EARTH ENGINEERING INCORPORATED

Geotechnical Engineers & Geologists

REPORT OF GEOTECHNICAL INVESTIGATION

PROPOSED 1-STORY BUILDING

6000 RISING SUN AVENUE

CITY & COUNTY OF PHILADELPHIA, PENNSYLVANIA

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I. INTRODUCTION AND BACKGROUND

A. PROJECT OBJECTIVE AND SCOPE OF WORK

Earth Engineering Incorporated (EEI) has completed the geotechnical investigation for a proposed 1-story building addition located at 6000 Rising Sun Avenue in Philadelphia, Pennsylvania. The objective of this investigation was to evaluate the subsurface soil conditions within the proposed construction area. Based on the encountered conditions and the results of geotechnical and laboratory analyses performed for this project, EEI has developed geotechnical recommendations for the design and construction of a suitable foundation system. EEI also provides general construction guidelines for the development of the site.

The scope of work for this project included a test boring investigation, geologic analysis of site conditions, laboratory testing of soil samples, infiltration testing, and a geotechnical engineering analysis of the data obtained. This investigation was performed in general accordance with EEI Proposal No. BB-20955R, dated July 29, 2022. The following report sections present the results of the field and laboratory investigations and document recommendations regarding the geotechnical aspects of this project.

B. EXISTING FEATURES AND PROJECT DESCRIPTION

The proposed development is located at 6000 Rising Sun Avenue in Philadelphia, Pennsylvania. The site is immediately bordered to the north by small bleachers and a basketball court, to the west by the Lawncrest pool area, to the east by the Lawncrest park and to the south by Comly Street. The site consists of a basketball court that is adjacent to the Lawncrest Recreation center.

The "*Infiltration Testing Plan"* prepared by Sitio, LLC., dated on May 7, 2021, the conceptual plan prepared by Sitio, LLC., dated May 11, 2022 and the structural plan titled "*Lawncrest Recreation Center - Foundation Plan*", page S1.01, prepared by Sitio, LLC., dated August 5, 2022, shows existing site conditions, the layout of the proposed development at the site and proposed foundation plan. Based on the provided plans, the existing site is fairly flat. The Lawncrest Recreation Center has a basement at a Finished Floor Elevation (FFE) of approximately 130.0 feet. The general relief at the site is approximately 1.0 foot. This corresponds to topographic contours ranging from 138.9 feet to 140.0 feet.

Figure 1 below, shows an aerial of the approximate development area. A topographic map of the site, from the *Topographic Maps of Pennsylvania* series, Frankford, PA-NJ Quadrangle, is shown in Plate 1 in the APPENDIX section of this report.

Figure 1: Site location (Google 2022)

According to the information provided by the client, the proposed structure will be a 1-story building addition to the existing Lawncrest Recreation center. This addition will have a basement matching the existing basement to the Lawncrest Recreation center. Based on information and plans provided by the client, the Finished Floor Elevation (FFE) of the proposed structure will be 130.0 feet. Structural loads were not provided during the preparation of this report; therefore, EEI assumed a maximum column load and maximum wall load of 100.0 kips and 3.0 kips per linear foot, respectively. Should the actual structural loads vary from these assumed loads, EEI should be contacted immediately to evaluate the impact on the subsequent recommendations. Should the project plans be further developed, EEI should be notified so that any changes may be evaluated.

II. FIELD INVESTIGATION, OBSERVATIONS, AND DATA

A. FIELD ACTIVITIES AND PROCEDURES

1. Private Utility Location

EEI contacted the Pennsylvania One Call System prior to initiating the field investigation for location of public utilities. Due to the possible presence of existing utilities, EEI subcontracted Trinity Subsurface Engineering, LLC (TSE) of Wilmington, Delaware to complete

a scan of the development area prior to advancement of test borings on October 11, 2022. The results confirmed the location and direction of a few linear anomalies within the proposed work areas. These obstructions were field marked before the commencement of the subsurface investigation and are indicated on the *Field Sketch* produced by TSE. This plan is included in the FIGURES AND DRAWINGS section.

2. Test Borings

Five (5) test borings, denoted in this report as B-1 through B-5, were conducted for this investigation to obtain geotechnical data within the investigation area of the proposed building addition. Test borings B-1 through B-5 were conducted within the development area of the proposed building. The test borings were drilled on October 11, 2022 by Sano Drilling, LLC of Sewell, New Jersey utilizing a Mobile Drill B-37X track-mounted drilling rig. Supervision and monitoring of the test boring program was performed by a representative of EEI. The ground surface elevations of the test boring locations are shown on the boring profile, included in the FIGURES AND DRAWINGS section of this report. The ground surface elevation at each boring location was estimated using the provided "*Infiltration Testing Plan".*

The borings were advanced using 2-inch outer-diameter, split-barrel (spoon) samplers and 3-¼ inch inner-diameter hollow-stem augers. Split-barrel sampling was conducted with an automatic hammer. The borings were conducted in accordance with ASTM Standard D1586. Standard Penetration Test (SPT) values were recorded for each sample. The SPT values, which are a measure of soil density and consistency, are the number of blows required to drive the 2-inch outer diameter split-barrel sampler 1 foot using a 140-pound weight dropped 30 inches. The number of blows required to advance the sampler over the 12-inch interval from 6 to 18 inches is considered the "N" value, or the SPT value.

3. Groundwater Observations

Groundwater measurements were taken in each boring during the subsurface investigation. Groundwater was not encountered in the test borings to the depths explored. It should be noted that groundwater elevations may fluctuate with daily, seasonal and climatic events. The contractor should be advised that they may conduct their own investigations to verify groundwater elevations prior to performing excavations on site.

