-24-14	14:50	62	20		7.3			ND OF DA			
07-25-14	07:00	62	20		15.1		OVERN	IGHT MUD	LEVEL.		
			1								
PIEZOME	TER INST	ALLED	YES	X NO	SKI	ETCH SHOWN C	ON				
STANDPIP	E:	TYPE		1	D, IN.	LEN	GTH, FT.		TOP ELEV	•	
INTAKE EL	EMENT:	TYPE		(DD, IN.	LEN	GTH, FT.		TIP ELEV.	R.L.S.A	
FILTER:		MATERIAL		(DD, IN.	LEN	GTH, FT.		BOT. ELEV	/.	
									inud		
PAY QUA	NTITIES										
3.5" DIA. DI	RY SAMPLE	BORING	LIN. FT.			NO. OF 3" SHEL	BY TUBE S	AMPLES			
3.5" DIA. U-	-SAMPLE B	ORING	LIN. FT.			NO. OF 3" UNDI	STURBED S	AMPLES			
CORE DRIL	LING IN RO	DCK	LIN. FT.			OTHER:					
	CONTRAC				1	WARREN GEOR					
DRILLER			ARRIS/JIMMY			HELPERS			RIS/GILL BU		S
REMARKS			And the second second second			EHOLE BACKFI	LLED WITI				
RESIDEN			the statement of the st	FAROUK	EL KHA			DATE		-25-14	
CLASSIFI	CATION C	HECK:	CHERYL	J. MOSS			:K:		ERYL J. MC		040
MRCE Form BS	6-1							BOI	ring no.	MR	-213

			BC	RING LOG		BOR SHE			
	т.			LA CENTRAL			ILE		
PROJEC						JRFAC			
LOCATIO	NN:			BRONX, NEW YORK					FAROUK EL KHATI
				F		RES			
DAILY		SAMF		-			CAS		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	Inter or Statements		
07:00	1D	0.0	10-10	Black organic silty fine to medium sand, some			DRILLE		
07-28-14		2.0	11-12	brick, gravel, trace vegetation (Fill) (SM)			AHE		na
Monday	2D	2.0	6-20	Brown fine to coarse sand & brick, trace silt,			4" 3"		REC=4"
Partly Cloudy		3.8	35-100/4"	wood (Fill) (SP-SM)					
75°F						5			
	3D	5.0	18-12	Brown fine to coarse sand & brick, trace silt					REC=2"
		7.0	11-16	(Fill) (SP-SM)				_	
	4D	7.0	5-100/6"	Orange brick, trace fine to coarse sand, wood,					Rig chatter at 8'.
		8.0	0-100/0	silt (Fill) (GP-GM)					Terminated borehole.
		0.0			F	10			Borehole moved 5'
		40.0	5.0	Orange brick, trace fine to coarse sand, silt					West. Drilled ahead
	5D	10.0	5-9						10' with 4-7/8, rotary
		11.3	100/3"	(Fill) (GP-GM)					4D: REC=6"
								_	
									5D: REC=4"
						15		\perp	Rig chatter at 14'.
	6D	15.0	7-10	Brown fine to coarse sand, some brick, trace				_	
		17.0	8-7	gravel, silt (Fill) (SP-SM)					White wash at 17'.
						18.5			
						20			
	7D	20.0	7-6	Brown fine to coarse sand, some gravel, trace					
		22.0	9-9	silt, mica (SP-SM)					-
		22.0	0-0						-
									_
		8D 25.0 17-19 27.0 18-19			25			_	
			Brown grov find cond, some silt, trace mice				+	1	
	80		Brown gray fine sand, some silt, trace mica	S				_	
			(SM)					_	
			-					-	-
						20			_
						30			_
	9D	30.0	7-12	Do 8D (SM)				_	
		32.0	11-10						
								_	
						33.5			
						35			_
	10D	35.0	8-7	Gray silt, some fine sand, trace mica (ML)	м				
		37.0	7-10		141				
			1 -						
		-	-			38.5]
			-			40			
	11D	40.0	8-9	Gray fine sand, some silt (SM)	-			\top	1
		42.0	13-7		S				
		42.0	13-7						
		-			43.5			-	
	-			45			-		
	400	45.0							-
	12D		5-6	Gray silt, some fine sand, trace mica (ML)	M			_	_
		47.0	8-20					_	4
						40 -			4
			_			48.5			_
]		s	50	1		4
	13D 50.0 12-1		12-16	Brown fine to medium sand, some silt, trace	Э				
ŀ		52.0	16-17	coarse sand, gravel (SM)				•	

BORING NO. MR-214

			<u>BU</u>	RING LOG			ING NO.			
PROJEC	т۰			LA CENTRAL			ET 2 OF			
.OCATIC				BRONX, NEW YORK	S		E ELEV.			
.00//110				BROWA, NEW TOTAL				FAROUK EL KHA		
DAILY		SAM	PLE				CASING			
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS		
Cont'd			5 J 0-				DRILLED	-		
07-28-14							AHEAD	-		
Monday			-				3"			
artly Cloudy										
75°F	445	55.0	10.10			55		-		
	14D	55.0 57.0	12-18 23-22	Brown fine to medium sand, trace silt (SP-SM)				-		
		57.0	23-22							
								-		
			0			60				
	15D	60.0	11-19	Brown silty fine sand, trace mica (SM)						
		62.0	28-30		S					
			_							
						05		-		
	160	GE O	15 10	Tan 6": Prown fine cand, come ailt, trace mice		65		-		
	16D	65.0 67.0	15-19 18-22	Top 6": Brown fine sand, some silt, trace mica (SM)				-		
		07.0	10-22	Bot 6": Brown fine to medium sand, trace						
-			-	coarse sand, silt (SP-SM)				-		
			-			70				
	17D	70.0	11-34	Brown fine sand, some gravel, trace silt, silt						
		72.0	27-21	seams (SP-SM)						
			-					-		
			-			73.5		-		
	100	75.0	11-9	Prown find to madium cond. come reals		75				
	18D	75.0	24-14	Brown fine to medium sand, some rock fragments, trace silt, mica (SP-SM)	Т					
		77.0	24-14	Tragments, trace sit, mica (SF-Sivi)						
			-			78.5				
14:30			-			80				
07:00	19D	80.0	100-100	Brown fine to coarse sand, some rock						
07-29-14		81.0		fragments, trace silt (Decomposed Rock)	DR					
Tuesday				(SP-SM)		-				
Sunny			-			0.5				
77°F	1C	85.0	BEC-100%	Intermediate alightly weathered to highly		85	2.5*			
		90.0		Intermediate slightly weathered to highly weathered gray white marble, moderately				White wash.		
-		30.0	NGD=0078	jointed to broken, iron stained & weathered			2.5*	*Coring time in		
-				joints			2*	minutes per foot.		
					R/WR	90	2*	•		
	2C	90.0		Intermediate to weathered slightly weathered			2.5*			
-		95.0	RQD=33%	to highly weathered gray white marble, jointed			3*			
-				to broken, iron stained & weathered			2.5*			
10.00				joints		05	2.5* 3*	End of Doving at OF		
12:30						95	3	End of Boring at 95'.		
-										
-										
						100				

