

REPORT OF GEOTECHNICAL INVESTIGATION

**PROPOSED IMPROVEMENTS
SIX SOUTH MONROE STREET
BLOCKS 2403 & 2404, LOTS 17.01 & 3
RIDGEWOOD, BERGEN COUNTY, NEW JERSEY**



Prepared for:

**BOHLER, LLC
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Prepared by:

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**Whitestone Project No.: GJ2523671.000
July 14, 2025**

Office Locations:

July 14, 2025

via email

BOHLER, LLC
30 Garber Square
Ridgewood, New Jersey 07450

Attention: Ms. Jossy Fouad
Assistant Project Manager

**Regarding: REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED IMPROVEMENTS
SIX SOUTH MONROE STREET
BLOCKS 2403 & 2404, LOTS 17.01 & 3
RIDGEWOOD, BERGEN COUNTY, NEW JERSEY
WHITESTONE PROJECT NO.: GJ2523671.000**

Dear Ms. Fouad:

Whitestone Associates Inc. (Whitestone) is pleased to submit the *Report of Geotechnical Investigation* for the above-referenced project. The attached report presents the results of Whitestone's soils exploration efforts and presents recommendations for design of the proposed structural foundations, floor slab, pavements, stormwater management (SWM) facilities and related earthwork associated with the proposed improvements.

Whitestone's Geotechnical Division appreciates the opportunity to be of continued service to Bohler, LLC (Bohler). Please note that Whitestone has the capability to conduct the additional geotechnical engineering services recommended herein.

Please contact us at (908) 668-7777 with any questions regarding the enclosed report.

Sincerely,

WHITESTONE ASSOCIATES, INC.



Mudar Khantamr, PE
Regional Manager



Laurence W. Keller, PE
Vice President

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REPORT OF GEOTECHNICAL INVESTIGATION

Proposed Improvements Six South Monroe Street Ridgewood, Bergen County, New Jersey

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REPORT OF GEOTECHNICAL INVESTIGATION
Proposed Improvements
Six South Monroe Street
Ridgewood, Bergen County, New Jersey

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SECTION 1.0

Summary of Findings

Whitestone has conducted an exploration and evaluation of the subsurface conditions at the site in support of the proposed redevelopment located at Six South Monroe Street (Blocks 2403 & 2404, Lots 17.01 & 3) in Ridgewood, Bergen County, New Jersey. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

At the time of Whitestone's exploration, the subject site housed a paved parking lot and a support building with associated pavements, landscaping, and utilities associated with the West Side Presbyterian Church. Based on the January 15, 2025 *Concept Plan* prepared by Bohler, the site has an existing high elevation of 165 feet above an unknown datum (UD) within the northwestern portion of the site and an existing low elevation of 122 feet above UD within the southeastern portion of the site.

Based on the *Concept Plan*, the proposed improvements will include clearing the project area and construction of an approximately 3,000-square feet (footprint) barn building with improved pavement and pedestrian access areas, SWM areas, landscaping, and utilities.

Based on the *Concept Plan*, Whitestone anticipates that the proposed site will be redeveloped with maximum cuts and fills up to five feet. The proposed SWM facilities are preliminary anticipated to be situated up to approximately eight feet below existing grades.

The subsurface exploration included conducting a reconnaissance of the project site, drilling test borings and excavating test pits and soil profile pits and conducting infiltration testing within accessible portions of the subject site, and collecting soil samples for laboratory analyses. The data from this exploration and analysis were analyzed by Whitestone in light of the provided project information.

A summary of Whitestone's findings is presented in the following:

- ▶ **Subsurface Materials:** The subsurface tests were conducted within existing pavement and landscaped areas and disclosed between three inches and four inches of asphalt underlain by six inches of granular subbase materials or between four inches and six inches of topsoil at the surface. Beneath the surface cover, the subsurface tests encountered natural residual soils generally consisting of silty sand (USCS: SM) with variable amounts of gravel and/or lean clay (USCS: CL) with variable amounts of sand. Borings B-1 and B-4 encountered auger refusal within the residual soils at depths ranging between approximately five feet below ground surface (fbgs) and 5.5 fbgs presumedly on very dense natural residual soils and/or the top of the weathered rock layer. The remaining borings encountered the residual soils to depths ranging from five fbgs to nine fbgs, where the top of weathered rock was encountered. The remaining borings encountered the weathered rock to maximum termination depths ranging between 7.3 fbgs and 13.4 fbgs. Static and perched/trapped groundwater was not encountered during the investigation. Static and perched/trapped groundwater are expected to fluctuate seasonally and following periods of precipitation.

Recommendations developed upon consideration of these findings are summarized below and presented in greater detail in the following sections of the report.

- ▶ **Foundations:** Whitestone recommends supporting the proposed structures on conventional shallow spread and continuous wall footings bearing within approved portions of the natural residual soils and/or structural fill provided the soils are properly evaluated, placed, and compacted as described herein. Foundations bearing within these materials may be designed using a maximum allowable net bearing pressure of 3,000 pounds per square foot (psf). Due to anticipated disturbance of upper portions of the subgrade soils during footing excavations, all footing bottoms should be improved by in-trench compaction in the presence of the geotechnical engineer.

- ▶ **Floor Slab and Pavements:** Whitestone anticipates that proposed floor slab and pavements may be supported on improved and approved natural residual soils and/or controlled structural fill materials subject to supplemental evaluation and subgrade preparation as described herein.

- ▶ **Soil Reusability:** Whitestone anticipates that the majority of the natural residual site soils will be suitable for selective reuse as structural fill and/or backfill provided moisture contents are controlled within two percent of the optimum during favorable weather conditions and objectionable deleterious materials are segregated. The reuse of the granular site materials with greater than 12 percent fines (USCS: SM) and fine-grained soils (USCS: CL) typically is possible only during extended periods of warm, dry weather conditions. Reuse of these soils is expected to require mixing with a granular material, extensive moisture conditioning, and/or drying to facilitate their reuse, workability, and compaction in fill areas. The on-site soils will become increasingly difficult to reuse and compact where wetted beyond the optimum moisture content. Immediate reuse of on-site soil should not be anticipated. Materials that become exceedingly wet likely will require discing and aerating, which may not be practical during wet conditions. Alternatively, imported fill materials may be used to attain the desired grades and expedite earthwork operations where weather conditions or site area availability preclude moisture control operations. The stripped asphalt and topsoil should not be used as fill or backfill.

SECTION 2.0

Introduction

2.1 AUTHORIZATION

Ms. Jossy Fouad with Bohler issued authorization to Whitestone to conduct the geotechnical investigation at the site relevant to the proposed improvements located at Six South Monroe Street (Blocks 2403 & 2404, Lots 17.01 & 3) in Ridgewood, Bergen County, New Jersey. The geotechnical investigation was conducted in general accordance with Whitestone's proposal to Bohler dated February 10, 2025.

2.2 PURPOSE

The purpose of this subsurface exploration and analysis was to:

- ▶ ascertain the various soil profile components at test locations;
- ▶ estimate the engineering characteristics of the proposed foundation bearing and subgrade materials;
- ▶ provide geotechnical criteria for use by the design engineers in preparing the foundation, floor slab, pavement, and SWM designs;
- ▶ provide recommendations for required earthwork and subgrade preparation;
- ▶ record groundwater and bedrock levels (where encountered) at the time of the investigation and discuss the potential impact on the proposed construction; and
- ▶ recommend additional investigation and/or analysis (if warranted).

2.3 SCOPE

The scope of the exploration and analysis included the subsurface exploration; field testing and sampling; laboratory analysis; and an engineering analysis and evaluation of the foundation materials. This *Report of Geotechnical Investigation* is limited to addressing the site conditions related to the physical support of the proposed construction. Any references to suspicious odors, materials, or conditions are provided strictly for the client's information.

2.3.1 Field Exploration

Whitestone's field exploration of the project site was conducted by means of six borings (identified as B-1 through B-6) and two soil profile pits (identified as SPP-1 and SPP-2) within accessible locations of the proposed redevelopment areas to depths ranging from approximately five fbgs to 13.4 fbgs. The borings

were advanced with an all-terrain vehicle (ATV)-mounted drill rig equipped with hollow stem augers and split-spoon sampling techniques and the soil profile pits and test pits were conducted using a track-mounted excavator. The subsurface tests were backfilled with excavated soils generated from the investigation and restored surficially using asphaltic cold patch, where necessary. The locations of the tests are shown on the *Test Location Plan* included as Figure 1.

A visual evaluation was also conducted to assess the current condition of the existing site parking lot. The visual evaluation included mapping and quantifying apparent distress types, severity, and locations. The results of the condition survey were combined to formulate an overall pavement condition index (good, fair, and poor). The overall condition index is helpful for identifying patterns of distress severity and is useful toward developing appropriate rehabilitation strategies and maintenance programs.

