PILLORI ASSOCIATES, P.A.
Geotechnical Engineering

GEOTECHNICAL INVESTIGATION REPORT

1949 Bathgate Avenue
Bronx, New York

Prepared For:

St. Joseph Apartments LLC
C/o: Association of New York Catholic Homes
80 Maiden Lane, 13th Floor
New York, New York 10038

Prepared By:

Pillori Associates, P.A.
333 Meadowlands Pkwy, Suite 102
Secaucus, New Jersey 07094

May 2021
Project # 201108

PILLORI ASSOCIATES, P.A.
Geotechnical Engineering

May 3, 2021
Email: Susan.Albrecht@archny.org

St. Joseph Apartments LLC
C/o: Association of New York Catholic Homes
80 Maiden Lane, 13th Floor
New York, NY 10038

Attn: Susan Albrecht

Re: Geotechnical Investigation Report
1949 Bathgate Avenue, Bronx, NY

Madam:

Presented herein is the geotechnical investigation report for the referenced project. We are confident that the subsurface information and engineering recommendations contained herein will meet the needs of the project. Thank you for the opportunity to be of service. Please call if you have any questions or if we can be of further assistance.

Sincerely,
Gregory Pillori
Pillori Associates, PA

STATE OF NEW YORK
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LICENSED PROFESSIONAL ENGINEER

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Introduction

Presented herein are the results of the geotechnical investigation conducted for the proposed development at 1949 Bathgate Avenue, Bronx, New York. The geotechnical investigation was performed in accordance with our proposal dated January 28, 2021. The purpose of the investigation was to identify the subsurface soil/rock and groundwater conditions in order to determine the relative soil parameters for the design and construction of new foundations and related earthwork.

Project Description

The project site is located on the southeast corner of Washington Avenue and East 178th Street, Bronx, New York, as shown on the nearby Site Vicinity Map, Figure 1. Currently, the site is vacant. City streets along the northern, western and eastern property lines bound the project site.

The proposed development includes a new 10-story building with a cellar and subcellar below street grade. The new building will occupy a base footprint of approximately 25,000 square feet.

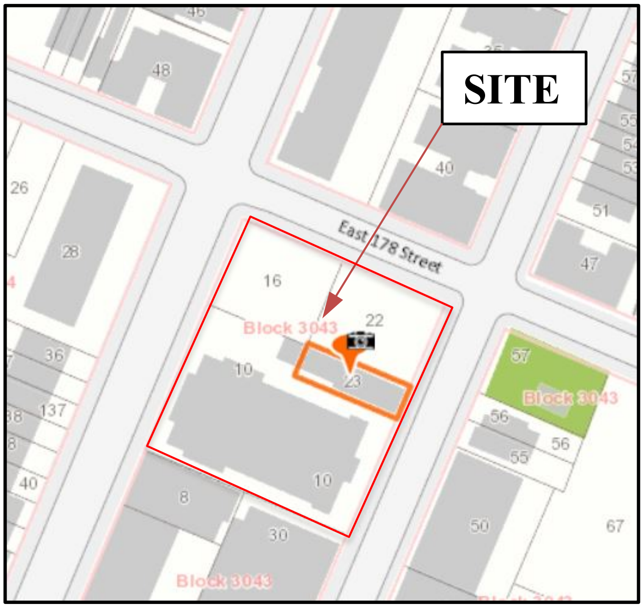


Figure 1 - Site Vicinity Map

Geotechnical Investigation

The geotechnical investigation consisted of excavating two exploratory test pits (TP-1 through TP-2), drilling ten exploratory soil borings (B-1 through B-10) and drilling twenty-six exploratory rock probes (RP-1 through RP-26). PG Environmental Services, Inc performed all geotechnical explorations between the dates of March 10 and March 24, 2021.

Borings

Borings B-1, B-2, B-4, B-6W, B-8, B-9 and B-10 were advanced 5 feet into competent bedrock at completion elevation ranging between EL. 41.46+/- and EL. 60.68+/- (NAVD 88). Standard Penetration Tests (SPTs) were performed within the overburden soils at regular 5-foot intervals in accordance with procedures specified in ASTM D1586. The underlying bedrock was core drilled using a double tube core barrel in accordance with ASTM D2113. Boring B-3, B-5 and B-7 were advanced to top of rock using SPT sampling to confirm the thickness of the overburden soil and the depth to refusal on top of rock. The underlying bedrock was not core drilled in these three boings. A groundwater observation well consisting of 1-1/4" PVC riser pipe and well screen was installed in the completed boring B-6W.

Rock Probes

Rock probes, RP-1 through RP-17 and RP-22 through RP-24, which were located on relatively flat and truck accessible areas of the site, were advanced using a track mounted drill rig employing rotary drilling techniques; however, rock probes RP-18 through RP-21, RP-25 and RP-26, were advanced using portable drilling equipment employing a chop-n-wash drilling technique. The portable drilling equipment was able to access the elevated area at the northeast corner of the site, which was walled off from the streets and the remainder of the site. No soil or rock sampling was performed in the rock probes.

Test Pits

Both test pits, TP-1 and TP-2 were excavated against the north wall of the neighboring 4-story building located on Washington Avenue to the south of the site. The test pits were excavated to explore the depth, size and type of the neighboring foundations along with the shallow bearing soil/rock conditions. Cross-sections showing the exposed foundation configurations are shown on the test pit logs attached to this report.

Special Inspection

Full-time special inspection was provided by Pillori Associates to locate the explorations in the field, direct drilling and sampling activities, and maintain continuous logs of the explorations. Soil/rock types observed in the borings were visually classified according to the Unified Soil Classification System (USCS) and the New York City Building Code (NYCBC). The boring, probe and test pit locations are shown on the Boring and Probe Location Plan, Drawing No. 1, attached to this report.

At the conclusion of the investigation program, the soil and rock samples were delivered to our soil laboratory for re-examination and further classification. The individual sample classifications were combined according to soil group and geologic origin, and their descriptions were recorded on finalized logs. The final logs of the borings and soil/rock profiles, Section A-A, Section B-B, Section C-C, and Section D-D illustrating the stratigraphy encountered in the borings and rock probes are attached to this report along with the Unified Soils Classification System chart.

Stratigraphy

In general, the subsurface conditions consisted of a surface layer of miscellaneous fill, overlying glacial till/Decomposed Rock, which in turn was underlain by competent Inwood Marble/Granitic Gneiss bedrock. Detailed descriptions of the subsurface stratigraphy encountered in the borings are presented on boring logs attached to this report. Generalized descriptions are presented below in order of increasing depth.

Fill (F): A miscellaneous fill layer was encountered just below the existing grade/concrete pavement. The fill was a heterogeneous mixture of sand, silt and gravel with brick, stone and concrete fragments and miscellaneous debris. The fill depth ranged from 4'-3" to 14'-0" below the existing grade and was loose to medium compact in terms of relative density. The fill was classified as nominally unsatisfactory bearing material, Class 7, in accordance with the NYCBC.

Glacial Till: Glacial till was encountered beneath the fill layer in in borings B-9 and B-10. The glacial till was very compact in terms of relative density and was classified as SW, Class 3a material, in accordance with USCS and NYCBC, respectively.

Decomposed Rock (DR): Decomposed rock derived from complete weathering of the underlying parent bedrock was encountered beneath the fill and glacial till in all borings. The thickness of this layer varied from 0.5 to 3 feet. The decomposed rock maintained the fabric and structure of the parent bedrock but was typically weak and could be broken with moderate hand pressure. The decomposed rock was classified as, Class 1d material, in accordance with the NYCBC.

Inwood Marble/Granitic Gneiss Bedrock (R): Competent Inwood Marble and Granitic Gneiss bedrock was encountered beneath the decomposed rock. The top of rock elevations varied widely across the site, from a high point at about Elevation 83.96 at the northeast corner of the site to about Elevation 46.46 at the southwest corner of the site. The rock core samples possessed recovery values (REC) ranging from 20% to 100% and rock quality designation values (RQD) ranging from 13.3 to 71.67%. In general, the bedrock samples were medium hard, slightly to moderately weathered, and closely to widely jointed, and were classified as "Medium Hard Rock" or "Intermediate Rock," Classes 1b and 1c material, in accordance with NYCBC.

Groundwater: Groundwater was measured in the groundwater observation well installed in boring, B-6W at a depth of 11'-6", or elevation 59.54+/- (NAVD 88). We anticipate that groundwater levels across the site will vary with the underlying bedrock elevations, and may be as high as about 3 to 4 feet above the decomposed rock.