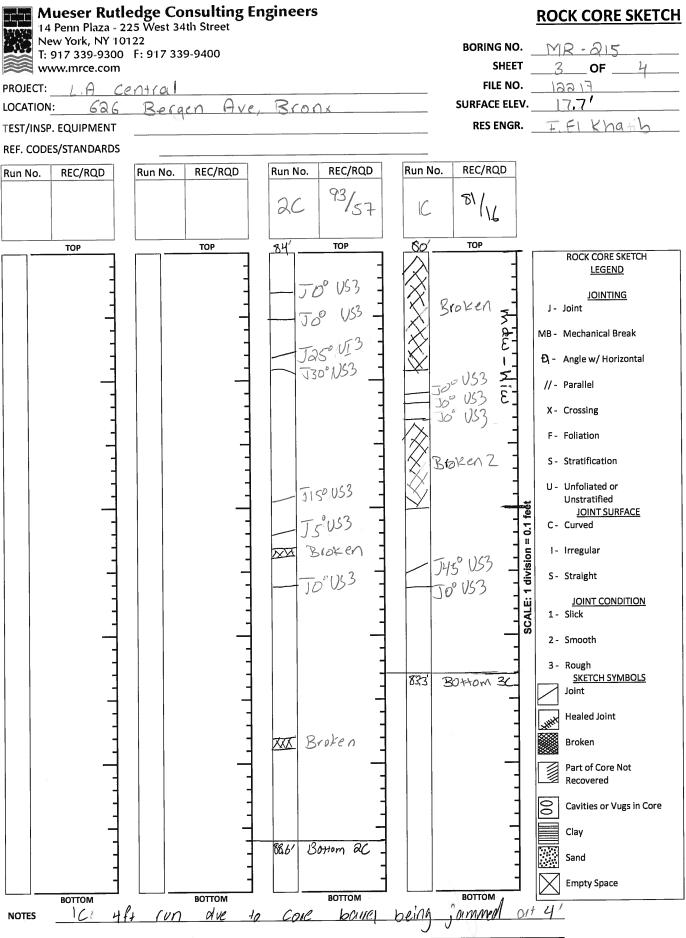


							BORING N	10.	MR-21	4
							SHEET	4	OF	4
PROJECT			LA CE	NTRAL			FILE NO.		12217	
LOCATION	٧		BRONX, N	IEW YOR	<		SURFACE	ELEV.		5.8
BORING L		I	SEE BORING			N	DATUM		NAVD 88	
BORING E	QUIPMEN	IT AND METHC		LIZING BOF	REHOLE					
		TYPE OF	FEED				[*******			
TYPE OF B	ORING RIG	DURING C	ORING	С	ASING U	SED		YES	NO	
TRUCK	ACKER A	AD2 MECHANI	CAL	D	IA., IN.	4	DEPTH, FT	. FROM		O 15
SKID		HYDRAUL	.IC	X D	IA., IN.	3	DEPTH, FT	. FROM		O 85
BARGE		OTHER		D	IA., IN.		DEPTH, FT	. FROM	Т	0
OTHER										
-									·	
TYPE AND	SIZE OF:	:		D	RILLING	MUD USED	X	YES	NO	
D-SAMPLE	R 2" O.	D. SPLIT SPOON	N	D	IAMETER	R OF ROTARY BI	Γ, IN.		3-7/8	
U-SAMPLE	R			т	YPE OF [DRILLING MUD			QUIK MUD	
S-SAMPLE										
CORE BAR	REL NX D	OUBLE TUBE "M	" SERIES	A	UGER US	SED		YES	X NO	
CORE BIT	and the second sec	IAMOND		т		DIAMETER, IN.			L,1	
DRILL ROD										
DIVICE NOD				*(AMMER, LBS.	140	AVERAGE	FALL, IN.	30
						R HAMMER, LBS.		AVERAGE	FALL. IN.	30
						FETY HAMMER.				
		SERVATIONS I			0010 0.1					
		DEPTH OF	DEPTH O		тн то					
DATE	TIME	HOLE	CASING		ATER		CONDITION	IS OF OBS	ERVATION	
07-28-14	14:50	80	15		9.4		END	OF THE D	DAY.	
07-29-14	06:50	80	15	1	13.8		OVERN	IGHT MUD	LEVEL.	
0, 20, 11										
						1				
PIEZOME	TER INST	ALLED	YES	X NO	SKE	TCH SHOWN C	N			
			l							
STANDPIP	E:	TYPE		11	D, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL		TYPE		and the second sec	DD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL			DD, IN.		GTH, FT.		BOT. ELEV.	
· 1616(\.				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1 11 11		,			
PAY QUA										
3.5" DIA. DI			LIN. FT.			NO. OF 3" SHEL	BY TUBE S	AMPLES		
3.5" DIA. U			LIN. FT.			NO. OF 3" UNDI				
						OTHER:				
CORE DRI	LLING IN R	UUK	LIN. FT.							
		TOP			N.	VARREN GEOF	GE INC			
BORING	JUNIKAC			NI	V	HELPERS	.ol, 110.	\A/IL 14	AM ROSADO	
DRILLER		•	JIMMY WILSO							
REMARKS			BC						07 /	29-14
RESIDEN				FAROUK			NIZ.			
CLASSIFI	CATION C		CHERY	L J. MOSS		TYPING CHEC	JK:		ERYL J. MOS	
MRCE Form BS	5-1							RO	RING NO.	MR-214

•				E CONSULTING ENGINEERS IRING LOG		BOR	ING NO.	MR-215
							ET 1 OF	
ROJEC [.]	т۰			LA CENTRAL			ILE NO.	
				BRONX, NEW YORK	S	URFAC	E ELEV.	17.7
OCATIC	JN:			BRONX, NEW FORM				FAROUK EL KHATI
		CANE					CASING	
DAILY		SAMF		SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
ROGRESS		DEPTH	BLOWS/6"	Black fine to coarse sand, some gravel, brick,	University	02.111	DRILLED	And the second se
12:40	1D	0.0	5-22 30-7	trace silt, wood (Fill) (SP-SM)			AHEAD	
07-24-14	00	2.0		Brown fine to coarse sand, some gravel, brick,			4"	REC=3"
Thursday	2D	2.0 4.0	9-6 6-6	trace silt, wood (Fill) (SP-SM)				
Sunny	20	4.0	3-3	Brown fine to coarse sand, some brick, trace		5		
80°F	3D	6.0	3-3 2-4	silt, wood, gravel (Fill) (SP-SM)				
	4D	6.0	2-4	Do 3D (Fill) (SP-SM)	F			REC=3"
	40	8.0	2-3 7-8		F			
	5D	8.0	7-8 5-6	Brown fine to coarse sand, some brick, gravel,				
	50	10.0	44-38	trace silt (Fill) (SP-SM)		10		
	6D	10.0	6-7	Do 5D (Fill) (SP-SM)		-		1
	00	12.0	7-9					
		12.0	1-3					
					-	13.5		
						15	ł	
	7D	15.0	6-9	Brown fine to medium sand, some gravel,			1	1
		17.0	7-6	trace coarse sand, silt (SP-SM)				-
		17.0	7-0					-
			-					-
						20		
	8D	20.0	17-18	Do 7D (SP-SM)				-
44.45	00	20.0	17-15					-
14:45		22.0	17-15					
07:00 07-25-14			-					-
			-			25		
Friday	9D	25.0	8-9	Brown fine to medium sand, trace silt, mica	_			-
Sunny 80°F	30	27.0	11-14	(SP-SM)	S			
00 F		27.0						_
			-					
			-			30		
	10D	30.0	10-19	Brown fine sand, some silt, trace mica (SM)				
	100	32.0	19-21					
		01.0						
			_					
			-			35		
	11D	35.0	14-16	Brown silty fine sand, trace mica (SM)				REC=4"
		37.0	12-18					-
			-					_
			-			38.5		-
			-			40		
	12D	40.0	13-13	Gray silt, some fine sand, trace mica (ML)	м			_
		42.0	18-25		141			_
			-					_
						43.5		_
						45		_
	13D	45.0	17-19	Brown fine sand, trace silt, mica (SP-SM)				_
		47.0	18-18					-
			1		S			-
			1					-
			1			50		_
	14D	50.0	12-16	Brown fine sand, trace silt (SP-SM)				
		52.0	15-19					