General descriptions of pavement distress types, severity levels and overall condition index are provided on the attached *Pavement Condition Survey* included as Appendix C. Detailed mapping of individual pavement survey areas and the test locations are provided on the attached *Test Location Plan* included as Figure 1.

The subsurface tests were conducted in the presence of Whitestone personnel who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. The subsurface tests were located in the field using normal taping procedures and estimated right angles. These locations are presumed to be accurate within a few feet.

The borings and Standard Penetration Tests (SPTs) were conducted in general accordance with ASTM International (ASTM) designation D-1586. The SPT resistance value (N) can be used as an indicator of the consistency of fine-grained soils and the relative density of coarse-grained soils. The N-value for various soil types can be correlated with the engineering behavior of earthworks and foundations.

Groundwater level observations, although not encountered, were recorded during and immediately after the completion of field operations prior to backfilling the subsurface tests. Seasonal variations, temperature effects, man-made effects, and recent rainfall conditions may influence the levels of the groundwater, and the observed levels will depend on the permeability of the soils. Groundwater elevations derived from sources other than seasonally observed groundwater monitor wells may not be representative of true groundwater levels.

2.3.2 Laboratory Program

In addition to the field investigation, a laboratory program was conducted to determine additional, pertinent engineering characteristics of representative samples of on-site soils. The laboratory program was conducted in general accordance with applicable ASTM standard test methods and included physical testing of representative samples of various strata.

Physical/Textural Analyses: Representative samples of selected strata encountered were subjected to a laboratory program that included Atterberg Limit determinations (ASTM D-4318), moisture content determinations (ASTM D-2216), and washed gradation analyses (ASTM D-422) in order to conduct supplementary engineering soil classifications in general accordance with ASTM D-2487. The soil strata tested were classified by the Unified Soil Classification System (USCS) and results of the laboratory testing are summarized in the following table. Quantitative test results are provided in Appendix B.

PHYSICAL/TEXTURAL ANALYSES SUMMARY							
Boring	Sample	Depth (fbgs)	% Passing No. 200 Sieve	Moisture Content (%)	Liquid Limit	Plastic Index	USCS Classification
B-5	S-3	4.0 - 6.0	27.4	7.5	NP	NP	SM
B-6	S-2	2.0 - 4.0	77.2	18.3	28	8	CL

NP - Non-Plastic

The engineering classifications are useful when considered in conjunction with the additional site data to estimate properties of the soil types encountered and to predict the soil's behavior under construction and service loads.

2.3.3 Existing Pavement Evaluation

AC Pavement Mechanisms: AC pavement is unique in comparison to other pavement types because of flexibility and ability to distribute loading. AC pavement achieves flexibility from asphalt cement that binds aggregate particles to create asphalt concrete. Asphalt cement is a sticky, black, and highly viscous liquid or semi-solid form of petroleum. In general, as asphalt cement ages, viscosity increases and the material becomes more stiff and brittle (cement fatigue) resulting in AC pavement cracking. In addition to aging, pavement distress can result from other factors, or combination of, including excessive traffic loading, repeated temperature change, environmental effects, inadequate design, impeded drainage, and subgrade soil failure. Additionally, unrepaired pavement cracks allow water to penetrate the soil subgrade materials and in turn can result in strength loss of the subgrade soils and subsequent pavement distress.

The understanding of pavement distress occurrence is important to develop the appropriate rehabilitation strategy, enhance a pavement performance, and extend the service life. In general, most AC pavements for retail and commercial facilities are designed for a service life of approximately 15 years to 20 years with regular maintenance. Additionally, the understanding of the owner's expectation regarding the pavement appearance and life-service enhancement also is considered for the development of the pavement rehabilitation program.

Visual Evaluation: The results of the visual evaluation indicated that the majority of the existing asphaltic concrete parking lot are generally in poor structural condition with areas generally exhibiting moderate to severe distress including longitudinal/transverse/fatigue (alligator) cracking, and potholes. General descriptions of pavement distress types, severity levels and overall condition index are provided on the attached *Pavement Condition Survey* included as Appendix C.

SECTION 3.0 Site Description

3.1 LOCATION AND DESCRIPTION

The subject property located is located at Six South Monroe Street in Ridgewood, Bergen County, New Jersey. The site is further identified as Blocks 2403 & 2404, Lots 17.01 & 3. The site is bound to the north by the West Side Presbyterian Church, to the south by athletic fields followed by Godwin Avenue and residential properties, to the east by South Monroe Street followed by George Washington Middle School, and to the west by residential properties. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

3.2 EXISTING CONDITIONS

Surface Cover/Development: At the time of Whitestone's exploration, the subject site housed a paved parking lot and a support building with associated pavements, landscaping, and utilities associated with the West Side Presbyterian Church.

Topography: Based on the *Concept Plan* prepared by Bohler, the site has an existing high elevation of 165 feet above UD within the northwestern portion of the site and an existing low elevation of 122 feet above UD within the southeastern portion of the site.

Utilities: At the time of Whitestone's subsurface field investigation, the subject site was observed to be serviced by public and private utilities including underground electric, water, natural gas, sewer, and stormwater lines. Other utilities were not observed at the subject site by Whitestone, however, may be present. The utility information contained in this report is presented for general discussion only and is not intended for construction purposes.

Site Drainage: Surface run-off for the site generally follows existing topography draining towards SWM inlets located within the existing site pavements and adjacent right-of ways. The termini of these inlets is unknown.

3.3 SITE GEOLOGY

The subject property is situated within a section of the Piedmont Physiographic Province known as the Newark Basin. Specifically, the subject site is underlain by the Lower Jurassic-age and Upper Triassic-age Quartzite Conglomerate member of the Passaic Formation, which is part of the Brunswick Group. The Quartzite Conglomerate generally consists of reddish-brown pebble conglomerate, medium-grained to coarse-grained feldspathic and pebbly sandstone.

The overburden materials at the site include Rahway Till associated with the Wisconsin Glacier that presumably reached its most southerly advance approximately 20,000 years ago and ended approximately 10,000 years ago. The glacial deposits are expected to overlay the weathered rock. Glacial till in the area typically contains a heterogeneous mixture of sand, silt, clay and gravel mixed with variable amounts of boulders and cobbles.

3.4 PROPOSED CONSTRUCTION

Based on the *Concept Plan*, the proposed improvements will include clearing the project area and construction of an approximately 3,000-square feet (footprint) barn building with improved pavement and pedestrian access areas, SWM areas, landscaping, and utilities. Whitestone anticipates that the proposed site will be redeveloped with maximum cuts and fills up to five feet. The proposed SWM facilities are preliminarily anticipated to be situated up to approximately eight feet below existing grades.

The anticipated maximum loads are expected to be as follows:

- ▶ column loads - 75 kips;
- ▶ wall loads - 2.0 kips per lineal foot; and
- ▶ floor slabs - 125 psf.

The scope of Whitestone's investigation and the professional advice contained in this report were generated based on the project details and loading noted herein. Any revisions or additions to the design details enumerated in this report should be brought to the attention of Whitestone for additional evaluation as warranted.

SECTION 4.0

Subsurface Conditions

Details of the subsurface materials encountered are presented on the *Records of Subsurface Exploration* presented in Appendix A of this report. The subsurface soil conditions encountered in the subsurface tests consisted of the following generalized strata in order of increasing depth.

4.1 SUBSURFACE SOIL CONDITIONS

Surface Cover Materials: The subsurface tests were conducted within existing pavement and landscaped areas and disclosed between three inches and four inches of asphalt underlain by six inches of granular subbase materials or between four inches and six inches of topsoil at the surface.

Residual Soils: Beneath the surface cover, the subsurface tests encountered natural residual soils generally consisting of silty sand (USCS: SM) with variable amounts of gravel and/or lean clay (USCS: CL) with variable amounts of sand. Borings B-1 and B-4 encountered auger refusal within the residual soils at depths ranging between approximately five fbgs and 5.5 fbgs presumedly on very dense natural residual soils and/or the top of the weathered rock layer. The remaining borings encountered the residual soils to depths ranging from five fbgs to nine fbgs, where the top of weathered rock was encountered. SPT N-values within this stratum ranged between eight blows per foot (bpf) and refusal (generally defined as greater than 50 SPT hammer-blows per six-inch split-spoon sampler advancement), generally indicating loose to very dense relative densities, and averaged approximately 29 bpf. Pocket penetrometer measurements within the fine-grained portions of the stratum ranged between 0.75 ton per square foot (tsf) and greater than 4.5 tsf, generally indicating medium stiff to very hard relative consistencies, and averaged approximately 1.75 tsf.

Weathered Rock: The remaining borings encountered the weathered rock to maximum termination depths ranging between 7.3 fbgs and 13.4 fbgs. The relative densities within the weathered rock were in the very dense range.