Existing Foundations

Two test pits (TP-1 and TP-2) were located along the south property line, adjacent to the 4-story brick neighboring building at 1932 Washington Ave. The bottom of the foundation wall in TP-1 was observed bearing on Inwood Marble bedrock at Elevation 59.9, while the bottom of the foundation wall in TP-2 was obstructed from view by a remnant foundation wall on the project side of the property line, but was assumed to be founded at the same elevation as the remnant wall, at Elevation 47.2. Since the neighboring building, 1925 Bathgate Ave, was offset 7-foot from the property line, test pits TP-3 and TP-4 were canceled, because permission was not granted to enter the neighboring property.

Seismic Evaluation and Criteria

The proposed structure must be designed in accordance with all applicable New York City Building Code seismic design criteria. The site classes are based on the average soil/rock properties in the upper 100 feet. The soils and rock encountered in the borings most closely resembles a "Hard Rock Profile," Site Class A, provided the new building foundations bear on bedrock or within 10 feet of the top of bedrock. The profile is based on Table 1613.5.2 of the NYCBC. Peak accelerations may be estimated using Tables 1813.2.1 and values for the site coefficients Fa and Fv may be estimated using Tables 1613.5.3(1) and 1613.5.3(2), respectively. The building code requires an evaluation of the liquefaction potential of non-cohesive soils below the groundwater table and to a depth of 50 feet below the ground surface. The soil underlying the site was classified as "Liquefaction Evaluation Not Required" in accordance with Figure 1813.1 of the NYCBC.

Geotechnical Engineering Evaluation

Suitable bearing soil and/or bedrock was found beneath the surface fill across the entire site, making conventional shallow footings or mat foundations feasible. Depending on depth of the cellar and the location on the site, typical excavations for the new cellar will extend through the surface fill, stopping on either the underlining glacial soil, decomposed rock or sound bedrock. Groundwater was measured at elevation of 59.54+/- in boring B-6W located at the north side of the site, but in all likelihood will probably be encountered at or slightly above bedrock elevations across the site. Because the natural soils and bedrock are relatively impermeable, localized dewatering may be required during excavation. We believe that localized dewatering can be accomplished by pumping from drywells or sump pits located in wet areas found on the site.

The dense glacial soil possessed an allowable bearing capacity of 6 tons per square foot (tsf), whereas underlying decomposed rock and sound rock possessed allowable bearing pressures of 8 tsf and 20 tsf, respectively. Considering the proposed cellar and sub-cellar slab elevations shown on the proposed Boring and Test Pit Location Plan provided for our evaluation, substantial rock removal will be required over the northern ¾ of the building footprint while little or no rock removal will be required at the southern ¼ of the footprint. Typically, about 5 feet of rock removal will be required over most of the northern footprint, with as much as 20 feet of rock removal required on the high spot, at the northwest corner of the property. Conversely, excavations for footing subgrades at the southern end of the building footprint will remain above bedrock elevations, stopping on either compact glacial soil or decomposed rock. As such, all three allowable bearing capacities would be feasible; however, for design purposes we suggest simplifying the allowable bearing capacities to 6 tsf for glacial soil and decomposed rock, and 20 tsf for medium hard or intermediate rock. Adjustments to the actual footing bearing pressures, if required, can be made in the field by the special inspector.

Given the soil and rock conditions encountered during the investigation, conventional shallow foundations (spread/strip footings) appear as the most suitable foundation solution for the proposed 10-story structure; however, full or partial mat foundations may also prove desirable if substantial dewatering and/or waterproofing systems are required to maintain dry conditions within cellar or sub-cellar spaces.

Where foundation excavations extend below the top of bedrock, the slabs or mat foundations, and all exterior foundation walls should be waterproofed and designed for the full hydrostatic pressure. Alternately, a blanket drain (constructed in accordance with the recommendations below) can be installed to remove hydrostatic pressure from under the cellar slabs or mat foundations; however, the exterior foundation walls should be designed for a minimum hydrostatic pressure equivalent to a height of 2-feet above the surrounding bedrock elevation. As a failsafe, envelope waterproofing should be provided for all ground supported slabs and exterior walls to prevent seepage and humid conditions within below ground spaces.

Engineering Recommendations

Conventional Shallow Foundations

Bedrock was encountered at the proposed cellar and sub-cellar elevations across most of the site, except at the southern end of the building footprint. Footings bearing on intermediate rock or medium hard rock can be proportioned for allowable bearing pressures of 20 or 40 tons per square foot (tsf); however, because of the rock's inherent variability, we recommend that all the footings be designed for an average bearing pressure of 20 tsf. If warranted, the geotechnical engineer performing the special inspections of the footing subgrades can upgrade or downgrade the rock at the footing subgrades and recommend a higher or lower allowable bearing pressure.

Footings at the southern end of the building footprint can be brought to bear on compact glacial soil or decomposed rock, whichever is first encountered at the bottom of the surface fill layer. To avoid confusion, the footings be design for a uniform allowable bearing capacity of 6 tsf.

All foundations should be designed and constructed in accordance with Section 1804 of the New York City Building Code. The following table provides a summary of the parameters for the foundation design and excavation support.

Table 1 – Design Criteria

Allowable Bearing Pressure – Bedrock	20 tsf
Allowable Bearing Pressure – Decomposed Bedrock/Glacial Soil	6 tsf
Equivalent Fluid Pressure – Below Top of Rock (γK_O)	20 psf + hydrostatic
Equivalent Fluid Pressure – Above Top of Rock (γ)	55 psf

Prior to placement of reinforcing steel, the footing subgrades should be thoroughly cleaned of loose soil and rock, mud, debris and all other deleterious material. An engineer licensed in the State of New York should inspect the prepared subgrade. Foundation settlements will be negligible for footings bearing on the rock.

Tiedown Anchors

If large uplift forces are anticipated, the loads can be resisted using double corrosion protected tiedown anchors. Typically, tiedown anchors are installed and secured to column or wall footings bearing directly on bedrock. Tiedown anchors are capable of a wide range of capacities (50 to 150 kips) and can be installed with conventional drilling equipment. A licensed professional engineer should design, test and approve each anchor in accordance with recognized criteria.

Exterior Foundation Walls and Cellar Floor Slab

Because of the rock's low permeability, water will tend to collect behind the exterior foundation walls during periods of prolonged rain. In order to eliminate hydrostatic pressure, the exterior foundation walls should be backfilled with clean crushed stone to allow vertical drainage. The stone layer should be a minimum of 2-feet in width. If the overcut is insufficient for a 2-foot drainage layer or if one-sided foundation walls are constructed, we recommend installing drainage material such as JDR J-Drain or Mirafi Miradrain for vertical drainage. A collector pipe should be installed at the bottom of the footing to convey the water to an interior sump pit(s) for removal from the building. If sufficient space isn't available for installation of collector pipes, then weep holes can be provided through base of the foundation walls, below the level of the cellar slab. The walls should be waterproofed to prevent dampness from penetrating to the inside face of the wall. The drainage layer and waterproofing should extend the full height of the foundation walls.

Groundwater will also tend to collect under the cellar slab. Here again, to eliminate hydrostatic pressure, we recommend installing a drainage layer beneath the cellar slab, consisting of a minimum of ¾-inch crushed stone with 4-inch diameter perforated PVC pipes pitched to convey water to a sand trap and sump pit system located below the slab or mat foundation. A continuous waterproofing membrane should be placed between the drainage layer and the concrete slab. Alternatively, the cellar slab can be designed for a hydrostatic pressure equivalent to the height of bedrock with a continuous waterproofing membrane.

Rock Removal

Conventional excavation equipment may be able to penetrate the decomposed rock and 1 or 2 feet into the underlying intermediate and hard rock; however, deeper excavations will require chipping, and/or drilling and splitting. Line drilling will be needed to control breakout along the open excavation lines, whereas channel drilling may be required adjacent to existing structures.

Line drilling consists of 2-inch or 3-inch diameter holes spaced no further than 12 inches apart (center to center). Channel drilling consists of the same 2-inch or 3-inch diameter holes, but the holes are spaced adjacent to each other. Drilling with guides or placement of steel pipes inside completed holes will be required to keep the drill bit vertical while drilling adjacent to completed holes. The holes should not deviate more than 2-inches out of plumb. If excessive bit wonder is encountered, then the successive line/channel drilling should be performed at incremental lifts or excavation depths. Relief holes may also be required to increase rock removal production. The relief holes can be drilled on a 4-foot by 4-foot staggered grid throughout selected areas of hard or difficult to remove bedrock.