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

				RING LOG		SHE	ET 2 OF	4			
ROJEC	т۰			LA CENTRAL		F	ILE NO.				
OCATIC				BRONX, NEW YORK	S		E ELEV.				
OCATIC	/IN.			BROWA, NEW FORM	_			FAROUK EL KHAT			
		CANA			1	CASING					
DAILY	NO	SAME		SAMPLE DESCRIPTION	STRATA	DEPTH	W	REMARKS			
ROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	01101111						
Cont'd											
07-25-14											
Friday											
Sunny 80°F					S	55					
00 F	15D	55.0	14-18	Brown fine to medium sand, trace silt, silty fine				REC=3"			
		57.0	20-24	sand seams (SP-SM)							
						58.5					
		L+0.00.				60					
	16D	60.0	30-15	Brown fine to coarse sand, some gravel, trace							
		62.0	20-38	silt (SP-SM)				Rig chatter at 63'			
								Rig chatter at 63'.			
						05		-			
						65		-			
	17D	65.0	11-10	Brown fine to medium sand, trace gravel, silt,	T			-			
		67.0	12-12	mica (SP-SM)				-			
								-			
						70					
	18D	70.0	7-8	Brown fine to medium sand, trace silt, mica							
	100	70.0	11-12	(SP-SM)							
		12.0	11-12					Rig chatter at 73'.			
			75.038-100/6"Gray brown fine to medium sand, some silt,76.0mica, rock fragments (Decomposed Rock)DR	73.5							
						75		_			
	19D	75.0		Gray brown fine to medium sand, some silt,	DR						
		1	1								
						80		Hard drilling.			
	1C	80.0	-	Top 2': Weathered highly weathered dark gray			6*	Gray wash.			
		84.0	RQD=16%				6* 4*	4' Run instead of 5'			
			-	Bot 1.3': Intermediate SIW to moderately			4 5*	due to core barrel			
			550 000	weathered gray marble, CJtd, FeStn & WJts	R/WR	85	4*	being jammed.			
	2C	84.0	REC=93%	Medium hard slightly weathered to moderately weathered gray marble, jointed to closely			3*	*Coring time in			
		89.0	RQD=57%	jointed, iron stained & weathered joints			5*	minutes per foot.			
			-	jointed, non stanled & weathered jointo			3*				
14:00			-			89	4*	End of Boring at 89'.			
14.00						90					
			-		r i						
			-								
			1					_			
			1								
					8	95		_			
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						100					
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			L			-	ING NO.	MR-215			

