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
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October 17, 2014

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October 17, 2014

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
Bronx, NY
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.

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

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

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

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.

Design

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/mini-piles/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.

Basement Walls and Slabs 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 damp-proofing 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.

Seismic Design 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 re-evaluate 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

Subsurface Obstructions and Abandoned Structures - 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.

Support of Excavation - 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.

Construction Dewatering Considerations - 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.

Construction Monitoring – Existing NYCT Structures - 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 pre-construction 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.

Construction Monitoring – Other existing structures - 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: _____
Hiren J. Shah

By: _____
Alfred H. Brand

Attachments
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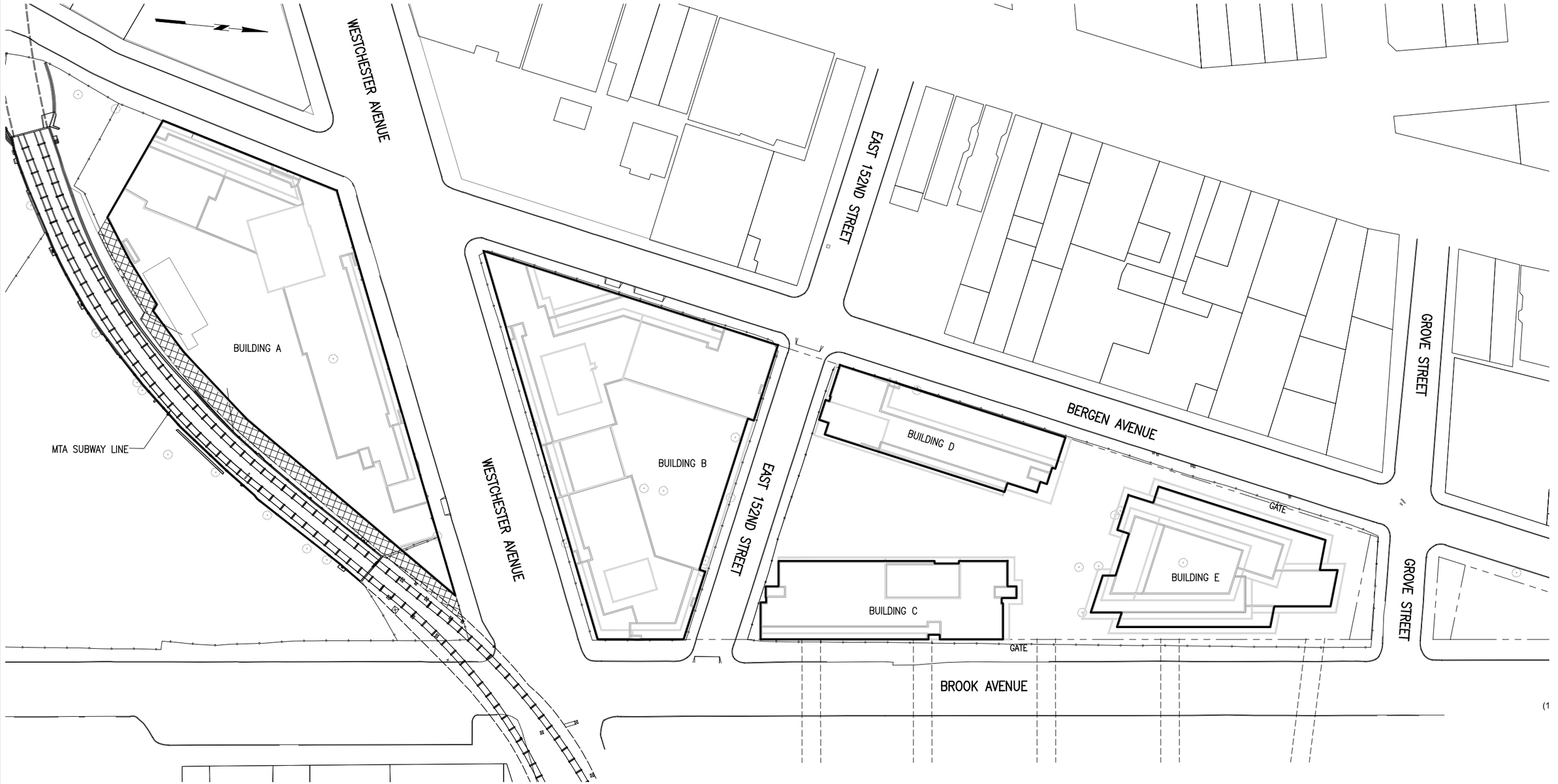
EXHIBITS



P L A N

GRAPHIC SCALE
40' 20' 0 40' 80'

REV.	DATE	BY	DESCRIPTION

LA CENTRAL

BRONX — NEW YORK

LA CENTRAL MANAGER LLC

NEW YORK — NEW YORK

MUESER RUTLEDGE CONSULTING ENGINEERS

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

SCALE	MADE BY: L.R. DATE: 10-10-2014	FILE NUMBER
GRAPHIC	CH'KD BY: H.J.S. DATE: 10-10-2014	12217

PROPOSED BUILDING FOOTPRINTS

DRAWING NUMBER: SK-1

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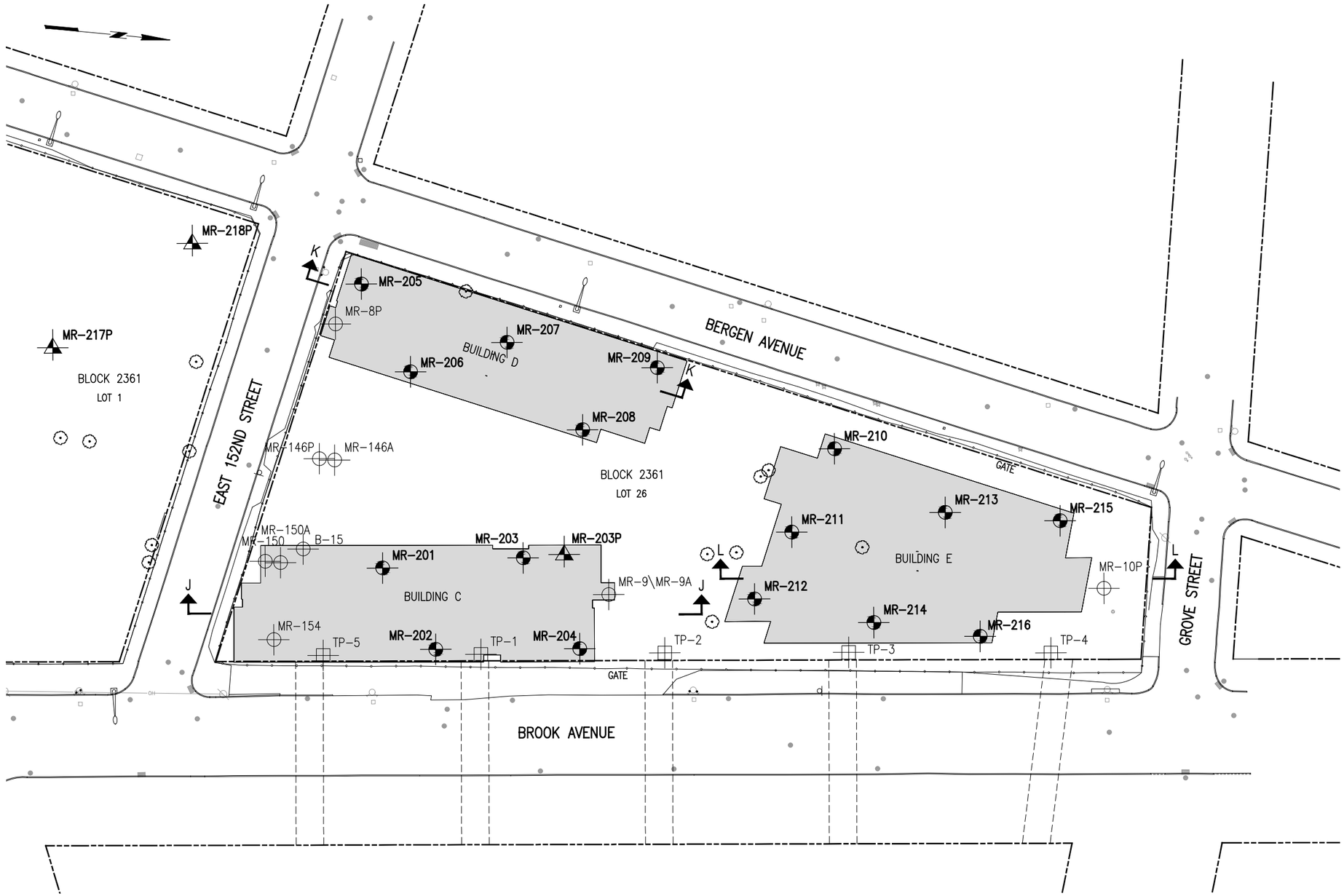

P L A N

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.
3. ALL BORINGS, PIEZOMETERS, AND TEST PITS SHOWN ON THIS DRAWING WERE MADE UNDER THE CONTINUOUS INSPECTION OF MRCE.
4. 2014 BORINGS AND PIEZOMETERS WERE MADE BY WARREN GEORGE INC. AND SURVEYED BY HOWARD F. GREENSPAN ASSOCIATES.
5. GEOTECHNICAL INVESTIGATION AT BUILDINGS "A" AND "B" WAS PERFORMED BY MRCE IN 2007. REFER TO MRCE'S GEOTECHNICAL REPORT DATED OCTOBER 2007.
6. 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.
7. 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:

- **MR–200** – 2014 BORING PERFORMED BY WARREN GEORGE INC.
- MR–100 – EXISTING BORING (2005/2007)
- TP–X – EXISTING TEST PIT (2007)
- **MR–203P** – 2014 PIEZOMETER INSTALLED BY WARREN GEORGE INC.

GRAPHIC SCALE
30' 20' 10' 0 30' 60'

REV.	DATE	BY	DESCRIPTION

LA CENTRAL

BRONX — NEW YORK

LA CENTRAL MANAGER LLC

NEW YORK — NEW YORK

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

SCALE	MADE BY: E.C.	DATE: 09–08–2014	FILE NUMBER
AS NOTED	CH'KD BY: H.J.S.	DATE: 09–08–2014	12217

BORING LOCATION PLAN — DRAWING NUMBER B–5

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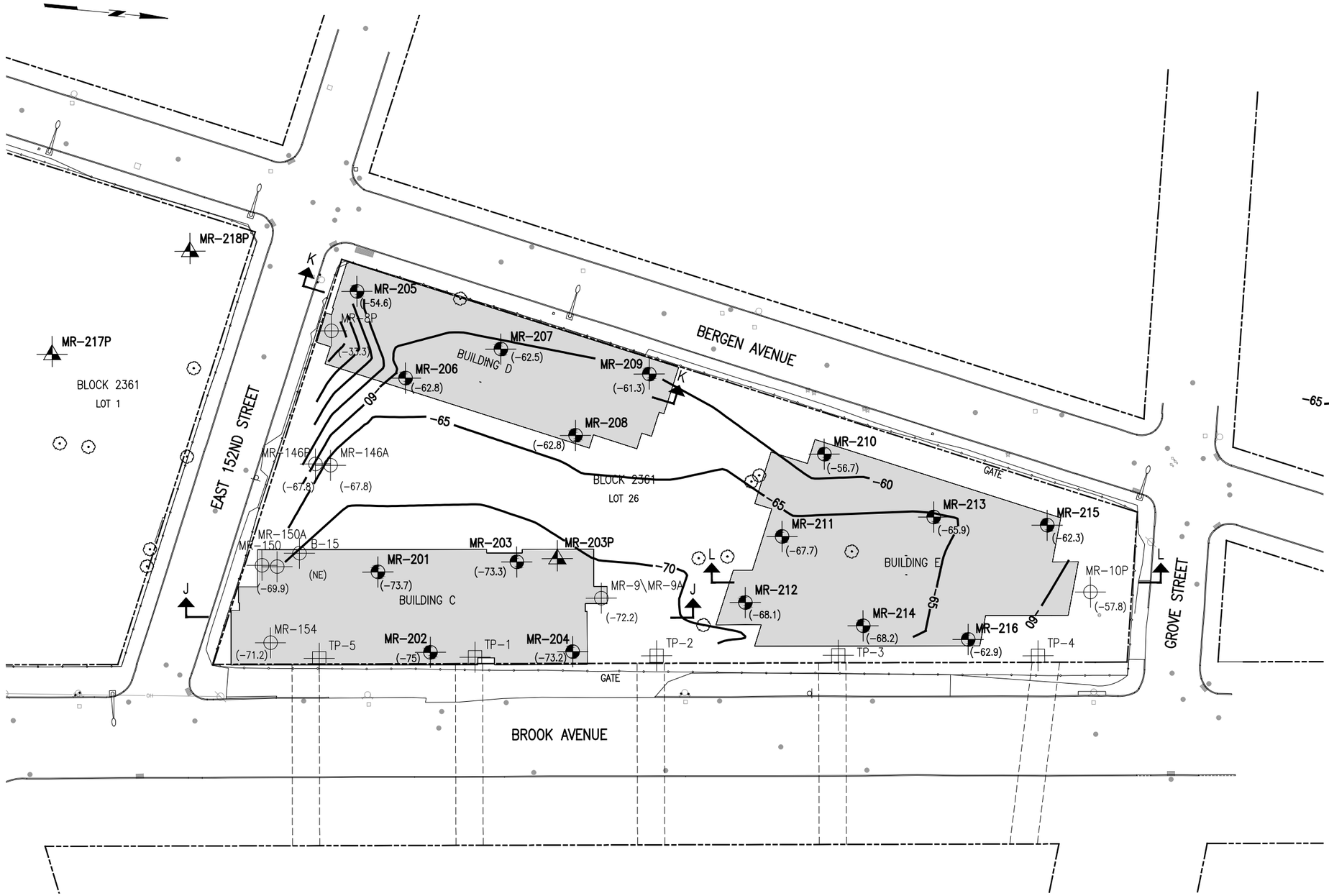

P L A N

NOTES:

1. FOR GENERAL NOTES, SEE DRAWING NO. B-5.
2. 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:

- **MR-200** – 2014 BORING PERFORMED BY WARREN GEORGE INC.
- MR-100 – EXISTING BORING (2005/2007)
- TP-X – EXISTING TEST PIT (2007)
- **MR-203P** – 2014 PIEZOMETER INSTALLED BY WARREN GEORGE INC.
- -65 – CONTOUR OF TOP OF STRATUM R/WR. CONTOUR INTERVAL 5 FEET (TYP.)

GRAPHIC SCALE
30' 20' 10' 0 30' 60'

REV.	DATE	BY	DESCRIPTION

LA CENTRAL
BRONX NEW YORK

LA CENTRAL MANAGER LLC
NEW YORK NEW YORK

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

SCALE	MADE BY: L.R. DATE: 10-10-2014	FILE NUMBER
GRAPHIC	CH'KD BY: H.J.S. DATE: 10-10-2014	12217

CONTOUR PLAN
TOP OF STRATUM R/WR

DRAWING NUMBER
C-3

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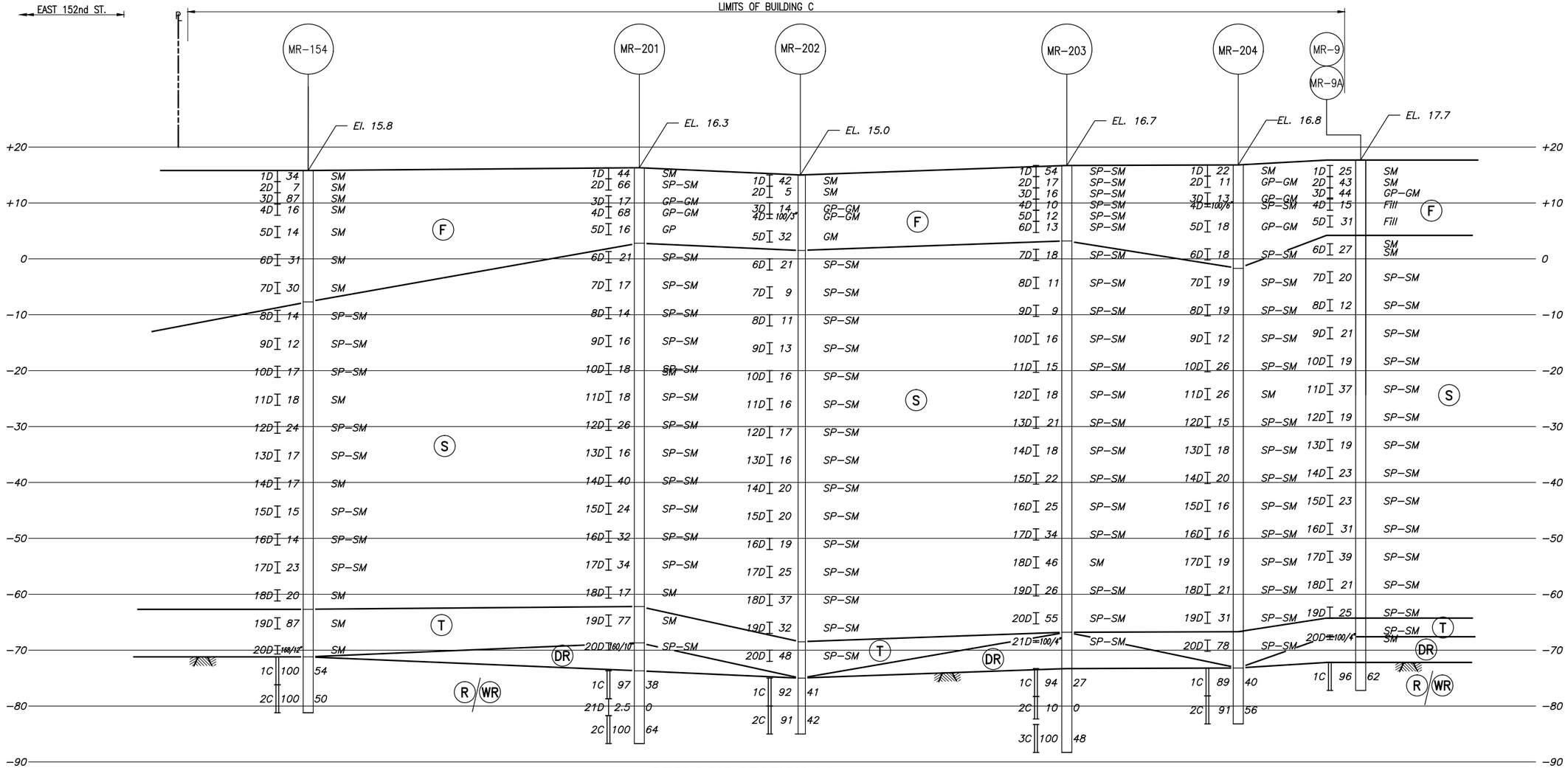

GEOLOGIC SECTION J-J

GRAPHIC SCALE

10' 5' 0 10' 20'

NOTES:

1. FOR LOCATIONS FOR BORINGS/PIEZOMETERS, REFER TO DRAWING NO. B-5. SOME BORINGS PROJECTED ON TO GEOLOGIC SECTION.
2. ELEVATIONS ARE REFERENCED TO NAVD 1988.
3. STRATIFICATIONS SHOWN ARE NECESSARY INTERPOLATIONS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
4. DETAILED SOIL AND ROCK DESCRIPTIONS ARE SHOWN ON BORING LOGS IN APPENDIX A.
5. REFER TO DRAWING NO. GS-R FOR BORING LEGEND AND SUMMARY OF UNIFIED SOIL CLASSIFICATION SYSTEM.
6. REFER TO DRAWING NO. RC-1 FOR ROCK CLASSIFICATION CRITERIA.