4.2 GROUNDWATER

Static and perched/trapped groundwater was not encountered during the investigation. Static and perched/trapped groundwater are expected to fluctuate seasonally and following periods of precipitation.

SECTION 5.0

Conclusions and Recommendations

5.1 GENERAL

Whitestone recommends supporting the proposed structures on conventional shallow foundations bearing within the approved portions of the natural residual soils and/or controlled structural fill soils provided they are properly inspected, placed, and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report.

Whitestone anticipates that proposed floor slab and pavements may be supported on approved natural residual soils and/or controlled structural fill provided these materials are prepared in accordance with the recommendations herein.

All fill or backfill placed in structural areas during any site remediation or demolition operation, particularly following removal of existing building foundations, should be placed as structural fill in maximum nine-inch loose lifts and compacted to 95 percent of the modified proctor maximum dry density within two percentage points of the optimum moisture content under the supervision of the owner's geotechnical engineer.

5.2 SITE PREPARATION AND EARTHWORK

Surface Cover Stripping: Prior to stripping operations, all utilities should be identified and secured. The existing building and surface cover to be demolished and stripped should be removed from within and at least five feet beyond the limits of areas requiring structural backfill, where possible. Any structural elements, such as foundation walls, or any concrete foundations, walls or slabs, if encountered during excavations, should be removed entirely from below proposed foundations and their zones of influence (as determined by lines extending at least one foot laterally beyond footing edges for each vertical foot of depth) and excavated to at least two feet below proposed construction subgrade levels elsewhere. Foundations and slabs may remain in place below these depths below landscaped areas, provided interference with future construction is avoided, however, any existing slab to remain should be thoroughly broken to allow vertical drainage of infiltrating water. The resulting excavations should be backfilled to elevations consistent with proposed construction subgrades in accordance with the recommendations of Section 5.3. The demolition contractor should be required to conduct all earthwork in accordance with the recommendations in this report.

Excavation Difficulties: Weathered rock was encountered across the subject property at depths ranging between five fbg and nine fbg that may present difficult excavation during deeper utility excavations. Heavy excavating equipment with ripping tools will typically be effective in removing dense/hard weathered soils, transition materials, and cobble/boulder-sized rock fragments during site mass grading.

The speed and ease of excavation will depend on the type of grading equipment, the skill of the equipment operators, and the geologic structure of the material itself, such as the direction of planes of weakness and spacing between discontinuities. Planned excavation in confined excavations, such as for utility trenches, may require ripping tools and/or pneumatic hammers.

Surface Preparation/Proofrolling: Prior to placing any fill or subbase materials to raise or restore grades to the desired subgrade elevations, the existing exposed soils should be compacted to a firm surface with several passes in two perpendicular directions of a minimum 10-ton roller. The surface then should be proofrolled with a loaded tandem axle truck in the presence of the geotechnical engineer to help identify soft or loose pockets which may require removal and replacement or further investigation. Proofrolling should be conducted after a suitable period of dry weather to avoid degrading an otherwise stable subgrade. Any fill or backfill should be placed and compacted in accordance with Section 5.3.

Weather Performance Criteria: Portions of the on-site soils are moderately- to highly-moisture sensitive (USCS: SM & CL) and will soften when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations and prepared subgrades to rainfall. Accordingly, excavation and fill placement procedures should be conducted during favorable weather conditions. Overexcavation of saturated soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

Subgrade Protection and Maintenance: Every effort should be made to minimize disturbance of the site soils by construction traffic and surface runoff. The site soils will deteriorate when subjected to repeated wetting and construction traffic and likely will require removal and replacement or further investigation. Proofrolling should be conducted after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade. Site materials placed as fill should be sealed on a daily basis using a smooth drum roller to promote drainage and prevent ponding of stormwater. Materials that become exceedingly wet likely will require discing, aerating, and possibly drying during favorable weather. Alternatively, imported fill materials or subgrade stabilization procedures may be required to attain the desired grades and expedite earthwork operations during wet weather periods. The owner's geotechnical engineer should be retained to inspect soil conditions during construction and verify the suitability of prepared foundations, floor slab, and pavement subgrades for support of design loads. The site contractors should employ appropriate means and methods to protect subgrade including, however, not limited to the following:

- ▶ leaving the existing pavement in place as long as practical to protect the subgrade from freeze-thaw cycles and exposure to inclement weather;
- ▶ sealing exposed subgrade soils on a daily basis with a smooth drum roller operated in static mode;
- ▶ regrading the site as needed to maintain positive drainage away from open earthwork construction areas and to prevent standing water;

- ▶ removing wet surficial soils and ruts immediately; and
- ▶ limiting exposure to construction traffic especially following inclement weather and subgrade thawing.

5.3 STRUCTURAL FILL AND BACKFILL

Imported Fill Material: Any imported material placed as structural fill or backfill to raise elevations or restore design grades should consist of clean, relatively well graded sand or gravel with a maximum particle size of three inches and five percent to 15 percent of material finer than a #200 sieve. Imported fill material placed within the upper four feet of the building area should have a maximum plasticity index of 12 percent and a maximum liquid limit of 40 percent. Imported fill material placed below the upper four feet of the building area and any of the structural areas should have a maximum plasticity index of 20 percent and a maximum liquid limit of 50 percent. The material should be free of clay lumps, organics and deleterious material.

On-Site Materials: Based on the conditions disclosed by the subsurface tests, Whitestone anticipates that the majority of the natural site soils will be marginally suitable for selective reuse as structural fill and/or backfill provided moisture contents are controlled within two percent of the optimum during favorable weather conditions and objectionable deleterious materials are segregated. The reuse of granular site materials with greater than 12 percent fines (USCS: SM) and fine-grained site soils (USCS: CL) typically is possible only during extended periods of warm, dry weather conditions. Reuse of these soils is expected to require mixing with a granular material, extensive moisture conditioning, and/or drying to facilitate their reuse, workability, and compaction in fill areas. The on-site soils will become increasingly difficult to reuse and compact where wetted beyond the optimum moisture content. Immediate re-use of on-site soil should not be anticipated. Materials that become exceedingly wet likely will require discing and aerating, which may not be practical during wet conditions. Alternatively, imported fill materials may be used to attain the desired grades and expedite earthwork operations where weather conditions or site area availability preclude moisture control operations. Stripped asphalt and/or topsoil should not be used as fill or backfill.

Cobble- and boulder-sized weathered rock/bedrock materials or similarly sized materials greater than three inches in diameter will need to be separated from on-site soils to be placed as structural fill or backfill. Cobble-sized materials between three inches to 12 inches may be crushed or individually placed in structural fill or backfill layers deeper than two feet below proposed foundation and pavement subgraded levels. Care must be taken to individually seat any large particles and to compact soil around large particles with hand operated equipment to minimize risk of void formation. Boulder-sized greater than 12 inches in diameter need to be crushed prior to replacement as structural fill materials. Materials greater than three inches in size should be placed a minimum of three feet from utilities.

Demolition Material: Demolition material, free of environmental restrictions, may be used as fill material provided the material is properly segregated and processed as recommended herein. Concrete masonry materials should be crushed to a well graded blend with a maximum size of three inches in diameter. Stripped asphaltic materials and deleterious building materials such as wood, insulation, metal shingles etc. should not be used as general structural fill material. Milled or reclaimed asphalt pavement (RAP) may be re-used as granular base or stabilizing materials provided that the RAP particle size meets New Jersey Department of Transportation (NJDOT) standard specifications for granular base and no more than 50 percent of the pavement granular base contains RAP.

Compaction and Placement Requirements: All structural fill and backfill should be placed in maximum nine-inch loose lifts and compacted to 95 percent of the maximum dry density within two percent of the optimum moisture content as determined by ASTM D-1557 (Modified Proctor). Whitestone recommends using a vibratory drum roller to compact the existing coarse-grained site soils or a small hand held vibratory compactor within excavations.

Structural Fill Testing: A sample of the imported fill material or any on-site material proposed for reuse as structural fill or backfill should be submitted to the geotechnical engineer for analysis and approval at least one week prior to its use. The placement of all fill and backfill should be monitored by a qualified engineering technician to ensure that the specified material and lift thicknesses are properly installed. A sufficient number of in-place density tests should be conducted to ensure that the specified compaction is achieved throughout the height of the fill or backfill.

5.4 GROUNDWATER CONTROL

Static groundwater was not encountered during the investigation. Accordingly, based on anticipated redevelopment grades, Whitestone does not anticipate the need for extensive dewatering or groundwater control. However, perched/trapped water may be anticipated within existing fill, at the existing fill/natural soil interface, within fine-grained portions of the natural site soils, and/or above the weathered rock, especially following precipitation events. As such, construction phase dewatering primarily is anticipated to consist of removing surface water runoff and trapped water that should be expected during site excavations. A gravity fed sump pump should be suitable for minor temporary dewatering of any trapped water or surface runoff encountered during construction.