Excavation Support

Temporary support of excavation (SOE) walls may be required along the street lines and along open lot lines where bedrock drops below 4 feet from grade. Because the bedrock is shallow, either concrete piers and timber lagging or drilled soldier piles and timber lagging can be used for the temporary SOE walls above the bedrock. The temporary SOE walls should be designed to withstand the appropriate lateral earth and surcharge pressures. Where required, tiebacks or internal braces can be used to laterally support the SOE walls. The temporary SOE walls should be designed for a maximum deflection of 1-inch along open lot lines and 0.5-inches adjacent to the sidewalks, roadways and underground utilities. Periodic optical survey measurements should be performed on the SOE walls to monitor the structural deflections and potential ground movements.

Above the bedrock, temporary shallow excavations with vertical sides less than 4 feet high will generally be stable, although a potential for sloughing within loose fill layers may be evident. Temporary excavation sides greater than 4 feet in depth may be sloped back at an inclination of 1.5:1 (horizontal to vertical). Some erosion or unraveling of surface soils exposed to weather should be anticipated. All applicable safety requirements and regulations, including OSHA requirements, should be met.

Dewatering

Excavations that reach or extend below the measured groundwater level will quickly destabilize, consequently, dewatering must be accomplished prior to excavating below the groundwater level on the site. As a result, we recommend that a dewatering system be designed and installed before any excavation proceeds below the measured groundwater level on the site. The dewatering probably can be accomplished by pumping from deep sumps or well points installed throughout the cellar footprints and should be maintained until sufficient building weight is constructed to resist uplift forces.

Interior Backfill

All compact fill and backfill placed beneath the floor slabs and against foundation walls, and used for backfilling utility trenches should be performed in a controlled manner using the select fill, free of organic matter and debris. The fill material should be placed in 8-inch loose lifts and compacted to 95% of the maximum dry density as determined ASTM

D1557. Compaction can be performed using walk-behind-vibratory plate, vibratory roller, or “jumping jack” type compactors. Lift thickness may be increased to 12 inches for larger compaction equipment. The imported fill material should conform to the gradation requirements for Select Fill presented in Table 2 below. The material should be sampled, tested and approved prior to use on the site.

Underpinning

We understand that the footing elevations for the proposed building are intended to match the neighboring footing elevations so as to avoid underpinning. However, if underpinning is required, we recommend that all underpinning be performed within lagged pits constructed in such a manner as to prevent ground loss and soil migration. The individual underpinning pits should be three to four feet wide and should extend to the top of bedrock or at least one foot below the bottom of the planned excavations. The concrete pour should be held 3 inches below the bottom of the existing footings to allow space for inserting steel plates and wedges to transfer the foundation loads. After the foundation loads are transferred, the 3-inch gap can be filled with dry pack concrete. The pits should be excavated in an alternating sequence, in which, every fourth pit is completed prior to beginning a new sequence. The sequence should then be repeated until the entire lengths of the existing foundations are continuously supported on the new concrete underpinning. Once each underpinning pit is completed, the approach pits should be backfilled to above the original foundation level. After all the underpinning pits are completed and backfilled, staged excavation inside can commence allowing for installation of braces and/or tieback soil anchors.

Underpinning and Support of Excavation drawings should be signed and sealed by a professional engineer licensed in the State of New York. Also, the professional engineer should inspect the actual underpinning work in accordance with the NYCBC.

Exterior Earthwork for Pavement Support

The existing fill in its current condition is unsuitable for the support of exterior paved surfaces. As an alternate to total removal and replacement with imported controlled fill, a ground improvement program is recommended to consolidate the otherwise unstable fill and to minimize the potential for ground loss or soil migration within the surface fill layer on the site.

In general, the ground improvement program should consist of excavating to a nominal depth of 36 inches below existing grade. Remnant building foundations encountered in the excavation should be demolished to the same depths. The resulting subgrades should be thoroughly compacted using a heavy vibratory roller (10-ton dead weight) making a minimum of 10 passes. The roller passes should crisscross and overlap to promote maximum knitting of the underlying material. In areas too narrow for large compaction equipment, smaller walk-behind vibratory rollers or jumping jack type compactors may be used provided a sufficient number of passes are made to gain the appearance and hardness of the subgrades compacted using larger, heavy compaction equipment. The prepared subgrades should be inspected and approved by a New York State licensed professional engineer.

Once approved, additional fill can be placed to raise grade. The fill should comply with the gradation requirements present in Table 2 below. The material should be placed in 12-inch lifts and compacted to 95% of the maximum dry density as determined by ASTM D1557. Each lift should be tested and approved prior to placing successive lifts. The final subgrade preparation should consist of placing and compacting a 4-inch layer of ¾-inch crushed stone.

Underground utilities can be installed and backfilled once the subgrades are approved. The backfill should be placed and compacted in accordance with utility pipe manufacturer recommendations and industry standards.

Table 2 – Select Fill

Sieve Size	Percent Passing
1”	100
3/4”	100 - 80
No.4	80 - 60
No. 40	60 - 30
No. 200	0 - 12

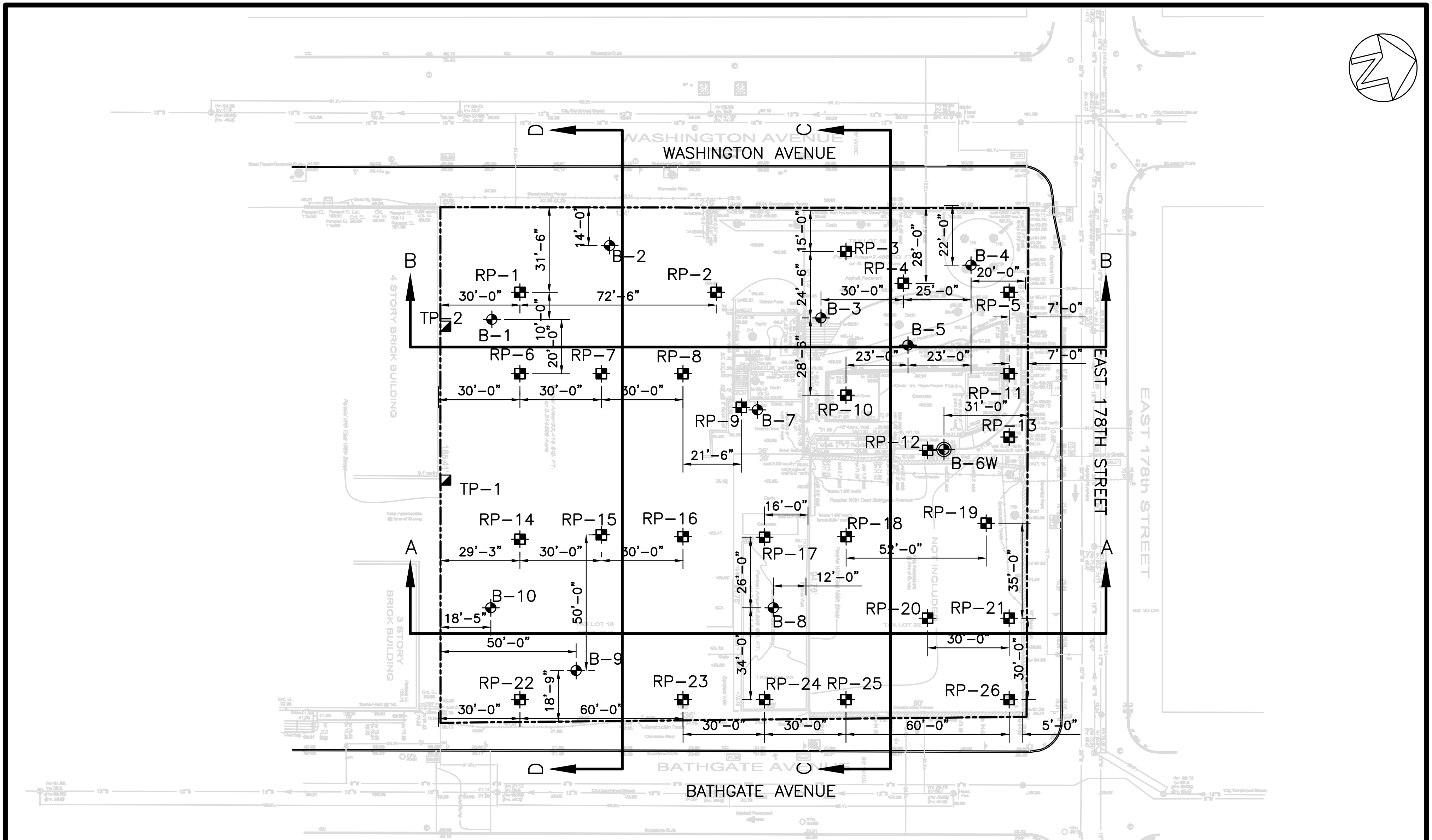
Protection of Adjacent Structure

We strongly recommend that a pre-construction survey be conducted for the neighboring buildings adjacent to the site. The survey should be completed prior to construction. Each building should be inspected and photographed, inside and out, to record existing conditions. In addition, crack monitors should be installed on all visible cracks greater than 1/16 inches.