GENERAL STRATA DESCRIPTIONS:

(F) **FILL** – LOOSE TO COMPACT MISCELLANEOUS FILL

(S) **SAND** – LOOSE TO COMPACT, FINE TO COARSE SAND, WITH SILT, GRAVEL, SILT SEAMS, MICA

(M) **SILT** – MEDIUM COMPACT, BROWN OR GRAY FINE SANDY SILT TO SILT WITH FINE SAND, MICA

(T) **TILL** – MEDIUM COMPACT TO VERY COMPACT, BROWN TO GRAY FINE TO MEDIUM SAND, WITH GRAVEL, ROCK FRAGMENTS, SILT, COARSE SAND AND OCCASIONAL BOULDERS

(DR) **DECOMPOSED ROCK** – VERY COMPACT, BROWN TO GRAY FINE TO COARSE SAND WITH ROCK FRAGMENTS, SILT

(R/WR) **ROCK/WEATHERED ROCK** – WHITE, GRAY OR BROWN MARBLE, OCCASIONALLY CHLORITIC SCHIST, RANGING FROM WEATHERED, HIGHLY WEATHERED AND BROKEN TO MEDIUM HARD, UNWEATHERED AND MODERATELY JOINTED, WITH IRON STAINED AND WEATHERED JOINTS, AND DECOMPOSED ROCK ZONES

REV.	DATE	BY	DESCRIPTION

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GEOLOGIC SECTION J-J — DRAWING NUMBER GS-10

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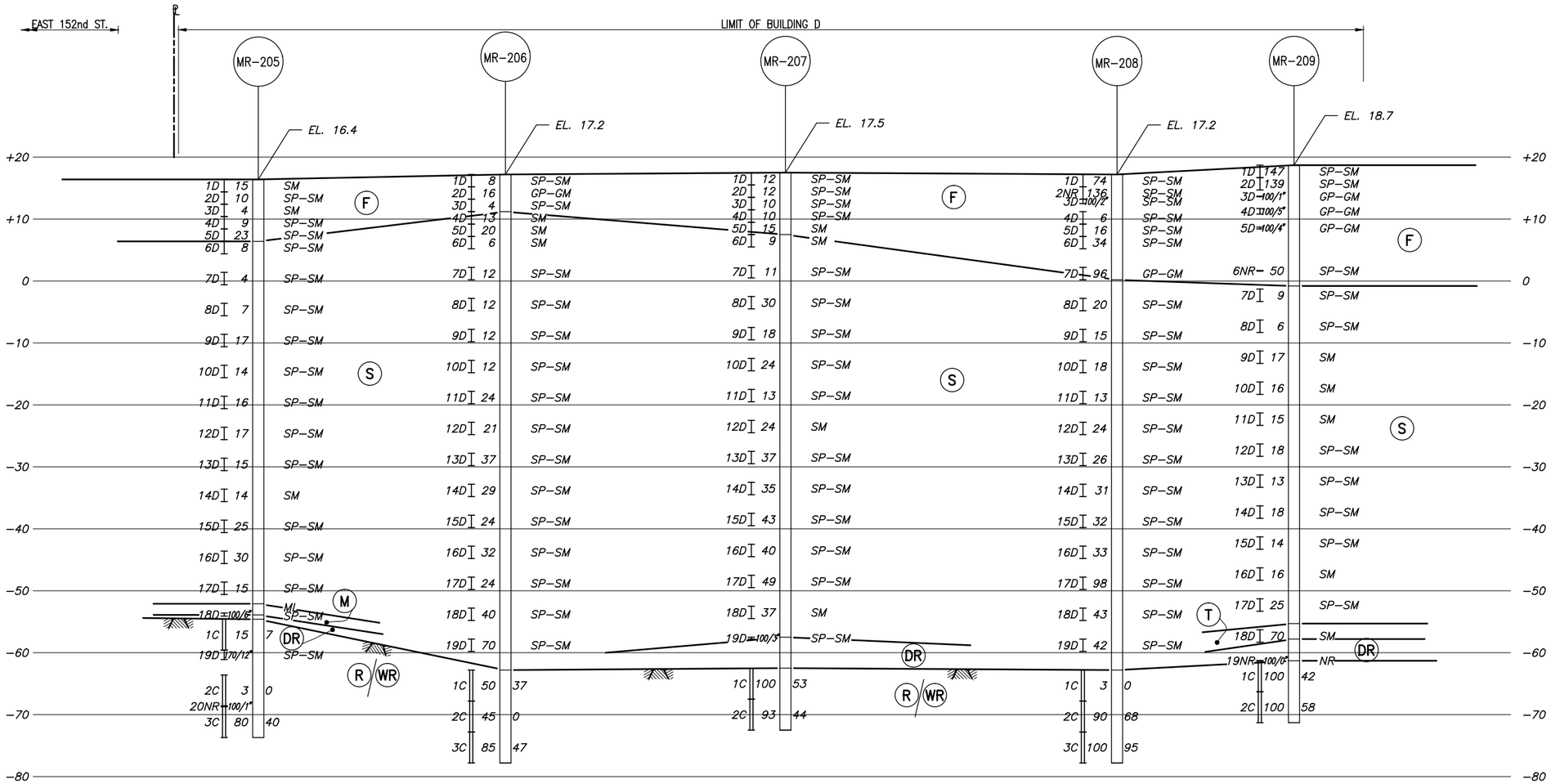

GEOLOGIC SECTION K-K

GRAPHIC SCALE

10' 5' 0 10' 20'

NOTES:

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

REV.	DATE	BY	DESCRIPTION

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GEOLOGIC SECTION K-K

DRAWING NUMBER: GS−11

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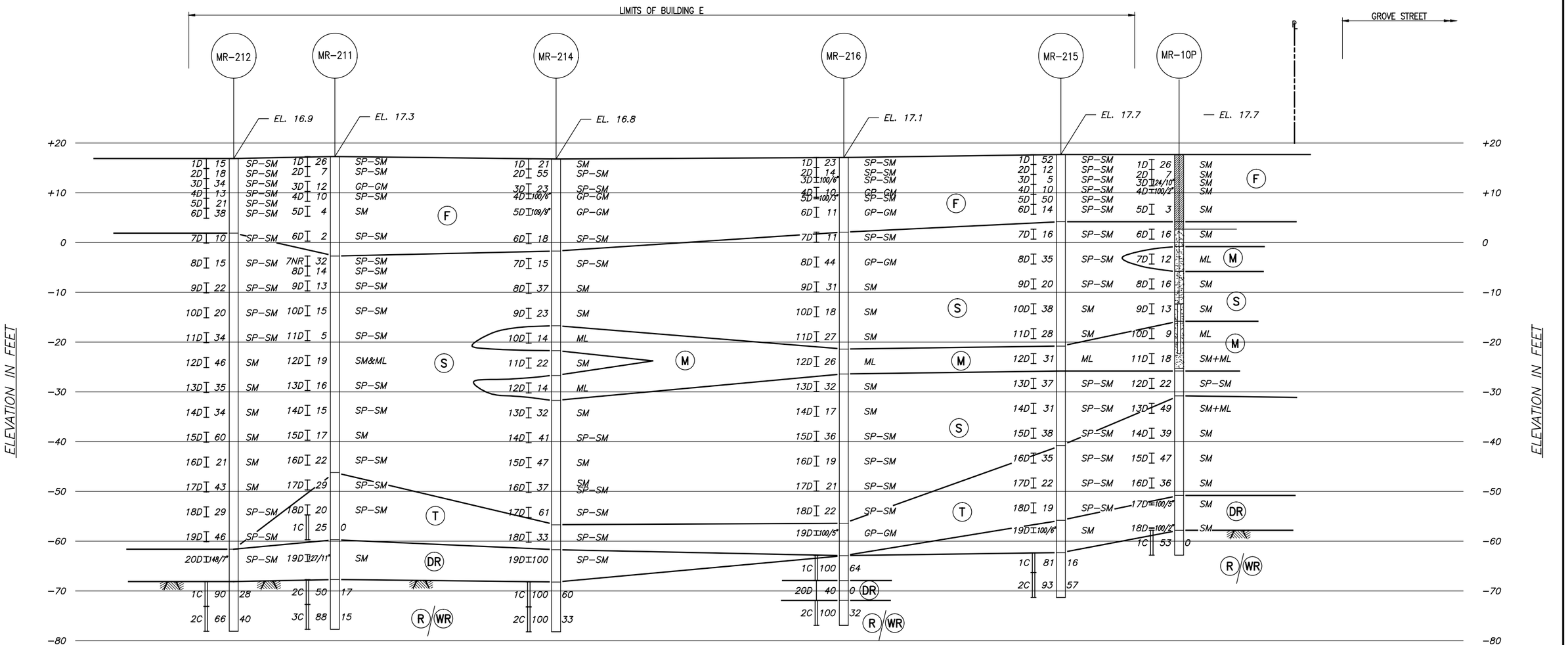

GEOLOGIC SECTION L-L

GRAPHIC SCALE

10' 5' 0 10' 20'

NOTES:

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

REV.	DATE	BY	DESCRIPTION

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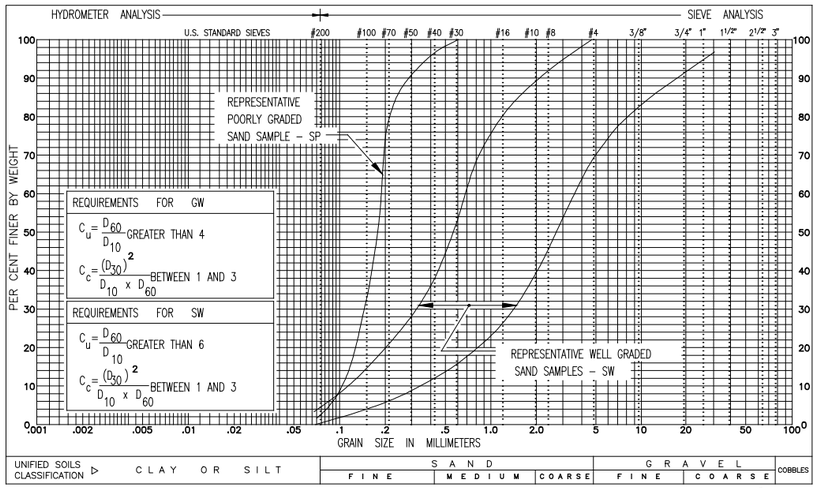
GEOLOGIC SECTION L-L — DRAWING NUMBER GS-12

UNIFIED SOIL CLASSIFICATION (INCLUDING IDENTIFICATION AND DESCRIPTION)

1 MAJOR DIVISIONS	2		3 GROUP SYMBOLS	4 TYPICAL NAMES	5 FIELD IDENTIFICATION PROCEDURES (EXCLUDING PARTICLES LARGER THAN 3 IN. AND BASING FRACTIONS ON ESTIMATED WEIGHTS)
COARSE-GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE — MORE THAN HALF OF MATERIAL IS ABOUT THE SMALLEST PARTICLE VISIBLE TO THE NAKED EYE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE. (FOR VISUAL CLASSIFICATION, THE 1/4 -IN. SIZE MAY BE USED AS EQUIVALENT TO THE NO. 4 SIEVE SIZE)	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	PREDOMINANTLY ONE SIZE OR A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT-MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.	PLASTIC FINES (FOR IDENTIFICATION PROCEDURES SEE CL BELOW)
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE.	CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	PREDOMINANTLY ONE SIZE OR A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT-MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES.	PLASTIC FINES (FOR IDENTIFICATION PROCEDURES SEE CL BELOW)
FINE-GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE — THE NO. 200 SIEVE SIZE IS ABOUT					IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN NO. 40 SIEVE SIZE
					DRY STRENGTH (CRUSHING CHARACTERISTICS) / DILATANCY (REACTION TO SHAKING) / TOUGHNESS (CONSISTENCY NEAR PL)
	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, SANDY SILTS, ROCK FLOUR, OR CLAYEY SILTS WITH SLIGHT PLASTICITY.	NONE TO SLIGHT / QUICK TO SLOW / NONE
			CL	INORGANIC CLAYS, OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.	MEDIUM TO HIGH / NONE TO VERY SLOW / MEDIUM
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.	SLIGHT TO MEDIUM / SLOW / SLIGHT
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.	SLIGHT TO MEDIUM / SLOW TO NONE / SLIGHT TO MEDIUM
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.	HIGH TO VERY HIGH / NONE / HIGH
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.	MEDIUM TO HIGH / NONE TO VERY SLOW / SLIGHT TO MEDIUM
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS.	READILY IDENTIFIED BY COLOR, ODOR, SPONGY FEEL AND FREQUENTLY BY FIBROUS TEXTURE.

BOUNDARY CLASSIFICATIONS: SOILS POSSESSING CHARACTERISTICS OF TWO GROUPS ARE DESIGNATED BY COMBINATIONS OF GROUP SYMBOLS, I.E.: SP-SC POORLY GRADED SAND WITH CLAY BINDER.

LABORATORY CLASSIFICATION CRITERIA

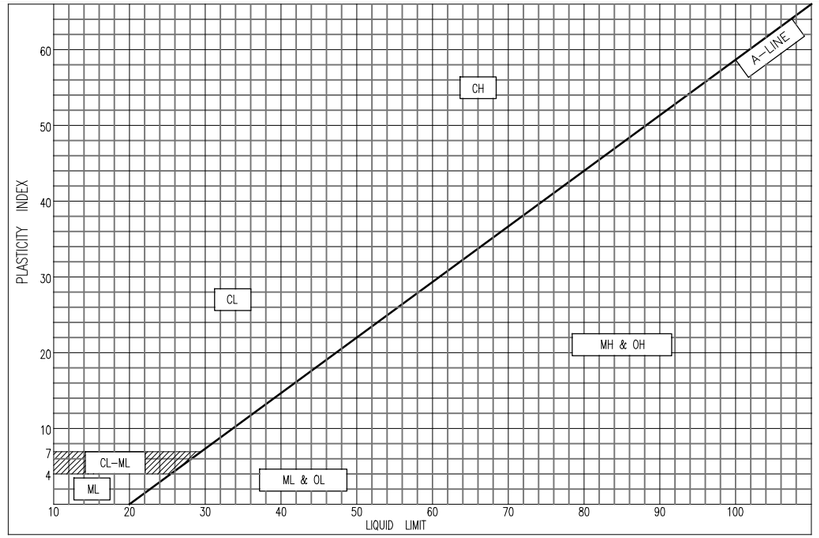


GRAIN SIZE PLOT

COBBLE 3-12"
BOULDER > 12"

DEPENDING ON PERCENTAGE OF FINES (FRACTION SMALLER THAN NO. 200 SIEVE SIZE) COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS:

LESS THAN 5%	GW, GP, SW, SP
MORE THAN 12%	GM, GC, SM, SC
5% TO 12%	BORDERLINE CASES REQUIRING USE OF DUAL SYMBOLS, I.E.: SP-SM, GP-GM.



PLASTICITY CHART FOR CLASSIFICATION OF FINE GRAINED SOILS

TERMINOLOGY USED IN MRCE SOIL DESCRIPTIONS

DEGREE OF COMPACTION FOR NON-PLASTIC SOIL

DEGREE OF COMPACTION	BLOWS* PER FOOT
LOOSE	0 TO 10
MEDIUM COMPACT	11 TO 29
COMPACT	30 TO 50
VERY COMPACT	GREATER THAN 50

* STANDARD PENETRATION RESISTANCE USING 140 LB. HAMMER FREE FALLING 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-SPOON SAMPLER.

CONSISTENCY OF CLAY AND CLAYEY SILT+

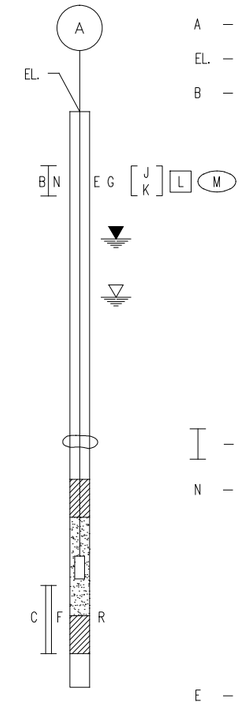
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TSF)	IDENTIFICATION CHARACTERISTICS
SOFT	LESS THAN 0.5	EASILY REMOLDED WITH SLIGHT FINGER PRESSURE
MEDIUM	0.5 TO 1.0	REQUIRES SUBSTANTIAL PRESSURE FOR REMOLDING
STIFF	1.0 TO 4.0	DIFFICULT TO REMOLD WITH FINGERS
HARD	GREATER THAN 4.0	CANNOT BE REMOLDED WITH FINGERS

\+ NONPLASTIC SILTS ARE DESCRIBED USING DEGREE OF COMPACTION AS PRESENTED FOR NON-PLASTIC SOIL.