Proper grading and drainage must be incorporated into the site design and construction phase grading to discourage ponding of surface runoff. Every effort must be made to maintain drainage of surface run-off away from construction areas by grading. The contractor should limit exposure of excavations and prepared subgrades to rainfall. Overexcavation of saturated soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

5.5 FOUNDATIONS

Shallow Foundation Design Criteria: Whitestone recommends supporting the proposed structures on conventional spread and continuous wall footings designed to bear within approved portions of the natural residual site soils and/or on properly placed and compacted structural fill provided these materials are properly evaluated, placed and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report. Foundations bearing within these materials may be designed to impart a maximum allowable net bearing pressure of 3,000 psf. All footing bottoms should be improved by in-trench compaction in the presence of the geotechnical engineer. Regardless of loading conditions, proposed foundations should be sized no less than minimum dimensions of 24 inches for continuous wall footings and 36 inches for isolated column footings.

Inspection/Overexcavation Criteria: Whitestone recommends that the suitability of the bearing soils along and below the footing bottoms be verified by a geotechnical engineer prior to placing concrete for the footings. Where areas of unsuitable materials are encountered in footing excavations, overexcavation and recompaction or replacement of the materials will be necessary to provide a suitable footing subgrade. Any overexcavation to be restored with structural fill will need to extend at least one foot laterally beyond footing edges for each vertical foot of overexcavation. Lateral overexcavation may be reduced if grade is restored with lean concrete. The bottom of overexcavations should be compacted with static smooth drum rollers, walk-behind compactors, vibrating plates, or plate tampers (“jumping jacks”), as appropriate, to compact locally disturbed materials.

Settlement: Whitestone estimates post construction settlements of individual foundation elements to be less than one inch if the recommendations outlined in this report are properly implemented. Differential settlements of building foundations should be less than one-half inch.

Frost Coverage: Footings subject to frost action should be placed at least 36 inches below adjacent exterior grades or the depth required by local building codes to provide protection from frost penetration. Interior footings not subject to frost action may be placed at a minimum depth of 18 inches below the slab subgrade.

5.6 FLOOR SLAB

Whitestone anticipates that approved natural residual site soils and/or controlled structural fill will be suitable for support of the proposed floor slabs provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report. Any areas that become softened or disturbed as a result of wetting and/or repeated exposure to construction traffic should be removed and replaced with compacted structural fill. The properly prepared on-site soils are expected to yield a minimum subgrade modulus (k) of 150 psi/in.

A minimum four-inch layer of coarse aggregate, such as AASHTO #57 stone, dense graded aggregate, or equal, should be installed below ground-supported floor slabs to provide a capillary break. An impervious membrane also should be provided as a moisture vapor barrier beneath all floor slabs.

5.7 PAVEMENT DESIGN CRITERIA

General: Whitestone anticipates that approved natural residual soils, and/or controlled structural fill materials are expected to be suitable for support of the proposed pavements provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Any areas that become softened or disturbed as a result of wetting and/or repeated exposure to construction traffic should be removed and replaced with compacted structural backfill. Pavement subgrade soils should be recompacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor. Although not encountered, where existing fill remains below proposed subgrades, increased maintenance, possibly including crack sealing, patching or more frequent re-paving, may be necessary.

A biaxial geogrid, such as Tensar BX-1200 or an engineer-approved equivalent, may be used within pavement subgrade areas to stabilize the subgrade and also to reduce the depth of overexcavation. If the risk of increased maintenance is not acceptable, more extensive subgrade preparation recommendations can be developed. The following pavement section recommendations are based on the assumption that such an allowed risk is acceptable. Whitestone would be pleased to prepare alternative recommendations for more substantial subgrade improvements.

Design Criteria: A design California Bearing Ratio of five has been determined based on climatic considerations for the properly prepared subgrade soils for pavement design purposes. This value was correlated with pertinent soil support values and specified traffic loads to prepare flexible and rigid pavement designs per the AASHTO *Guide for the Design of Pavement Structures*.

Design traffic loads were assumed based on typical volumes for similar facilities and correlated with 18-kip equivalent single axle loads (ESAL) for a 20-year life. An estimated maximum load of 25,000 ESAL for all pavement areas assuming the pavement primarily will accommodate both automobile and limited heavier truck traffic. Actual pavement loads should be less than this value.

Pavement Sections: The following recommended flexible pavement section is presented below:

FLEXIBLE PAVEMENT SECTIONS		
Layer	Material	Standard Duty Thickness (Inches)
Asphalt Surface	NJDOT I-5 Surface	1.5
Asphalt Base	NJDOT I-2 Base	2.5
Granular Subbase	NJDOT DGA Base Course	6.0

A rigid concrete pavement should be used to provide suitable support at areas of high traffic or severe turns. The recommended minimum rigid pavement is presented below in tabular format:

RIGID PAVEMENT SECTIONS		
Layer	Material	Standard Duty Thickness (Inches)
Surface	4,000 psi air-entrained concrete	5.0 ¹
Base	NJDOT DGA Base Course	6.0

Note¹: The outer edges of concrete pavements are susceptible to damage as trucks move from rigid pavement to adjacent flexible pavement. Accordingly, the thickness at the outer two feet of the rigid concrete pavement should be 12 inches.

Additional Design Considerations: The pavement section thickness designs presented in this report are based on the design parameters detailed herein and are contingent on proper construction, inspection, and maintenance. Additional pavement thickness may be required by local code. The designs are contingent on achieving the minimum soil support value in the field. To accomplish this requirement, all subgrade soil and supporting fill or backfill must be placed, compacted, and evaluated in accordance with Sections 5.2, 5.3, and 5.11 of this report. Proper drainage must be provided for the pavement structure including appropriate grading and surface water control.

The performance of the pavement also will depend on the quality of materials and workmanship. Whitestone recommends that NJDOT standards for materials, workmanship, and maintenance be applied to this site. Project specifications should include verifying that the installed asphaltic concrete material composition is within tolerance for the specified materials and that the percentage of air voids of the installed pavement is within specified ranges for the respective materials. All rigid concrete pavements should be suitably air-entrained, jointed, and reinforced.

5.8 LATERAL EARTH PRESSURES

Site retaining walls were not identified on the *Concept Plan*, however, Whitestone anticipates that they may be necessary for the proposed redevelopment and lateral earth pressure design will be required.

The following soil parameters apply to the anticipated properly compacted imported granular fill or site soils in a well-drained, level backfill condition and may be used for foundation designs dependent upon lateral earth resistance:

LATERAL EARTH PRESSURE PARAMETERS		
Parameters	Site Soils	Imported Granular Fill Materials
Moist Density (γ_{moist})	130 pcf	140 pcf
Internal Friction Angle (ϕ)	28°	30°
Active Earth Pressure Coefficient (K_a)	0.36	0.33
Passive Earth Pressure Coefficient (K_p)	2.77	3.00
At-Rest Earth Pressure Coefficient (K_o)	0.53	0.50

pcf: pounds per cubic foot

Backfill Criteria: Whitestone recommends that granular soils be used to backfill behind the proposed below-grade walls. The granular backfill materials should consist of clean, relatively well graded sand or gravel with a maximum particle size of three inches and five percent to 15 percent of material finer than a #200 sieve. The material should be free of clay lumps, organics, and deleterious material. The natural site soils or weathered rock are not anticipated to be suitable for below-grade wall backfill. Accordingly, imported granular soils may be required. A maximum density of 140 pcf should not be exceeded to avoid creating excessive lateral pressure on the walls during compaction operations.

Whitestone recommends that backfill directly behind any walls be compacted with light, hand-held compactors. Heavy compactors and grading equipment should not be allowed to operate within a zone of influence measured at a 45-degree angle from the base of the walls during backfilling to avoid developing excessive temporary or long-term lateral soil pressures.

Wall Drainage: Positive gravity drainage of the backfill should be provided at the base of the below-grade walls by a series of perforated pipes surrounded by at least 18 inches of clean crushed stone that discharges into a stormwater sewer or daylight to appropriate site surface drainage. Whitestone recommends that a two-foot wide zone of clean crushed stone or washed sand, separated from the backfill by a filter fabric, be constructed adjacent to the back of the wall. This zone should prevent the buildup of hydrostatic pressures and pressures from freezing moisture in the backfill above the groundwater level. The vertical drain should be tied into the gravity drainage system (perforated pipe) installed at the base of the wall. Alternatively, below-grade walls may include weep holes instead of a drain tied to the site drainage system. Where wall drainage is not provided, the wall should be designed to withstand full hydrostatic pressure.