Vibration and optical survey monitoring programs should be implemented to record potential ground movements of the neighboring buildings. The monitoring program should be initiated prior to the start of construction, and periodic readings be taken during construction. Any landmark buildings located within 90 feet of the site must be monitored in accordance with TPPN 10/88.

Closure

This report presents the results of the geotechnical investigation performed at 1949 Bathgate Avenue, Bronx, New York. This report is not a bid document, and any contractor reviewing this report must draw his own conclusions regarding specific construction techniques to be used on this project.



LEGEND

⊕	B-1	BORING LOCATION
◎	B-6W	BORING LOCATION WITH WELL
▣	RP-1	ROCK PROBE LOCATION
◪	TP-1	TEST PIT LOCATION

SCALE: 1" = 50'

Title:
BORING & PROBE LOCATION PLAN

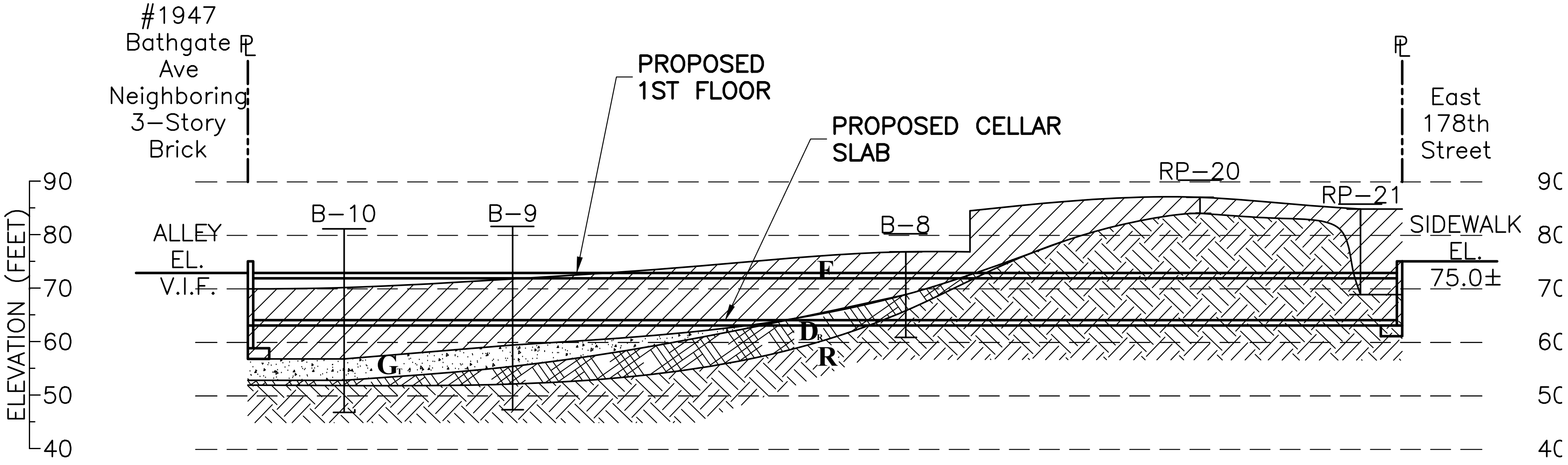
Project:
1949 BATHGATE AVE
BRONX, NEW YORK

PILLORI ASSOCIATES, P.A.
Geotechnical Engineering
71 Route 35, Laurence Harbor, NJ 08879
333 Meadowlands Parkway, Suite 102
Secaucus, NJ 07094

Date:04/30/2021

Job No.: 201108

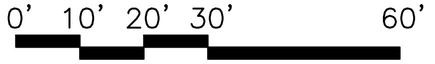
Dwg No. 1



SUBSURFACE SECTION A-A

LEGEND

F	FILL
GT	GLACIAL TILL
DR	DECOMPOSED ROCK
R	INWOOD MARBLE/ GRANITIC GNEISS BEDROCK



Title: SUBSURFACE SECTION A-A

Project: 1949 BATHGATE AVE
BRONX, NEW YORK

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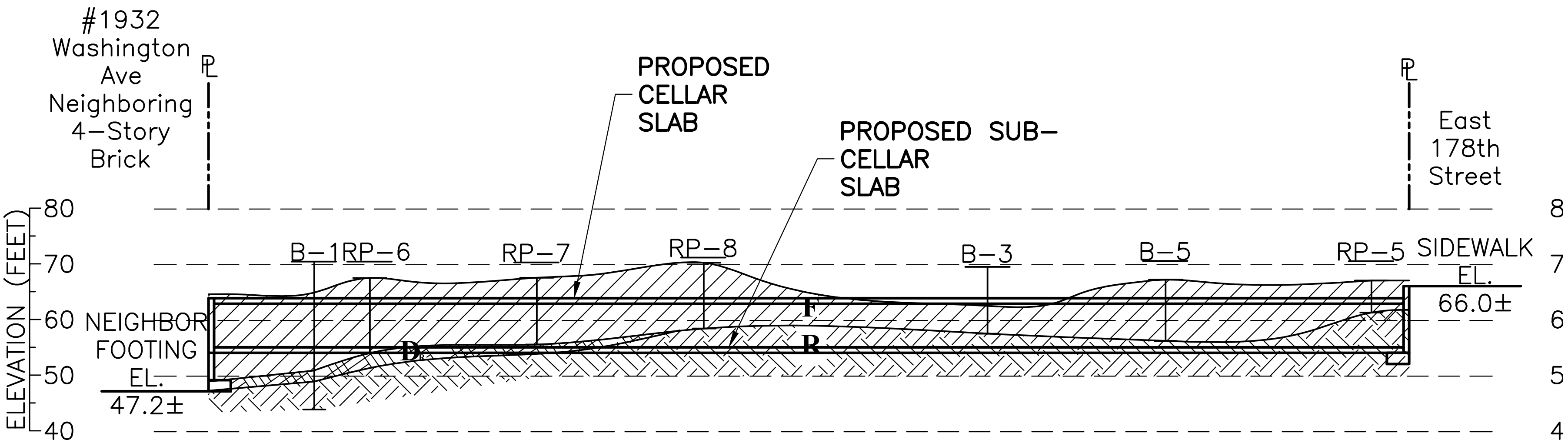
Secaucus, NJ 07094