DESCRIPTION OF CONSTITUENT PERCENTAGES AS USED IN SOIL SAMPLE CLASSIFICATIONS

- 1% TO 12% - "TRACE"
- 13% TO 30% - "SOME"
- 31% TO 49% - ADJECTIVE FORM OF SOIL GROUP (EG. SANDY)
- EQUAL AMOUNT - "AND" (EG. SAND AND GRAVEL)

BORING LEGEND



- A — NUMBER, TYPE AND LOCATION OF BORING
- EL. — GROUND SURFACE ELEVATION AT BORING
- B — NUMBER AND TYPE OF SAMPLE
  - HA - HAND AUGER SAMPLE
  - D - DRY SAMPLE TAKEN WITH 2 INCH O.D. SPLIT SPOON
  - U - UNDISTURBED SAMPLE TAKEN WITH 3 INCH O.D. FIXED PISTON TYPE SAMPLER
  - UD - UNDISTURBED SAMPLE EXTRUDED IN FIELD AND PLACED IN JAR DUE TO POOR RECOVERY OR DISTURBANCE
  - S - THIN TUBE SAMPLE TAKEN WITH SHELBY TUBE SAMPLER
  - N - THIN TUBE SAMPLE TAKEN WITH DENISON BARREL SAMPLER
  - P - THIN TUBE SAMPLE TAKEN WITH PITCHER BARREL SAMPLER
  - NR - NO RECOVERY
- | — LENGTH OF SAMPLE ATTEMPT
- N — STANDARD PENETRATION RESISTANCE. NUMBER OF BLOWS FROM 140 LB. HAMMER FREE FALLING 30 INCHES REQUIRED TO DRIVE 2 INCH O.D. SPLIT SPOON SAMPLER ONE FOOT AFTER INITIAL PENETRATION OF 6 INCHES, UNLESS A SPECIFIC PENETRATION IS INDICATED.
  - P - PRESSED OR PUSH SAMPLE
  - WH - SAMPLE TAKEN UNDER WEIGHT OF HAMMER AND RODS
  - WR - SAMPLE TAKEN UNDER WEIGHT OF RODS
- E — AVERAGE NATURAL WATER CONTENT OF SAMPLE, IN PERCENT OF DRY WEIGHT
- G — UNIFIED SOIL CLASSIFICATON GROUP SYMBOL OF SAMPLE
- [J / K] = ATTERBERG LIQUID LIMIT VALUE / ATTERBERG PLASTIC LIMIT VALUE
- [L] — COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONFINED COMPRESSION TEST
- (M) — COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST
- ▼ — GROUNDWATER LEVEL OBSERVED IN BORING
  - * - MUD LEVEL
- ▽ — GROUNDWATER LEVEL OBSERVED IN PIEZOMETER
- C — ROCK CORE NUMBER
- | — LENGTH OF CORE RUN
- F — LENGTH OF CORE RECOVERED EXPRESSED AS A PERCENT OF THE LENGTH OF CORE RUN
- R — ROCK QUALITY DESIGNATION-THE SUM OF THE LENGTHS OF PIECES OF RECOVERED CORE WHICH ARE EQUAL TO OR GREATER THAN FOUR INCHES IN LENGTH, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-SITU SEPARATIONS AND MECHANICAL BREAKS RESULTING FROM CORING ARE IGNORED.
- IMPERVIOUS SEAL
- SAND FILTER SURROUNDING PIEZOMETER INTAKE ELEMENT
- INTAKE ELEMENT
- COBBLE OR BOULDER

REVISED 10-25-2012

MUESER RUTLEDGE CONSULTING ENGINEERS
225 WEST 34th STREET - 14 PENN PLAZA
NEW YORK, NY 10122

GEOTECHNICAL REFERENCE STANDARDS

DRAWING NO. GS-R

TABLE R–1 ROCK CORE CLASSIFICATION CRITERIA

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

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–2 WEATHERING AND JOINTING DEFINITIONS

DEGREE OF FABRIC WEATHERING

FABRIC WEATHERING		CHARACTERISTIC
Unweathered	UnW	No decomposition or discoloration rings when struck
Slightly Weathered	SlW	Iron Stained Rings when struck
Moderately Weathered	MdW	Deteriorated fabric Thuds when struck
Highly Weathered	HiW	Friable, easily broken by hand
Decomposed	Dec	Soil–like

DEGREE OF JOINT WEATHERING

JOINT WEATHERING		CHARACTERISTIC
Iron stained joints	FeJtS	Indicates movement of water along joints
Weathered joints	WJts	Joints are not tight and do not match. Joints have friable edges.

DEGREE OF JOINTING

JOINTING		JOINT FREQUENCY
Massive	Mssv	Less than 1 joint in 4 feet
Blocky	Blky	1 joint every 2 to 4 feet
Moderately Jointed	MdJtd	1 joint every foot to 2 feet
Jointed	Jtd	1 to 2 joints per foot
Closely Jointed	ClJtd	2 to 4 joints per foot
Broken	Bkn	More than 4 joints per foot

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

TABLE R–3 ABBREVIATIONS FOR ROCK CORE CLASSIFICATION

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

TABLE R–4 ROCK CORE SKETCH KEY

SKETCH SYMBOLS

- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand

JOINT ORIENTATION AND CONDITION

			SURFACE – CONDITION			
Parallel	–	//	Curved	– C	Slick	– 1
Crossing	–	X	Irregular	– I	Smooth	– 2
Foliation	–	F	Straight	– S	Rough	– 3
Stratification	–	S				
Unfoliated or Unstratified	–	U				
Mechanical Break	–	MB				

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ROCK CORE CLASSIFICATION CRITERIA

DRAWING NO. RC–1

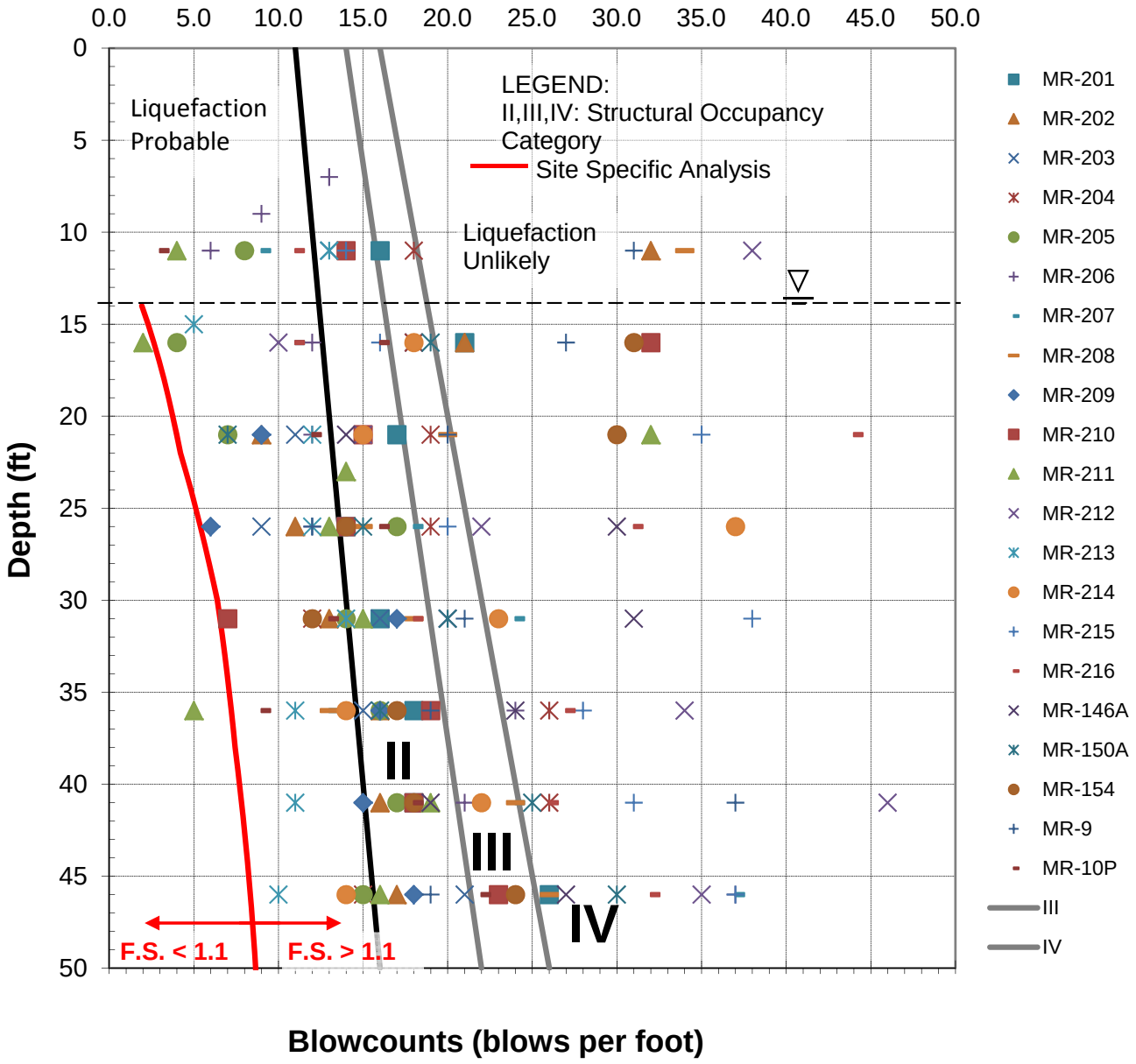
La Central Bronxchester
Table S-1 – Soil Design Parameters

Design Parameter	**Soil Strata**			
	F **Fill**	**S** **Sand**	**M** **Silt**	**T** **Till**
Effective Unit Weight (pcf)				
Above Water Table, γ	115	120	120	125
Below Water Table,γ'	53	58	58	63
Angle of Internal Friction, ϕ	30	32	30	36
Earth Pressure Coefficients				
Active, $K_a = \tan^2(45 - \phi/2)$	0.33	0.31	0.33	0.26
At Rest, $K_0 = 1 - \sin \phi$	0.5	0.47	0.5	0.41
Passive $K_p = \tan^2(45 + \phi/2)$	3.0	3.25	3.0	3.85

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

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-201
SHEET 1 OF 5
FILE NO. 12217
SURFACE ELEV. 16.3
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
07:00	1D	0.0	28-21	Brown gray fine to medium sand & brick, some				REC=6"
08-04-14		2.0	23-25	silt, trace vegetation (Fill) (SM)				
Monday	2D	2.0	28-40	Brown fine to medium sand & brick, trace silt				
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					
						13.5		
						15		
	6D	15.0	10-12	Brown fine to medium sand, trace silt (SP-SM)				
		17.0	9-9					
						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		
	9D	30.0	6-8	Brown fine to medium sand, trace silt, mica				
		32.0	8-8	(SP-SM)	S			
						35		
	10D	35.0	7-7	Top 6": Brown medium to fine sand, trace				
		37.0	11-12	coarse sand, silt, mica (SP-SM)				
				Bot 4": Brown fine sand, some silt, trace mica				
				(SM)				
						40		
	11D	40.0	9-9	Brown fine sand, trace silt, silty clay seam,				
		42.0	9-12	mica (SP-SM)				
						45		
	12D	45.0	11-12	Brown fine to medium sand, trace coarse				
		47.0	14-13	sand, silt (SP-SM)				
						50		
	13D	50.0	10-8	Do 12D (SP-SM)				
		52.0	8-11					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-201
SHEET 2 OF 5
FILE NO. 12217
SURFACE ELEV. 16.3
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 08-04-14 Monday Sunny 80°F								
	14D	55.0	20-20	Brown fine to medium sand, trace silt, mica (SP-SM)		55		
		57.0	20-18					
	15D	60.0	9-13	Do 14D (SP-SM)		60		
		62.0	11-9					
	16D	65.0	15-18	Do 14D (SP-SM)	S	65		
		67.0	14-19					
	17D	70.0	12-17	Brown gray fine sand, trace silt, mica (SP-SM)		70		
		72.0	17-19					
	18D	75.0	8-7	Brown gray fine sand, some silt, trace mica (SM)		75		
		77.0	10-8					
						78.5		
	19D	80.0	8-31	Brown gray fine to medium sand, some rock fragments, silt, trace coarse sand (SM)	T	80		
		82.0	46-40					
15:00						85		
07:00 08-05-14 Tuesday Sunny 85°F	20D	85.0	39-60	Brown fine to coarse sand, some white rock fragments, trace silt (Decomposed Rock) (SP-SM)	DR			
		86.3	100/4"			90		
	1C	90.0	REC=97%	Top 4': Intermediate slightly weathered to moderately weathered gray marble, jointed to broken, iron stained & weathered joints			2.5*	*Coring time in minutes per foot.
		95.0	RQD=38%	Bot 1': Weathered moderately weathered to highly weathered green calc schist, blocky, WJts			2.5*	
							2*	White wash.
							1.5*	
	21D	95.0	REC=2.5'	Brown fine to medium sand, some rock fragments, trace silt (Decomposed Rock) (SP-SM)		95	4*	
		98.0			R/WR		0.5*	
							1*	
							0.5*	
	2C	98.0	REC=100%	Medium hard slightly weathered gray marble, jointed to broken, iron stained & weathered joints			2.5*	Brown wash.
		103.0	RQD=64%			100	2*	

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-201
SHEET 3 OF 5
FILE NO. 12217
SURFACE ELEV. 16.3
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 08-05-14 Tues., Sunny 85°F, 14:00					R/WR		3*	
							2.5*	
						103	3*	End of Boring at 103'.
						105		
						110		
						115		
						120		
						125		
						130		
						135		
						140		
						145		
						150		

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

ROCK CORE SKETCH

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

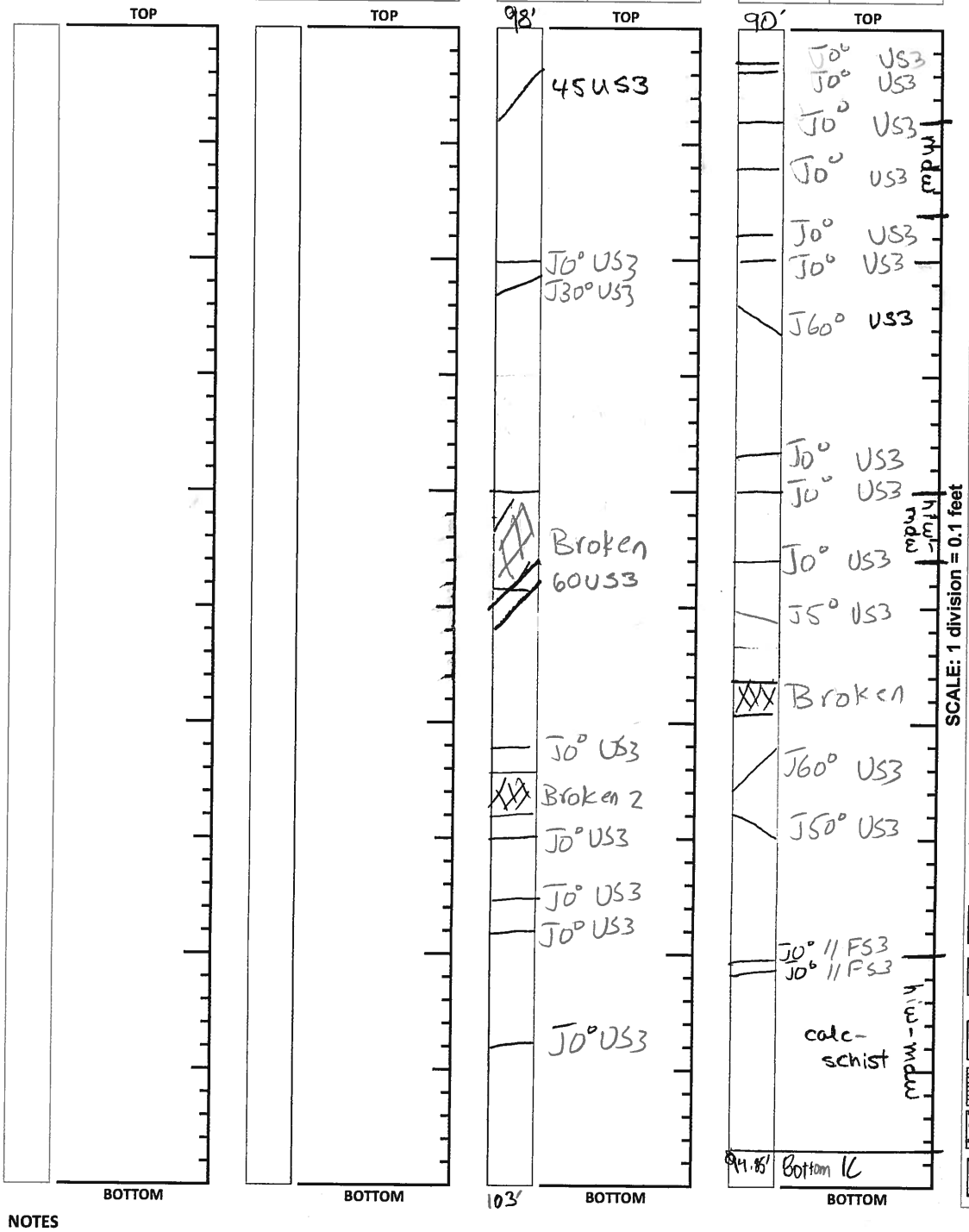
BORING NO. MR-201
SHEET 4 OF 5
FILE NO. 12217
SURFACE ELEV. 16.3'
RES ENGR. F.El Khatib

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	100/64

Run No.	REC/RQD
2C	97/38



ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-201
		SHEET	5 **OF** 5
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	16.3
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	90	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK MUD		
AUGER USED	YES	X	NO
TYPE AND DIAMETER, IN.			

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
08-04-14	15:00	85	15	13	END OF THE DAY.
08-05-14	06:25	85	15	13.35	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	JIMMY WILSON	HELPERS	WILLIAM ROSADO
REMARKS	BOREHOLE BACKFILLED WITH DRILL CUTTINGS.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	08-05-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-202
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 15.0
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION
10:30	1D	0.0	8-31	Brown fine to medium sand, some gravel,
07-31-14		2.0	11-2	brick, silt, tr coarse sand, vegetation (Fill) (SM)
Thursday	2D	2.0	3-3	Brown fine to coarse sand, some gravel, silt,
Sunny		4.0	2-3	trace brick (Fill) (SM)
79°F	3D	5.0	6-9	Brown brick & concrete, trace coarse to fine
		7.0	5-6	sand, silt (Fill) (GP-GM)
	4D	7.0	8-100/3"	Do 3D (Fill) (GP-GM)
		7.8		
	5D	10.0	5-21	Brown black concrete & brick, some fine to
		12.0	11-11	medium sand, silt (Fill) (GM)
	6D	15.0	8-11	Brown fine to medium sand, trace gravel, silt
		17.0	10-7	(SP-SM)
	7D	20.0	3-3	Brown fine to medium sand, trace silt, mica
		22.0	6-7	(SP-SM)
	8D	25.0	3-5	Do 7D, trace gravel (SP-SM)
		27.0	6-7	
	9D	30.0	4-5	Brown medium to fine sand, some gravel,
		32.0	8-7	trace silt (SP-SM)
	10D	35.0	8-9	Brown gravelly fine to medium sand, trace
		37.0	7-7	coarse sand, silt (SP-SM)
	11D	40.0	8-6	Brown fine to coarse sand, some gravel, trace
		42.0	10-8	silt (SP-SM)
	12D	45.0	7-7	Gray brown fine to medium sand, trace silt,
		47.0	10-10	mica (SP-SM)
	13D	50.0	9-7	Do 12D (SP-SM)
		52.0	9-11	

STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4"	REMARKS
			REC=6"
	5		
			REC=4"
F			
			REC=3"
	10		
			Rig chatter at 13'.
	13.5		Brown wash.
	15		
			REC=3"
	20		
	25		
	30		
S			
	35		
	40		
	45		
	50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-202
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 15.0
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-31-14 Thursday Sunny 79°F, 14:50								
07:00 08-01-14 Friday Partly Cloudy 77°F	14D	55.0 57.0	8-9 11-9	Gray brown fine sand, trace silt, mica (SP-SM)		55		
	15D	60.0 62.0	8-9 11-11	Do 14D, trace gravel (SP-SM)		60		
	16D	65.0 67.0	9-8 11-11	Brown fine to medium sand, trace silt, mica (SP-SM)	S	65		
	17D	70.0 72.0	12-10 15-16	Do 16D, trace coarse sand (SP-SM)		70		
	18D	75.0 77.0	16-15 22-22	Do 16D (SP-SM)		75		
	19D	80.0 82.0	16-17 15-18	Do 16D (SP-SM)		80		
	20D	85.0 87.0	17-23 25-82	Brown fine to medium sand, some gravel, rock fragments, trace silt (SP-SM)	T	83.5 85		
	1C	90.0 95.0	REC=92% RQD=41%	Top 1': Weathered moderately weathered to slightly weathered brown marble, broken, WJts Bot: Medium hard slightly weathered to moderately weathered gray marble, jointed to closely jointed, weathered joints & FeStnJts		90		Hard drilling.
					R/WR		2*	
							2*	White wash.
							2*	*Coring time in
							2*	minutes per foot.
						95	1.5*	
	2C	95.0 100.0	REC=91% RQD=42%	Intermediate slightly weathered to highly weathered gray marble, jointed to broken, weathered joints & iron stained joints			1.5*	
							2*	
							2*	
11:00							2*	
						100	2.5*	End of Boring at 100'.