Whitestone should be notified if any other retaining structures or design considerations requiring lateral earth pressure estimations are proposed. Specific recommendations for temporary retaining structures are beyond Whitestone's scope of work.

5.9 SEISMIC AND LIQUEFACTION CONSIDERATIONS

Based on a review of the subsurface conditions relevant to the *International Building Code 2021, New Jersey Edition* the subject site may be assigned a Site Class C. Based on the seismic zone and soil profile liquefaction considerations are not expected to have a substantial impact on design. Based on review of the Geologic Map of New Jersey, no seismic hazard zones or fault zones are identified on this site.

5.10 EXCAVATIONS

The soils encountered during this investigation within anticipated excavation depths are at least consistent with Type C Soil Conditions as defined by 29 CFR Part 1926 (OSHA) which require a maximum unbraced excavation angle of 1.5:1 (horizontal: vertical). Actual conditions encountered during construction should be evaluated by a competent person (as defined by OSHA) to ensure that safe excavation methods and/or shoring and bracing requirements are implemented.

5.11 SUPPLEMENTAL POST INVESTIGATION SERVICES

Construction Inspection and Monitoring: The owner’s geotechnical engineer with specific knowledge of the subsurface conditions and design intent should conduct inspection, testing, and consultation during construction as described in previous sections of this report. Monitoring and testing should also be conducted to verify that the existing structures are properly demolished, any encountered underground structures are properly backfilled, the existing surface cover materials are properly removed, and suitable materials used for controlled fill are properly placed and compacted over suitable subgrade soils. The overexcavation of unsuitable materials, where required, and proofrolling of subgrades prior to structural support should be witnessed and documented by the owner’s geotechnical engineer.

5.12 PRELIMINARY SWM AREA EVALUATION

General: A preliminary evaluation of the subsurface conditions, including limiting zones and estimated seasonal high groundwater (ESHGW) levels, was conducted in support of the proposed SWM system. The investigation and infiltration testing were conducted in general accordance with standards presented in the New Jersey Department of Environmental Protection (NJDEP) *Stormwater Best Management Practices Manual* (BMP Manual). The preliminary investigation included conducting two soil profile pits (identified as SPP-1 through SPP-2) and conducting laboratory tube permeameter testing on representative samples. The subsurface test locations are shown on the *Test Location Plan* included as Figure 1.

Estimated Seasonal High Groundwater Levels: The methods used in determining the seasonal high groundwater level include evaluating the soil morphology within a test excavation and identifying irregular spots or blotches of different colors or minerals unlike that of the surrounding soil (mottles). A summary of the ESHGW observations, although not encountered, as well as field infiltration test results from the evaluation are included in the following table.

ESHGW/INFILTRATION TEST SUMMARY				
Test Location	ESHGW (fbgs)	USDA Classification @ Test	Field Infiltration Test Results	
			Depth (fbgs)	Rate (in/hour)
SPP-1	Not Encountered	Sandy Loam	3.0	0.98
SPP-2	Not Encountered	Sandy Loam	5.0	0.22

USDA: United States Department of Agriculture

Tested Soil Infiltration Rates: Representative samples within select subsurface tests were subjected to laboratory tube permeameter testing as detailed in the BMP Manual. Infiltration rates ranged between approximately 0.22 inches per hour (iph) and 0.98 iph. *Records of Subsurface Exploration* are included in Appendix A, and detailed laboratory tube permeameter test results are provided in Appendix B.

SECTION 6.0

General Comments

Supplemental recommendations may be required upon finalization of construction plans or if significant changes are made in the characteristics or location of the proposed structure. Soil bearing conditions should be checked at the appropriate time for consistency with those conditions encountered during Whitestone's geotechnical investigation.

The recommendations presented herein should be utilized by a qualified engineer in preparing the project plans and specifications. The engineer should consider these recommendations as minimum physical standards which may be superseded by local and regional building codes and structural considerations. These recommendations are prepared for the sole use of Bohler, LLC for the specific project detailed and should not be used by any third party. These recommendations are relevant to the design phase and should not be substituted for construction specifications.

The possibility exists that conditions between borings and profile pits may differ from those at specific test locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may alter soil and rock conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered.

Whitestone assumes that a qualified contractor will be employed to conduct the construction work, and that the contractor will be required to exercise care to ensure all excavations are conducted in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent properties and maintaining slope stability.

Whitestone recommends that the services of the geotechnical engineer be engaged to test and evaluate the soils in the footing excavations prior to concreting in order to determine that the soils will support the bearing capacities. Monitoring and testing also should be conducted to verify that suitable materials are used for controlled fills and that they are properly placed and compacted over suitable subgrade soils.

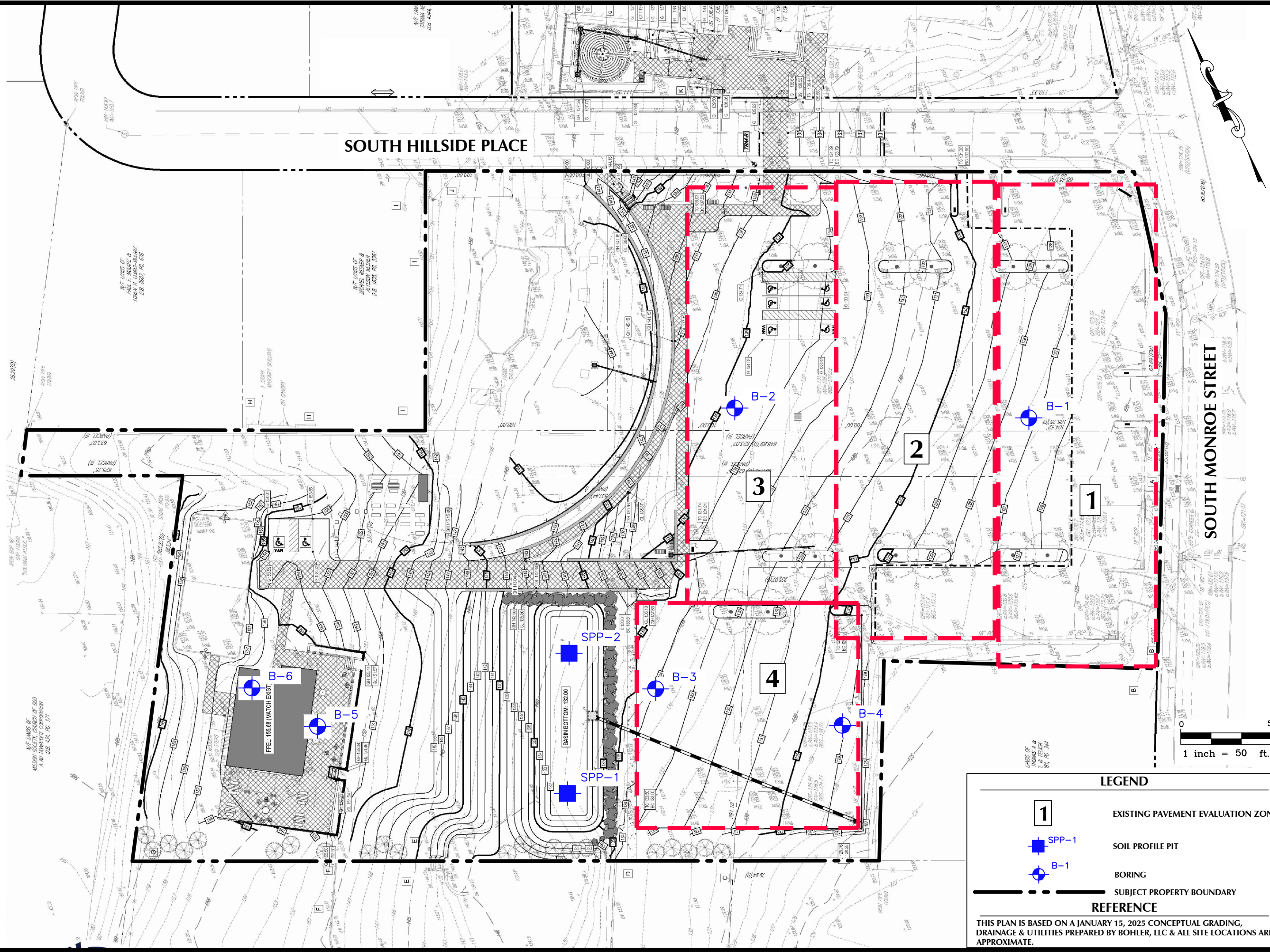
The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information and the design details furnished by Bohler, LLC. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties are implied or expressed.