B. GEOTECHNICAL LABORATORY TESTING

Two (2) representative soil sample was recovered from the field investigation for laboratory testing. The laboratory testing was performed to verify visual classifications and to establish engineering parameters required for geotechnical engineering analysis. The tests

performed included Particle Size Analysis (ASTM D2487) and Natural Moisture Content (ASTM D2216). Unified Soil Classification System (USCS) Group Symbols and ASTM Group Names were assigned to the samples based on the laboratory testing. The results of the laboratory testing are presented in the following table. Gradation curves, which graphically and numerically depict the results of the analyses, are included in the APPENDIX section.

TABLE 1
LABORATORY TEST RESULTS

Boring Location	B-1	B-3
Sample Location	S-4 & S-5	S-4 & S-5
Sample Depth	6.0' – 10.0'	6.0' – 10.0'
Stratum	Stratum I	Stratum I
Atterberg Limits – Liquid Limit / Plastic Limit / Plasticity Index	NP	NP
Percent Passing No. 200 Sieve (%)	13.4	25.7
Natural Moisture Content (%)	10.1	16.3
Unified Soil Classification System (USCS) Group Symbol/ Name	SM, Silty Sand	SM, Silty Sand

C. PUBLISHED GEOLOGICAL INFORMATION

According to the Commonwealth of Pennsylvania, Topographic and Geologic Survey, Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, 1981, Frankford, PA-NJ Quadrangle, the investigated site is situated within an area of the Pensauken and Bridgeton Formations (Geologic Symbol: Tpb) and ultimately underlain by the Wissahickon Schist Formation (Geologic Symbol: Xw). Plate 2, included in the Appendix, shows the location of the site on a geologic map of the area.

As noted in the Pennsylvania Geological Survey, *Engineering Characteristics of The Rocks of Pennsylvania*, Fourth Series, Revised 1982, the Pensauken and Bridgeton Formations (Geologic Symbol: Tpb) are composed of yellow to reddish brown crossbedded clayey sand with interbedded quartz, chert and quartzite gravels. These formations are well-bedded and crossbedded. This formation is deeply weathered. Excavation is generally easy in comparison to other rock types.

As noted in the Pennsylvania Geological Survey, *Engineering Characteristics of The Rocks of Pennsylvania*, Fourth Series, Revised 1982, the Wissahickon Schist Formation (Geologic Symbol: Xw) is typically composed of a mica schist. This rock is characterized by its distinct foliation which is caused by the preferential orientation of muscovite, feldspar and quartz. The foliation within this formation is typically well developed, fissile to thin. This rock type is moderately resistant to weathering and the overlying soil mantle is typically thin to thick. Excavation rates are moderate in weathered areas of this formation.

III. INTERPRETATION OF INFORMATION AND DATA

A. STRATIFICATION AND SUBSURFACE CONDITIONS

The samples of soil obtained during the field investigation were examined and visually classified by EEI, both in the field and in the laboratory. EEI has generalized the subsurface profile for the investigated area. One (1) material designated as Existing FILL or Reworked Native Soils and one (1) naturally occurring stratum was characterized to exist at the investigated locations. Asphalt was encountered at each test boring and had thicknesses ranging from 5 to 6 inches from the surface. Beneath the asphalt, stone aggregate was encountered at each test boring at a thickness of 5 inches.

Boring Profiles, which depict the strata, and other information obtained from the field investigation, are included in the FIGURES AND DRAWINGS section of this report. Detailed descriptions and data regarding the subsurface conditions are shown on the *Boring Logs,* found in the APPENDIX section. The following subsections provide general descriptions of the materials encountered.

1. Existing FILL

The Existing FILL materials consist of dark brown, black, and white sandy silt to silty sand, trace to some mica, gravel, asphalt and concrete. The Existing FILL material was encountered at all test borings beneath the stone aggregate layer and extended to depths ranging from 4.0 to 6.0 feet below existing ground surface. As determined by visual observation, the USCS Group Symbol for representative samples of this soil is *SM.* The assigned ASTM Group Name for the samples observed is *Silty Sand*.

The SPT values recorded during the sampling of the Existing FILL ranged from 4 blows per foot (bpf) to 32 bpf of penetration. Based on these values, the relative density of the Existing FILL material ranged from very loose to dense. These materials were encountered in a moist state during the field investigation.

2. Stratum I: Decomposed Schist

The soils designated as Stratum I are indicative of decomposed schist. This stratum consists of black, dark brown, tan brown and gray tan micaceous silty sand, trace gravel. As determined by visual observation and laboratory analysis, the USCS Group Symbol for a representative sample of this material is *SM*. The corresponding ASTM Group Name is *Silty Sand*. The Stratum I soils were encountered beneath the Existing FILL at all test borings and extended to termination depths ranging from 21.0 feet to 25.0 feet below existing grade.

The SPT values recorded during the sampling of this soil ranged from 3 bpf to 59 bpf of penetration. Based on these values, the relative density of Stratum I is very loose to very dense. These materials were encountered in a moist state during the field investigation. Laboratory testing measured natural moisture contents of 10.1 and 16.3 percent.

3. Bedrock

Bedrock is indicated by auger refusal, or when there is no significant advancement of the rotating auger drill bit for the type of drilling rig and drilling equipment used. Auger refusal was encountered in all test borings except B-3. Auger refusal depths ranged from 21.0 feet to 23.6 feet below existing grade.

TABLE 2
DEPTH TO BEDROCK

Boring #	Existing Grade (ft)	Depth to Rock (ft)	Rock Elevation (ft)
B-1	139.5	23.6	115.9
B-2	139.7	21.0	118.7
B-3	140.0	N/A	N/A
B-4	140.0	21.5	118.5
B-5	139.8	21.0	118.8

IV. GEOTECHNICAL RECOMMENDATIONS

A. GEOTECHNICAL ANALYSES

EEI has completed geotechnical analyses in order to provide foundation design recommendations. The analyses are based on the conditions encountered in the field. EEI has

evaluated the subsurface conditions and provides the following soil parameters utilized for foundation analyses in the following table.