ROCK CORE SKETCH

BORING NO. MR-202
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 15.0'
RESIDENT ENGINEER F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
2C	91/42

95' TOP

J0° US3
J5° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
Broken
J0° US3
J0° US3
J0° US3
80 U I3

99.55' Bottom 2C

BOTTOM

Run No.	REC/RQD
1C	92/41

90' TOP

J5° US3
J0° US3
J0° US3
Broken
J45° US3
90 U S3
45 U S3
J0° US3
J0° US3
J45 US3
J0° US3
Broken 2
J0° US3
J0° US3

94.6' Bottom 1C

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recoverec
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-202
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	15.0
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X	YES		NO		
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK MUD		
AUGER USED	YES	X	NO
TYPE AND DIAMETER, IN.			

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-31-14	15:00	55	15	6.4	END OF THE DAY.
08-01-14	07:00	55	15	12.35	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	JIMMY WILSON	HELPERS	WILLIAM ROSADO
REMARKS	BOREHOLE BACKFILLED WITH DRILL CUTTINGS.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	08-01-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-203
SHEET 1 OF 5
FILE NO. 12217
SURFACE ELEV. 16.7
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
09:00	1D	0.0	11-29	Brown fine to medium sand, some gravel,				
08-04-14		2.0	25-14	brick, tr silt, wood, vegetation (Fill) (SP-SM)				
Monday	2D	2.0	11-12	Brown fine to medium sand, some brick, trace				REC=4"
Sunny		4.0	5-6	gravel, silt, vegetation (Fill) (SP-SM)				
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)				
	4D	6.0	4-3	Do 3D (Fill) (SP-SM)	F			REC=4"
		8.0	7-17					
	5D	8.0	7-7	Do 3D (Fill) (SP-SM)				REC=6"
		10.0	5-17			10		
	6D	10.0	6-9	Do 3D (Fill) (SP-SM)				REC=5"
		12.0	4-5					
						13.5		
						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			
						35		
	11D	35.0	6-7	Do 8D (SP-SM)				
		37.0	8-9					
						40		
	12D	40.0	8-9	Do 8D (SP-SM)				
		42.0	9-9					
						45		
	13D	45.0	10-11	Do 8D (SP-SM)				
		47.0	10-11					
						50		
	14D	50.0	7-9	Do 8D (SP-SM)				
		52.0	9-11					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-203
SHEET 2 OF 5
FILE NO. 12217
SURFACE ELEV. 16.7
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 08-04-14 Monday Sunny 80°F							DRILLED AHEAD 3"	
						55		
	15D	55.0	9-11	Do 8D (SP-SM)				
		57.0	11-12					
						60		
	16D	60.0	12-12	Brown fine to medium sand, trace silt, mica				
		62.0	13-14	(SP-SM)				
						65		
	17D	65.0	13-16	Do 16D (SP-SM)				
15:00		67.0	18-19		S			
07:00 08-05-14 Tuesday Sunny 85°F						70		
	18D	70.0	20-19	Brown fine sand, some silt, trace mica (SM)				
		72.0	27-30					
						75		
	19D	75.0	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				
		82.0	37-36	(SP-SM)				
						83.5		
						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			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			2.5*	Gray wash.
				stained & weathered joints		95	3.5*	
	2C	95.0	REC=10%	Do 1C Bottom			1*	
		99.0	RQD=0%		R/WR		1*	
							0.5*	
15:00							1*	Tip of core barrel broke
07:00						100	0.5*	between 99' & 100'.
08-06, Wed	3C	100.0	REC=100%	MdHd slightly weathered to highly weathered				
Ptly.Cldy.,80°F		105.0	RQD=48%	gray marble, jointed to broken, FeStn & WJts				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-203
SHEET 3 OF 5
FILE NO. 12217
SURFACE ELEV. 16.7
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							3*	White wash.
08-06-14							2*	
Wednesday					R/WR		1*	Brown green wash.
Partly Cloudy							2*	White wash.
80°F, 09:30						105	2*	End of Boring at 105'.
						110		
						115		
						120		
						125		
						130		
						135		
						140		
						145		
						150		

MRCE Form BL-1

BORING NO. MR-203

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ROCK CORE SKETCH

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

BORING NO. MR-203
SHEET 4 OF 5
FILE NO. 12217
SURFACE ELEV. 16.7'
RES ENGR. F. El Khatib

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
3C	100/48

100' TOP

J30° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
Broken
J0° US3
J0° US3
J20° US3
J0° US3
J0° US3
J0° US3
J0° UC3
J0° US3

BOTTOM 105'

Run No.	REC/RQD
2C	10/0

95' TOP

95.4' Bottom 2C

BOTTOM

Run No.	REC/RQD
1C	94/27

90' TOP

J0° US3
J0° US3
J0° US3
J0° US3
J15° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3

94.7' Bottom 1C

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO.	MR-203		
SHEET	5	**OF**	5
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	16.7
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
TRUCK	ACKER 82	MECHANICAL				X	YES		NO	
SKID		HYDRAULIC	X	DIA., IN.	4	DEPTH, FT. FROM	0	TO	20	
BARGE		OTHER		DIA., IN.	3	DEPTH, FT. FROM	0	TO	95	
OTHER				DIA., IN.		DEPTH, FT. FROM		TO		

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8			
TYPE OF DRILLING MUD	QUIK MUD			
AUGER USED		YES	X	NO
TYPE AND DIAMETER, IN.				

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
08-04-14	14:00	67	20	-	THE BOREHOLE COLLAPSED BELOW THE CASING.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	LOUIS RAMOS	HELPERS	FRANKLIN MUNOZ
REMARKS	BOREHOLE BACKFILLED WITH DRILL CUTTINGS.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	08-06-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

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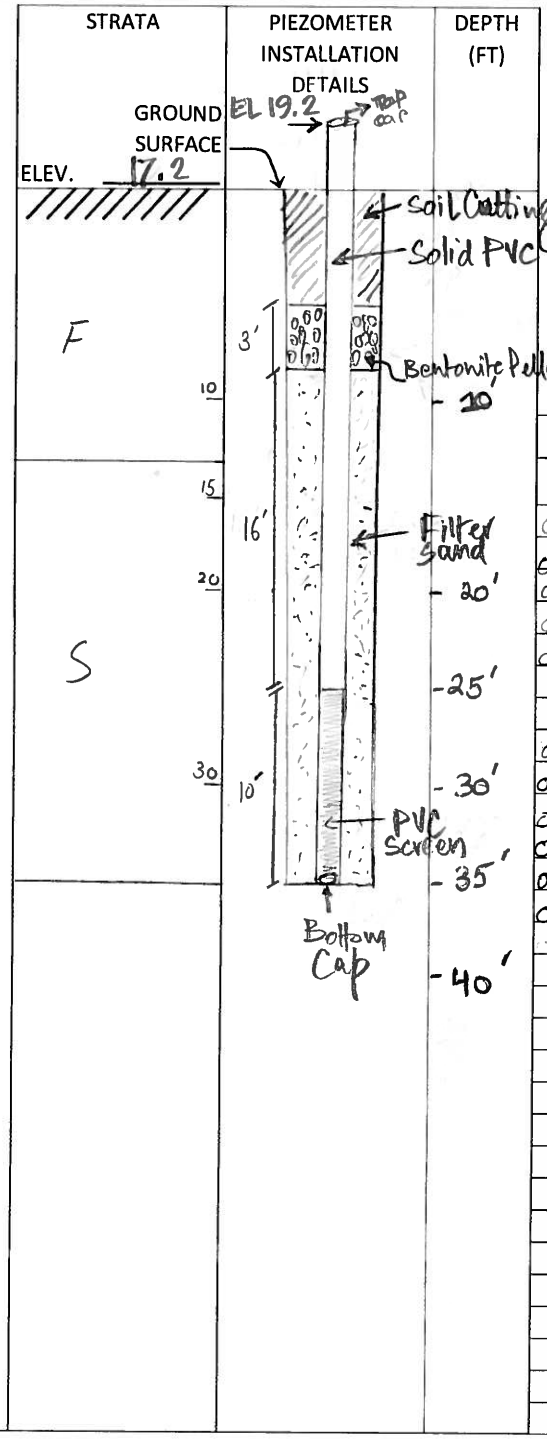
PIEZOMETER RECORD

PIEZOMETER OR BORING NO. MR-203P
SHEET 1 OF 2
FILE NO. 12217
INSTALLATION DATE 07/31/14
RES ENGR. F. El Khatib

PROJECT: L.A Central
LOCATION: 626 Bergen Ave, Bronx
PIEZOMETER LOCATION: 20' N of MR-203 (check plan)

☐ SEE SKETCH ON BACK



PIEZOMETER TYPE Open Standpipe

INTAKE POINT
depth to bottom, ft = 35'
depth to top, ft = 25'
length, ft = 10 = L
diameter, in = 2, ft = 0.17 = 2R

STANDPIPE/RISER
elevation of rim, ft = 19.2
diameter, in = 2, ft = 0.17 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
07/30/14	15:00	14.6'		before adding pellets
07/31/14	06:45	16.2'		after installation
07/31/14	14:55	16.1'		
08/01/14	06:55	16.1'		
08/01/14	14:30	15.9'		after 6.5hrs of performing falling head test
08/04/14	06:30	16.1'		
08/04/14	14:50	16.1'		
08/05/14	06:30	16.1'		
08/05/14	14:00	16.1'		
08/06/14	06:45	16.1'		
08/11/14	12:30	16.2'		

SAND
GRAVEL
BENTONITE
GROUT

GROUND SURFACE ELEV. 17.2

PIEZOMETER NO. MR-203P

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BORING NO. MR-203P
SHEET 2 **OF** 2
FILE NO. 12217
SURFACE ELEV. 17.2
DATUM NAVD 88

PROJECT L.A. Central
LOCATION 626 Bergen Ave, Bronx
BORING LOCATION Check plan

TEST/INSPECTION EQUIPMENT
REFERENCE CODES/STANDARDS

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	Acker 82	MECHANICAL		DIA., IN.	4"	DEPTH, FT. FROM	0'	TO	15'
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

[X] YES [ ] NO

TYPE AND SIZE OF:
D-SAMPLER
U-SAMPLER
S-SAMPLER
CORE BARREL
CORE BIT
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3 7/8"
TYPE OF DRILLING MUD revert

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
SAMPLER HAMMER, LBS. AVERAGE FALL, IN.
TYPE OF HAMMER Safety hammer

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON MR-203P, Sheet 1

STANDPIPE:	TYPE	ID, IN.	LENGTH, FT.	TOP ELEV.			
INTAKE ELEMENT:	TYPE	OD, IN.	LENGTH, FT.	TIP ELEV.			
FILTER:	MATERIAL	OD, IN.	LENGTH, FT.	BOT. ELEV.			

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR WGI
DRILLER Louis Ramos **HELPERS** Franklin Munoz
REMARKS
RESIDENT ENGINEER T. El Khatib **DATE** 07/31/14

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-204
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 16.8
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
07:00	1D	0.0	7-13	Brown fine to medium sand, some gravel,				
07-30-14		2.0	9-4	brick, silt, trace wood, vegetation (Fill) (SM)				
Wednesday	2D	2.0	2-5	Orange brick, some fine to medium sand, trace				
Sunny		4.0	6-12	silt (Fill) (GP-GM)				
75°F						5		
	3D	5.0	7-5	Orange brick, some coarse to fine sand, trace				REC=6"
		7.0	8-7	silt (Fill) (GP-GM)				
	4D	7.0	100/6"	Brown coarse to fine sand, some gravel, brick,				REC=3"
		7.5		trace silt (Fill) (SP-SM)				
					F	10		
	5D	10.0	13-13	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.
						15		
	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					
						35		
	10D	35.0	6-8	Brown fine to medium sand, some gravel, trace	S			
		37.0	18-19	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		
	12D	45.0	5-6	Brown fine sand, trace silt, mica (SP-SM)				
		47.0	9-9					
						50		
	13D	50.0	5-7	Brown fine to medium sand, trace silt, coarse				
		52.0	11-12	sand, gravel (SP-SM)				

MRCE Form BL-1

BORING NO. MR-204

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-204
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 16.8
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 07-30-14 Wednesday Sunny 75°F								
	14D	55.0	6-7	Do 13D (SP-SM)		55		
		57.0	13-14					
	15D	60.0	6-6	Brown fine to medium sand, trace silt (SP-SM)		60		
		62.0	10-11					
	16D	65.0	5-7	Do 15D (SP-SM)		65		
		67.0	9-11		S			
	17D	70.0	8-8	Do 15D (SP-SM)		70		
		72.0	11-10					
	18D	75.0	7-10	Do 15D (SP-SM)		75		
		77.0	11-14					
	19D	80.0	9-17	Brown fine to medium sand, trace silt, coarse sand, mica (SP-SM)		80		
		82.0	14-21			83.5		
	20D	85.0	30-45	Brown fine to medium sand, some rock fragments, trace silt (SP-SM)	T	85		
		87.0	33-29					Rig chatter at 88'.
14:45						90		Hard drilling.
07:00 07-31-14 Thursday Sunny 79°F	1C	90.0	REC=89% RQD=40%	Intermediate slightly weathered to highly weathered gray marble, moderately jointed to broken, iron stained & weathered joints			3*	
		95.0					2.5*	White wash.
							2*	*Coring time in
							2*	minutes per foot.
	2C	95.0	REC=91% RQD=56%	Medium hard to weathered slightly weathered to highly weathered gray marble, jointed to broken, iron stained & weathered joints	R/WR	95	2*	
		100.0					1.5*	
							1.5*	
							1.5*	
							2	
10:00						100	2.5*	End of Boring at 100'.

ROCK CORE SKETCH

BORING NO. MR-204
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 16.8'
RESIDENT ENGINEER F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
2C	91/56

95' TOP

broken
J0° US3
J0° US3
broken 2
J0° US3
70 US3
sand
J0° US3
J0° US3
sand
J 70° US3
J0° US3
99.55' bottom 2C

BOTTOM

Run No.	REC/RQD
1C	89/40

90' TOP

J0° US3
J0° US3
J0° US3
J 60° US3
broken
J0° US3
J0° US3
J50° US3
J0° US3
sand
broken
J0° US3
J 70° US3
94.45' Bottom 1C

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
X - Angle w/ Horizonta
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recoverec
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-204
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	16.8
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TYPE OF BORING RIG										
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	90	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED X YES NO

DIAMETER OF ROTARY BIT, IN. 3-7/8

TYPE OF DRILLING MUD QUIK MUD

AUGER USED YES X NO

TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30

*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-30-14	14:50	90	90	14	END OF THE DAY.
07-31-14	06:40	90	90	14	OVERNIGHT MUD LEVEL. SAME READING DUE TO CASING BEING ON TOP OF ROCK.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR WARREN GEORGE, INC.

DRILLER JIMMY WILSON HELPERS WILLIAM ROSADO

REMARKS BOREHOLE BACKFILLED WITH DRILL CUTTINGS.

RESIDENT ENGINEER FAROUK EL KHATIB DATE 07-31-14

CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-205
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 16.4
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:30	1D	0.0	3-8	Brown medium to fine sand, some gravel, silt,			DRILLED	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			4" 3"	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)				
		12.0	3-5					
						15		
	7D	15.0	3-2	Do 6D (SP-SM)				
		17.0	2-5					
						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					
						30		
	10D	30.0	9-7	Do 6D (SP-SM)				
		32.0	7-7		S			
						35		
	11D	35.0	7-6	Do 6D (SP-SM)				
		37.0	10-12					
						40		
	12D	40.0	9-8	Do 6D (SP-SM)				
		42.0	9-9					
						45		
	13D	45.0	9-7	Brown medium to fine sand, trace silt (SP-SM)				
		47.0	8-8					
						50		
	14D	50.0	9-7	Brown fine sand, some silt (SM)				
		52.0	7-9					

BORING NO. MR-205

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-205
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 16.4
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-17-14 Thursday Sunny 72°F, 14:45							DRILLED AHEAD 3"	
						55		
07:30 07-18-14 Friday Sunny 75°F	15D	55.0	9-11	Brown fine sand, trace silt (SP-SM)				
		57.0	14-15					
					S	60		
	16D	60.0	15-15	Do 15D, trace mica (SP-SM)				
		62.0	15-17					
						65		
	17D	65.0	8-7	Do 16D (SP-SM)				
		67.0	8-9					
						68.5		
					M	70		
	18D	70.0	100/6"	Top 3": Brown fine sandy silt (ML)		70.3	6*	*Coring time in minutes per foot.
		70.5		Bot 3": Gray fine sand, sm gravel, tr silt (SP-SM)	DR	71	6*	
	1C	71.0	REC=15%	Weathered highly weathered white marble,			3*	
		76.0	RQD=7%	closely jointed, weathered joints			4*	
						75	6*	
	19D	76.0	70-70	Brown fine to coarse sand, some rock fragments,				
		77.5	100/6"	trace silt (Decomposed Rock) (SP-SM)				
14:45								Rig chatter at 79'.
						80		Hard drilling at 80'.
10:15 07-21-14 Monday Sunny 77°F	2C	80.0	REC=3%	Weathered highly weathered brown marble,			0.5*	Brown wash through-
		85.0	RQD=0%	broken, weathered joints	R/WR		0.5*	out coring.
							0.5*	
							0.5*	
						85	0.5*	
	20NR	85.0	100/1"	No recovery			3*	White wash at 86'.
		85.1					3*	
	3C	85.1	REC=80%	Top 1': Do 2C			3*	
		90.1	RQD=40%	Bot: Medium hard to intermediate slightly			2.5*	
14:30				weathered to moderately weathered white gray		90	3.5*	
				marble, jointed to broken, iron stained &		90.1		End of Boring at 90.1'.
				weathered joints				
						95		
						100		