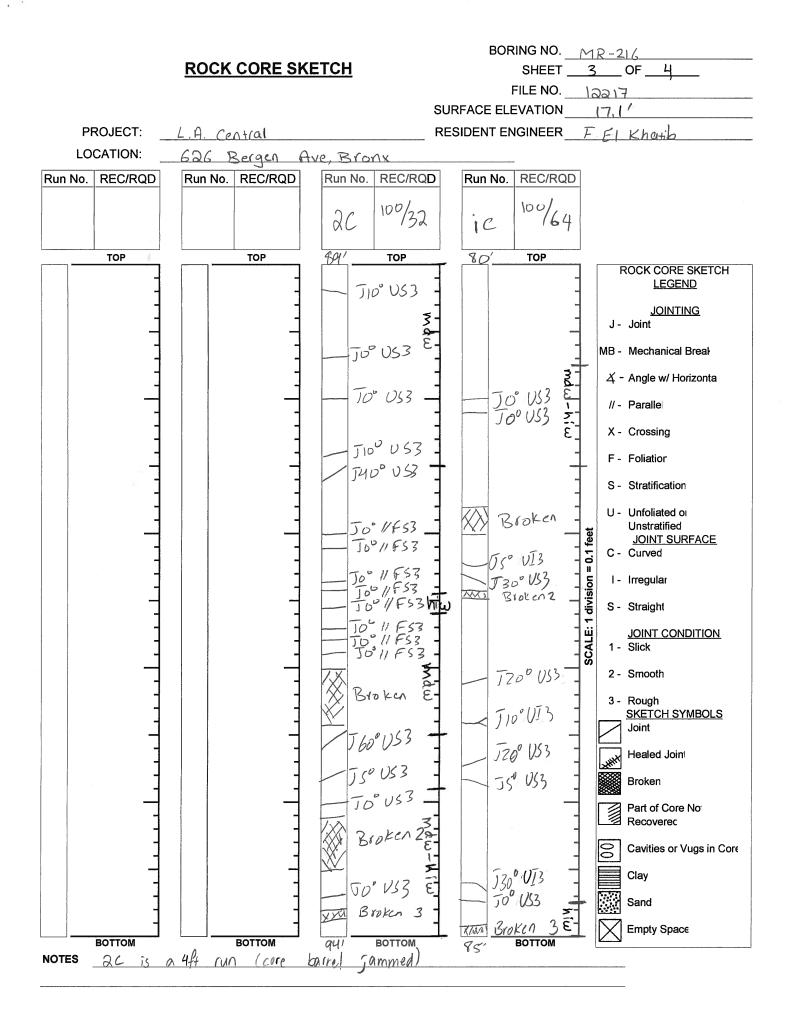


BOR-3_JAN2013

JOCATION BRONX, NEW YORK SURFACE ELEV. 17.7 SORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 SORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FORMS CASING CORNG CASING USED X YES NO SYDE TYPE OF FORMS DUA, IN. 4 DEPTH, FT. FROM 0 10 15 SKID HYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM 10 15 SARGE OTHER DIA, IN. 4 DEPTH, FT. FROM 10 15 SARGE OTHER DIA, IN. DEPTH, FT. FROM 10 15 SARGE OTHER DIA, IN. DEPTH, FT. FROM 10 15 SARGE OTHER DIAMETER OF ROTARY BIT, IN. 3-78 10 SAMPLER ZO D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 30 175 SORE BARREL NX DIAMOND TYPE AND DIAMETER, IN. 30 140 AVERAGE FALL, IN. 30 SORE BIT NX DIAMOND TYPE AND DIAMETER, IN. 140 AVERAGE FALL, IN. 30 140 AVERAGE FALL, IN. <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>BORING</th> <th>NO.</th> <th>MR-2</th> <th>215</th>									BORING	NO.	MR-2	215
JOCATION BRONX, NEW YORK SURFACE ELEV. 17.7 SORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 SORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FORMS CASING CORNG CASING USED X YES NO SYDE TYPE OF FORMS DUA, IN. 4 DEPTH, FT. FROM 0 10 15 SKID HYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM 10 15 SARGE OTHER DIA, IN. 4 DEPTH, FT. FROM 10 15 SARGE OTHER DIA, IN. DEPTH, FT. FROM 10 15 SARGE OTHER DIA, IN. DEPTH, FT. FROM 10 15 SARGE OTHER DIAMETER OF ROTARY BIT, IN. 3-78 10 SAMPLER ZO D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 30 175 SORE BARREL NX DIAMOND TYPE AND DIAMETER, IN. 30 140 AVERAGE FALL, IN. 30 SORE BIT NX DIAMOND TYPE AND DIAMETER, IN. 140 AVERAGE FALL, IN. 30 140 AVERAGE FALL, IN. <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>SHEET</th> <th>4</th> <th>OF</th> <th>4</th>									SHEET	4	OF	4
BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED X YES NO STRUCK ACKER 82 MCFANROLAL DIA., IN. 4 DEPTH, FT. FROM 0 TO SKID HYDRAULIC X NA., IN. 4 DEPTH, FT. FROM TO SKID HYDRAULIC X NA., IN. 4 DEPTH, FT. FROM TO SKID HYDRAULIC X NA., IN. 4 DEPTH, FT. FROM TO SKID HYDRAULIC X NA., IN. DEPTH, FT. FROM TO SKID HYDRAULIC X NA., IN. DEPTH, FT. FROM TO SKID HYDRAULIC X NA., IN. DEPTH, FT. FROM TO SKID SAMPLER 20 OTHER DIA., IN. DEPTH, FT. FROM TO SAMPLER SAMPLER DIALING MUD USED X YES NO SAMPLER NX DOUBLE TUBE "W SERIES AUGER USED YES X NO SORE BT NX DIAMOND TYPE AND DIAMETER, IN. 30 "CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 STANDEPEN NVJ "CASING HAMMER, LBS. 140	PROJECT	-			LA	CENTR	RAL		FILE NO.		12217	
SORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED YPE OF BORING IG DURING CORING CASING USED X YES NO RUCK ACKER 82 MECHANICAL DIA, IN 4 DEPTH, FT, FROM 0 TO SKID HYDRAULIC X DIA, IN 4 DEPTH, FT, FROM TO SKID HYDRAULIC X DIA, IN 4 DEPTH, FT, FROM TO SKID HYDRAULIC X DIA, IN 4 DEPTH, FT, FROM TO SKID HYDRAULIC X DIA, IN DEPTH, FT, FROM TO SKID JARGE OTHER DIAMETER OF ROTARY BIT, IN 3.7/8 SAMPLER DIAMETER OF ROTARY BIT, IN 3.7/8 3.7/8 SORE BAREL INX DUBLE TUBE TW SERIES AUGER USED YES X NO SORIE BAREL INX DUMOND TYPE AND DIAMETER OF ROTARY BIT, IN 30 "YES X NO SORIE BAREL INX DUBLE TUBE TW SERIES AUGER USED YES X NO	LOCATIO	N			BRON	X, NEW	YORK		SURFAC	E ELEV.		
TYPE OF FEED YPE OF BORING RIG DURING CORING CASING USED X YES NO YPE OF BORING RIG DURING CORING DIA, IN. 4 DEPTH, FT. FROM 0 TO 15 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 15 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 15 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 15 SAMPLER OTL D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-778 - <td>BORING L</td> <td>OCATIO</td> <td>V</td> <td></td> <td>SEE BOR</td> <td>ING LO</td> <td>CATION PL</td> <td>.AN</td> <td>DATUM</td> <td></td> <td>NAVD 8</td> <td>8</td>	BORING L	OCATIO	V		SEE BOR	ING LO	CATION PL	.AN	DATUM		NAVD 8	8
TYPE OF FEED YPE OF BORING RIG DURING CORING CASING USED X YES NO YPE OF BORING RIG DURING CORING DIA, IN. 4 DEPTH, FT. FROM 0 TO 15 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 15 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 15 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 15 SAMPLER OTL D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-778 - <td></td> <td>Salate entries of the second second</td> <td></td>											Salate entries of the second	
YPE OF BORING RIG DURING CORING CASING USED X YES NO RUCK ACKER 82 MECHANICAL DIA., IN. DEPTH, FT. FROM TO 15 SKID HYDRAULIC X DIA., IN. DEPTH, FT. FROM TO 15 SARGE OTHER DIA., IN. DEPTH, FT. FROM TO TO 15 SARMPLER OTHER DIA., IN. DEPTH, FT. FROM TO 37.78 SSAMPLER 2'O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3.778 3.778 SCAMPLER YES ANO QUIK MUD SCAMPLER 3.778 SCARE BIT NX DUAMOND TYPE OF DRILLING MUD QUIK MUD SCARE FALL, IN. 30 SCARE BIT NX DUAMOND 'YES X NO 'YES X NO SCARE BIT NX DUAMOND 'YES AUGER USED YES X NO SCARE BIT NX DUAMOND 'YES X NO 'YES X NO SCARE BIT NX DUAMOND 'YES X NO SCANPLER HANMER, LBS. 140	<u>BORING E</u>	EQUIPME				ABILIZIN	IG BOREHO	LE				
RUCK ACKER 82 MECHANICAL DIA, IN, 4 DEPTH, FT, FROM 0 TO 15 SKID HYDRAULIC X DIA, IN, DEPTH, FT, FROM TO TO SKID OTHER DIA, IN, DEPTH, FT, FROM TO TO TO STARDE OTHER DIA, IN, DEPTH, FT, FROM TO TO TO STAMPLER 2* 0. D.SLIT SPOON DIAMETER OF ROTARY BIT, IN, 3-7/8 SAMPLER SAMPLER AUGER USED YES NO SCARE BARREL NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO SO SCARE BARREL NUJ OURANDO TYPE OF DRILLING MUD QUIK MUD SO SCARE BARREL NA DIAMOND TYPE OF DRILLING MUD QUIK MUD SO SO SCARE BARREL NA DIAMOND TYPE OF DRILLING MUD QUIK MUD SO SO SCARE BARREL NA DIAMOND TYPE OF DRILLING MUD QUIK MUD SO SO SCARE BARREL NOU CASING WATER CONDITIONS OF OBSERVATION SO O7:24:14 <td>TYPE OF B</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>CASING</td> <td>USED</td> <td>X</td> <td>YES</td> <td>NO</td> <td></td>	TYPE OF B						CASING	USED	X	YES	NO	
IXID HYDRAULIC X DIA., IN. DEPTH, FT. FROM TO SARGE OTHER DIA., IN. DEPTH, FT. FROM TO TYPE OTHER DIA., IN. DEPTH, FT. FROM TO TYPE AND SIZE OF: DRILLING MUD USED X YES NO SAMPLER 2'O, D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 SAMPLER 2'O, D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 SAMPLER TYPE OF DRILLING MUD QUIK MUD 3-7/8 SORE BARREL NX DOUBLE TUBE 'M' SERIES AUGER USED YES X SORE BAT NX DIAMOND TYPE AND DIAMETER, LBS. 140 AVERAGE FALL, IN. 30 SAMPLER	TRUCK											TO 15
ARRGE OTHER DIA., IN. DEPTH, FT. FROM TO OTHER DIA., IN. DEPTH, FT. FROM TO STAMPLER O. D. SPLIT SPOON DIALLING MUD USED X YES NO SAMPLER TYPE O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 JSAMPLER TYPE OF DRILLING MUD QUIK MUD SCAMPLER TYPE OF DRILLING MUD QUIK MUD SCAMPLER NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO SORE BART NX DOUMOND TYPE AND DIAMETER, LBS. 140 AVERAGE FALL, IN. 30 VORE BARTEN ND DAMOTO "CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 VIELE OBSERVATIONS IN BOREHOLE DEPTH OF DEPTH TO CONDITIONS OF OBSERVATION 30 07-24-14 14:50 22 15 7 END OF DAY. 30 07-25-14 07:00 22 15 11.3 OVERNIGHT, FT. TOP ELEV. VIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON	SKID					х						