Date: 04/01/2021
Job No.: 201108
Dwg No. 2



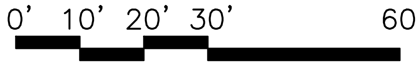
SUBSURFACE SECTION B-B

LEGEND

F FILL

DR DECOMPOSED ROCK

R INWOOD MARBLE/
GRANITIC GNEISS
BEDROCK



Title: SUBSURFACE SECTION B-B

Project: 1949 BATHGATE AVE
BRONX, NEW YORK

PILLORI ASSOCIATES, P.A.
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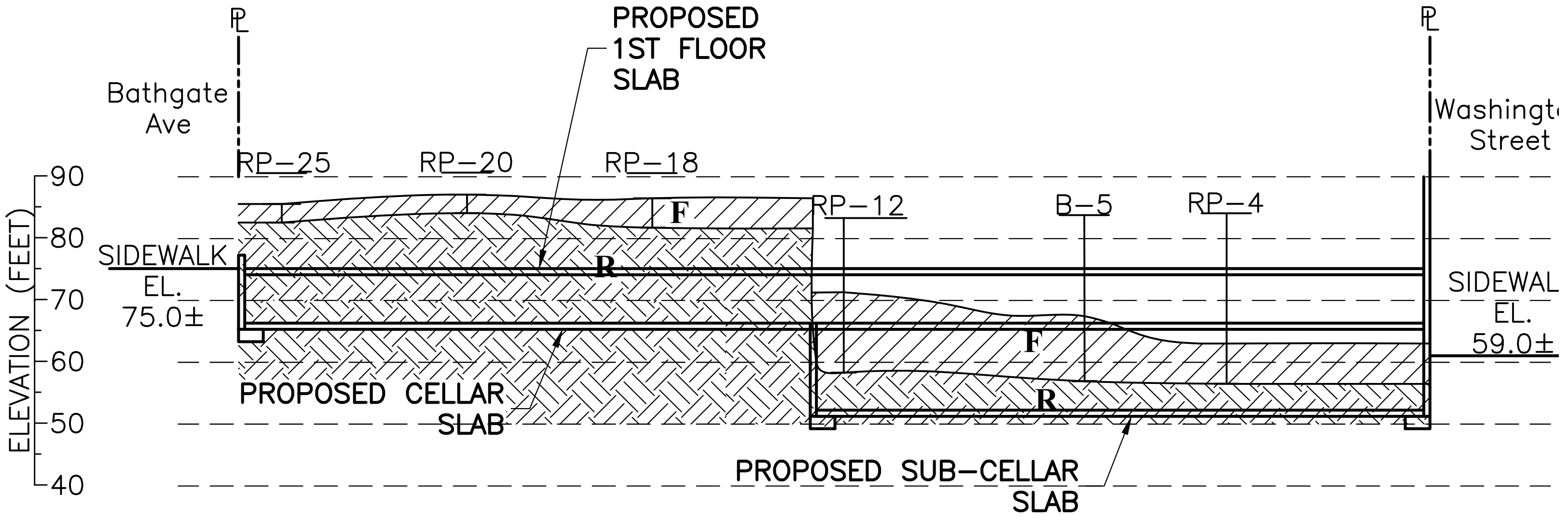
71 Route 35, Laurence Harbor, NJ 08879
333 Meadowlands Parkway, Suite 102
Secaucus, NJ 07094

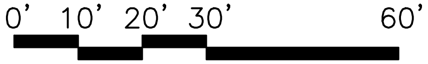
Date: 04/01/2021

Job No.: 201108

Dwg No. 3



SUBSURFACE SECTION C–C

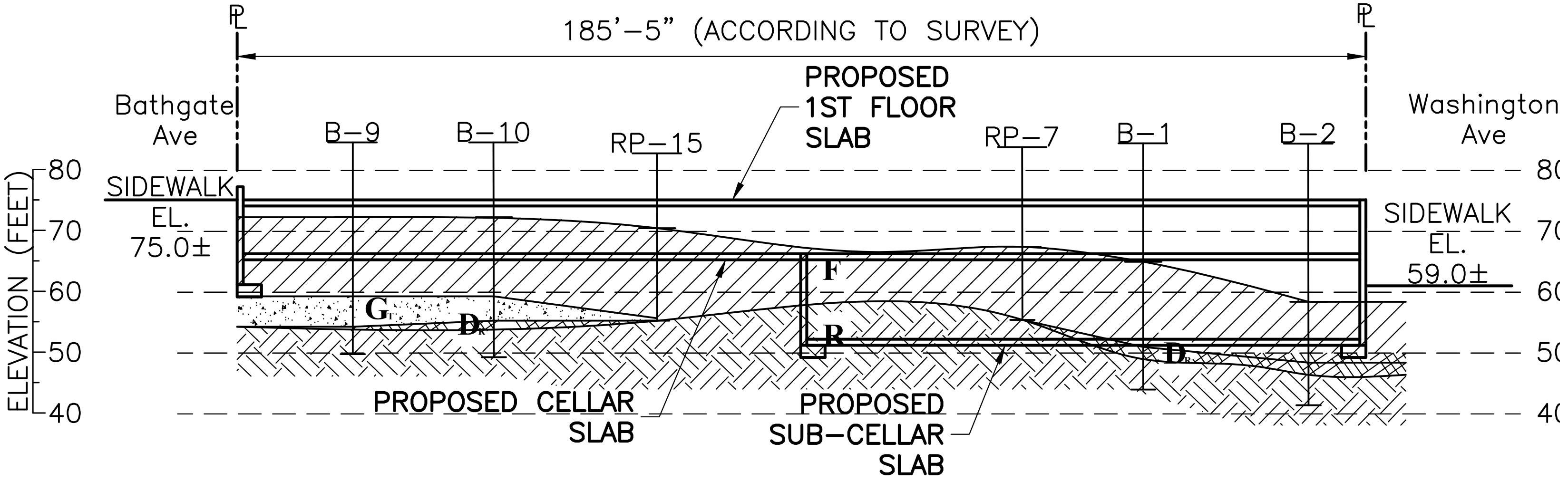


LEGEND

▨ F FILL

▨ R INWOOD MARBLE/
GRANITIC GNEISS
BEDROCK

Title: SUBSURFACE SECTION C–C	
Project: 1949 BATHGATE AVE BRONX, NEW YORK	
PILLORI ASSOCIATES, P.A. *Geotechnical Engineering* 71 Route 35, Laurence Harbor, NJ 08879 333 Meadowlands Parkway, Suite 102 Secaucus, NJ 07094	**Date:** 04/01/2021 **Job No.:** 201108 **Dwg No.** 4



SUBSURFACE SECTION D-D

LEGEND

F	FILL
G_T	GLACIAL TILL
D_R	DECOMPOSED ROCK
R	INWOOD MARBLE/ GRANITIC GNEISS BEDROCK

Title: SUBSURFACE SECTION D-D

Project: 1949 BATHGATE AVE
BRONX, NEW YORK

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Date: 04/01/2021

Job No.: 201108

Dwg No. 5

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/16/21
Contractor: PGE Services, Inc.

Boring No.: B-1
Sheet: 1 of 1
Ground El: 64.84±
Groundwater Depth: NA

Depth Feet	**SAMPLES**			**SOIL DESCRIPTION**	**Classification Depth Elevation**
	Number	Blows / 6"	Strata		
	S-1	10-8-8-5		Brown coarse to fine Sand, little fine Gravel w/brick, concrete, stone fragments, & miscellaneous debris	
	S-2	9-5-9-9			
5	S-3	7-20-7-7			
	S-4	5-11-12-13	F	Light Brown coarse to fine Sand, little medium to fine Gravel w/brick, concrete, stone fragments, & miscellaneous debris	FILL (7)
	S-5	14-15-25-42			
10				Hard drilling; possible brick layer	
					14'-0" 50.84
15			D_R	Decomposed Rock	(1d)
					16'-0" 48.84
		RUN = 60" 16.0' - 21.0' REC = 100% RQD = 56.67%	**R**	Inwood Marble Bedrock: Medium Hard, slightly weathered, closely to widely jointed	(1b)
20					
					21'-0" 43.84
				End of Boring	
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/16/21
Contractor: PGE Services, Inc.

Boring No.: B-2
Sheet: 1 of 1
Ground El: 58.46±
Groundwater Depth: NA

Depth Feet	**SAMPLES** Number	Blows / 6"	Strata	**SOIL DESCRIPTION**	**Classification** **Depth** **Elevation**
	S-1	14-13-15-16	F	Brown coarse to fine Sand, little medium to fine Gravel w/brick, concrete, stone fragments, & miscellaneous debris	FILL (7)
	S-2	9-5-4-9			
5	S-3	2-7-7-6		Brown coarse to fine Sand w/brick fragments	
	S-4	4-4-5-3		Light Brown coarse to fine Sand w/brick fragments; fragments of decompoed rock found on spoon tip	
	S-5	12-14-24-50/2"			10'-0" 48.46
10			D_R	Decomposed Rock	(1d) 12'-0" 46.46
15		RUN = 60" 12.0' - 17.0' REC = 20% RQD = 0%	R	Inwood Marble Bedrock: Soft, intensely weathered, closely jointed	(1d) 17'-0" 41.46
				End of Boring	
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/17/21
Contractor: PGE Services, Inc.

Boring No.: B-3
Sheet: 1 of 1
Ground El: 62.46±
Groundwater Depth: NA

Depth Feet	**SAMPLES**			**SOIL DESCRIPTION**	**Classification** **Depth** **Elevation**
	Number	Blows / 6"	Strata		
	S-1	6-2-5-2	F	Brown coarse to fine Sand, little fine Gravel w/brick, asphalt fragments, & miscellaneous debris	FILL (7)
	S-2	4-1-3-1			
	S-3	26-100/5"			4'-6"
5			DR	Decomposed rock fragments	57.96(1d)
				End of Boring	5'-0"/57.46
10					
15					
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/17/21
Contractor: PGE Services, Inc.