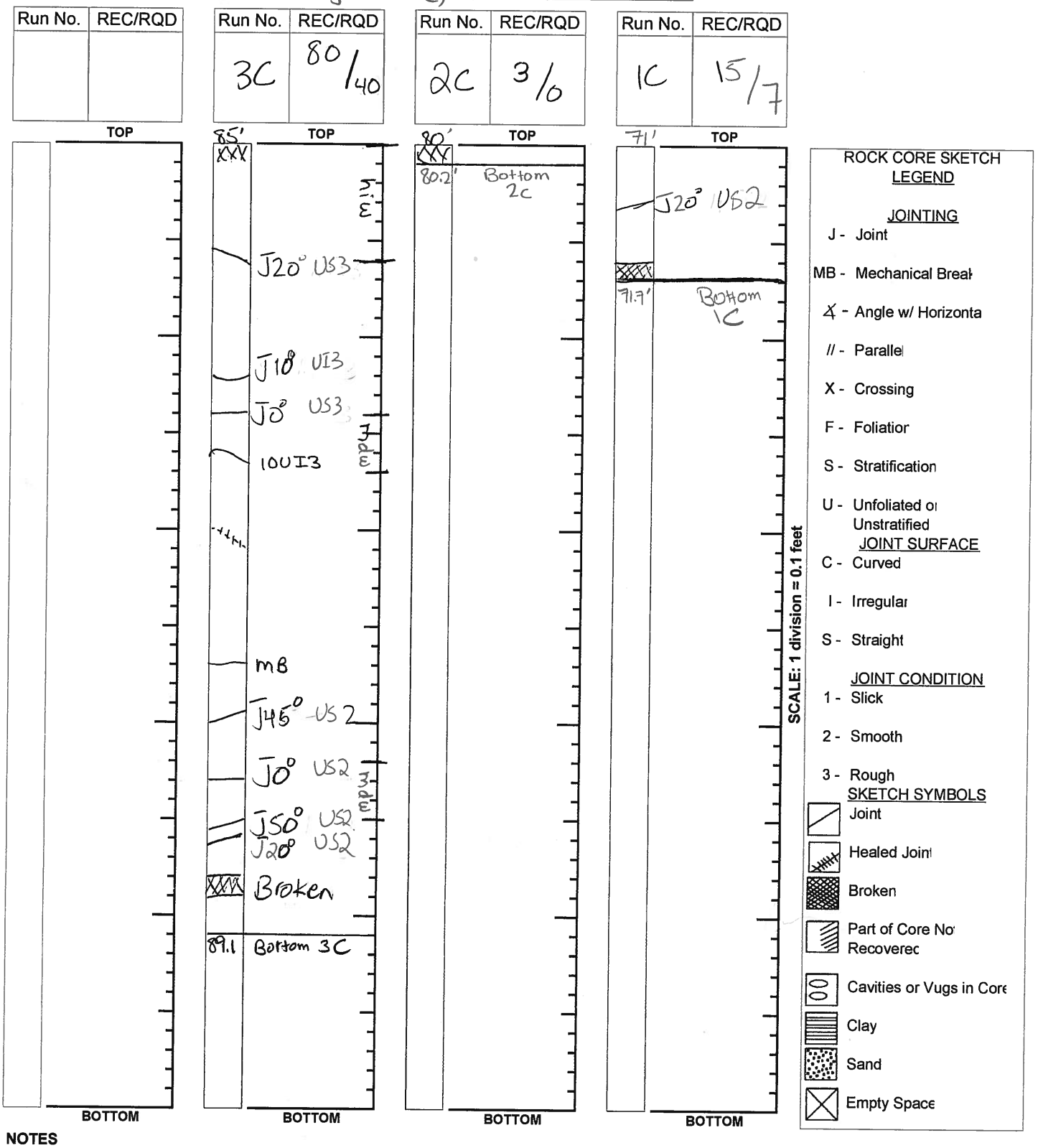
MRCE Form BL-1

BORING NO. MR-205

ROCK CORE SKETCH

BORING NO. MR-205
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 16.4'
RESIDENT ENGINEER F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx



NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. MR-205
SHEET 4 **OF** 4
FILE NO. 12217
SURFACE ELEV. 16.4
DATUM NAVD 88

PROJECT LA CENTRAL
LOCATION BRONX, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG
TRUCK SOIL XLS/ACKER AD2
SKID
BARGE
OTHER

TYPE OF FEED DURING CORING
MECHANICAL
HYDRAULIC X
OTHER

CASING USED [X] YES [ ] NO
DIA., IN. 4 DEPTH, FT. FROM 0 TO 20
DIA., IN. 3 DEPTH, FT. FROM 0 TO 76
DIA., IN. DEPTH, FT. FROM TO

TYPE AND SIZE OF:
D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE TUBE "M" SERIES
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD EASY MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LB 140 AVERAGE FALL, IN. 30
*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER OBSERVATION DUE TO BOREHOLE
					COLLAPSE AT 18'.
07-18-14	08:16	57	20	12.3	AFTER CLEANING HOLE AT 55'.
07-18-14	14:50	80	76	20.7	END OF DAY.
07-21-14	10:20	80	76	12.3	OVERNIGHT MUD LEVEL.
07-21-14	14:45	90	76	21	END OF BORING.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV.
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV.
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING LIN. FT.
3.5" DIA. U-SAMPLE BORING LIN. FT.
CORE DRILLING IN ROCK LIN. FT.
NO. OF 3" SHELBY TUBE SAMPLES
NO. OF 3" UNDISTURBED SAMPLES
OTHER:

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER EDWIN FELICIANO/JACOB HARRIS HELPERS RAMON FELICIANO/DAVID HARRIS
REMARKS HARRIS WORKED ON 07-21-14. BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.
RESIDENT ENGINEER FAROUK EL KHATIB DATE 07-21-14
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-206
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 17.2
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD	REMARKS
10:30	1D	0.0	2-4	Brown fine to coarse sand, some gravel, brick,				REC=6"
07-17-14		2.0	4-7	trace silt (Fill) (SP-SM)				
Thursday	2D	2.0	7-7	Brown brick, some fine to coarse sand, trace			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		
	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				
		17.0	6-5	(SP-SM)				
						20		
	8D	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				
		32.0	7-9	silt (SP-SM)				
						35		
	11D	35.0	7-12	Brown fine to medium sand, trace coarse sand,				
		37.0	12-8	gravel, silt, layers of fine sand, some silt				
				(SP-SM)		40		
	12D	40.0	11-9	Brown fine to medium sand, trace silt (SP-SM)				
		42.0	12-9					
14:45						45		
07:30	13D	45.0	12-20	Brown fine sand, trace silt, mica (SP-SM)				
07-18-14		47.0	17-13					
Friday								
Sunny								
75°F						50		
	14D	50.0	7-12	Do 16D, trace gravel (SP-SM)				
		52.0	17-22					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-206
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 17.2
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 07-18-14 Friday Sunny 75°F								
						55		
	15D	55.0	11-11	Brown fine sand, trace silt (SP-SM)				
		57.0	13-16					
						60		
	16D	60.0	8-15	Do 15D, trace mica (SP-SM)				
		62.0	17-20					
						65		
	17D	65.0	9-11	Brown fine to medium sand, trace silt (SP-SM)	S			
		67.0	13-16					
						70		
	18D	70.0	15-17	Brown fine sand, trace silt, mica (SP-SM)				
		72.0	23-25					Rig chatter at 74'.
						75		
	19D	75.0	35-30	Gray brown fine to coarse sand, some rock				
		77.0	40-64	fragments, trace silt (SP-SM)				Rig chatter at 77'.
						80		Hard drilling at 79.5'.
	1C	80.0	REC=50%	Intermediate to weathered slightly weathered			2*	*Coring time in
		85.0	RQD=37%	to highly weathered white gray marble, jointed, iron stained & weathered joints			2*	minutes per foot.
							1*	
							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*	
							1*	
						90	1*	
	3C	90.0	REC=85%	Top 1.9': Weathered moderately weathered			1*	
		95.0	RQD=47%	to highly weathered brown marble, broken, iron stained & weathered joints			2*	
				Bot 2.5': Medium hard slightly weathered to			1*	
14:00				moderately weathered white marble, jointed to closely jointed, iron stained & weathered joints			2*	
						95	1*	End of Boring at 95'.
						100		

MRCE Form BL-1

BORING NO. MR-206

ROCK CORE SKETCH

BORING NO. MR-206
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 17.2'
RESIDENT ENGINEER F. Elkhatib

PROJECT: L.A. Central
LOCATION: 826 Bergen Ave, Bronx

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
3C	85/47

90' TOP

J0° US3
J10° US3
Broken
J10° US3
J10° US3
J0° US3
J0° US3
J15° US3
J0° US3
J0° US3
J5° US3
J10° US3
J0°

94.4' Bottom 3C

BOTTOM

Run No.	REC/RQD
2C	45/0

85' TOP

Broken

87.2' Bottom 2C

BOTTOM

Run No.	REC/RQD
1C	50/37

80' TOP

J0° US2
J20 US2
J45 US2
J0° US3
J0° US3
J0° US3

82.5' Bottom 1C

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Paralle
X - Crossing
F - Foliatior
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recoverec
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. MR-206
SHEET 4 **OF** 4
FILE NO. 12217
SURFACE ELEV. 17.2
DATUM NAVD 88

PROJECT LA CENTRAL
LOCATION BRONX, NEW YORK
BORING LOCATION SEE BORING LOCATION PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	10
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	80
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED X YES NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD EASY MUD

AUGER USED YES X NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-17-14	15:00	42	10	10.4	END OF DAY.
07-18-14	07:00	42	10	13.4	OVERNIGHT MUD LEVEL.
07-18-14	14:45	95	80	13.5	END OF BOREHOLE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.
DRILLER ANGEL MEDRANO/LOUIS RAMOS HELPERS JULIAN SAMSON/FRANKLIN MUNOZ
REMARKS LOUIS & FRANKLIN WORKED ON 07-18-14. BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.
RESIDENT ENGINEER FAROUK EL KHATIB DATE 07-18-14
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

BORING NO. MR-207
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 17.5
RES. ENGR. FAROUK EL KHATIB

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION
08:00	1D	0.0	7-7	Brown fine to coarse sand, some gravel, brick,
07-21-14		2.0	5-4	trace silt (Fill) (SP-SM)
Monday	2D	2.0	5-5	Brown fine to coarse sand, some brick, trace
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
		6.0	5-5	brick, silt, vegetation (Fill) (SP-SM)
	4D	6.0	5-7	Brown gravelly fine to medium sand, trace silt,
		8.0	3-4	brick, vegetation (Fill) (SP-SM)
	5D	8.0	6-8	Brown silty fine sand, some brick, trace gravel
		10.0	7-7	(Fill) (SM)
	6D	10.0	3-5	Brown fine to medium sand, some silt, trace
		12.0	4-8	mica (SM)
	7D	15.0	7-6	Brown fine to medium sand, trace silt, mica
		17.0	5-6	(SP-SM)
	8D	20.0	11-15	Brown fine to coarse sand, trace gravel, silt
		22.0	15-15	(SP-SM)
	9D	25.0	14-10	Brown fine to medium sand, trace silt, coarse
		27.0	8-11	sand, mica (SP-SM)
	10D	30.0	13-12	Do 9D (SP-SM)
		32.0	12-8	
	11D	35.0	8-7	Brown fine to coarse sand, trace silt, gravel
		37.0	6-7	(SP-SM)
	12D	40.0	10-12	Brown fine sand, some silt, trace silt seams,
		42.0	12-17	mica (SM)
	13D	45.0	11-16	Brown fine sand, trace silt (SP-SM)
		47.0	21-19	
	14D	50.0	14-16	Brown fine sand, trace silt (SP-SM)
		52.0	19-19	

STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
			REC=3"
F	5		REC=3"
			REC=6"
	10		
			Brown wash at 14'.
	15		
	20		
	25		
S	30		
	35		
	40		
	45		
	50		

MRCE Form BL-1

BORING NO. MR-207

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-207
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 17.5
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 07-21-14 Monday Sunny 77°F								
	15D	55.0	17-19	Do 14D (SP-SM)		55		
		57.0	24-13					
	16D	60.0	15-21	Brown fine to medium sand, trace silt (SP-SM)		60		
		62.0	19-22		S			
	17D	65.0	20-23	Brown fine to medium sand, trace silt, mica (SP-SM)		65		
		67.0	26-26					
	18D	70.0	12-11	Brown silty fine sand, trace silt seams (SM)		70		
		72.0	26-24					Rig chatter at 73'.
	19D	75.0	100/3"	Brown fine to medium sand, trace rock fragments, silt (SP-SM)		75		REC=3"
		75.3			DR			
14;30						80		Hard drilling at 80'.
07:15	1C	80.0	REC=100%	Medium hard to intermediate slightly weathered to moderately weathered white gray marble, jointed to broken, iron stained & weathered joints			3.5*	
07-23-14 Wednesday Sunny 83°F		85.0	RQD=53%				4*	White wash. *Coring time in minutes per foot.
	2C	85.0	REC=93%	Intermediate slightly weathered to moderately weathered white gray marble, closely jointed, iron stained & weathered joints	R/WR	85	4*	
		90.0	RQD=44%				6*	
							5.5*	
							7*	
							7*	
10:00						90	5*	End of Boring at 90'.
						95		
						100		

BORING NO. MR-207

ROCK CORE SKETCH

BORING NO. MR-207
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 17.5'
RESIDENT ENGINEER F. Elkhatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	93/44

Run No.	REC/RQD
1C	100/53

TOP

TOP

85' TOP

80' TOP

Broken
J0° US3
J0° US3
J0° US3
J5° US3
J0° US3
J30° US3
Broken 2
J20° US3
J20° US3
J0° US3
J20° US3
Broken 3
J0° US3
Broken
89.6' Bottom 2C

J10 US3
J0° US3
J0° US3
J10° US3
J45° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
Broken 2
65'

BOTTOM

BOTTOM

BOTTOM

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Paralle
X - Crossing
F - Foliatior
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recoverec
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-207
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	17.5
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING	
TYPE OF BORING RIG			
TRUCK	ACKER 82	MECHANICAL	
SKID		HYDRAULIC	X
BARGE		OTHER	
OTHER			

CASING USED	X	YES		NO			
DIA., IN.	4	DEPTH, FT. FROM	0	TO	12		
DIA., IN.	3	DEPTH, FT. FROM	0	TO	80		
DIA., IN.		DEPTH, FT. FROM		TO			

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8			
TYPE OF DRILLING MUD	REVERT			
AUGER USED		YES	X	NO
TYPE AND DIAMETER, IN.				

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-21-14	14:45	80	80	12.7	END OF DAY.
07-22-14	07:00	80	80	9.2	OVERNIGHT MUD LEVEL.
07-23-14	07:00	80	80	9.2	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	LOUIS RAMOS	HELPERS	FRANKLIN MUNOZ
REMARKS	BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-23-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-208
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 17.2
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS (DRILLED AHEAD 4" 3")	REMARKS
07:00	1D	0.0	11-51	Brown fine to medium sand, some brick, trace				REC=6"
07-31-14		2.0	23-6	gravel, silt, vegetation, wood (Fill) (SP-SM)				
Thursday	2NR	2.0	7-38	No recovery				
Sunny		4.0	98-100/2"					
79°F	3D	4.0	21-100/2"	Brown fine to coarse sand & brick, trace gravel,		5		REC=2"
		4.7		silt, vegetation (Fill) (SP-SM)				
	4D	6.0	2-3	Brown brick, some fine to coarse sand, trace				REC=1"
		8.0	3-4	silt (Fill) (SP-SM)				
	5D	8.0	5-7	Black brown fine to coarse sand & brick,	F			
		10.0	9-14	trace silt (Fill) (SP-SM)		10		
	6D	10.0	14-16	Brown brick & gravel, some fine to coarse sand,				
		12.0	18-17	trace silt, wood (Fill) (SP-SM)				
								Brown wash.
						15		
	7D	15.0	2-1	Brown fine to medium sandy gravel, trace silt				
		17.0	95-14	(GP-GM)		17		
						20		
	8D	20.0	9-9	Brown fine to medium sand, trace silt, mica				
		22.0	11-12	(SP-SM)				
						25		
	9D	25.0	6-8	Brown fine to coarse sand, trace silt (SP-SM)				
		27.0	7-9					
						30		
	10D	30.0	7-9	Do 9D, trace gravel (SP-SM)				
		32.0	9-10					
					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	13-12	Do 11D (SP-SM)				
		42.0	12-11					
						45		
	13D	45.0	12-12	Brown fine to medium sand, trace silt (SP-SM)				
		47.0	14-14					
						50		
	14D	50.0	12-17	Do 13D (SP-SM)				
		52.0	14-15					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-208
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 17.2
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 07-31-14 Thursday Sunny 79°F								
						55		
	15D	55.0	14-14	Do 13D (SP-SM)				
		57.0	18-20					
						60		
	16D	60.0	11-15	Do 13D (SP-SM)				
		62.0	18-14					
						65		
	17D	65.0	32-48	Do 13D (SP-SM)	S			
		67.0	50-46					
						70		
	18D	70.0	27-25	Brown fine sand, trace silt, mica (SP-SM)				
		72.0	18-18					
						75		
	19D	75.0	20-22	Brown fine to medium sand, trace silt (SP-SM)				
		77.0	20-31					
14:45						80		Hard drilling at 80'.
07:00 08-01-14 Friday Cloudy 77°F	1C	80.0	REC=3%	Weathered highly weathered white marble,			1*	*Coring time in
		85.0	RQD=0%	broken, iron stained & weathered joints			1*	minutes per foot.
							1*	
							1*	
						85	1*	
	2C	85.0	REC=90%	Medium hard unweathered to slightly weathered			3*	White wash.
		90.0	RQD=68%	white marble, moderately jointed to closely			4.5*	
				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*	
11:30							3*	
						95	3.5*	End of Boring at 95'.
						100		

MRCE Form BL-1

BORING NO. MR-208

ROCK CORE SKETCH

BORING NO. MR-208
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 17.2'
RESIDENT ENGINEER F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
3C	100/93

90' TOP

J10° US3

broken
J0° US3
J0° US3

BOTTOM

Run No.	REC/RQD
2C	90/68

85' TOP

broken
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J20 US3
J0° US3
MB 0°
MB 0°
89.5' bottom 2C

BOTTOM

Run No.	REC/RQD
1C	3'/0

80' TOP

broken
80.15' bottom 1C

85'

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-208
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	17.2
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING		CASING USED						
TYPE OF BORING RIG					X	YES		NO		
TRUCK	ACKER 82	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	25	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	80	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK MUD		
AUGER USED	YES	X	NO
TYPE AND DIAMETER, IN.			