FIGURE 1
Test Location Plan

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LEGEND

- 1 EXISTING PAVEMENT EVALUATION ZONE
- SPP-1 SOIL PROFILE PIT
- ⊕ B-1 BORING
- SUBJECT PROPERTY BOUNDARY

REFERENCE

THIS PLAN IS BASED ON A JANUARY 15, 2025 CONCEPTUAL GRADING, DRAINAGE & UTILITIES PREPARED BY BOHLER, LLC & ALL SITE LOCATIONS ARE APPROXIMATE.

DRAWING TITLE:
TEST LOCATION PLAN

CLIENT:
BOHLER, LLC

PROJECT:
PROPOSED IMPROVEMENTS
SIX SOUTH MONROE STREET
RIDGEWOOD, BERGEN COUNTY, NJ

PROJECT #: GJ2523671.000	
DESIGNED BY: GR	PROJ. MGR.: MK
DATE: 7/10/25	FIGURE: 1
SCALE: 1" = 50'	



WHITESTONE
An Employee-Owned Company

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APPENDIX A
Records of Subsurface Exploration



RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Page 1 of 1

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street; Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 127.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	
Termination Depth: 5.2 feet bgs	Date Completed: 6/17/2025	Cave-In Depth Elevation (feet bgs) (feet)	
Proposed Location: Pavement	Logged By: CS / FS	During: NE --- ▼	At Completion: 5.0 122.0
Drill / Test Method: HSA / SPT	Contractor: ACC	At Completion: NE --- ▼	
	Equipment: ATV	24 Hours: --- --- ▼	24 Hours: --- ---

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
0.0						0.0	PAVEMENT	4" Pavement, 6" Subbase	
0.8						0.8	RESIDUAL	Brown Lean Clay, Moist, Medium Stiff (CL)	Qu = 0.75 tsf
1 - 3	S-1		2 - 2 - 2 - 2	6	4	1.5			
3 - 5	S-2		5 - 10 - 17 - 27	12	27	3.0		Reddish-Brown Silty Sand with Some Gravel, Moist, Medium Dense (SM)	
5 - 5.2	S-3		50/2"	NR	50/2"	5.0		As Above, Very Dense (SM)	
						10.0		Boring Log B-1 Terminated at a Depth of 5.2 Feet Below Ground Surface Due to Auger and Spoon Refusal	
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2
Page 1 of 1

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street; Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 134.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	
Termination Depth: 7.3 feet bgs	Date Completed: 6/17/2025	Cave-In Depth Elevation (feet bgs) (feet)	
Proposed Location: Pavement	Logged By: CS / FS	During: NE --- ▼	At Completion: 5.0 129.0
Drill / Test Method: HSA / SPT	Contractor: ACC	At Completion: NE --- ▼	
	Equipment: ATV	24 Hours: --- --- ▼	24 Hours: --- ---

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	PAVEMENT	3" Pavement, 6" Subbase	
1 - 3	S-1		5 - 6 - 5 - 6	16	11	0.8	RESIDUAL	Brown Lean Clay, Moist, Stiff (CL)	Qu = 1.5 tsf
3 - 4.8	S-2		15 - 20 - 23 - 50/3"	20	43	3.0		Reddish-Brown Silty Sand with Some Gravel, Moist, Dense (SM)	
5 - 5.2	S-3		50/2"	NR	50/2'	5.0	WEATHERED ROCK	No Recovery, Resumed as Below (WR)	
7 - 7.3	S-4		50/4"	4	50/4"	7.0		Reddish-Brown Weathered Rock, Dry, Very Dense (WR)	
								Boring Log B-2 Terminated at a Depth of 7.3 Feet Below Ground Surface Due to Auger Refusal	
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3
Page 1 of 1

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street; Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 135.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	
Termination Depth: 9.7 feet bgs	Date Completed: 6/17/2025	Cave-In Depth Elevation (feet bgs) (feet)	
Proposed Location: Pavement	Logged By: CS / FS	During: NE --- ▼	At Completion: 3.0 132.0
Drill / Test Method: HSA / SPT	Contractor: ACC	At Completion: NE --- ▼	
	Equipment: ATV	24 Hours: --- --- ▼	24 Hours: --- ---

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	PAVEMENT	4" Pavement, 6" Subbase	
						0.8	RESIDUAL		
1 - 3	S-1		6 - 6 - 6 - 7	8	12	3.0		Reddish-Brown Lean Clay, Moist, Hard (CL)	Qu = >4.5 tsf
3 - 5	S-2		12 - 17 - 15 - 17	16	32	5.0		Reddish-Brown Silty Sand with Some Gravel, Moist, Dense (SM)	
5 - 7	S-3		19 - 25 - 27 - 33	12	52			As Above, Very Dense (SM)	
7 - 9	S-4		41 - 37 - 32 - 40	12	69	9.0		As Above (SM)	
9 - 9.7	S-5		20 - 50/2"	NR	50/2"	10.0	WEATHERED ROCK	No Recovery, Presumed Weathered Rock, Moist, Very Hard (WR)	
						15.0			
						20.0			
						25.0			
Boring Log B-3 Terminated at a Depth of 9.7 Feet Below Ground Surface Due to Auger Refusal									

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4
Page 1 of 1

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street; Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 129.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	
Termination Depth: 5.0 feet bgs	Date Completed: 6/17/2025	Cave-In Depth Elevation (feet bgs) (feet)	
Proposed Location: Pavement	Logged By: CS / FS	During: NE --- ▼	At Completion: 2.0 127.0 <input type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: ACC	At Completion: NE --- ▼	
	Equipment: ATV	24 Hours: --- --- ▼	

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	PAVEMENT	4" Pavement, 6" Subbase	
						0.8	RESIDUAL	 Reddish-Brown Silty Sand with Some Gravel, Moist, Medium Dense (SM)	
1 - 3	S-1	X	2 - 7 - 20 - 27	16	27				
3 - 5	S-2	X	8 - 15 - 12 - 12	14	27				As Above (SM)
						5.0		Boring Log B-4 Terminated at a Depth of 5.0 Feet Below Ground Surface	
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



RECORD OF SUBSURFACE EXPLORATION



Boring No.: B-5
Page 1 of 1














Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street; Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 153.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	
Termination Depth: 13.2 feet bgs	Date Completed: 6/17/2025	Cave-In Depth Elevation (feet bgs) (feet)	
Proposed Location: Barn	Logged By: CS / FS	During: NE --- ▾	At Completion: 10.0 143.0
Drill / Test Method: HSA / SPT	Contractor: ACC	At Completion: NE --- ▾	
	Equipment: ATV	24 Hours: --- --- ▾	24 Hours: --- ---

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	TOPSOIL	4" Topsoil	
0 - 2	S-1		1 - 2 - 2 - 2	16	4	0.3	RESIDUAL	Reddish-Brown Lean Clay, Moist, Medium Stiff (CL)	Qu = 0.75 tsf
2 - 4	S-2		3 - 4 - 4 - 7	12	8	2.0		Reddish-Brown Silty Sand with Some Gravel, Moist, Loose (SM)	
4 - 6	S-3		8 - 20 - 32 - 37	16	52	5.0		As Above, Very Dense (SM)	
6 - 6.8	S-4		32 - 50/4"	6	50/4"	8.0		As Above (SM)	
8 - 8.9	S-5		7 - 50/5"	10	50/5"	10.0		WEATHERED ROCK	Reddish-Brown Weathered Rock, Moist, Very Dense (WR)
						13.0		No Recovery, Presumed As Above (WR)	
13 - 13.2	S-6		50/2"	NR	50/2"	13.2		Boring Log B-5 Terminated at a Depth of 13.2 Feet Below Ground Surface Due to Auger Refusal	
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street; Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 156.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	
Termination Depth: 13.4 feet bgs	Date Completed: 6/17/2025	Cave-In Depth Elevation (feet bgs) (feet)	
Proposed Location: Building	Logged By: CS / FS	During: NE --- ▾	At Completion: 12.0 144.0 
Drill / Test Method: HSA / SPT	Contractor: ACC	At Completion: NE --- ▾	
	Equipment: ATV	24 Hours: --- --- ▾	24 Hours: --- --- 

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0			
						0.5	TOPSOIL 	6" Topsoil	
0 - 2	S-1		2 - 2 - 2 - 2	16	4		RESIDUAL 	Brown Lean Clay with Sand, Moist, Stiff (CL)	Qu = 1.5 tsf
2 - 3.7	S-2		2 - 6 - 7 - 50/ 2"	12	13			As Above (CL)	Qu = 1.5 tsf
4 - 5.8	S-3		14 - 13 - 16 - 50/ 4"	16	29			Reddish-Brown Silty Sand with Some Gravel, Moist, Medium Dense (SM)	
6 - 8	S-4		10 - 12 - 17 - 15	18	29			As Above (SM)	
8 - 8.9	S-5		25 - 50/5"	5	50/5"		WEATHERED ROCK 	Reddish-Brown Weathered Rock, Moist, Very Dense (WR)	
13 - 13.4	S-6		50/5"	4	50/5"			As Above (WR)	
						15.0		Boring Log B-6 Terminated at a Depth of 13.4 Feet Below Ground Surface Due to Auger Refusal	
						20.0			
						25.0			



RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-1

Page 1 of 1

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street, Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 138.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	Estimated Seasonal High Groundwater Depth Elevation (feet bgs) (feet)
Termination Depth: 5.0 feet bgs	Date Completed: 6/17/2025		
Proposed Location: SWM	Logged By: CS / FS	During: NE --- ▼	At Completion: NE ---
Excavating Method: Test Pit Excavation	Contractor: ACC	At Completion: NE --- ▼	
Test Method: Visual Observation	Rig Type: Excavator	24 Hours: --- --- ▼	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0	0 - 0.5	TOPSOIL	6" Topsoil
			0.5 - 5	RESIDUAL	Dark Reddish-Brown (5YR 3/4) SANDY LOAM; 10% Gravel, 10% Boulder; Moist; Moderate, Fine to Medium Granular Structure; Friable; No Roots	
3.0	T-1A/B	TUBES	1.0			
			2.0			
			3.0			
			4.0			
			5.0			
			6.0			
			7.0			
			8.0			
			9.0			
			10.0			
			11.0			
			12.0			
			13.0			
			14.0			
			15.0			
					Soil Profile Pit SPP-1 Terminated at a Depth of 5.0 Feet Below Ground Surface Due to Bucket Refusal	

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-2

Page 1 of 1

Project: Proposed Improvements		WAI Project No.: GJ2523671.000	
Location: Six South Monroe Street, Ridgewood, Bergen County, NJ		Client: Bohler, LLC	
Surface Elevation: ± 139.0 feet	Date Started: 6/17/2025	Water Depth Elevation (feet bgs) (feet)	Estimated Seasonal High Groundwater Depth Elevation (feet bgs) (feet)
Termination Depth: 7.0 feet bgs	Date Completed: 6/17/2025		
Proposed Location: SWM	Logged By: CS / FS	During: NE --- ▼	At Completion: NE ---
Excavating Method: Test Pit Excavation	Contractor: ACC	At Completion: NE --- ▼	
Test Method: Visual Observation	Rig Type: Excavator	24 Hours: --- --- ▼	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS	
Depth (feet)	Number	Type	feet				
			0.0	0 - 0.5	TOPSOIL	6" Topsoil	
			0.5 - 4	RESIDUAL	Dark Reddish-Brown (5YR 3/6) SANDY LOAM; 10% Gravel, 20% Boulder; Moist; Moderate, Fine to Medium Granular Structure; Friable; No Roots		
5.0	T-1A/B	TUBES	4 - 7		As Above, Reddish-Brown (5YR 4/4)		
			8.0		Soil Profile Pit SPP-2 Terminated at a Depth of 7.0 Feet Below Ground Surface Due to Bucket Refusal		
			9.0				
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

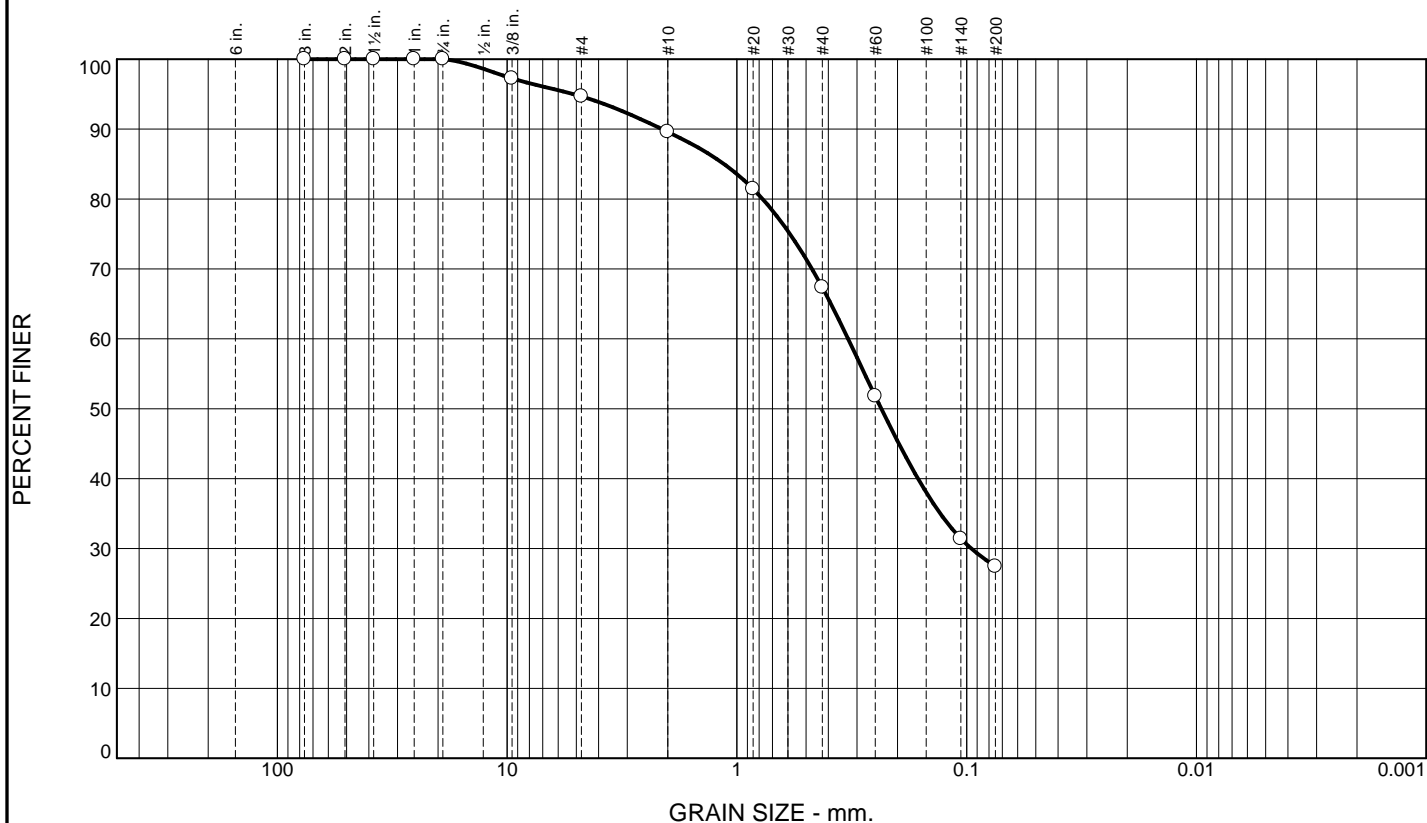
NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



APPENDIX B

Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.3	5.1	22.2	40.0	27.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	97.3		
#4	94.7		
#10	89.6		
#20	81.4		
#40	67.4		
#60	51.8		
#140	31.4		
#200	27.4		

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 2.1205 D₈₅= 1.1378 D₆₀= 0.3282
D₅₀= 0.2351 D₃₀= 0.0954 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 7.5%

* (no specification provided)