Boring No.: B-4
Sheet: 1 of 1
Ground El: 65.0±
Groundwater Depth: NA

Depth Feet	SAMPLES			SOIL DESCRIPTION	Classification Depth Elevation
	Number	Blows / 6"	Strata		
	S-1	4-11-17-11	F	Brown coarse to fine Sand, little fine Gravel w/brick, fragments	FILL (7)
	S-2	9-12-9-22			
	S-3	60/3"			4'-3"
5			D_R	Decomposed Rock	60.75 (1d) 6'-0"
		RUN = 60" 6.0' - 11.0' REC = 100% RQD = 63.3%	R	Inwood Marble Bedrock: Medium Hard, slightly weathered, closely to widely jointed	59.00 (1b)
10					11'-0"
				End of Boring	54.00
15					
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/18/21
Contractor: PGE Services, Inc.

Boring No.: B-5
Sheet: 1 of 1
Ground El: 67.16±
Groundwater Depth: NA

Depth Feet	**SAMPLES**			**SOIL DESCRIPTION**	**Classification** **Depth** **Elevation**
	Number	Blows / 6"	Strata		
	S-1	6-4-11-16	F	Brown coarse to fine Sand, little medium to fine Gravel w/brick, concrete fragments, & miscellaneous debris	FILL (7)
	S-2	1-2-2-2			
5	S-3	2-3-6-3		Brown coarse to fine Sand, little fine Gravel w/brick, asphalt, stone fragments, & miscellaneous debris	
	S-4	6-15-6-5			
				Brown coarse to fine Sand, little fine Gravel with fragments of decomposed rock on tip of spoon	10'-6"
10	S-5	6-80/5"	DR	Decomposed Rock	56.76(1d)
				End of Boring	11'-0"/56.16
15					
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/22/21
Contractor: PGE Services, Inc.

Boring No.: B-6W
Sheet: 1 of 1
Ground El: 71.04±
Groundwater Depth: 11.5'

Depth Feet	**SAMPLES**			**SOIL DESCRIPTION**	**Classification** **Depth** **Elevation**
	Number	Blows / 6"	Strata		
	S-1	5-2-4-5	F	Brown coarse to fine Sand, little fine Gravel w/brick fragments, & miscellaneous debris	FILL (7)
	S-2	4-4-3-2			
5	S-3	2-5-5-1		Light Brown coarse to fine Sand, little medium to fine Gravel w/brick, concrete, stone fragments, & miscellaneous debris	
10				Obstruction at 9'	
					13'-0" 58.04
			D$_R$	Decomposed Rock	(1d) 14'-0" 57.04
15		RUN = 60" 14.0' - 19.0' REC = 100% RQD = 71.67%	R	Inwood Marble/ Granitic Gneiss Bedrock: Hard, slightly to moderately weathered, mediumly to widely jointed	(1b) 19'-0" 52.04
				End of Boring	
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/23/21
Contractor: PGE Services, Inc.

Boring No.: B-7
Sheet: 1 of 1
Ground El: 75.85±
Groundwater Depth: NA

Depth Feet	**SAMPLES**			**SOIL DESCRIPTION**	**Classification** <u>**Depth**</u> **Elevation**
	Number	Blows / 6"	Strata		
	S-1	3-7-3-1			
	S-2	1-WOH-WOH-1	F	Brown coarse to fine Sand,trace Silt, little fine Gravel	
5	S-3	1-1-WOH-1			FILL (7)
	S-4	2-1-1-1		Low Recovery	
	S-5	6-80/5"	DR	Residual Soil/Decomposed Rock	9'-6" 66.35 (1d)
10				End of Boring	10'-0"/65.85
15					
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/16/21
Contractor: PGE Services, Inc.

Boring No.: B-8
Sheet: 1 of 1
Ground El: 76.68±
Groundwater Depth: NA

Depth Feet	**SAMPLES** Number	Blows / 6"	Strata	**SOIL DESCRIPTION**	**Classification** **Depth** **Elevation**
	S-1	4-5-4-7			
	S-2	8-7-5-5		Brown coarse to fine Sand, little medium to fine Gravel w/brick, concrete, stone fragments, & miscellaneous debris	FILL (7)
5	S-3	6-4-3-4	F		
	S-4	3-3-30-100/5"		Light Gray coarse to fine Sand, little fine Gravel with fragments of decomposed rock on tip of spoon	8'-0" 68.68
10			D_R	Decomposed Rock	(1d) 11'-0" 65.68
15		RUN = 60" 11.0' - 16.0' REC = 90% RQD = 56.67%	**R**	Granitic Gneiss Bedrock: Medium Hard, slightly weathered, closely to mediumly jointed	(1c) 16'-0" 60.68
				End of Boring	
20					
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/11/21
Contractor: PGE Services, Inc.

Boring No.: B-9
Sheet: 1 of 1
Ground El: 72.36±
Groundwater Depth: NA

Depth Feet	SAMPLES			SOIL DESCRIPTION	Classification Depth Elevation
	Number	Blows / 6"	Strata		
	S-1	7-7-9-10	F	Brown coarse to fine Sand, little medium fine Gravel w/brick, concrete, wood fragments, & miscellaneous debris	FILL (7)
	S-2	11-16-15-14			
5	S-3	14-15-17-21			
	S-4	13-18-19-21		Light Brown coarse to fine Sand, little fine Gravel w/brick, stone fragments, & miscellaneous debris	
10					
	S-5	10-15-10-13		Dark Gray coarse to fine Sand, little fine Gravel w/brick, stone fragments, & miscellaneous debris	13'-0" 59.36
15			GT	Light Gray coarse to fine Sand, little fine Gravel w/ decomposed rock fragments (Drilling Rig Chatter)	SW (3a)
	S-6	5-9-14-9*			17'-0" 55.36
			DR	Decomposed Rock	(1d) 17'-6"/54.86
20		RUN = 60" 17.5' - 22.5' REC = 67% RQD = 13.3%	R	Inwood Marble Bedrock: Soft, slightly to moderately weathered, closely jointed	(1d) 22'-6" 49.86
25				End of Boring * Very Dense Soil Disturbed by Drilling Procedures	

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 03/15/21
Contractor: PGE Services, Inc.

Boring No.: B-10
Sheet: 1 of 1
Ground El: 69.76±
Groundwater Depth: NA

Depth Feet	**SAMPLES**			**SOIL DESCRIPTION**	**Classification** **Depth** **Elevation**
	Number	Blows / 6"	Strata		
	S-1	7-11-11-12	F	Brown coarse to fine Sand, little medium fine Gravel w/brick, concrete, wood fragments, & miscellaneous debris	FILL (7)
	S-2	11-7-14-4			
5	S-3	8-9-8-6			
	S-4	9-12-26-28		Light Brown coarse to fine Sand, little fine Gravel w/brick, stone fragments, & miscellaneous debris	
10	S-5	36-100/1"		Gray coarse to fine Sand, little fine Gravel w/brick, stone fragments, & miscellaneous debris	13'-0" 56.76
15			G_T	Light Gray coarse to fine Sand, little fine Gravel w/ decomposed rock fragments (Drilling Rig Chatter)	SW (3a) 17'-0" 52.76
			D_R	Decomposed Rock	(1d) 18'-0" 51.76
20		RUN = 60" 18' - 23' REC = 96.67% RQD = 66.67%	R	Granitic Gneiss/Inwood Marble Bedrock: Hard, slightly weathered, closely to mediumly jointed	(1b) 23'-0" 46.76
				End of Boring	
25					

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-1
Sheet: 1 of 1
Ground El: 62.98±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** / **Elevation**
5	FILL	
	Refusal on Possible Bedrock	8'-0" 54.98
	End of Probe	
10		
15		
20		
25		

PILLORI ASSOCIATES, P.A. ***Geotechnical Engineering*** **Project No.:** 201108

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-2
Sheet: 1 of 1
Ground El: 63.8±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
15		
	Refusal on Possible Bedrock	16'-8"
	End of Probe	47.13
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/18/21
Contractor: PGE Services, Inc.

Probe No.: RP-3
Sheet: 1 of 1
Ground El: 61.81±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
	FILL	
	Refusal on Possible Bedrock	3'-0"
	End of Probe	58.81
5		
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/18/21
Contractor: PGE Services, Inc.