*CASING HAMMER, LBS.	300	AVERAGE FALL, IN.	24
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-13-14		80	80		CASING IS ON TOP OF ROCK. WATER IS AT TOP OF CASING.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.		NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK	LIN. FT.		OTHER:

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	LOUIS RAMOS	HELPERS	FRANKLIN MUNOZ
REMARKS	BOREHOLE BACKFILLED WITH DRILL CUTTINGS.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	08-01-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-209
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 18.7
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
07:00	1D	0.0	17-48	Brown fine to coarse sand, some orange				
07-22-14		2.0	99-43	brick fgmts, trace silt, vegetation (Fill) (SP-SM)				
Tuesday	2D	2.0	80-86	Do 1D (Fill) (SP-SM)				
Sunny		4.0	53-14					Red wash at 4'.
84°F						5		Rig chatter at 5'.
	3D	5.0	100/1"	Gray brown gravel & brick fragments, some				Red wash at 6'.
		5.1		coarse to fine sand, trace silt (Fill) (GP-GM)				Rig chatter at 6'.
	4D	7.0	100/5"	Orange brick fragments, trace coarse to fine				
		7.9		sand, silt (Fill) (GP-GM)				Rig chatter at 9'.
	5D	10.0	100/4"	Do 4D (Fill) (GP-GM)	F	10		Brick red wash at 10'.
		10.3						
								Light brown wash &
								rig chatter at 13'.
								Loss of fluid at 14'.
						15		Rig chatter at 15' & 16'.
	6NR	17.0	50/1"	No recovery				Very hard drilling at
		17.1						15' & 16'. Took sample
								at 17'. Clear wash at
								17'.
	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'.
						25		
	8D	25.0	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					
						35		
	10D	35.0	7-7	Do 9D (SM)	S			
		37.0	9-7					
						40		
	11D	40.0	7-7	Do 9D (SM)				
		42.0	8-10					
						45		
	12D	45.0	10-9	Brown fine sand, trace silt (SP-SM)				
		47.0	9-8					
						50		
	13D	50.0	7-7	Brown fine to coarse sand, trace gravel, silt				
		52.0	6-5	(SP-SM)				

BORING NO. MR-209

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-209
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 18.7
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 07-22-14 Tuesday Sunny 84°F								
						55		
	14D	55.0	9-9	Brown fine to medium sand, trace gravel, silt, mica (SP-SM)				
		57.0	9-10					
						60		
	15D	60.0	6-7	Brown fine to medium sand, trace silt, mica (SP-SM)	S			
		62.0	7-9					
						65		
	16D	65.0	6-6	Brown fine sand, some silt (SM)				
		67.0	10-10					
						70		
	17D	70.0	11-10	White brown fine to coarse sand, trace gravel, silt, mica (SP-SM)				
		72.0	15-17					
						74		Rig chatter at 74'.
						75		
	18D	75.0	30-38	Brown fine to coarse sand, some silt, black gray rock fragments (SM)	T			
15:00		77.0	32-82			76.5		
07:00 07-23-14 Wednesday					DR			
						80		
Sunny 83°F	19NR	80.0	100/0"	No recovery			1*	White wash. Brown wash at 82.5'.
		80.0					2*	
	1C	80.0	REC=100%	Intermediate slightly weathered to highly			2*	
		85.0	RQD=42%	weathered white gray marble, jointed to broken, iron stained & weathered joints			3*	White wash.
					R/WR	85	3.5*	
	2C	85.0	REC=100%	Intermediate to weathered highly weathered			3*	
		90.0	RQD=58%	to slightly weathered white gray marble, jointed to broken, iron stained & weathered joints			2*	
							3*	
							2*	
08:25						90	2.5*	End of Boring at 90'.
						95		
						100		

ROCK CORE SKETCH

BORING NO. MR-209
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 18.7'
RESIDENT ENGINEER F.El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
2C	100/58

85' TOP

J0° US3
J0° US3
J0° 11 FS3
J5° 11 FS3
J20° 11 FS3
I0° 11 FS3
J0° 11 FS3
Broken
J20° UI3
80 UI3
J0° US3
J0° US3
J0° US3
J0° US3
J5° US3
J0° US3

90' BOTTOM

Run No.	REC/RQD
1C	100/42

80' TOP

J0° US3
J0° US3
J5° UI3
J0° US3
J0° US3
J30 US3
J0° US3
Broken
J15° US3
J0° US3
Broken 2
85 US3
J0° US3
J0° US3
J0° US3
J0° US3
J5° US3

85' BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recoverec
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-209
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	18.7
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING								
TYPE OF BORING RIG				CASING USED		X	YES		NO	
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	24	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	80	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES		NO	
DIAMETER OF ROTARY BIT, IN.	3-7/8				
TYPE OF DRILLING MUD	REVERT				
AUGER USED		YES	X	NO	
TYPE AND DIAMETER, IN.					
*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30		
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30		

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-22-14	15:00	77	24	4.2	END OF DAY AFTER CLEANING THE BOREHOLE.
07-23-14	07:00	77	24	15.9	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	JACOB HARRIS	HELPERS	DAVID HARRIS
REMARKS	BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-23-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-210
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 18.3
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
11:00	1D	0.0	6-18	Brown fine to medium sand & brick, trace				
07-23-14		2.0	65-5	gravel, silt, wood, vegetation (Fill) (SP-SM)				
Wednesday	2D	2.0	5-6	Brown fine to medium sand, some brick, trace				REC=3"
Sunny		4.0	5-4	silt (Fill) (SP-SM)				
83°F	3D	4.0	2-3	Brown fine to medium sand, trace brick, silt,	F	5		REC=3"
		6.0	6-5	gravel (Fill) (SP-SM)				
	4D	6.0	5-5	Brown medium to fine sand, some gravel,				
		8.0	4-6	brick, trace silt (Fill) (SP-SM)				
	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)	S			
		32.0	3-3					
						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				
		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)				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-210
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 18.3
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-23-14 Wednesday Sunny 83°F							DRILLED AHEAD 3"	
						55		
	15D	55.0	17-23	Brown fine to medium sand, trace silt (SP-SM)				
		57.0	16-19					
						60		
	16D	60.0	16-19	Brown fine sand, some silt, rock fragments				
14:50		62.0	36-25	(SM)				
07:00 07-24-14 Thursday					S			
						65		
Sunny 80°F	17D	65.0	17-21	Brown fine sand, trace silt, mica (SP-SM)				
		67.0	21-29					
						70		
	18D	70.0	17-28	Brown fine sand, some silt, trace mica (SM)				
		71.3	100/3"					
								Hard drilling at 74'.
						75		
	1C	75.0	REC=60%	Weathered highly weathered dark green			3.5*	
		80.0	RQD=0%	chloritic marble, broken, weathered joints			1.5*	Light brown gray wash.
							3*	*Coring time in
							3*	minutes per foot.
						80	4*	
	2C	80.0	REC=92%	Top 0.7': Do IC			2*	White wash.
		85.0	RQD=27%	Bot 3.9': Weathered moderately weathered			3*	
				gray marble, closely jointed to broken, iron	R/WR		2*	
				stained & weathered joints			2*	
						85	2.5*	
	3C	85.0	REC=93%	Weathered slightly weathered to moderately			2*	
		90.0	RQD=22%	weathered gray white marble, jointed to broken,			3*	
				iron stained & weathered joints			3*	
							2.5*	
12:05						90	4.5*	End of Boring at 90'.
						95		
						100		

MRCE Form BL-1

BORING NO. MR-210

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

ROCK CORE SKETCH

BORING NO. MR-210
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEV. 18.3'
RES ENGR. F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
3C	93./42

95 TOP

J0° US3
J15° US3
J0° US3
J0° US3
J15° US3
J5° US3
J0° US3
J0° US3,
Broken
J0° US3
J0° US3
J0° US3
J20° US3
J5° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3

89.66' Bottom 3C

BOTTOM

Run No.	REC/RQD
2C	92/20

80' TOP

Broken
J0° US3
J10° US3
J0° US3
J0 US3
J0° US3
J0° US3
Broken 2
J0° US3
J0° US3
J0° US3
Broken 3
J0° US3
J0° US3
J0° US3
J0° US3
J25° US3
Broken 4

84.6' Bottom 2C

BOTTOM

Run No.	REC/RQD
1C	60/6

75' TOP

J0° US2
J0° US3
J0° US3
J0° US3
J0 US3
Broken

78' Bottom 1C

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-210
		SHEET	4 OF 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	18.3
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK	ACKER 82	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	10	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	75	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: X YES ☐ NO

DIAMETER OF ROTARY BIT, IN.: 3-7/8

TYPE OF DRILLING MUD: REVERT

AUGER USED: ☐ YES X NO

TYPE AND DIAMETER, IN.:

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30

*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-23-14	14:55	62	10	12.6	END OF DAY.
07-24-14	07:00	62	10	15.2	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED ☐ YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR: WARREN GEORGE, INC.

DRILLER: LOUIS RAMOS HELPERS: FRANKLIN MUNOZ

REMARKS: BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.

RESIDENT ENGINEER: FAROUK EL KHATIB DATE: 07-24-14

CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-211
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 17.3
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING 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)				
						15		
	6D	15.0	2-1	Brown fine to medium sand, some gravel,				REC=6"
		17.0	1-2	trace brick, wood, silt (Fill) (SP-SM)				
								Black wash at 18.5'.
						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)	S			
		37.0	3-4					
						40		
	12D	40.0	9-9	Brown fine sand, some silt, silt layers (SM&ML)				
		42.0	10-13					
						45		
	13D	45.0	9-8	Brown fine to medium sand, trace coarse sand,				
		47.0	8-11	gravel, silt (SP-SM)				
						50		
	14D	50.0	6-6	Brown fine sand, trace silt, mica (SP-SM)				
		52.0	9-11					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-211
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 17.3
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

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

MRCE Form BL-1

BORING NO. MR-211

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

ROCK CORE SKETCH

BORING NO. MR-21
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEV. 17.3'
RES ENGR. F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD

TOP

BOTTOM

Run No.	REC/RQD
3C	89/15

90' TOP

broken
J5° UI3
J0° US3
J0° US3
J10° US3
J5° US3
J0° US3
J60° US3
J0° US3
J0° US3
J0° US3
J0° US3
J0° US3
J5° US3
J5° US3
J0° US3
Broken 2F
J0° US3
J0° US3
91.4' Bottom 3C

BOTTOM

Run No.	REC/RQD
2C	50/17

77 TOP

J0° US3
J0° US3
J0° US3
J5° US3
Broken
79.5' Bottom 2C

BOTTOM

Run No.	REC/RQD
1C	25/NA

72' TOP

J50° US3
Gray boulder
Broken
73.6' Bottom 1C

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ð - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-211
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	17.3
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	20	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES		NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	REVERT		
CORE BARREL	NX DOUBLE TUBE "M" SERIES	AUGER USED	YES	X	NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-23-14	14:55	72	24	3.6	END OF DAY AFTER DRILLING ENDED (MUD LEVEL).
07-24-14	07:00	72	24	13	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	JACOB HARRIS	HELPERS	DAVID HARRIS
REMARKS	BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-24-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-212
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 16.9
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:30	1D	0.0	15-5	Brown fine to medium sand, some brick, trace			DRILLED	REC=4"
07-29-14		2.0	10-8	wood, silt (Fill) (SP-SM)			AHEAD	
Tuesday	2D	2.0	7-9	Brown fine to medium sand & brick, trace			4"	REC=6"
Sunny		4.0	9-13	gravel, silt (Fill) (SP-SM)				
77°F	3D	4.0	13-13	Do 2D (Fill) (SP-SM)		5		REC=2"
		6.0	21-11					
	4D	6.0	5-5	Do 2D (Fill) (SP-SM)				REC=4"
		8.0	8-10		F			
	5D	8.0	5-10	Do 2D (Fill) (SP-SM)				
		10.0	11-4			10		
	6D	10.0	10-19	Brown fine to medium sand, some concrete,				
		12.0	19-29	trace gravel, silt, wood (Fill) (SP-SM)				
						15		
	7D	15.0	5-6	Brown fine to coarse sand, some gravel, trace				REC=3"
		17.0	4-4	silt (SP-SM)				
						20		
	8D	20.0	7-7	Brown fine to medium sand, trace gravel, silt,				
		22.0	8-10	mica (SP-SM)				
						25		
	9D	25.0	9-11	Brown fine to medium sand, trace silt, mica				
		27.0	11-11	(SP-SM)				
						30		
	10D	30.0	6-7	Do 9D, trace coarse sand (SP-SM)				
		32.0	13-15					
					S			
						35		
	11D	35.0	12-15	Do 9D, trace gravel (SP-SM)				
		37.0	19-17					
						40		
	12D	40.0	18-21	Brown fine sand, some silt, trace mica (SM)				
		42.0	25-27					
						45		
	13D	45.0	13-18	Brown silty fine sand (SM)				
		47.0	17-24					
						50		
	14D	50.0	8-18	Brown fine sand, some silt (SM)				
		52.0	16-21					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-212
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 16.9
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-29-14 Tuesday Sunny 77°F								
						55		
	15D	55.0	18-33	Do 14D (SM)				
		57.0	27-26					
14:30						60		
07:00 07-30-14 Wednesday Sunny 75°F	16D	60.0	8-9	Do 14D (SM)				
		62.0	12-29					
					S	65		
	17D	65.0	12-18	Brown fine to medium sand, trace silt (SM)				
		67.0	25-22					
						70		
	18D	70.0	12-14	Do 17D, trace mica (SP-SM)				
		72.0	15-16					
						75		
	19D	75.0	19-24	Brown fine to medium sand, trace silt, gravel (SP-SM)				
		77.0	22-27					
						78.5		
						80		
	20D	80.0	32-48	Brown gray fine to medium sand, some rock fragments, trace silt (Decomposed Rock) (SP-SM)	DR			
		81.1	100/1"					
						85		
	1C	85.0	REC=90%	Intermediate weathered slightly weathered to highly weathered white marble, jointed to broken, iron stained & weathered joints			4*	Light brown wash.
		90.0	RQD=28%				3*	*Coring time in
							3*	minutes per foot.
							2.5*	
						90	4*	
	2C	90.0	REC=66%	Intermediate slightly weathered to moderately weathered gray marble, jointed to closely jointed, iron stained & weathered joints	R/WR		7.5*	
		95.0	RQD=40%				13*	
							6*	
							3*	
12:00						95	4*	End of Boring at 95'.
						100		

BORING NO. MR-212

Mueser Rutledge Consulting Engineers
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New York, NY 10122
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ROCK CORE SKETCH

BORING NO. MR-212
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEV. 16.9'
RES ENGR. F. El Khatib

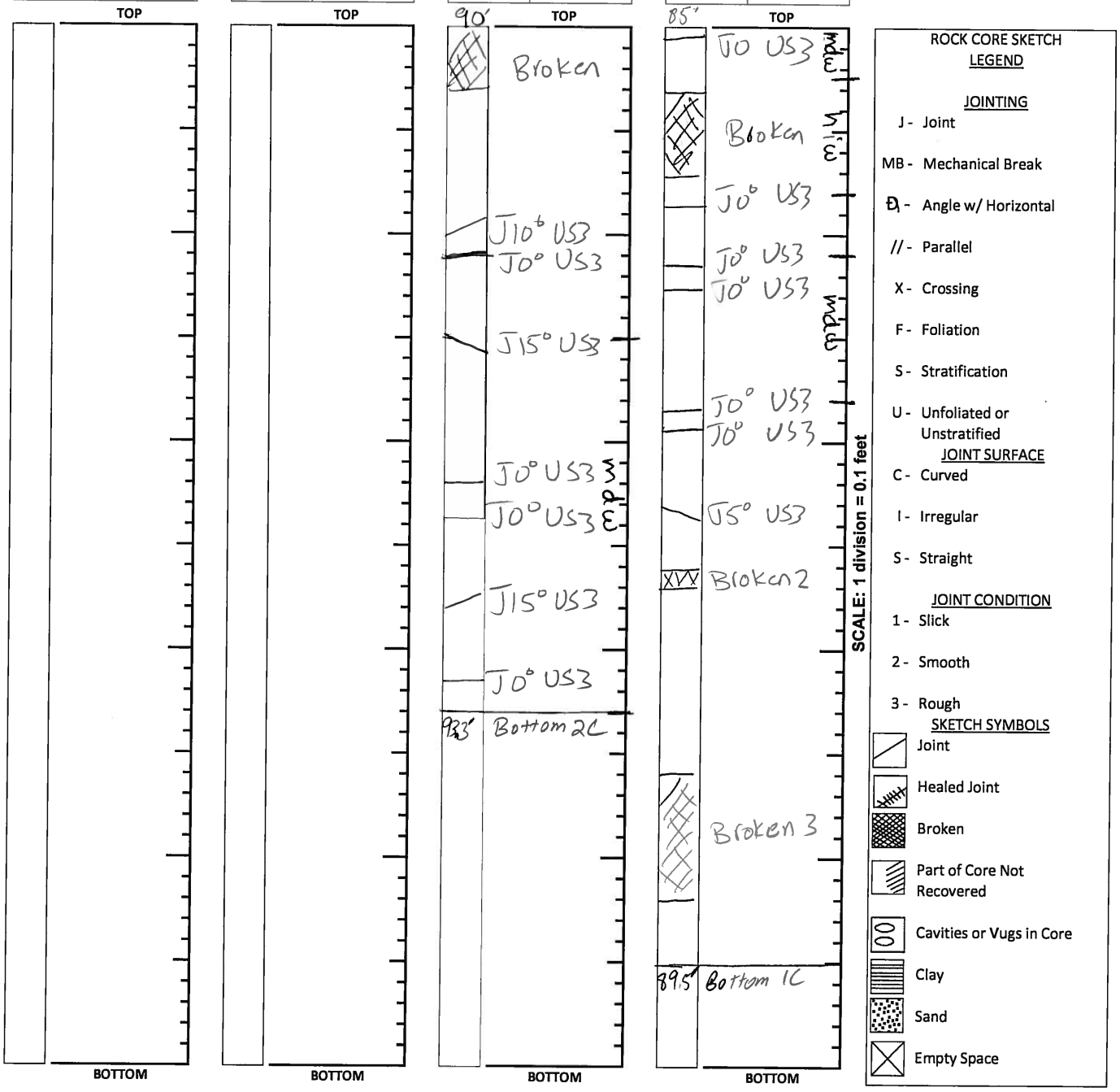
PROJECT: L.A. Central
LOCATION: 626 Bergen Ave., Bronx
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	66/50

Run No.	REC/RQD
1C	90/42



ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-212
		SHEET	4 OF 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	16.9
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING		CASING USED					
TYPE OF BORING RIG					X	YES		NO	
TRUCK	ACKER 82	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	20
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:		DRILLING MUD USED	X	YES	NO
D-SAMPLER	2" O. D. SPLIT SPOON	DIAMETER OF ROTARY BIT, IN.	3-7/8		
U-SAMPLER		TYPE OF DRILLING MUD	QUIK MUD		
S-SAMPLER					
CORE BARREL	NX DOUBLE TUBE "M" SERIES	AUGER USED		YES	X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