TABLE 3
GEOTECHNICAL SOIL PROPERTIES

Stratum	Existing FILL	Stratum I
Moist Unit Weight - γ_m (pcf)	120	125
Effective Stress Angle of Internal Friction - ϕ' (deg)	28	30
Cohesion – c (psf)	0	0

As previously mentioned, the proposed structure will be a 1-story building addition to the existing Lawncrest Recreation center with an assumed Finished Floor Elevation (FFE) of approximately 136.5 feet. Structural loads were not provided during the preparation of this report; therefore, EEI assumed a maximum column load and maximum wall load of 100.0 kips and 3.0 kips per linear foot, respectively. Should the actual structural loads vary from the assumed loads, EEI should be contacted immediately to evaluate the impact on the subsequent recommendations.

B. FOUNDATION SUPPORT RECOMMENDATIONS

The subsurface conditions in the area of the proposed 1-story structure are characterized by very loose to medium dense Existing FILL layer and very loose to very dense Stratum I soils. Based on the subsurface conditions, conversations with the client and assumed loading conditions, the Existing FILL layer and upper portions of Stratum I soils are expected to be completely removed to achieve the Bottom of Footing Elevation (BFE) of 127.0 feet. According to the structural plan provided, the BFE for the existing Lawncrest Recreation center is 127.0 feet. **Prior to foundation construction, the BFE for the existing Lawncrest Recreation center should be confirmed (see UNDERPINNING AND SHEETING AND SHORING section) and the BFE for the proposed structure should match this confirmed BFE**.

The soils encountered at the proposed BFE consisted of the Stratum I soils that are generally suitable for foundation and/or slab support. Therefore, EEI recommends that the proposed building be supported on standard strip and spread footings. **As stated earlier, the**

foundation elevation for the proposed structure should match the existing foundation elevation for the Lawncrest Recreation center.

Soils at the foundation subgrade should be evaluated using proofrolling (see SITE PREPARATION section) by the on-site representative of Geotechnical Engineer. If loose/soft materials or otherwise unsuitable materials still exists at the proposed footing subgrade elevations they should be recompacted or undercut and replaced according to the FILL AND COMPACTION section of this report. If undercuts are necessary, the vertical and lateral extent of undercut should be determined by on-site representative of Geotechnical Engineer. The foundation for the proposed structure may be designed for an allowable bearing pressure of 3,000 pounds per square foot (psf) on compacted medium dense Stratum I or structural fill soils. At this bearing pressure, estimated total settlements are expected to be less than 1 inch and differential settlement is expected to be less than 0.5 inch.

The following specifications assume that recognized, proper construction practices will be followed throughout construction and that a Professional Engineer qualified in Geotechnical Engineering will be retained to oversee the inspection of site preparation, proofrolling, foundation construction, and other critical earthwork operations.

1. Foundations shall bear on compacted medium dense Stratum I or structural fill soils placed and compacted at least 36 inches below adjacent exterior grade. Foundations shall not bear on loose/soft or wet soils. Bearing in these materials, the foundations should be designed for an allowable bearing capacity of 3,000 psf.
2. If loose/soft or wet soils are encountered at the footing subgrade elevation they should be undercut to suitable bearing materials and replaced with structural fill or lean concrete. Alternatively, the foundation base can be lowered to a suitable soil-bearing elevation.
3. Strip and spread foundations shall be a minimum of 18 and 36 inches wide, respectively, for shear considerations.
4. All foundation and slab subgrades should be compacted with hand-operated compaction equipment (e.g., a rammer or “jumping jack”) or with a vibratory, walk-behind, trench roller or a smooth roller (e.g., Rammax, Wacker, or Bomag equipment) in accordance with the FILL & COMPACTION section of this report.
5. All footing subgrades should be dry and free of loose material or debris, as determined by the geotechnical engineer, immediately before the placement of concrete.
6. The actual bearing conditions at the footing subgrade elevation should be confirmed in the field during excavation, by inspection under the supervision of a Professional Engineer qualified in Geotechnical Engineering.

C. FLOOR SLAB SUPPORT

EEI recommends the floor slabs for the proposed development be designed as a slab-on-grade system, and the subgrade should be prepared in accordance with the procedures

described in this report. EEI recommends the placement of a granular subbase beneath the floor slab to provide uniform support distribution between the subgrade soils and the base of the concrete slab. It is recommended that a minimum of four (4) inches of crushed stone aggregate, such as AASHTO #57 or equivalent, be placed and compacted beneath all floor slab areas. The floor slabs should be suitably reinforced to control shrinkage cracks. Proper joints should be provided at the junction of the slabs and foundation system so that a small amount of independent movement can occur without causing damage. Floor slabs supported on a minimum 4-inch thick layer of a clean stone, AASHTO #57 or equivalent, can be designed using a modulus of subgrade reaction of 125.0 psi/in for the on-site soils in their current state. An increased modulus of subgrade reaction can be obtained by using a more granular soil or aggregate beneath the proposed slab.

Floor slabs may be supported on *structural fill* placed and compacted over approved subgrade soils in accordance with the FILL AND COMPACTION section of this report. During SITE PREPARATION, localized areas may require removal of unsuitable soils and replacement with compacted *structural fill* or excavation, drying, aeration and replacement in a controlled manner. Following these procedures, the resultant product should be a uniform bearing surface for slab support that will provide adequate structural support and limit settlement. The earthwork procedures described herein should be monitored and inspected by a representative of the Geotechnical Engineer of Record.