Probe No.: RP-4
Sheet: 1 of 1
Ground El: 62.74±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
	FILL	
5		
	Refusal on Possible Bedrock	6'-6" 56.24
	End of Probe	
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/18/21
Contractor: PGE Services, Inc.

Probe No.: RP-5
Sheet: 1 of 1
Ground El: 67±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
	FILL	
5	Refusal on Possible Bedrock	5'-9" 61.25
	End of Probe	
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-6
Sheet: 1 of 1
Ground El: 67.46±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
	Refusal on Possible Bedrock	13'-6"
	End of Probe	53.96
15		
20		
25		

PILLORI ASSOCIATES, P.A. ***Geotechnical Engineering*** **Project No.:** 201108

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-7
Sheet: 1 of 1
Ground El: 67.5±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
	Refusal on Possible Bedrock	12'-0" 55.50
	End of Probe	
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-8
Sheet: 1 of 1
Ground El: 70.2±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
	Refusal on Possible Bedrock	11'-10" 58.37
	End of Probe	
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/23/21
Contractor: PGE Services, Inc.

Probe No.: RP-9
Sheet: 1 of 1
Ground El: 75.85±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth Elevation**
5	FILL	
10	Refusal on Possible Bedrock	10'-0" 65.85
	End of Probe	
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/18/21
Contractor: PGE Services, Inc.

Probe No.: RP-10
Sheet: 1 of 1
Ground El: 70.86±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
	Refusal on Possible Bedrock	12'-0"
	End of Probe	58.86
15		
20		
25		

PILLORI ASSOCIATES, P.A. ***Geotechnical Engineering*** **Project No.:** 201108

Project: **1949 Bathgate Ave**
Bronx, New York 10457

Date: 3/18/21

Contractor: PGE Services, Inc.

Probe No.: RP-11

Sheet: 1 of 1

Ground El: 68±

Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
0–11	FILL	
11	Refusal on Possible Bedrock	11'-0" 57.00
	End of Probe	

5

10

15

20

25

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/17/21
Contractor: PGE Services, Inc.

Probe No.: RP-12
Sheet: 1 of 1
Ground El: 71.04±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
	Refusal on Possible Bedrock	13'-0"
	End of Probe	58.04
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/18/21
Contractor: PGE Services, Inc.

Probe No.: RP-13
Sheet: 1 of 1
Ground El: 70.96±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** / **Elevation**
	FILL	
	Refusal on Possible Bedrock	14'-0" 56.96
	End of Probe	

5

10

15

20

25

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-14
Sheet: 1 of 1
Ground El: 69.74±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
15		
	Refusal on Possible Bedrock	16'-0"
	End of Probe	53.74
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-15
Sheet: 1 of 1
Ground El: 70.56±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
15	Refusal on Possible Bedrock	15'-2"
	End of Probe	55.36
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/19/21
Contractor: PGE Services, Inc.

Probe No.: RP-16
Sheet: 1 of 1
Ground El: 74.76±
Groundwater Depth: NA

Depth Feet	SOIL DESCRIPTION	Depth Elevation
	FILL	
	Refusal on Possible Bedrock	19'-10" 54.96
20	End of Probe	

5
10
15
20
25

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/12/21
Contractor: PGE Services, Inc.

Probe No.: RP-17
Sheet: 1 of 1
Ground El: 75.34±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** / **Elevation**
	FILL Refusal on Possible Bedrock	2'-0" 73.34
	End of Probe	
5		
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/10/21
Contractor: PGE Services, Inc.

Probe No.: RP-18
Sheet: 1 of 1
Ground El: 86.36±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
	FILL	
	Refusal on Possible Bedrock	4'-9" 81.61
5	End of Probe	
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/10/21
Contractor: PGE Services, Inc.

Probe No.: RP-19
Sheet: 1 of 1
Ground El: 86.7±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** / **Elevation**
	FILL	
	Refusal on Possible Bedrock	3'-0"
	End of Probe	83.70
5		
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/10/21
Contractor: PGE Services, Inc.

Probe No.: RP-20
Sheet: 1 of 1
Ground El: 86.96±
Groundwater Depth: NA

Depth Feet	SOIL DESCRIPTION	Depth Elevation
	FILL	
	Refusal on Possible Bedrock	3'-0"
	End of Probe	83.96
5		
10		
15		
20		
25		

PILLORI ASSOCIATES, P.A. ***Geotechnical Engineering*** **Project No.:** 201108

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/10/21
Contractor: PGE Services, Inc.

Probe No.: RP-21
Sheet: 1 of 1
Ground El: 84.78±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
5		
	FILL	
10		
15		
	Refusal on Possible Bedrock	8'-0"
	End of Probe	68.78
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/12/21
Contractor: PGE Services, Inc.

Probe No.: RP-22
Sheet: 1 of 1
Ground El: 71.31±
Groundwater Depth: NA

Depth Feet	SOIL DESCRIPTION	Depth Elevation
	FILL Refusal on Possible Bedrock	2'-0" 69.31
	End of Probe	
5		
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/12/21
Contractor: PGE Services, Inc.

Probe No.: RP-23
Sheet: 1 of 1
Ground El: 73.66±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth Elevation**
5		
	FILL	
10		
15		
	Refusal on Possible Bedrock	17'-0" 56.66
	End of Probe	
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/12/21
Contractor: PGE Services, Inc.

Probe No.: RP-24
Sheet: 1 of 1
Ground El: 75.76±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
	FILL Refusal on Possible Bedrock	1'-0" 74.76
	End of Probe	
5		
10		
15		
20		
25		

Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/10/21
Contractor: PGE Services, Inc.

Probe No.: RP-25
Sheet: 1 of 1
Ground El: 85.44±
Groundwater Depth: NA

Depth Feet	**SOIL DESCRIPTION**	**Depth** **Elevation**
	FILL Refusal on Possible Bedrock	3'-0" 82.44
	End of Probe	
5		
10		
15		
20		
25		

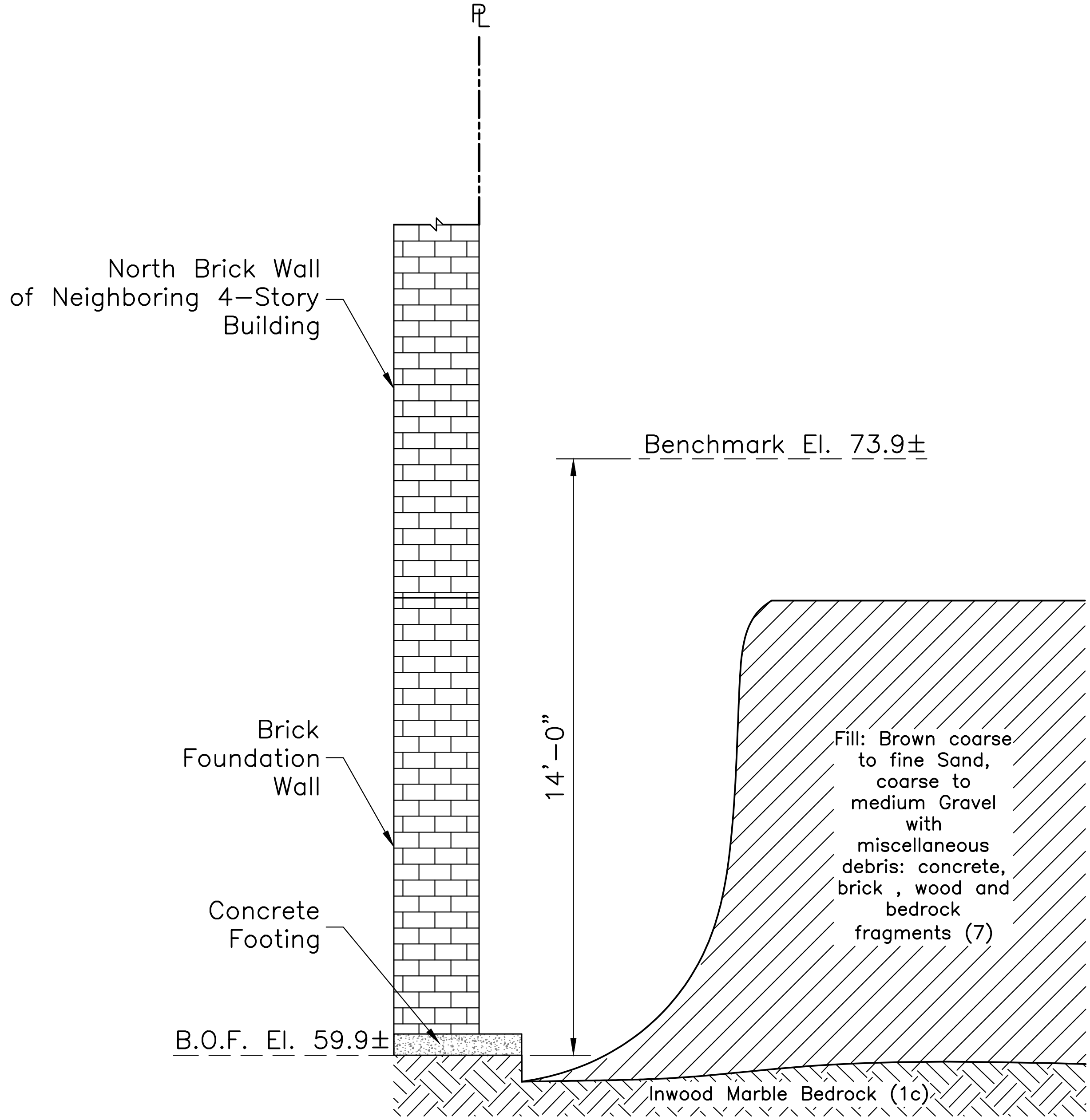
Project: **1949 Bathgate Ave**
Bronx, New York 10457
Date: 3/10/21
Contractor: PGE Services, Inc.