DTHER	BARGE		C	THER								то
Description Diameter of rotary Bit, IN. 3-7/8 Usampler Ouk MUD Quik MUD Sampler Ouk MUD Quik MUD Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED TYPE AND DIAMETER, IN. 30 Sore Barrel NXJ "CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "SAMPLER DEPTH OF DEPTH OF DEPTH TO CONDITIONS OF OBSERVATION 07-22-14 07-24-14 14:50 22 15 7 END OF DAY. 07-22-14 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 00 StandPipe: TYPE OD, IN. LENGTH, FT. TOP ELEV. 00, IN. ELENGTH, FT. DEPT ELEV. <	OTHER								_			
Description Diameter of rotary Bit, IN. 3-7/8 Usampler Ouk MUD Quik MUD Sampler Ouk MUD Quik MUD Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO Sore Barrel NX DOUBLE TUBE "M" SERIES AUGER USED TYPE AND DIAMETER, IN. 30 Sore Barrel NXJ "CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "SAMPLER DEPTH OF DEPTH OF DEPTH TO CONDITIONS OF OBSERVATION 07-22-14 07-24-14 14:50 22 15 7 END OF DAY. 07-22-14 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 00 StandPipe: TYPE OD, IN. LENGTH, FT. TOP ELEV. 00, IN. ELENGTH, FT. DEPT ELEV. <											(
J-SAMPLER TYPE OF DRILLING MUD QUIK MUD SSAMPLER AUGER USED YES X SORE BARREL NX DOUBLE TUBE "M" SERIES AUGER USED YES X SORE BARREL NX DOUBLE TUBE "M" SERIES AUGER USED YES X SORE BAT NX DIAMOND TYPE AND DIAMETER, IN. 30 "SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED SAFETY HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED SAFETY HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED SAFETY HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED SAFETY HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED SAFETY HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED SAFETY HAMMER, LBS. 140 AVERAGE FALL, IN. 30 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON		O SIZE OF	:				DRILLIN	IG MUD USED	Х	YES	NO	
SAMPLER VATER LUBE "M" SERIES AUGER USED YES X NO SORE BIT NX DIAMOND TYPE AND DIAMETER, IN. 30 *SAMPLER, IN. 30 "RILL RODS NWJ *CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 *SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "VATER LEVEL OBSERVATIONS IN BOREHOLE DEPTH OF DEPTH OF DEPTH OF DEPTH OF OPTH	D-SAMPLE	R 2"O.	D. SPLI	T SPOON	1		DIAMET	ER OF ROTARY BI	T, IN.		3-7/8	
CORE BARREL NX DOUBLE TUBE "M" SERIES AUGER USED YES X NO CORE BIT NX DIAMOND TYPE AND DIAMETER, IN. TYPE AND DIAMETER, IN. 30 "CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "VATER LEVEL OBSERVATIONS IN BOREHOLE DEPTH OF DEPTH OF DEPTH TO O7:24-14 14:50 22 15 7 END OF DAY. 07:25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON	U-SAMPLE	R					TYPE O	F DRILLING MUD			QUIK MU	D
CORE BIT NX DIAMOND TYPE AND DIAMETER, IN. VRILL RODS NWJ VRILL RODS NWJ *CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 *SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 140 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 140 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 0 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 0 0 0 0 DATE TIME HOLE CONDITIONS OF OBSERVATION 0 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON SKETCH SHOWN ON STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. TIP ELEV. YAY QUANTITIES Standard Structure OD, IN. LENGTH, FT. BOT. ELEV. SORING CONTRACTOR VARREN GEORGE, INC. OTHER: SORING CONT	S-SAMPLE	R								1		
DRILL RODS NWJ *CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 *SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 140 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 140 AVERAGE FALL, IN. 30 *USED SAFETY HAMMER. 05 DEPTH OF DEPTH OF DEPTH OF DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON		REL NX D	OUBLE	TUBE "M	" SERIES		AUGER	USED		YES	X NO	
*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 *SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 WATER LEVEL OBSERVATIONS IN BOREHOLE 0 0 0 30 DATE TIME DEPTH OF DEPTH OF DEPTH OF CONDITIONS OF OBSERVATION 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON STANDPIPE: TYPE OD, IN. LENGTH, FT. TOP ELEV. NTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TOP ELEV. STANDPIPE: TYPE OD, IN. LENGTH, FT. TOP ELEV. STANDE BORING LIN. FT. NO. OF 3" SHELBY TUBE SAMPLES	CORE BIT	manufacture and a)			TYPE A	ND DIAMETER, IN.				
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 'USED SAFETY HAMMER. WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH TO CONDITIONS OF OBSERVATION 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 01 01 01 01 01 01 01 OPERZOMETER INSTALLED YES X NO SKETCH SHOWN ON STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. NTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV. STANDPIPE: TYPE OD, IN. LENGTH, FT. TIP ELEV. NTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. BOT. ELEV. STANDPIPE: TYPE OD, IN. LENGTH, FT. BOT. ELEV. STO IA. DRY SAMPLE	DRILL ROD	S NWJ										
"USED SAFETY HAMMER. WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH TO 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 01 01 01 01 01 01 01 02 01 01 01 01 01 01 01 01 01 01 01 01 01 02 01 01 01 01 01 01 01 01 01 01 01 01 01 02 01 01 01 01 01 01 01 01 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td></td> <td>-</td> <td>•</td> <td></td>								•		-	•	
WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH TO 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 01 01 01 01 01 01 01 02 02 02 15 10.1 01 01 01 216ZOMETER INSTALLED YES X NO SKETCH SHOWN ON 01 01 216ZOMETER INSTALLED YES X NO SKETCH SHOWN ON 01 01 216ZOMETER INSTALLED YPE OD,								•	140	AVERAGE	E FALL, IN.	30
DATE TIME DEPTH OF HOLE DEPTH OF CASING DEPTH TO WATER CONDITIONS OF OBSERVATION 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 07-01 07.00 14 07.00 14 07.00 07-02 14 07.00 14 07.00 14 01 0.01 14 0.01 14 14 01 14 0.01 10.01 14 14 01EZOMETER TYPE 10, IN. LENGTH, FT. TOP ELEV. 01A LEMEMENT: TYPE 00, IN.							*USED \$	SAFETY HAMMER.				
DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION 07-24-14 14:50 22 15 7 END OF DAY. 07-25-14 07:00 22 15 11.3 OVERNIGHT MUD LEVEL. 07-25-14 07:00 22 15 1.1.3 OVERNIGHT MUD LEVEL. 07:00 07:01 07:01 07:01 07:01 07:01 07:01 07:01 07:01 07:01 07:01 07:01 07:02 YES X NO SKETCH SHOWN ON 100:01 07:04:01 YES X NO SKETCH SHOWN ON 100:01 100:01 07:05:01 <t< td=""><td>WATERL</td><td>EVEL OB</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	WATERL	EVEL OB										
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								.κ.				
	CLASSIFICATION CHECK: MRCE Form BS-1											MR-215