*CASING HAMMER, LBS.	300	AVERAGE FALL, IN.	24
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-29-14	14:45	60	20	5	END OF DAY.
07-30-14	06:50	60	20	12.9	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	LOUIS RAMOS	HELPERS	FRANKLIN MUNOZ
REMARKS	BOREHOLE BACKFILLED WITH DRILL CUTTINGS.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-30-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-213
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 19.1
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4" 3"	REMARKS
11:25	1D	0.0	9-16	Brown fine to medium sand, some brick,				REC=6"
07-24-14		2.0	6-5	gravel, trace silt, vegetation, wood (Fill) (SP-SM)				
Thursday	2D	2.0	3-2	Brown fine to medium sand, some brick, trace				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 bottom
		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					
						13.5		
	6D	14.0	6-3	Black organic silty fine sand, trace wood		15		
		16.0	2-5	(Fill) (SM)				
						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)				
						30		
	9D	30.0	9-6	Brown fine to medium sand, trace silt, mica				
		32.0	8-9	(SP-SM)	S			
						35		
	10D	35.0	5-5	Do 9D, trace coarse sand (SP-SM)				
		37.0	6-7					
						40		
	11D	40.0	7-6	Brown fine to medium sand, some gravel,				
		42.0	5-5	trace coarse sand, silt, mica (SP-SM)				
						45		
	12D	45.0	6-4	Brown fine to coarse sand, some gravel, trace				REC=6"
		47.0	6-10	silt (SP-SM)				
						50		
	13D	50.0	7-8	Brown silty fine sand (SM)				
		52.0	12-13					

BORING NO. MR-213

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-213
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 19.1
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 3"	REMARKS
Cont'd 07-24-14 Thursday Sunny 80°F								
						55		
	14D	55.0	8-6	Brown fine to medium sand, trace gravel, silt,				
		57.0	8-8	mica (SP-SM)	S			
						60		
	15D	60.0	11-11	Brown fine to medium sand, some silt, trace				
14:45		62.0	12-15	mica (SM)				
07:00 07-25-14 Friday						63.5		
Sunny 80°F	16D	65.0	16-14	Brown gravelly fine to medium sand, trace		65		
		67.0	12-17	coarse sand, silt (SP-SM)				
						70		
	17D	70.0	13-12	Brown gravelly fine to medium sand, trace	T			
		72.0	8-10	coarse sand, silt, mica (SP-SM)				
						75		
	18D	75.0	20-14	Do 17D (SP-SM)				
		77.0	13-12					
						78.5		
	19D	80.0	100/2"	Brown fine to medium sand, trace silt, rock		80		
		80.5		fragments (Decomposed Rock) (SP-SM)	DR			
						85		Hard drilling.
	1C	85.0	REC=65%	Weathered highly weathered to slightly			2*	*Coring time in
		90.0	RQD=19%	weathered gray marble, closely jointed to			3*	minutes per foot.
				broken, iron stained & weathered joints			3*	
							3*	
						90	3*	
	2C	90.0	REC=78%	Weathered slightly weathered to moderately	R/WR		2*	
		95.0	RQD=23%	weathered gray marble, closely jointed to			3*	
				broken, iron stained & weathered joints			3*	
							2.5*	
14:30						95	3.5*	End of Boring at 95'.
						100		

MRCE Form BL-1

BORING NO. MR-213

ROCK CORE SKETCH

BORING NO. MR-213
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 19.1'
RESIDENT ENGINEER F. El Khatib

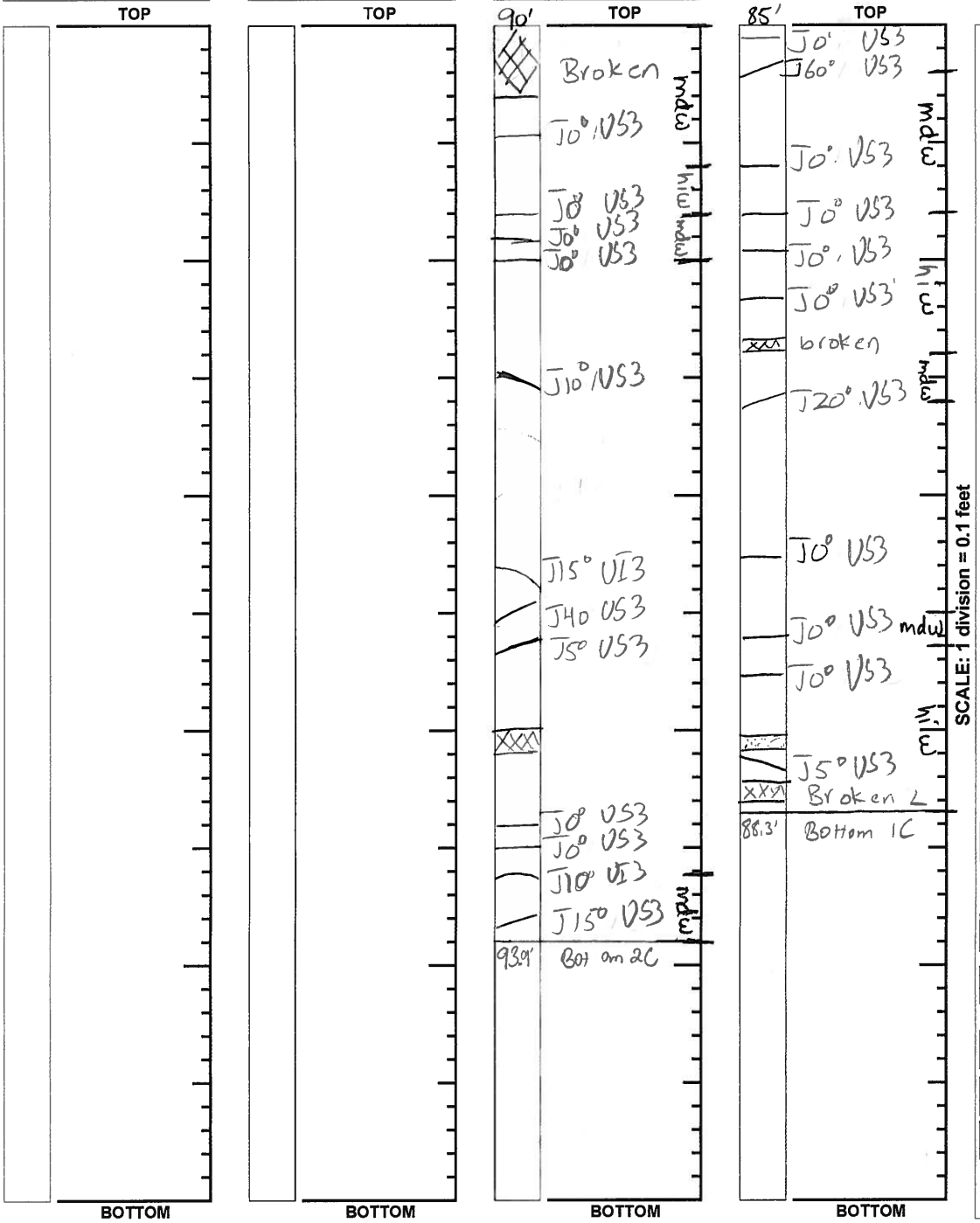
PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	78/38

Run No.	REC/RQD
1C	65/19



SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Paralle
X - Crossing
F - Foliatior
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-213
		SHEET	4 OF 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	19.1
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TYPE OF BORING RIG										
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	20	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	85	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:		DRILLING MUD USED	X YES		NO
D-SAMPLER	2" O. D. SPLIT SPOON	DIAMETER OF ROTARY BIT, IN.	3-7/8		
U-SAMPLER		TYPE OF DRILLING MUD	QUIK MUD		
S-SAMPLER					
CORE BARREL	NX DOUBLE TUBE "M" SERIES	AUGER USED	YES	X	NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-24-14	14:50	62	20	7.3	END OF DAY.
07-25-14	07:00	62	20	15.1	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	JACOB HARRIS/JIMMY WILSON	HELPERS	DAVID HARRIS/GILL BURGESS
REMARKS	JIMMY & BILL WORKED ON 07-25-14. BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-25-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-214
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 16.8
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
07:00	1D	0.0	10-10	Black organic silty fine to medium sand, some			DRILLED	
07-28-14		2.0	11-12	brick, gravel, trace vegetation (Fill) (SM)			AHEAD	
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		silt (Fill) (GP-GM)				Terminated borehole.
					F	10		Borehole moved 5'
	5D	10.0	5-9	Orange brick, trace fine to coarse sand, silt				West. Drilled ahead to
		11.3	100/3"	(Fill) (GP-GM)				10' with 4-7/8, rotary bit.
								4D: REC=6"
								5D: REC=4"
						15		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)				
						25		
	8D	25.0	17-19	Brown gray fine sand, some silt, trace mica				
		27.0	18-19	(SM)	S			
						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)	M			
		37.0	7-10					
						38.5		
						40		
	11D	40.0	8-9	Gray fine sand, some silt (SM)	S			
		42.0	13-7					
						43.5		
						45		
	12D	45.0	5-6	Gray silt, some fine sand, trace mica (ML)	M			
		47.0	8-20					
						48.5		
						50		
	13D	50.0	12-16	Brown fine to medium sand, some silt, trace	S			
		52.0	16-17	coarse sand, gravel (SM)				

MRCE Form BL-1

BORING NO. MR-214

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-214
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 16.8
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-28-14 Monday Partly Cloudy 75°F							DRILLED AHEAD 3"	
						55		
	14D	55.0	12-18	Brown fine to medium sand, trace silt (SP-SM)				
		57.0	23-22					
						60		
	15D	60.0	11-19	Brown silty fine sand, trace mica (SM)				
		62.0	28-30		S			
						65		
	16D	65.0	15-19	Top 6": Brown fine sand, some silt, trace mica (SM)				
		67.0	18-22	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 seams (SP-SM)				
		72.0	27-21					
						73.5		
					T	75		
	18D	75.0	11-9	Brown fine to medium sand, some rock fragments, trace silt, mica (SP-SM)				
		77.0	24-14					
						78.5		
14:30						80		
07:00 07-29-14 Tuesday Sunny 77°F	19D	80.0	100-100	Brown fine to coarse sand, some rock fragments, trace silt (Decomposed Rock) (SP-SM)	DR			
		81.0						
						85		
	1C	85.0	REC=100%	Intermediate slightly weathered to highly			2.5*	
		90.0	RQD=60%	weathered gray white marble, moderately			3*	White wash.
				jointed to broken, iron stained & weathered			2.5*	*Coring time in
				joints			2*	minutes per foot.
						90	2*	
	2C	90.0	REC=100%	Intermediate to weathered slightly weathered	R/WR		2.5*	
		95.0	RQD=33%	to highly weathered gray white marble, jointed			3*	
				to broken, iron stained & weathered			2.5*	
				joints			2.5*	
12:30						95	3*	End of Boring at 95'.
						100		

MRCE Form BL-1

BORING NO. MR-214

ROCK CORE SKETCH

BORING NO. MR-214
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEVATION 16.8'
RESIDENT ENGINEER F. ElKhatib

PROJECT: L.A Central
LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	100/32.5'

Run No.	REC/RQD
1C	100/60

TOP

BOTTOM

Broken
J0° US3
J0° US3
J0° UI3
J0° US3
J20° US3
J0° UI3
J0° US3
J0° US3
J45° US3
J0° US3
J0° US3
J25° US3
Broken 2
J0° US3
J0° US3
J0° US3
J0° US3
mdw-hig

85'
Broken
J0 US3
J0 US3
J0 US3
J0 US3
J0 US3
J0 US3
J0 US3
J0 US3
J40° US3
J0° US3
J0° US3
J0° US3
J25° US3
J30° US3
J20° US3
J30° US3
mdw
hig
90'

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∠ - Angle w/ Horizonta
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-214
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	16.8
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING		CASING USED					
TYPE OF BORING RIG					X	YES		NO	
TRUCK	ACKER AD2	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	85
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES	NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK MUD		
AUGER USED		YES	X NO
TYPE AND DIAMETER, IN.			

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-28-14	14:50	80	15	9.4	END OF THE DAY.
07-29-14	06:50	80	15	13.8	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	JIMMY WILSON	HELPERS	WILLIAM ROSADO
REMARKS	BOREHOLE BACKFILLED WITH DRILL CUTTINGS.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-29-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-215
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 17.7
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS DRILLED AHEAD 4"	REMARKS
12:40	1D	0.0	5-22	Black fine to coarse sand, some gravel, brick,				
07-24-14		2.0	30-7	trace silt, wood (Fill) (SP-SM)				
Thursday	2D	2.0	9-6	Brown fine to coarse sand, some gravel, brick,				REC=3"
Sunny		4.0	6-6	trace silt, wood (Fill) (SP-SM)				
80°F	3D	4.0	3-3	Brown fine to coarse sand, some brick, trace		5		
		6.0	2-4	silt, wood, gravel (Fill) (SP-SM)				
	4D	6.0	2-3	Do 3D (Fill) (SP-SM)	F			REC=3"
		8.0	7-8					
	5D	8.0	5-6	Brown fine to coarse sand, some brick, gravel,		10		
		10.0	44-38	trace silt (Fill) (SP-SM)				
	6D	10.0	6-7	Do 5D (Fill) (SP-SM)				
		12.0	7-9					
						13.5		
						15		
	7D	15.0	6-9	Brown fine to medium sand, some gravel,				
		17.0	7-6	trace coarse sand, silt (SP-SM)				
						20		
	8D	20.0	17-18	Do 7D (SP-SM)				
14:45		22.0	17-15					
07:00								
07-25-14								
Friday						25		
Sunny	9D	25.0	8-9	Brown fine to medium sand, trace silt, mica	S			
80°F		27.0	11-14	(SP-SM)				
						30		
	10D	30.0	10-19	Brown fine sand, some silt, trace mica (SM)				
		32.0	19-21					
						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)	M			
		42.0	18-25					
						43.5		
						45		
	13D	45.0	17-19	Brown fine sand, trace silt, mica (SP-SM)				
		47.0	18-18		S			
						50		
	14D	50.0	12-16	Brown fine sand, trace silt (SP-SM)				
		52.0	15-19					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-215
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 17.7
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-25-14 Friday Sunny 80°F								
					S	55		
	15D	55.0	14-18	Brown fine to medium sand, trace silt, silty fine sand seams (SP-SM)				REC=3"
		57.0	20-24					
						58.5		
						60		
	16D	60.0	30-15	Brown fine to coarse sand, some gravel, trace silt (SP-SM)				
		62.0	20-38					Rig chatter at 63'.
						65		
	17D	65.0	11-10	Brown fine to medium sand, trace gravel, silt, mica (SP-SM)	T			
		67.0	12-12					
						70		
	18D	70.0	7-8	Brown fine to medium sand, trace silt, mica (SP-SM)				
		72.0	11-12					Rig chatter at 73'.
						73.5		
						75		
	19D	75.0	38-100/6"	Gray brown fine to medium sand, some silt, mica, rock fragments (Decomposed Rock)	DR			
		76.0						
						80		Hard drilling.
	1C	80.0	REC=81%	Top 2': Weathered highly weathered dark gray black calcareous schist, broken, WJts			6*	Gray wash.
		84.0	RQD=16%				6*	
				Bot 1.3': Intermediate SlW to moderately weathered gray marble, CJtd, FeStn & WJts			4*	4' Run instead of 5'
							5*	due to core barrel
	2C	84.0	REC=93%	Medium hard slightly weathered to moderately	R/WR	85	4*	being jammed.
		89.0	RQD=57%	weathered gray marble, jointed to closely jointed, iron stained & weathered joints			3*	*Coring time in
							5*	minutes per foot.
							3*	
14:00						89	4*	End of Boring at 89'.
						90		
						95		
						100		

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
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ROCK CORE SKETCH

BORING NO. MR-215
SHEET 3 OF 4
FILE NO. 12217
SURFACE ELEV. 17.7'
RES ENGR. F. El Khatib

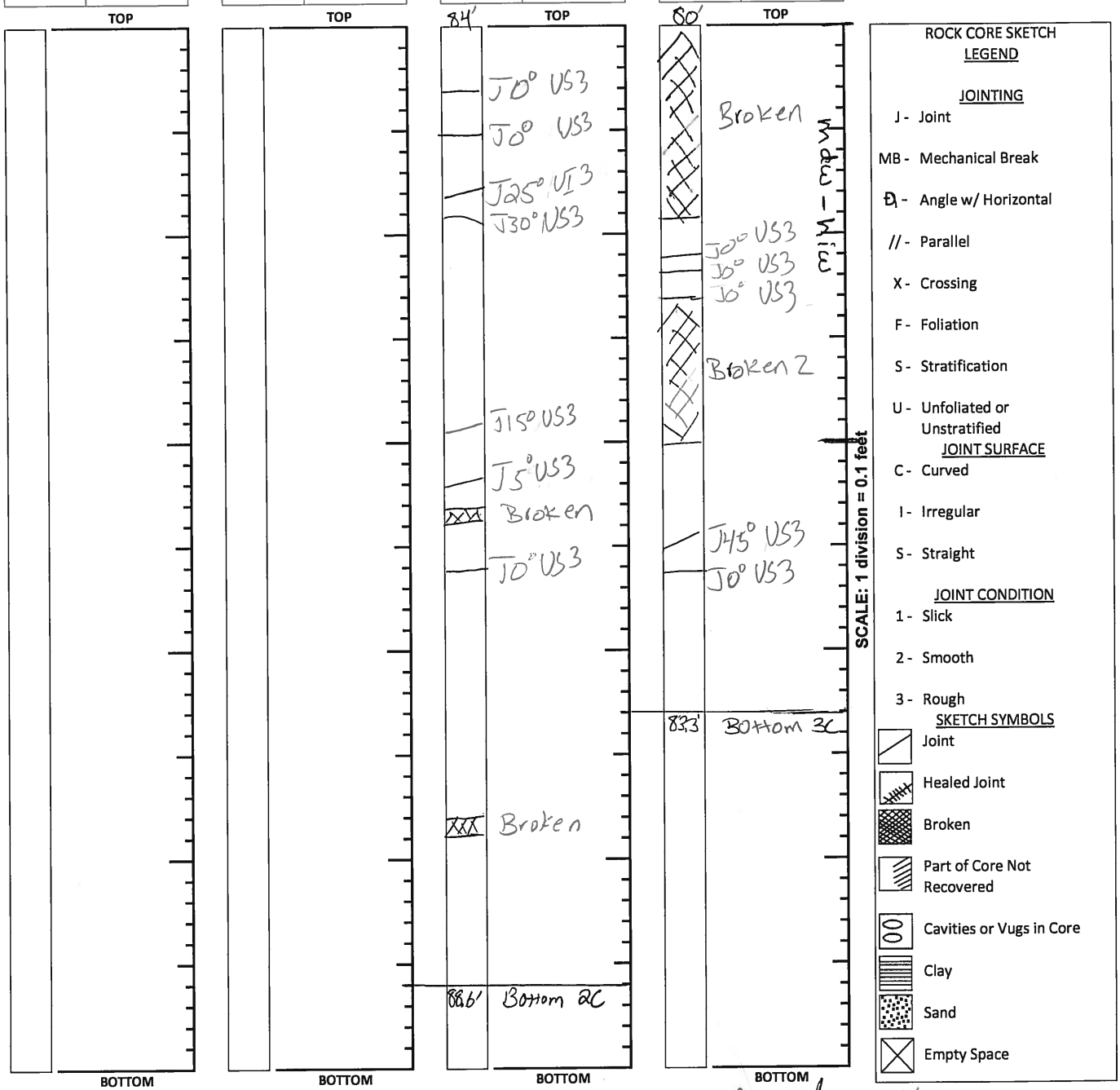
PROJECT: L.A Central
LOCATION: 626 Bergen Ave, Bronx
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	93/57