Probe No.: RP-26
Sheet: 1 of 1
Ground El: 84.54±
Groundwater Depth: NA

Depth Feet	SOIL DESCRIPTION	Depth Elevation
	FILL	
	Refusal on Possible Bedrock	4'-6" 80.04
5	End of Probe	
10		
15		
20		
25		

Project: 1949 Bathgate Ave
Bronx, New York
Date: 3/24/21
Contractor: PGE Services, Inc.

Test Pit No.: TP-1
Sheet: 1 of 1
Ground El: NA
Groundwater Depth: NA

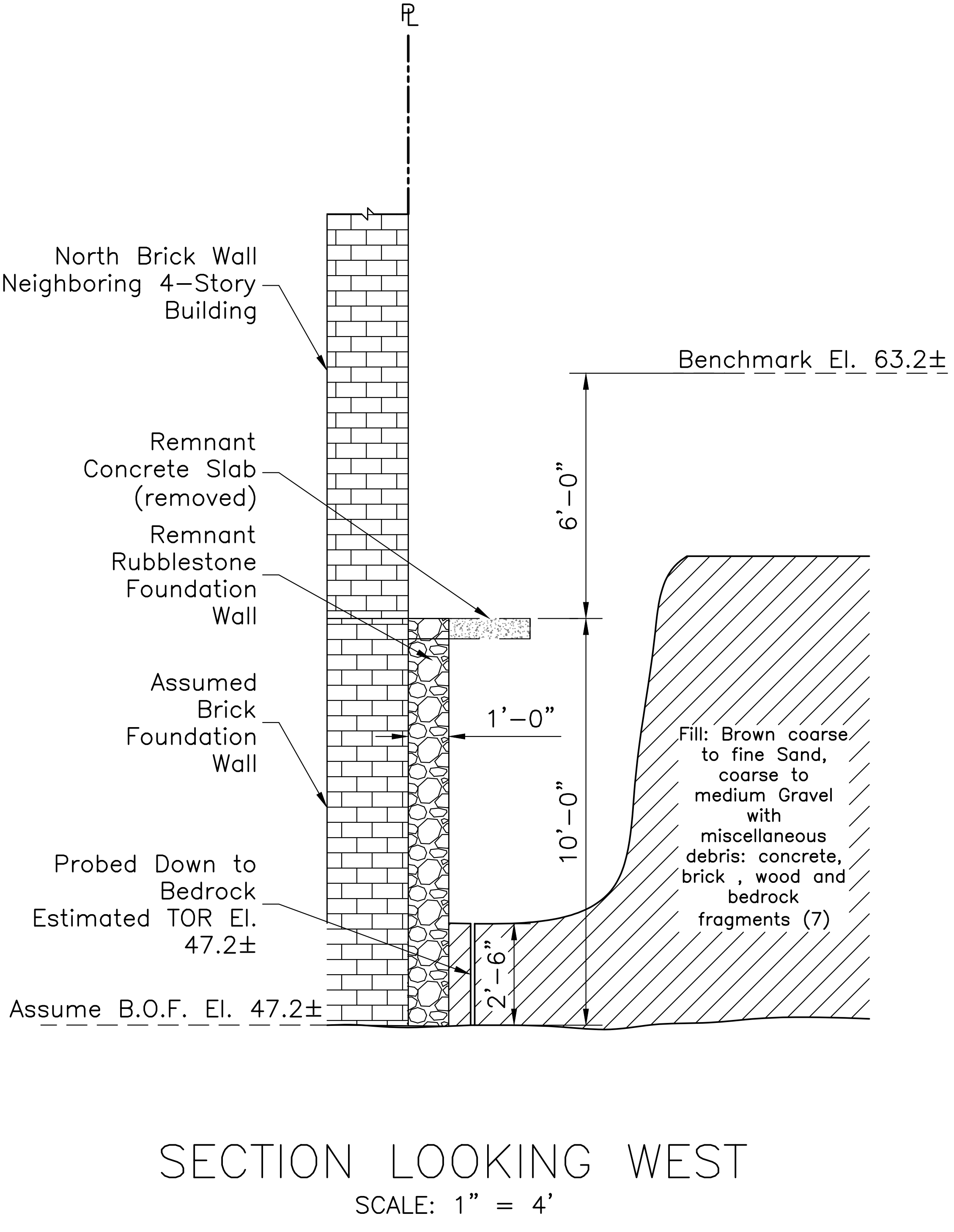


SECTION LOOKING WEST

SCALE: 1" = 4'

Project: 1949 Bathgate Ave
Bronx, New York
Date: 3/23/21
Contractor: PGE Services, Inc.

Test Pit No.: TP-2
Sheet: 1 of 1
Ground El: NA
Groundwater Depth: NA



SECTION LOOKING WEST
SCALE: 1" = 4'

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			GROUP SYMBOLS (ASTM D2487)	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOIL MORE THAN 50% RETAINED ON NO.200 SIEVE*	GRAVEL 50% OR MORE OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL- GRADED GRAVEL & GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL & GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVEL WITH FINES	GM	SILTY GRAVEL, GRAVEL SAND CLAY MIXTURES
			GC	CLAYEY GRAVEL, GRAVEL SAND CLAY MIXTURES
	SANDS MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND & GRAVELLY SAND, LITTLE OR NO FINES
			SP	POORLY GRADED SAND & GRAVELLY SAND, LITTLE OR NO FINES
		SAND WITH FINES	SM	SILTY SAND, SAND-SILT MIXTURES
			SC	CLAYEY SAND, SAND-CLAY MIXTURES
FINE-GRAINED SOIL 50% OR MORE PASSING NO.200 SIEVE*	SILT & CLAY LIQUID LIMIT LESS THAN 50%		ML	INORGANIC SILT, VERY FINE SAND, ROCK FLOUR, SILTY OR CLAYEY FINE SAND
			CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAY, SANDY CLAY, SILTY CLAY, LEAN CLAY
			OL	ORGANIC SILT & ORGANIC SILTY CLAY OF LOW PLASTICITY
	SILT & CLAY LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT, ELASTIC
			CH	INORGANIC CLAY OF HIGH PLASTICITY, FAT CLAY
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOIL			PT	PEAT, MUCK & OTHER HIGHLY ORGANIC SOIL

* BASED ON MATERIAL PASSING THE 3" (75MM) SIEVE

GRADATION**

TERM	% BY WEIGHT		
TRACE	1	TO	10
LITTLE	10	TO	20
SOME	20	TO	35
AND	35	TO	50

COMPACTNESS**
(SAND AND/OR GRAVEL)

TERM	% RELATIVE DENSITY		
LOOSE	0	TO	40
MEDIUM DENSE	41	TO	70
DENSE	71	TO	90
VERY DENSE	91	TO	100

CONSISTENCY**
(CLAY AND/OR SILT)

SHEAR STRENGTH TERM	TONS/SQ.FT.		
SOFT	LESS THAN 0.25		
FIRM	0.25	TO	0.5
STIFF	0.5	TO	1.0
VERY STIFF	1.0	TO	2.0
HARD	OVER 2.0		

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE, WHEN NO TESTING WAS PERFORMED VALUES ARE ESTIMATED.