Furthermore, from a geotechnical perspective, a vapor retarder/barrier is not required to address any issues with moisture intrusion from shallow groundwater. The need for a vapor retarder/barrier from a non-geotechnical perspective depends on the floor covering and/or humidity control in the proposed building space. Refer to appropriate documentation from the Portland Cement Association for guidance on the need and location of a vapor retarder/barrier. If a moisture sensitive floor covering is used, or the building space is equipped with humidity control, then a vapor retarder/barrier is recommended. Additionally, the location of the vapor retarder/barrier would depend on when slab construction is completed with respect to placement of a water tight roofing system. There is some debate in the industry on the use and location of vapor retarder/barrier. Regardless, these issues are not of a geotechnical nature. Therefore, EEI recommends that these issues be evaluated by the Architect and/or structural engineer accordingly to determine the need for and location of the vapor retarder/barrier.

D. UNDERPINNING AND SHEETING AND SHORING

Support of excavations (SOE) may be required in areas where sufficient distance is not available to safely slope the excavations or where the proposed excavation depth is within the zone of influence of adjacent structures. As stated in the EXISTING FEATURES AND PROJECT DESCRIPTION section, the existing Lawncrest Recreation center has an existing basement at an approximate FFE of 130.0 feet. In addition, there is also an existing sidewalk adjacent to Comly Street located south of the proposed development. These adjacent structures are within the zone of influence of the proposed development. Therefore, EEI recommends conducting a test pit investigation to confirm the elevation of the existing basement and associated foundations for the existing Lawncrest Recreation center, according to the Philadelphia License and Inspection Department.

Sheeting, shoring, underpinning or bracing of adjacent structures should be designed by a professional engineer and constructed according to a set of design plans. EEI can be contacted to provide the design of such measures. Furthermore, a licensed professional engineer is required for special inspections for SOE according to the Philadelphia License and Inspection Department. EEI can also be contacted to provide special inspections for SOE.

E. SITE PREPARATION

The proposed building development area is currently a basketball court. Several utilities were located on the site during a private utility scan conducted by Trinity Subsurface Engineering. The results are shown on the *Field Sketch* plan included in the FIGURES AND DRAWINGS section. These existing utilities either be removed or relocated away from the proposed development area prior to construction. The existing pavement and any structures encountered during foundation and utility excavations should be demolished and removed offsite. Additionally, underground/overhead utilities within the proposed foundation excavation areas should be stripped offsite prior to construction activities. Where applicable, EEI recommends relocation of existing utilities to areas outside the proposed building area.

Initial site preparation measures should include the removal of all surficial materials including asphalt, subbase stone, and topsoil to expose the soils at the construction subgrade elevations within the development area. The subgrade should be proof-rolled and compacted in order to densify and verify the integrity of the subgrade bearing materials. EEI recommends that a smooth drum vibratory roller having a minimum static weight of 10 tons be utilized for this purpose. Areas that cannot be accessed by this sized equipment should be densified and compacted by use of walk-behind or hand operated equipment. The proof-rolling and

compaction activities should be observed and evaluated during construction by the on-site representative of the Geotechnical Engineer of Record. Any soft or loose zones of soil encountered during proof-rolling should be scarified and moisture conditioned (dried) or removed and replaced with structural fill as described in the FILL AND COMPACTION subsection of this report.

The site should be graded during construction to convey surface runoff away from active work areas. Repeated construction traffic across the fine-grained native soils of Stratum I at the site will lead to instabilities and should therefore be minimized. The work areas should be sealed by rolling on a daily basis to promote runoff. Careful grading and management of surface water runoff will help minimize disturbance of the subgrade. EEI recommends that all construction areas, including those that will be excavated to achieve the planned subgrade elevation, be proof-rolled immediately before the placement of any structural fill and/or the placement of subbase stone, and again before the installation of concrete or asphalt. Such preparations will allow soft and weak areas to be observed and remediated before construction.

F. LATERAL EARTH PRESSURES

The lateral earth pressures that may be used for designing below grade walls and for retaining walls, if necessary, are shown in the following table. Retaining walls that are restrained from deflection should be designed for the at-rest (K_o) condition. Retaining walls that are free to deflect, such as landscaped walls, should be designed for the active (K_a) condition. Considered somewhat conservative, the earth pressure data for the on-site material was determined from the soil classification testing and visual classification of the soil samples and was compared to generally accepted and published values for the various properties.

EEI recommends that a drainage system be installed for walls constructed below grade. The presence of a drainage system will serve to minimize hydrostatic pressures caused by water trapped against the walls. If adequate drainage is not provided, the walls should be designed to resist hydrostatic loads. Additionally, consideration should be given to any surcharge loads at the top of walls.

TABLE 4 SOIL PROPERTIES FOR COMPUTATION OF LATERAL LOADS		
Stratum	Existing FILL	Stratum I
Effective Stress Angle of Internal Friction - ϕ'	28°	30°
Moist Unit Weight - γ_m	120 pcf	125 pcf
Rankine Coefficient of Active Earth Pressure - K_a	0.36	0.33
Rankine Coefficient of Passive Earth Pressure - K_p	2.77	3.00
Rankine Coefficient of At-Rest Earth Pressure - K_o	0.53	0.50
Coefficient of Sliding	0.37	0.40

G. EXCAVATIONS

Based on the grades shown on the provided plans and the subsurface profiles, EEI expects that foundation excavations will occur within the Existing FILL and Stratum I soils at the site. Specifically, excavations will be on the order of 10.0 feet in order to achieve the FFE of 130.0 feet and on the order of 13.0 feet in order to achieve the BFE of 127.0 feet. EEI expects that the Existing FILL and Stratum I soils should be capable of being excavated with conventional earth excavation equipment and techniques.

Excavations must be sloped, benched, or shored to prevent collapse during soil excavation and during construction. Sloping, benching, or shoring of all construction excavation should be conducted in accordance with 29 CFR 1926, Subpart P. A competent person as, defined by the aforementioned regulation, is required to confirm the stability of all excavations during construction. The actual excavation wall slopes, benching, or shoring should be determined in the field and should be based on the required depth of excavations and on the soil types encountered. Care should be taken during construction to protect existing foundations and utilities from undermining.