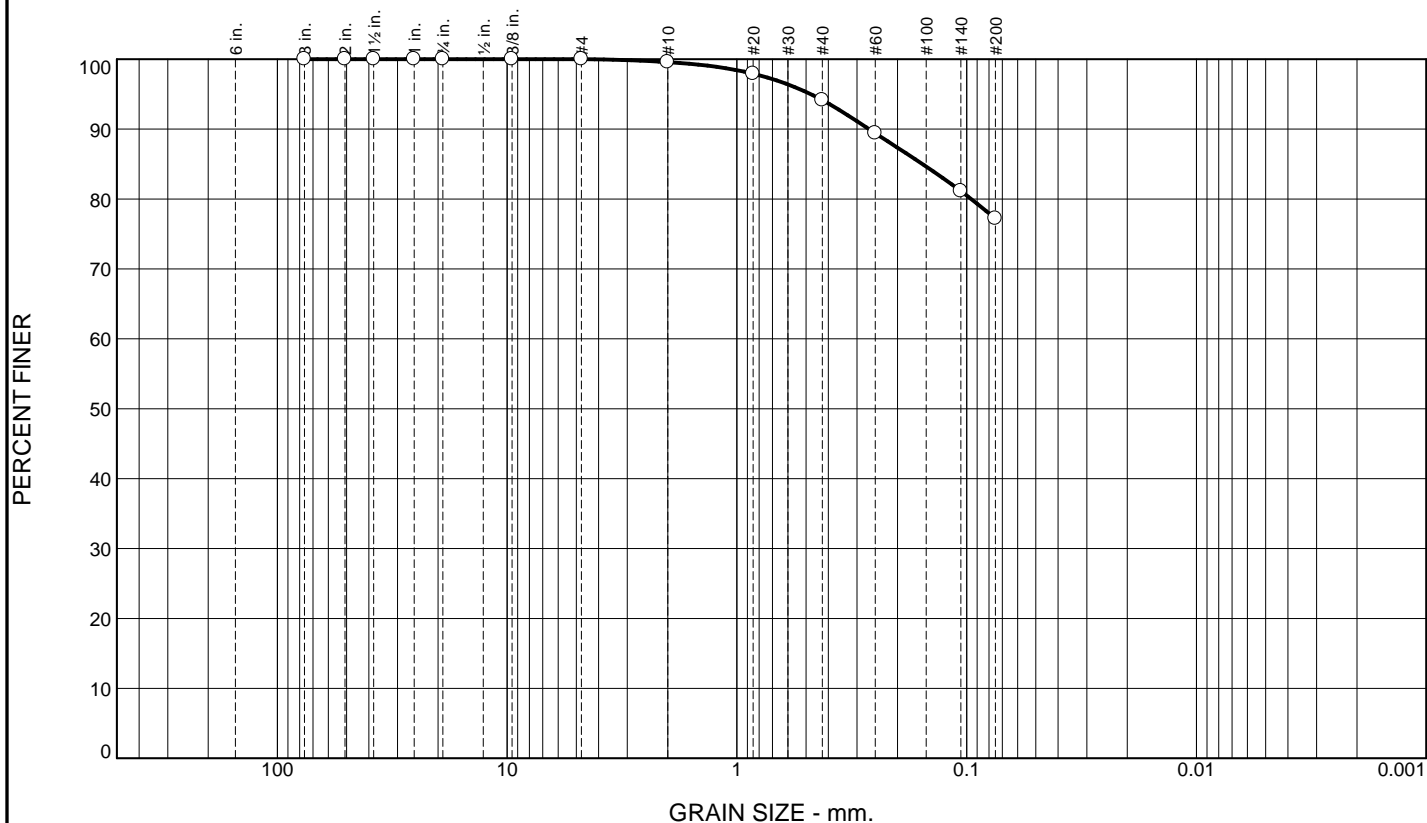
Source of Sample: B-5 Depth: 4.0' - 6.0'
Sample Number: S-3

Date: 7/10/2025

WHITESTONE ASSOCIATES, INC. Warren, New Jersey	Client: Bohler, LLC Project: Proposed Improvements Six South Monroe Street, Ridgewood, Bergen County, New Jersey Project No: GJ2523671.000
----------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	5.5	16.9	77.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	100.0		
#4	100.0		
#10	99.6		
#20	97.9		
#40	94.1		
#60	89.4		
#140	81.1		
#200	77.2		

Material Description

Lean Clay with Sand

Atterberg Limits

PL= 20 LL= 28 PI= 8

Coefficients

D₉₀= 0.2662 D₈₅= 0.1557 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= CL AASHTO= A-4(5)

Remarks

W_n = 18.3%

* (no specification provided)

Source of Sample: B-6 Depth: 2.0' - 4.0'
Sample Number: S-2

Date: 7/10/2025

WHITESTONE ASSOCIATES, INC. Warren, New Jersey	Client: Bohler, LLC Project: Proposed Improvements Six South Monroe Street, Ridgewood, Bergen County, New Jersey Project No: GJ2523671.000
----------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Figure

Tube Permeameter Test Data

Job Number: GJ2523671.000

Project: Proposed Improvements

Client: Bohler, LLC

Lab Tech:

Sample ID: **Profile Pit No.:** SPP-1 **Sample No.:** T-1 **Depth:** 3.0'

COUNTY/MUNICIPALITY Ridgewood, Bergen County, New Jersey **BLOCK** 2403 & 2404 **LOT** 17.01 & 3

1. Test Number 1 Replicate (letter) B Date Collected 6/17/2025

2. Material Tested: Fill X Test in Native Soil

3. Type of Sample: X Undisturbed Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
Length of Sample, L, in inches 3.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

Wt. of Tube Containing Sample

Wt. of Empty Tube

7. Sample Volume (L x 2.54 cm./inch x 3.14R²), cc. 86.83

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: No Yes, Indicate Internal Radius, cm.

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1 5.00
At the End of Each Test Interval, H2 4.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
10:25:00	11:05:00	40.00
11:05:00	11:46:00	41.00
11:46:00	12:28:00	42.00

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 41.00

K (in/hr) = 0.98 **Classification:** **K2**

13. Defects in the Sample (Check appropriate items):

 None
 Soil/Tube Contact Large Gravel Large Roots
 Dry Soil Smearing Compaction
 Other - Specify

Tube Permeameter Test Data

Job Number: GJ2523671.000
Project: Proposed Improvements
Client: Bohler, LLC
Lab Tech:

Sample ID: _____ **Profile Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 5.0'

COUNTY/MUNICIPALITY: Ridgewood, Bergen County, New Jersey **BLOCK:** 2403 & 2404 **LOT:** 17.01 & 3

1. **Test Number:** 1 **Replicate (letter):** B **Date Collected:** 6/17/2025

2. **Material Tested:** _____ **Fill:** _____ **X** **Test in Native Soil:** _____

3. **Type of Sample:** X **Undisturbed:** _____ **Disturbed:** _____

4. **Sample Dimensions:** **Inside Radius of Sample Tube, R, in cm:** 1.91
Length of Sample, L, in inches: 3.00

5. **Bulk Density Determination (Disturbed Samples Only):** N/A

6. **Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams:** 0.00

Wt. of Tube Containing Sample: _____
Wt. of Empty Tube: _____

7. **Sample Volume (L x 2.54 cm./inch x 3.14R²), cc.** 86.83

8. **Bulk Density (Sample Wt./Sample Volume), grams/cc.** 0 > 1.2

9. **Standpipe Used:** _____ **No** _____ **Yes, Indicate Internal Radius, cm.**

10. **Height of Water Level Above Rim of Test Basin, in inches:**

At the Beginning of Each Test Interval, H1: 5.00
At the End of Each Test Interval, H2: 4.00

11. **Rate of Water Level Drop (Add additional lines if needed):**

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
10:25:00	10:34:00	9.00
10:34:00	10:44:00	10.00
10:44:00	10:53:00	9.00

12. **Calculation of Permeability:** $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ **T=** 9.33

K (in/hr) = 4.30 **Classification:** **K3**

13. **Defects in the Sample (Check appropriate items):**

_____ **None**
_____ **Soil/Tube Contact** _____ **Large Gravel** _____ **Large Roots**
_____ **Dry Soil** _____ **Smearing** _____ **Compaction**
_____ **Other - Specify** _____

APPENDIX C
Pavement Condition Survey



PAVEMENT CONDITION SURVEY

Client: Bohler, LLC

Date: 6/17/2025

Project: Proposed Improvements

File No.: GJ2523671.000

Location: Six South Monroe Street
Ridgewood, Bergen County, New Jersey

Field Engineer: CS / FS

Grid Number	Distress Type	Distress Severity Level	Overall Condition Index
1	Transversal Crack	Severe	Poor
	Longitudinal Cracking	Severe	
	Potholes	Moderate	
2	Transversal Crack	Severe	Poor
	Longitudinal Cracking	Severe	
	Alligator	Moderate	
3	Longitudinal Cracking	Moderate	Poor
	Alligator	Severe	
4	Potholes	Moderate	Poor
	Longitudinal Cracking	Severe	
	Alligator	Moderate	

APPENDIX D
Supplemental Information
(USCS, Terms & Symbols)

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> ON NO. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> NO. 4 SIEVE	SM	SILTY SANDS, SAND-SILT MIXTURES	
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS <u>LESS</u> THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	SILTS AND CLAYS	LIQUID LIMITS <u>GREATER</u> THAN 50	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
	SILTS AND CLAYS	LIQUID LIMITS <u>GREATER</u> THAN 50	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS* Sand and/or Gravel

RELATIVE DENSITY

LOOSE..... 0% TO 40%
MEDIUM DENSE..... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY* Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

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

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Office Locations:

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NEW HAMPSHIRE

NEW YORK

GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

- N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
 Qu: Unconfined compressive strength, TSF.
 Qp: Penetrometer value, unconfined compressive strength, TSF.
 Mc: Moisture content, %.
 LL: Liquid limit, %.
 PI: Plasticity index, %.
 δd: Natural dry density, PCF.
 ▽: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

- NE: Not Encountered (Groundwater was not encountered).
 SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
 ST: Shelby Tube - 3" O.D., except where noted.
 AU: Auger Sample.
 OB: Diamond Bit.
 CB: Carbide Bit
 WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

<u>Term (Non-Cohesive Soils)</u>	<u>Standard Penetration Resistance</u>
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

<u>Term (Cohesive Soils)</u>	<u>Qu (TSF)</u>
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

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