			<u>D0</u>	RING LOG			ING NO. ET 1 OF	
	г.			LA CENTRAL			ILE NO.	
				BRONX, NEW YORK	SI		E ELEV.	
	/IN: _			BROWA, NEW YORK	_ 0.			FAROUK EL KHAT
5 A 11 M		SAM					CASING	Taraban and a second se
DAILY	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH		
PROGRESS	1D	0.0	16-16	Brown fine to coarse sand, some wood, trace	0			REC=3"
07:00		2.0	7-6	gravel, silt (Fill) (SP-SM)			AHEAD	
07-28-14	2D	2.0	9-7	Brown fine to coarse sand & brick, trace			4" 3"	REC=5"
Monday		4.0	7-5	gravel, wood, silt (Fill) (SP-SM)			i i	
Partly Cloudy	3D	4.0	2-100/6"	Do 3D (Fill) (SP-SM)		5		REC=2"
75°F	30	5.0	2-100/0					
	4D	6.0	7-5	Brown brick, some coarse to fine sand, trace				REC=6"
	40	8.0	5-8	silt (Fill) (GP-GM)	F			-
	5D	8.0	100/3"	Brown fine to coarse sand & brick, trace silt	•			REC=3"
	50	8.3	100/3	(SP-SM)		10		
	60	10.0	6-4	Brown brick & gravel, trace fine to coarse sand,				-
	6D	12.0	7-9	silt, wood (GP-GM)				-
		12.0	1-9					
			-					-
			-			15		-
	70	15.0	9-3	Gray fine to medium sand, some gravel, trace				REC=6"
	7D	15.0	9-3 8-15	silt, mica (SP-SM)				
		17.0	0-15					-
			-					-
			-			20		-
	00	00.0	0.45	Brown fine sandy gravel, trace silt (GP-GM)		20		-
	8D	20.0	9-15	Brown fine sandy gravel, trace silt (GF-GW)				-
		22.0	29-23					_
			-					-
			-			25		-
		05.0	10.11	Query sittle first sound traces mice (SM)		2.5		_
	9D	25.0	13-14	Gray silty fine sand, trace mica (SM)			· · · · · · · · · · · · · · · · · · ·	_
		27.0	17-16		S			,
			_					_
			-			30		_
						- 30		-
	10D	30.0	7-8	Do 9D (SM)				_
		32.0	10-10					
			_					
			·			35		_
								-
	11D	35.0	11-14	Do 9D, trace silt seams (SM)				_
		37.0	13-13					_
			_			38.5		_
			_			40		_
						40		-
	12D	40.0	12-13	Gray fine sandy silt, trace mica (ML)	M			_
		42.0	13-14					_
			1			42 E		_
			-			43.5		_
						45		4
	13D	45.0	14-15	Brown fine sand, some silt, trace mica (SM)				_
		47.0	17-14					4
					S			-
						FA		-
						50	<u> </u>	4
	14D	50.0	5-3	Brown silty fine sand, trace silt seams, mica				
		52.0	14-17	(SM)			•	

			BO	RING LOG			ING NO.	
	г.						ET 2 OF ILE NO.	and the second sec
PROJEC							E ELEV.	
LOCATIO	NN:			BRONX, NEW YORK	- 30			FAROUK EL KHATIE
0.411.1/		SAM				RE3	CASING	
DAILY PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	рертн		REMARKS
Cont'd	NO.	DEFIN	BLOWS/O		01101.71		DRILLED	
07-28-14							AHEAD	
Monday							3"	-
Partly Cloudy								-
75°F			ļ			55		_
	15D	55.0	15-17	Brown fine sand, trace silt, mica (SP-SM)				-
		57.0	19-19					-
								-
1						60		-
	16D	60.0	10-10	Brown black fine to coarse sand, trace gravel,				-
		62.0	9-11	silt (SP-SM)	s			
					Ŭ			-
]					
]			65		
	17D	65.0	9-10	Do 16D (SP-SM)				-
		67.0	11-13					Dia obstar at 69!
			-					Rig chatter at 68'.
			-			70		-
	18D	70.0	17-13	Do 16D (SP-SM)				-
		72.0	9-13					-
			-					-
]			73.5		
[]			75		
	19D	75.0	33-100/5"	Gray fine to coarse sandy gravel, trace silt				-
-2		75.9	-	(GP-GM)	T			-
			-					Hard drilling.
14:30			-			80		
07:00	1C	80.0	REC=100%	Medium hard slightly weathered to highly			2*	
07-29-14		85.0		weathered white gray marble, jointed to broken,			2*	White gray wash.
Tuesday			-	iron stained & weathered joints	R/WR		2.5*	*Coring time in
Sunny]				3*	minutes per foot.
77°F						85	3*	_
	20D	85.0		Brown fine to coarse sand, some rock			6* 2*	Durauman
		89.0	RQD=0%	fragments, trace silt (Decomposed Rock)	DR			Brown wash. Gray wash.
				(SP-SM)		89	6*	White wash.
	2C	89.0	REC=100%	Weathered moderately weathered to highly		90	4*	4' Run, core barrel
		94.0		weathered gray marble, closely jointed to			2*	jammed. White wash.
				broken, iron stained & weathered joints	R/WR		3*	
]				2.5*	
10:00						94	3*	End of Boring at 94'.
			4			95		-
			-					-
								-
								-
			-			100	· · · ·	
ł								1
			1					1