H. FILL AND COMPACTION

1. Onsite Fill Criteria

Fill material used to support and backfill foundations as well as fill for retaining walls is considered structural fill. Based on field observations it appears that the Existing FILL (free of

deleterious material such as wood and organics) and Stratum I soils are generally suitable for reuse as a structural fill material in their current conditions. EEI recommends soil be further evaluated during site construction activities by the on-site Geotechnical Representative during the fill placement process.

If excessively moist portions of any of the strata are encountered during excavation, they will require time for aeration and drying to achieve the required densities and percentage compaction values for re-use as structural fill. Aeration and drying of excessively moist soil are best accomplished during warm dry summer months. The on-site soils will require careful moisture control as portions contain finer-grained material that are sensitive to moisture changes. Caution should be exercised during construction to not stockpile and/or expose these soils to weather conditions for long periods of time. Materials stockpiled for use as structural fill should be graded to shed water and rolled to maintain the soils. During periods of wet site conditions, travel upon the building pads and construction areas should be limited to minimize disturbance of the subgrade which will lead to instabilities.

2. Imported Fill

If any general structural fill is required to be **imported** to the site, it should meet the following criteria:

- Granular soils such as GW, GP, GM SW, SP or SM as classified by ASTM D2487 are preferred, however soils having soil classifications GC, SC, ML or CL may be acceptable provided the Geotechnical Engineer of Record approves the soil;
- the largest particles within the fill should be no greater than 3 inches in diameter;
- not include deleterious materials such as construction debris, wood, glass, ash, trash, refuse, roots and other organic matter or contain frozen clumps of soil, snow or ice;
- have moisture contents within 3 percent of the soil's optimum moisture content and
- meets the definition of clean fill according to PADEP Management of Fill Policy, Document Number 258-2182-773.

The above criteria are provided as a general guideline for soil materials imported to the site. Soil materials that become available for use as a structural fill should be submitted to the Geotechnical Engineer of Record for evaluation before they are imported to the site.

3. Compaction Criteria

Structural fills should be placed in horizontal lifts not exceeding 8 inches in loose thickness and compacted with a smooth drum vibratory roller with a minimum static weight of 10 tons. Structural fill should be placed in horizontal lifts of 6 inches loose thickness where compaction by hand-operated equipment is necessary. The optimum lift thickness and number

of repetitions necessary to achieve the required percentage compaction values should be determined in the field with test passes of the chosen compaction equipment. The fill material should be placed at, or deviate nominally from, the optimum moisture content as determined in accordance with ASTM D698 or D1557 and compacted to a minimum percentage of the maximum dry density as indicated in Table 4 below.

TABLE 5
COMPACTION CRITERIA

Fill Area	Percent of Maximum Dry Density Per ASTM D698	Percent of Maximum Dry Density Per ASTM D1557
Foundation Support, Pavements, and Wall Backfill	98	95
Utility Trenches and Walkways	98	95
Nonstructural	92	90

I. GROUNDWATER CONTROL

As previously mentioned, groundwater was not encountered at the test borings during drilling. Based upon the field observations and the proposed construction, the presence of groundwater is not anticipated to impact construction activities. It should be noted that groundwater elevations may fluctuate with daily, seasonal and climatic events. The contractor should be advised that they may conduct their own investigations to verify groundwater elevations prior to performing excavations on site.

V. SITE SEISMIC CLASSIFICATION

According to the 2018 International Building Code IBC Section 1613.2.2 Site Classification for Seismic Design and the information obtained from the geotechnical field investigation, the average properties in the top 100 feet correspond to Site Class D (Table 20.3-1 *Site Classification*, in Chapter 20 of ASCE 7). Therefore, Site Class D conditions should be applied for the seismic design of the proposed structures.

VI. CONSTRUCTION QUALITY CONTROL

As documented within this report, the proposed construction will include earthwork procedures and foundation placement activities. The quality of these activities is an integral part of the development of this site and directly affects the validity of the recommendations presented in this report. Based on EEI's past experience, the most effective and economical

earthwork inspection is obtained through the presence of a qualified representative of the Geotechnical Engineer of Record during site preparation, excavation of on-site materials, site development, proof-rolling, placement of structural fill, and installation of foundation elements. EEI recommends that these activities be examined, tested, and confirmed by the Geotechnical Engineer of Record.

VII. LIMITATIONS

The conclusions and recommendations presented in this report are based on the subsurface data collected, details stated in this report, and the assumption that the subsurface conditions do not deviate from those disclosed by the data acquisition activities performed. It is recommended that the final foundation plans be made available to EEI for review. Any substantial change in the proposed plans should be brought to the attention of EEI so that the impact of the change on the recommendations presented herein may be evaluated.

The procedures followed during the subsurface exploration, and the analyses and conclusions contained herein, have followed generally accepted practices of geotechnical engineering. EEI provides no other warranties, either expressed or implied, as to the professional advice provided under the terms of EEI's agreement and included in this report. The conclusions and recommendations presented in this report are based on the assumption that recognized, proper construction practices will be followed throughout construction and that a Professional Engineer qualified in Geotechnical Engineering will be retained to oversee the inspection of site preparation, proof-rolling, foundation construction, and other critical earthwork operations. If subsurface conditions substantially deviate during construction from those described in this report, EEI should be contacted promptly.

The recommendations provided herein are for the design of the foundations and associated structures related to the proposed development at the site. Should sheeting, shoring, underpinning, or bracing of existing and adjacent structures be required, EEI should be contacted so that proper design of such measures may be formulated.

EEI emphasizes that geotechnical analyses made in this report are for the proposed 1-story building addition located at 6000 Rising Sun Avenue of Philadelphia, Pennsylvania. EEI does not assume any responsibility for the use of this report in generating a foundation design for a site other than the one specifically addressed in this report.