Run No.	REC/RQD
1C	81/16



ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES 1C: 4ft run due to core barrel being jammed at 4'

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-215
		SHEET	4 **OF** 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	17.7
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK	ACKER 82	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES		NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK MUD		
CORE BARREL	NX DOUBLE TUBE "M" SERIES	AUGER USED	YES	X	NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

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.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR	WARREN GEORGE, INC.		
DRILLER	LOUIS RAMOS	HELPERS	FRANKLIN MUNOZ
REMARKS	BOREHOLE BACKFILLED WITH BOREHOLE MATERIAL.		
RESIDENT ENGINEER	FAROUK EL KHATIB	DATE	07-25-14
CLASSIFICATION CHECK:	CHERYL J. MOSS	TYPING CHECK:	CHERYL J. MOSS

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-216
SHEET 1 OF 4
FILE NO. 12217
SURFACE ELEV. 17.1
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
07:00	1D	0.0	16-16	Brown fine to coarse sand, some wood, trace			DRILLED	REC=3"
07-28-14		2.0	7-6	gravel, silt (Fill) (SP-SM)			AHEAD	
Monday	2D	2.0	9-7	Brown fine to coarse sand & brick, trace			4" 3"	REC=5"
Partly Cloudy		4.0	7-5	gravel, wood, silt (Fill) (SP-SM)				
75°F	3D	4.0	2-100/6"	Do 3D (Fill) (SP-SM)		5		REC=2"
		5.0						
	4D	6.0	7-5	Brown brick, some coarse to fine sand, trace				REC=6"
		8.0	5-8	silt (Fill) (GP-GM)	F			
	5D	8.0	100/3"	Brown fine to coarse sand & brick, trace silt				REC=3"
		8.3		(SP-SM)		10		
	6D	10.0	6-4	Brown brick & gravel, trace fine to coarse sand,				
		12.0	7-9	silt, wood (GP-GM)				
						15		
	7D	15.0	9-3	Gray fine to medium sand, some gravel, trace				REC=6"
		17.0	8-15	silt, mica (SP-SM)				
						20		
	8D	20.0	9-15	Brown fine sandy gravel, trace silt (GP-GM)				
		22.0	29-23					
						25		
	9D	25.0	13-14	Gray silty fine sand, trace mica (SM)				
		27.0	17-16		S			
						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		
	12D	40.0	12-13	Gray fine sandy silt, trace mica (ML)	M			
		42.0	13-14					
						43.5		
						45		
	13D	45.0	14-15	Brown fine sand, some silt, trace mica (SM)				
		47.0	17-14		S			
						50		
	14D	50.0	5-3	Brown silty fine sand, trace silt seams, mica				
		52.0	14-17	(SM)				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. MR-216
SHEET 2 OF 4
FILE NO. 12217
SURFACE ELEV. 17.1
RES. ENGR. FAROUK EL KHATIB

PROJECT: LA CENTRAL
LOCATION: BRONX, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 07-28-14 Monday Partly Cloudy 75°F							DRILLED AHEAD 3"	
						55		
	15D	55.0	15-17	Brown fine sand, trace silt, mica (SP-SM)				
		57.0	19-19					
						60		
	16D	60.0	10-10	Brown black fine to coarse sand, trace gravel,				
		62.0	9-11	silt (SP-SM)	S			
						65		
	17D	65.0	9-10	Do 16D (SP-SM)				
		67.0	11-13					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				
		75.9		(GP-GM)	T			
								Hard drilling.
14:30						80		
07:00 07-29-14 Tuesday Sunny 77°F	1C	80.0	REC=100%	Medium hard slightly weathered to highly			2*	
		85.0	RQD=64%	weathered white gray marble, jointed to broken,			2*	White gray wash.
				iron stained & weathered joints	R/WR		2.5*	*Coring time in
							3*	minutes per foot.
						85	3*	
	20D	85.0	REC=40%	Brown fine to coarse sand, some rock			6*	
		89.0	RQD=0%	fragments, trace silt (Decomposed Rock)	DR		2*	Brown wash.
				(SP-SM)			4*	Gray wash.
						89	6*	White wash.
	2C	89.0	REC=100%	Weathered moderately weathered to highly		90	4*	4' Run, core barrel
		94.0	RQD=32%	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'.
						95		
						100		

ROCK CORE SKETCH

BORING NO. MR-216

SHEET 3 OF 4

FILE NO. 12217

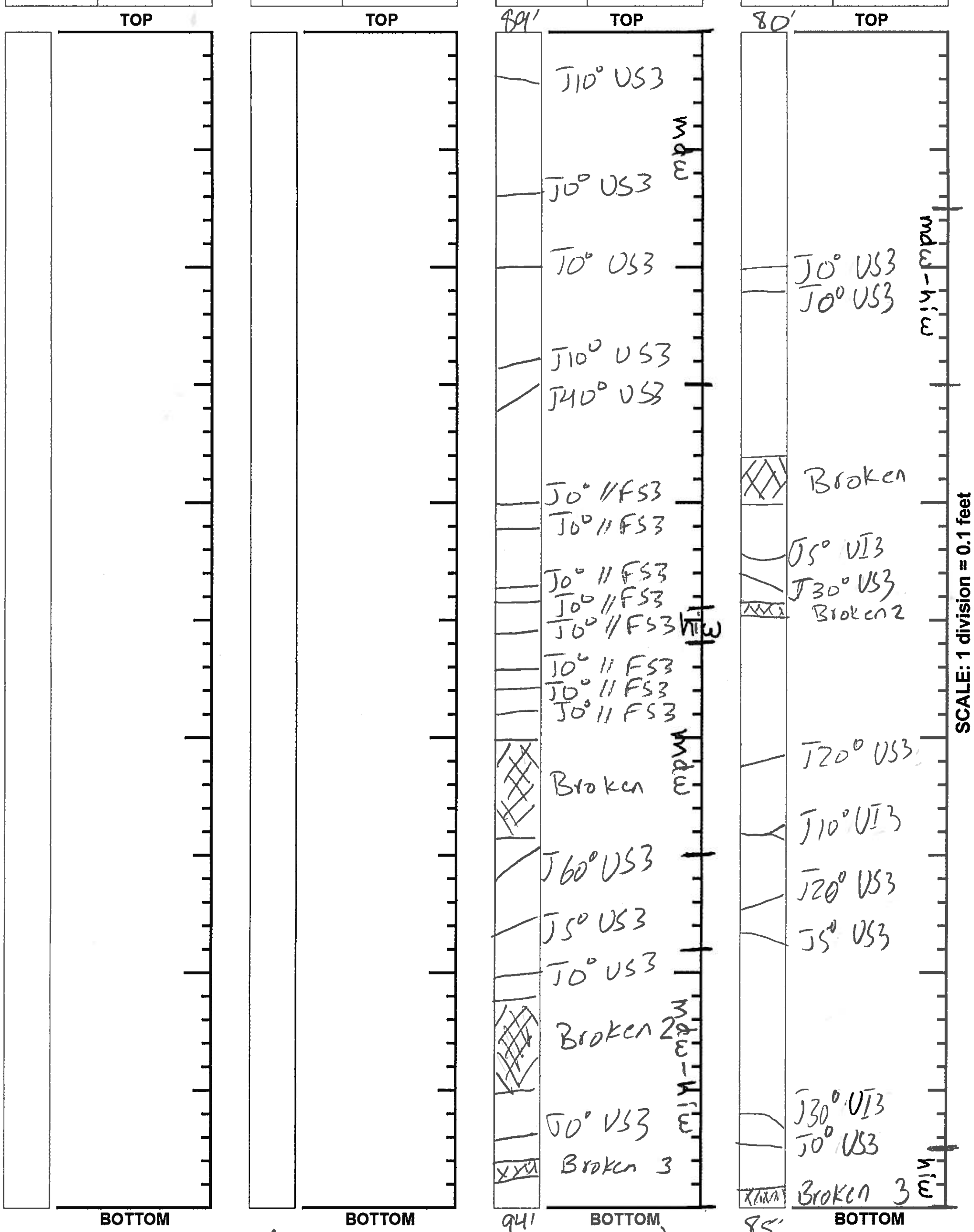
SURFACE ELEVATION 17.1'

PROJECT: L.A. Central

RESIDENT ENGINEER F. El Khatib

LOCATION: 626 Bergen Ave, Bronx

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100/32	1C	100/64



ROCK CORE SKETCH
LEGEND

JOINTING
- J - Joint
- MB - Mechanical Breal
- ∡ - Angle w/ Horizonta
- // - Paralle
- X - Crossing
- F - Foliatior
- S - Stratification
- U - Unfoliated or Unstratified

JOINT SURFACE
- C - Curved
- I - Irregular
- S - Straight

JOINT CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core No Recoverec
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES 2C is a 4ft run (core barrel jammed)

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	MR-216
		SHEET	4 OF 4
PROJECT	LA CENTRAL	**FILE NO.**	12217
LOCATION	BRONX, NEW YORK	**SURFACE ELEV.**	17.1
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO		
TRUCK	ACKER 82	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	15
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	80
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE TUBE "M" SERIES
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED X YES NO

DIAMETER OF ROTARY BIT, IN. 3-7/8

TYPE OF DRILLING MUD QUIK MUD

AUGER USED YES X NO

TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 300 AVERAGE FALL, IN. 24

*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30

*USED SAFETY HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
07-28-14	14:50	80	80		WATER AT TOP OF CASING. CASING SEATED IN ROCK.
07-29-14	07:00	80	80	2.7	OVERNIGHT MUD LEVEL.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR WARREN GEORGE, INC.

DRILLER LOUIS RAMOS HELPERS FRANKLIN MUNOZ

REMARKS BOREHOLE BACKFILLED WITH DRILL CUTTINGS.

RESIDENT ENGINEER FAROUK EL KHATIB DATE 07-29-14

CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: CHERYL J. MOSS

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
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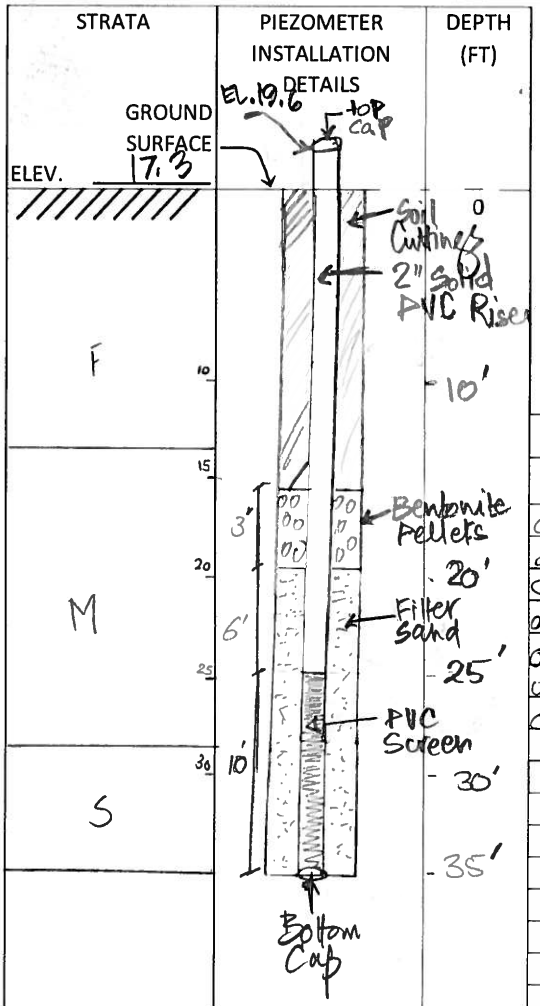
www.mrce.com

PIEZOMETER RECORD

PIEZOMETER OR BORING NO. MR-217P
SHEET 1 OF 2
FILE NO. 12217
INSTALLATION DATE 08/01/14
RES ENGR. F. El Khatib

PROJECT: L.A. Central
LOCATION: 626 Bergen Ave, Bronx
PIEZOMETER LOCATION: Check plan

☐ SEE SKETCH ON BACK



PIEZOMETER TYPE Open Standpipe

INTAKE POINT
depth to bottom, ft =
depth to top, ft = 2
length, ft = , = L
diameter, in = 2 , ft = 0.17 = 2R

STANDPIPE/RISER
elevation of rim, ft = 19.6
diameter, in = 2 , ft = 0.17 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
08/01/14	14:45	12.65'		after installation
08/04/14	06:35	16.2'		
08/04/14	15:00	16.2'		
08/05/14	06:45	16.2'		
08/05/14	14:10	16.2'		
08/06/14	06:50	16.2'		
08/11/14	12:30	16.28'		

SAND
GRAVEL
BENTONITE GROUT

GROUND SURFACE ELEV. 17.3'

PIEZOMETER NO. MR-217P

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BORING NO. MR-217P
SHEET 2 **OF** 2

PROJECT L.G. Central
LOCATION 626 Bergen Ave, Bronx
BORING LOCATION Check plan
FILE NO. 12217
SURFACE ELEV. 17.3'
DATUM NAVD 88

TEST/INSPECTION EQUIPMENT
REFERENCE CODES/STANDARDS

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		[X] YES	[ ] NO		
TRUCK	Acker 82	MECHANICAL		DIA., IN.	4"	DEPTH, FT. FROM	0	TO	15'
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:
D-SAMPLER
U-SAMPLER
S-SAMPLER
CORE BARREL
CORE BIT
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3 7/8"
TYPE OF DRILLING MUD Revert

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
SAMPLER HAMMER, LBS. AVERAGE FALL, IN.
TYPE OF HAMMER Safety hammer

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON MR-217P, Sheet 1

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR UGI
DRILLER Louis Ramos HELPERS Franklin Munoz
REMARKS
RESIDENT ENGINEER F. El Khatib DATE 08/01/14

BORING NO. MR-217P

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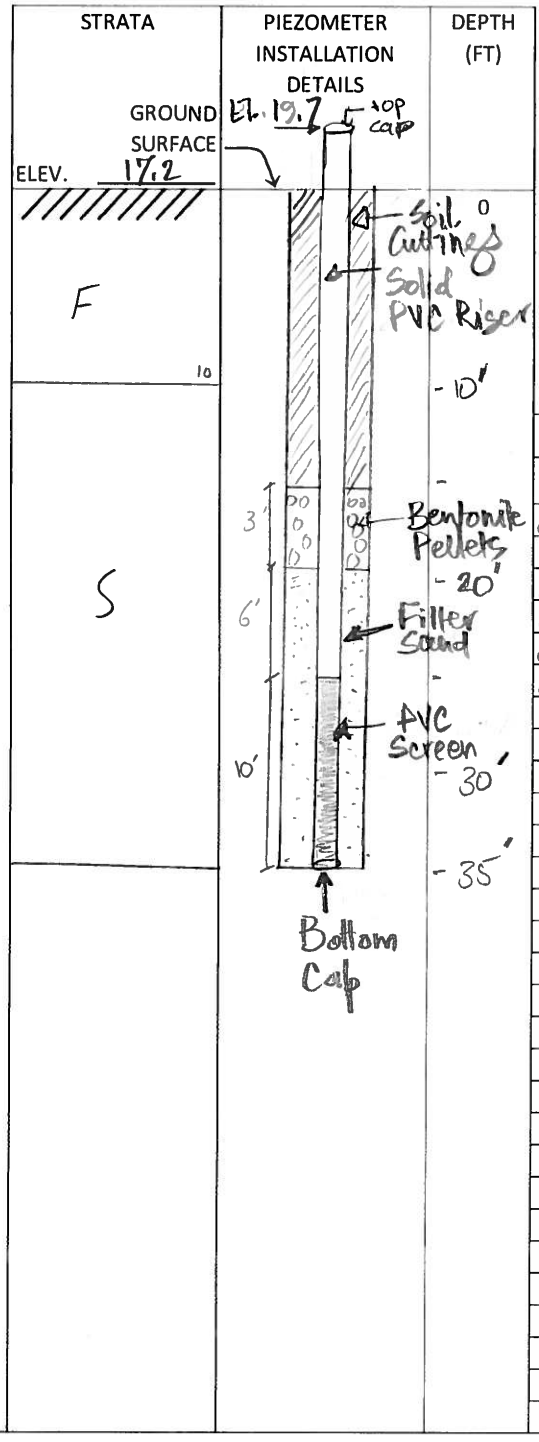
www.mrce.com

PIEZOMETER RECORD

PIEZOMETER OR BORING NO. MR-218P
SHEET 1 OF 2
FILE NO. 12217
INSTALLATION DATE 08/04/14
RES ENGR. F.El Khatib

PROJECT: L.A Central
LOCATION: 626 Bergen Ave. Bronx
PIEZOMETER LOCATION: Check plan

☐ SEE SKETCH ON BACK



PIEZOMETER TYPE Open Standpipe

INTAKE POINT
depth to bottom, ft = 35
depth to top, ft = 25
length, ft = 10 = L
diameter, in = 2, ft = 0.17 = 2R

STANDPIPE/RISER
elevation of rim, ft = 19.7
diameter, in = 2, ft = 0.17 = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
08/04/14	08:30	10.7'		after installation
08/04/14	15:00	14.1'		
08/05/14	06:45	16.1'		
08/05/14	14:30	14.1'		after performing head + q at 10:00
08/06/14	06:50	16.15'		
08/11/14	12:30	16.3'		

SAND
GRAVEL
BENTONITE GROUT

GROUND SURFACE ELEV. 17.2

PIEZOMETER NO. MR-218P

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BORING NO. MR-218P
SHEET 2 **OF** 2
FILE NO. 12217
SURFACE ELEV. 17.2
DATUM NAVD 88

PROJECT L.A. Central
LOCATION 626 Bergen Ave, Bronx
BORING LOCATION Check plan

TEST/INSPECTION EQUIPMENT
REFERENCE CODES/STANDARDS

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

		TYPE OF FEED DURING CORING		CASING USED					
TYPE OF BORING RIG					[X] YES	[ ] NO			
TRUCK	Acker 82	MECHANICAL		DIA., IN.	4"	DEPTH, FT. FROM	0'	TO	15'
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:
D-SAMPLER
U-SAMPLER
S-SAMPLER
CORE BARREL
CORE BIT
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3 7/8"
TYPE OF DRILLING MUD Revert

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
SAMPLER HAMMER, LBS. AVERAGE FALL, IN.
TYPE OF HAMMER Safety hammer

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON MR-218P, Sheet 1

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR WGT
DRILLER Louis Ramos HELPERS Franklin Munoz
REMARKS
RESIDENT ENGINEER F.El Khatib DATE 08/04/14