						BORING	NO.	MR	-216
	_					SHEET	4	OF	4
PROJEC				NTRAL		FILE NO.		1221	7
LOCATIC				EW YORK		SURFACI	E ELEV.		17.1
BORING	LOCATIO	N	SEE BORING	LOCATION P	LAN	DATUM		NAVD	88
BORING	EQUIPME	NT AND METHO	DS OF STABI	JZING BOREHO					
		TYPE OF							
TYPE OF E		DURING C	ORING	CASIN	G USED	X	YES	NO	
TRUCK	ACKER	82 MECHANI	CAL	DIA., IN		DEPTH, FT		0	TO 15
SKID		HYDRAUL	IC	X DIA., IN		DEPTH, FT		0	TO 80
BARGE		OTHER		DIA., IN	· · · · · · · · · · · · · · · · · · ·	DEPTH, FT	. FROM		то
OTHER						-			
TYPE AN	D SIZE OF	:		DRILLI	NG MUD USED	Х	YES	NO	
D-SAMPLE	ER <u>2" O.</u>	D. SPLIT SPOON	.	DIAME	TER OF ROTARY BI	T, IN.		3-7/8	
U-SAMPLE				TYPE C	OF DRILLING MUD			QUIK M	UD
S-SAMPLE	the second se								
		OUBLE TUBE "M	' SERIES	AUGER	USED		YES	X NO	
CORE BIT		IAMOND	775.01	TYPE A	ND DIAMETER, IN.				
DRILL ROE	DS NWJ								
					G HAMMER, LBS.		AVERAGE	E FALL, IN.	24
					ER HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
		SERVATIONS IN		*USED	SAFETY HAMMER.				
		DEPTH OF	DEPTH OF	DEPTH TO					
DATE	TIME	HOLE	CASING	WATER		CONDITION			
07-28-14	14:50	80	80		WATER AT 1				
									D INTROOM.
07-29-14	07:00	80	80	2.7		OVERNIC	HT MUD	LEVEL.	
DIEZONE									
PIEZOME	TER INSTA	ALLED	YES	X NO SI	KETCH SHOWN O	N			
	 .	T/05							
STANDPIPE				ID, IN.	100 million (100 m	STH, FT.			
FILTER:				OD, IN.		STH, FT.		TIP ELEV.	
TILTER.		MATERIAL		OD, IN.	LENG	STH, FT		BOT. ELEV	
PAY QUAN	NTITIES								
3.5" DIA. DF		BORING	LIN. FT.						
3.5" DIA. U-			LIN. FT.		NO. OF 3" SHELE				
CORE DRIL			LIN. FT.		NO. OF 3" UNDIS	TURBED SA	MPLES		
BUILE BILLE			LIN. FT		OTHER:				
BORING C	ONTRACT	OR			WARREN GEOR				
DRILLER			OUIS RAMOS		HELPERS	JE, INC.	EDANK		7
REMARKS		Ľ			ILLED WITH DRILL			LIN MUNO	۷
RESIDENT		R		AROUK EL KHA			S. DATE	07	-29-14
CLASSIFIC		terms of states	CHERYL		TYPING CHECH			RYL J. MO	
MRCE Form BS-		3				••	Luis -	ING NO.	MR-216
							DON		10111-210

14 Penn Plaza - 2 New York, NY 10	edge Consulti 225 West 34th Street	.9				PIEZON	IETER RECOR
	F: 917 339-9400				PIEZON		
ECT: <u>L.A.</u> TION: <u>626</u> DMETER LOCATION:	Central Bergen Ave Che.C	Bron	k n			INSTALLATION	ENO. 12217 DATE 08/01/14 NGR. F. ET 124
SEE SKETCH ON BACK	<	/					
STRATA GROUND		DEPTH (FT)		PIEZC		Open Han AKE POINT to bottom, ft =	pipe
SURFACE ELEV. <u>7,3</u>		0			der diameter, in =	pth to top, ft = length, ft = 2, ft =	= L 0,17 = 2R
	e 2"	solid VC Riser				$\frac{\text{NDPIPE}/\text{RISER}}{2}, \text{ ft} = 2$	$\frac{19.6}{0.17} = 2r$
F 10		-10'				<u>ح</u> (ال	
15			READIN DATE	IG TIME CLOCK	DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
	1000 1011	mur-	38/01/14	14:45 06:35	12.65'		after installati
2 <u>0</u> M		er o	78/04/14 8/ 05/14	15:00 06:45	16.21		
2 <u>5</u>		- 25 0	8/05/14 8/06/14		<u> 6.2'</u> 6.2' 6.8'		
30		reen - 30'			16,00		
5	MMMMM MMMMM	-35'					
	Boltom						
	f						
		_					
		-					
				-			

SAND △ → → GRAVEL

125



GROUND SURFACE ELEV. 17.31

PIEZOMETER NO. MR-217P

New	eser Ru enn Plaza York, NY 7 339-93	10122			; Engi	nee	ers					
	v.mrce.co		7 339-	9400					BORING NO.	\mathbb{M}	1R-2177	
									SHEET	2	OF	2
PROJECT		. <u>9</u> . Ce							FILE NO.	-1/	12217	
LOCATION		626		gen A		310	nx		SURFACE ELE	: v.	17.3'	
BORING LOC	AHON		Chec	K P	lan					/\	AVD 968	
TEST/INSPEC REFERENCE (
BORING EQU	IPMENT A				ING BOI	REHO	LE					
			E OF FEE					_			NO	
TYPE OF BORIN TRUCK		_	RING COF				CASING USEI DIA., IN.	, ц″	DEPTH, FT. FRC		NO TC	15'
SKID	Acker	005	RAULIC	·L			_ DIA., IN. DIA., IN.		DEPTH, FT. FRC		тстстс	
BARGE		птв			_X		_DIA., IN.		DEPTH, FT. FRC		TC	
OTHER		0										
TYPE AND SIZ	ZE OF:						DRILLING MU DIAMETER O TYPE OF DRI	F ROTARY BIT, IN	<u>بر</u>	37/8	NO	
U-SAMPLER S-SAMPLER		+9					TTPE OF DRI			leve	<u>/ F</u>	
CORE BARREL							AUGER USED)	Y	ES	X NO	
CORE BIT							TYPE AND DI					
WATER LEVE	L OBSERV	ATIONS IN	<u>I BOREH</u>	<u>IOLE</u>			Casing Ham Sampler Ha Type of Han	MMER, LBS.	A	verage fa verage fa Pety V	·	<u>30</u>
DATE	TIME	DEPTH O	F HOLE	DEPTH OF	CASING	DEPT	H TO WATER		CONDITIO	NS OF OBSE	RVATION	
								· · · · · ·				
											<u> </u>	
PIEZOMETER	INSTALLE	<u>D</u>	X	YES		NO	SKET	CH SHOWN ON	M MR.	-217P,	Sheet	L
STANDPIPE:		ТҮРЕ					ID, IN.	LEI	NGTH, FT.		TOP ELEV.	
INTAKE ELEME	NT:	ТҮРЕ					OD, IN.	LE	NGTH, FT.		TIP ELEV.	
FILTER:		MATERIAL					OD, IN.	LEI	NGTH, FT.		BOT. ELEV.	
PAY QUANTI 3.5" DIA. DRY 5 3.5" DIA. U-SA CORE DRILLING	SAMPLE BOI MPLE BORIN			LIN. FT. LIN. FT. LIN. FT.					BY TUBE SAMPLES STURBED SAMPLES	· · ·		
BORING CON	ITRACTOR				u	GI						
DRILLER		louis	R	amos				HELPERS	Frankl	ia M	UN07-	
REMARKS						A				, ,		
RESIDENT EN	IGINEER		Ŧ.EI	Кhaн	6				D	ATE	08/01/14	