Respectfully submitted,
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Margueritte N. Ngami, E.I.T.
Project Manager

Timothy B. Carlin, P.E.
Assistant Director
Geotechnical Investigations

https://eengineering.sharepoint.com/sites/EarthEngineeringInc/Shared Documents/Projects/35000/35247.00 - 6000 Rising Sun - EN GEO & Infiltration/REPORT/35247.00 - 6000 Rising Sun Ave - Geotech Report.doc

FIGURES AND DRAWINGS

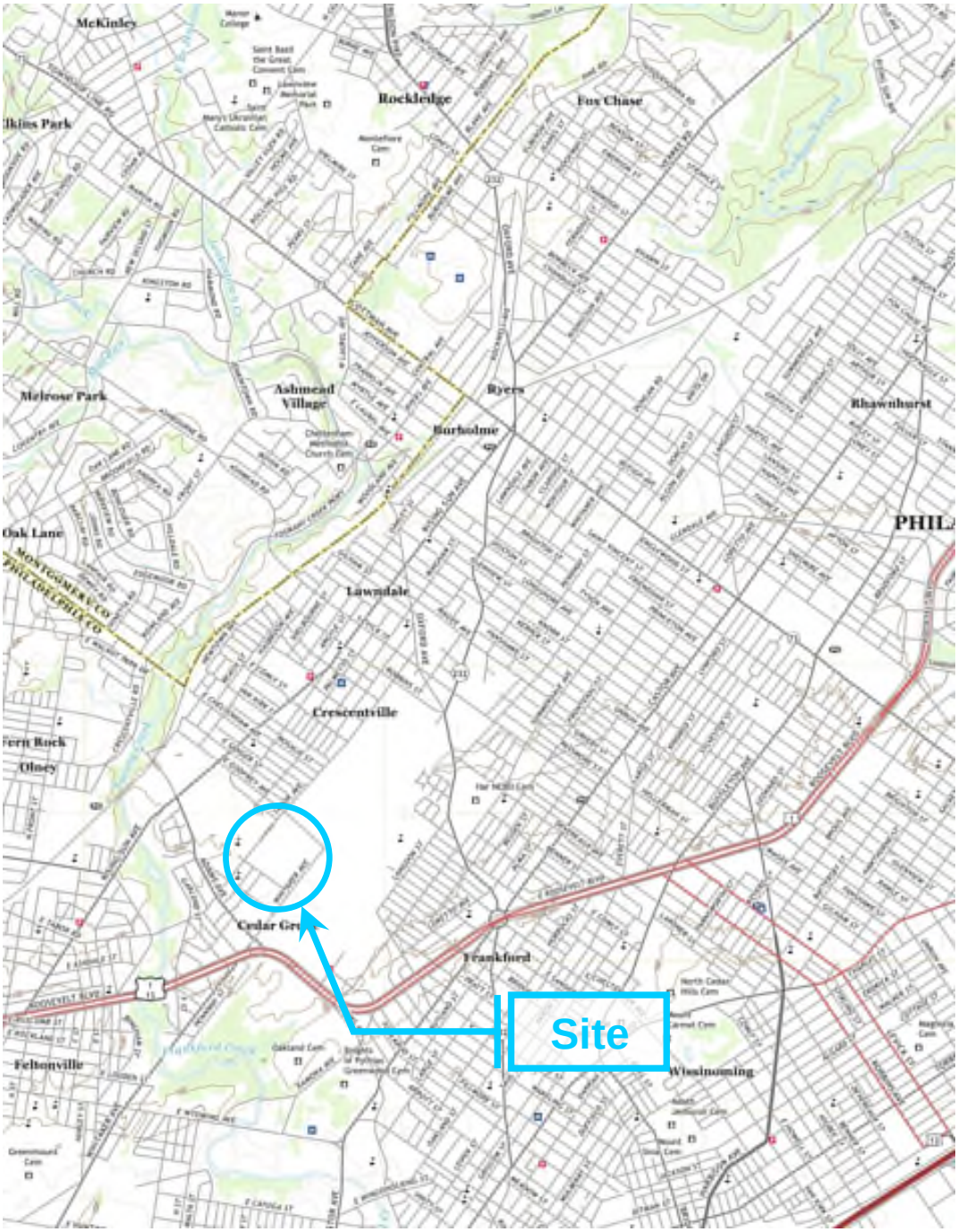


PLATE 1 – TOPOGRAPHIC MAP OF SITE

Reprinted from the United States Department of the Interior Geological Survey, Topographic Maps of Pennsylvania, Frankford, PA-NJ Quadrangle, Photorevised 2019