New York, NY 10 T: 917 339-9300 www.mrce.com	F: 917 339-9400			IETER OR BORIN S FIL INSTALLATION	METER RECORD G NO. <u>MR-218</u> HEET <u>I</u> OF <u>2</u> E NO. <u>I2217</u> DATE <u>08104/14</u>	-
OCATION: 626	Check pic	n	_	RES I	ENGR. F.EI Khad	<u>ط</u>
SEE SKETCH ON BACK					к М	1
STRATA	PIEZOMETER DEPT INSTALLATION (FT) DETAILS		OMETER TYPE	Open 2 AKE POINT	taudpipe	
GROUND SURFACE ELEV. 17.2	EL. 19.7 5 cap		der diameter, in =	to bottom, ft = both to top, ft = length, ft = 2, ft =	$\frac{35}{2}$ = L $\frac{10}{10}$ = 2R	
F	PVC Ris	A		NDPIPE/RISER ion of rim, ft = 2, ft =	<u> 9.7</u> <u>0.17</u> =2r	
		READING TIME DATE CLOCK	DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS	
<	3 0 24 Senton 0 Pellets		10.7' 14.1' 16.1'		after installation	
	6' Filler Sound AVC	08/05/14 14/30 08/06/14 06:50 08/11/14 62:30	14.1' 16.15' 16.3'		after performing k	ead + a + 10:00
	vo Screen 30	,				
	T Boltom Calp					
SAND			GR	OUND SURFACE E	ELEV. 17,2 NO. MR-218/2	

T: 917 339		5 West 34th 22 F: 917 339-9	Street	ngineers			
www.mrce	.com					BORING NO.	MR-218P OF 2
PROJECT	10	Centra	1				12217
	62			e, Bronx		SURFACE ELEV.	17.2
BORING LOCATION		ويستعداني واستبعت الطاطية	PCK Plan	\sim		DATUM	NAVID BB
			The bill	4			
EST/INSPECTION E REFERENCE CODES/		-					
BORING EQUIPMEN	IT AND N			BOREHOLE			
		TYPE OF FEED					
		DURING COR		CASING USE		X YES	NO
RUCK <u>Acke</u>	81			DIA., IN.	Ц"	DEPTH, FT. FROM	<u> </u>
BARGE			X	DIA., IN.		DEPTH, FT. FROM	TO
OTHER		OTHER		DIA., IN.		DEPTH, FT. FROM	то
TYPE AND SIZE OF: D-SAMPLER					IUD USED OF ROTARY BIT, IN. ILLING MUD	YES	1, NO 18 ∧)€1 ⁴
SAMPLER	ALC						
ORE BARREL				AUGER USE	D	YES	NO
ORE BIT				TYPE AND D	DIAMETER, IN.	1	
VATER LEVEL OBSE	RVATION	NS IN BOREH	<u>OLE</u>	CASING HAI SAMPLER H. TYPE OF HA	AMMER, LBS.		E FALL, IN. 30 E FALL, IN 24 Mammed
DATE TIME	DEP	TH OF HOLE	DEPTH OF CASI	NG DEPTH TO WATER		CONDITIONS OF (DESERVATION
			/ES	NO SKET	CH SHOWN ON	_MR-21	8P, Sheet 1
			YES				
ANDPIPE:			YES	ID, IN.	LENG	STH, FT.	TOP ELEV.
ANDPIPE: TAKE ELEMENT:	түре		YES		LENG		
ANDPIPE: TAKE ELEMENT:	TYPE TYPE		YES	ID, IN. OD, IN.	LENG	БТН, FT БТН, FT	TOP ELEV.
TANDPIPE: ITAKE ELEMENT: LTER: AY QUANTITIES	TYPE TYPE MATE			ID, IN. OD, IN.	LENG	БТН, FT БТН, FT	TOP ELEV.
FANDPIPE: ITAKE ELEMENT: LTER: AY QUANTITIES 5" DIA. DRY SAMPLE I	TYPE TYPE MATE BORING	RIAL	IN. FT.	ID, IN. OD, IN.	LENG	БТН, FT БТН, FT БТН, FT	TOP ELEV.
TANDPIPE: ITAKE ELEMENT: LTER: AY QUANTITIES 5" DIA. DRY SAMPLE I	TYPE TYPE MATE BORING	RIAL		ID, IN. OD, IN.	LENG	GTH, FT GTH, FT GTH, FT TUBE SAMPLES	TOP ELEV.
FANDPIPE: ITAKE ELEMENT: LTER: AY QUANTITIES 5" DIA. DRY SAMPLE F 5" DIA. U-SAMPLE BO	TYPE TYPE MATE BORING	RIAL	IN. FT.	ID, IN. OD, IN.	LENG	GTH, FT GTH, FT GTH, FT TUBE SAMPLES	TOP ELEV.
IEZOMETER INSTAL TANDPIPE: ITAKE ELEMENT: ITER: AY QUANTITIES 5" DIA. DRY SAMPLE IO 5" DIA. U-SAMPLE BO DRE DRILLING IN ROC	TYPE TYPE MATE BORING DRING K	RIAL	_IN. FT	ID, IN. OD, IN. OD, IN.	LENG	GTH, FT GTH, FT GTH, FT TUBE SAMPLES	TOP ELEV.
TANDPIPE: ITAKE ELEMENT: LTER: <u>AY QUANTITIES</u> 5" DIA. DRY SAMPLE IO 5" DIA. U-SAMPLE BO DRE DRILLING IN ROC ORING CONTRACTO	TYPE TYPE MATE BORING DRING K OR	RIAL	.IN. FT .IN. FT .IN. FT	ID, IN. OD, IN.	NO. OF 3" SHELBY NO. OF 3" UNDIST OTHER:	STH, FT.	TOP ELEV TIP ELEV BOT. ELEV
TANDPIPE: ITAKE ELEMENT: LTER: AY QUANTITIES 5" DIA. DRY SAMPLE I 5" DIA. U-SAMPLE BO DRE DRILLING IN ROCI ORING CONTRACTO RILLER	TYPE TYPE MATE BORING DRING K	RIAL	.IN. FT .IN. FT .IN. FT	ID, IN. OD, IN. OD, IN.	LENG	GTH, FT GTH, FT GTH, FT TUBE SAMPLES	TOP ELEV TIP ELEV BOT. ELEV
TANDPIPE: ITAKE ELEMENT: LTER: <u>AY QUANTITIES</u> 5" DIA. DRY SAMPLE IO 5" DIA. U-SAMPLE BO DRE DRILLING IN ROC ORING CONTRACTO	TYPE TYPE MATE BORING DRING K OR	RIAL L L L L L	.IN. FT .IN. FT .IN. FT	ID, IN. OD, IN. OD, IN.	NO. OF 3" SHELBY NO. OF 3" UNDIST OTHER:	STH, FT.	TOP ELEV.