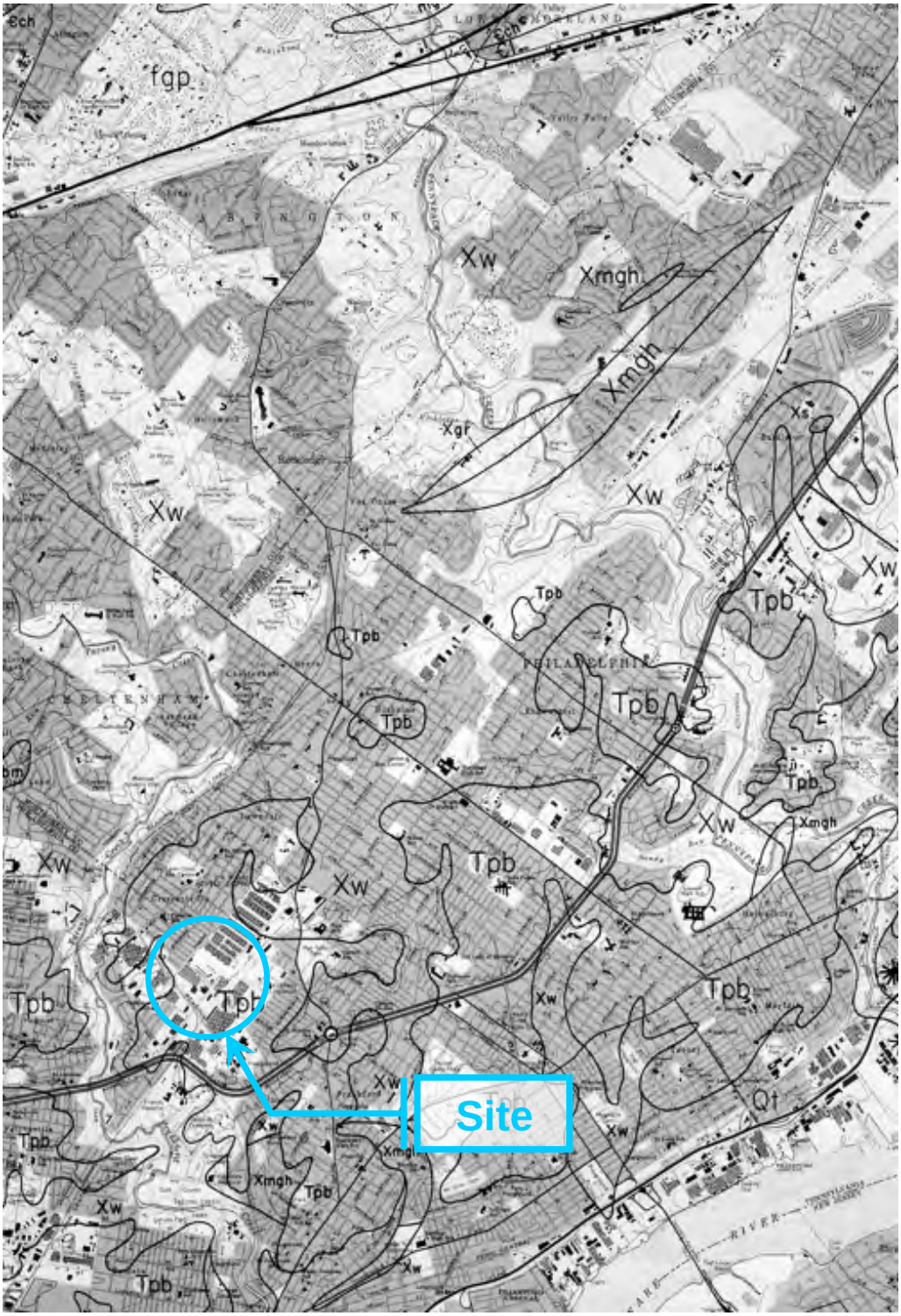
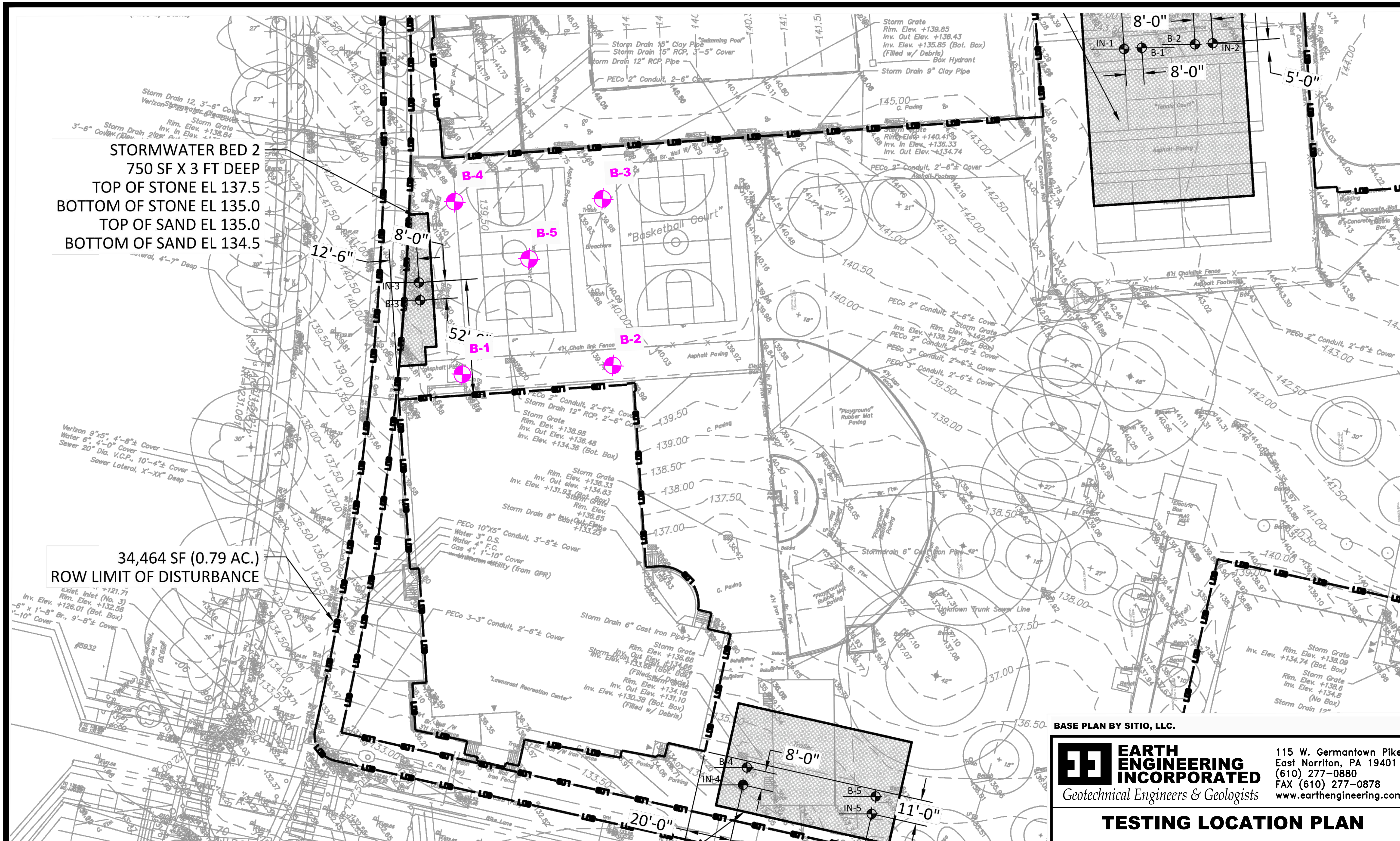
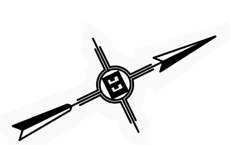


PLATE 2 - GEOLOGIC MAP OF SITE

Reprinted from the Pennsylvania Geological Survey, Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, Frankford, PA-NJ Quadrangle, 1978.





BASE PLAN BY SITIO, LLC.

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists
115 W. Germantown Pike
East Norriton, PA 19401
(610) 277-0880
FAX (610) 277-0878
www.earthengineering.com

TESTING LOCATION PLAN

PREPARED FOR

LAWNCREST RECREATION CENTER

PHILADELPHIA, PENNSYLVANIA

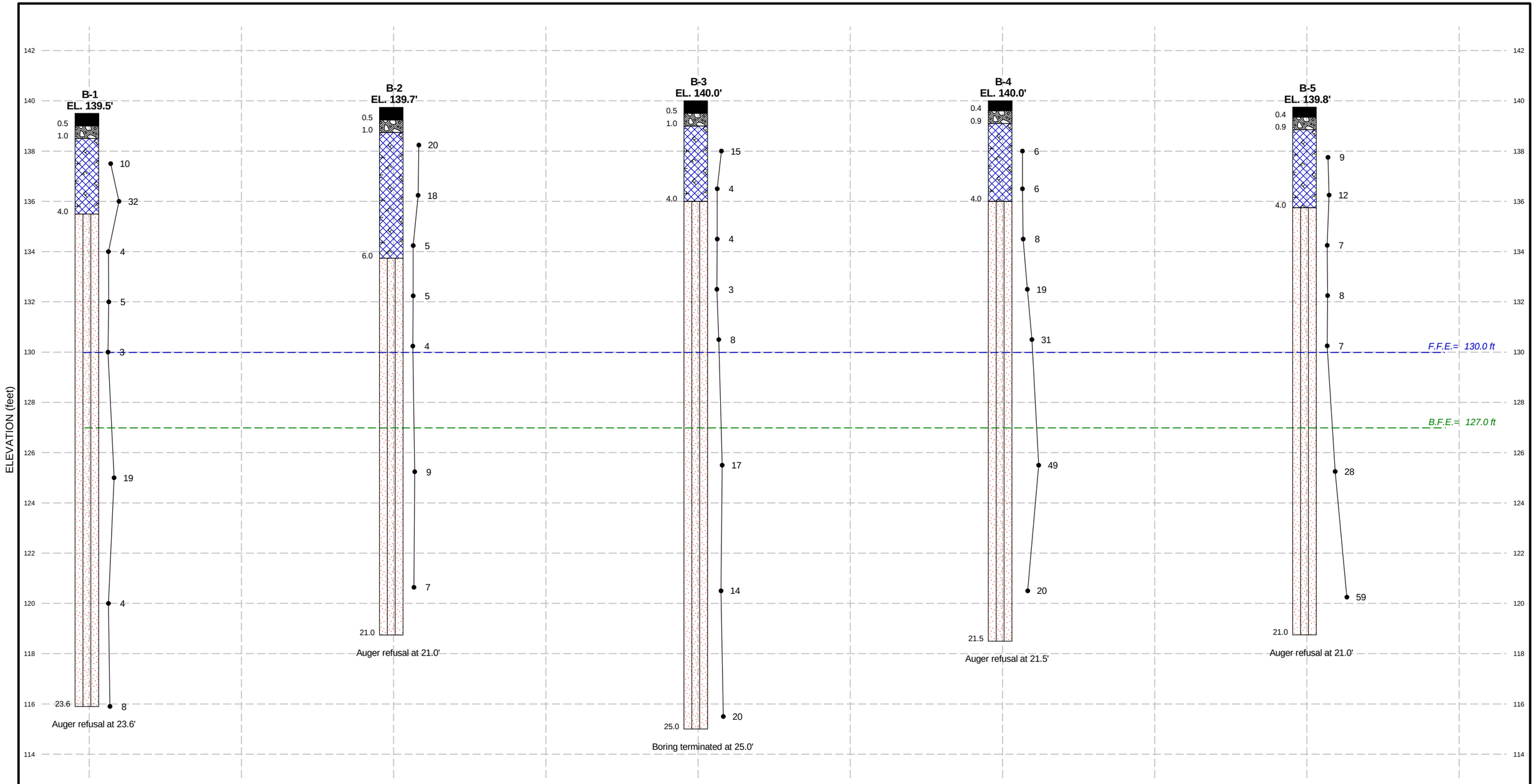
Scale: 1" = 40'	Date: 10/05/2022	Drawn By: MNN	Checked By: TBC
Drawing Number: 35247.00-B-101		Approved By: PMM	

KEY:

APPROXIMATE TEST BORING LOCATION

40 20 0 40 80

GRAPHIC SCALE: 1" = 40'



Lithology Graphics

- Asphalt
- Stone Aggregate
- FILL - Sandy silt to silty sand. trace to some gravels, concrete, asphalt, mica
- Stratum I - Silty sand, trace gravel, micaceous (Decomposed Schist)

F.F.E.= Finished Floor Elevation

B.F.E.= Bottom of Footing Elevation

EARTH ENGINEERING INCORPORATED

Geotechnical Engineers & Geologists

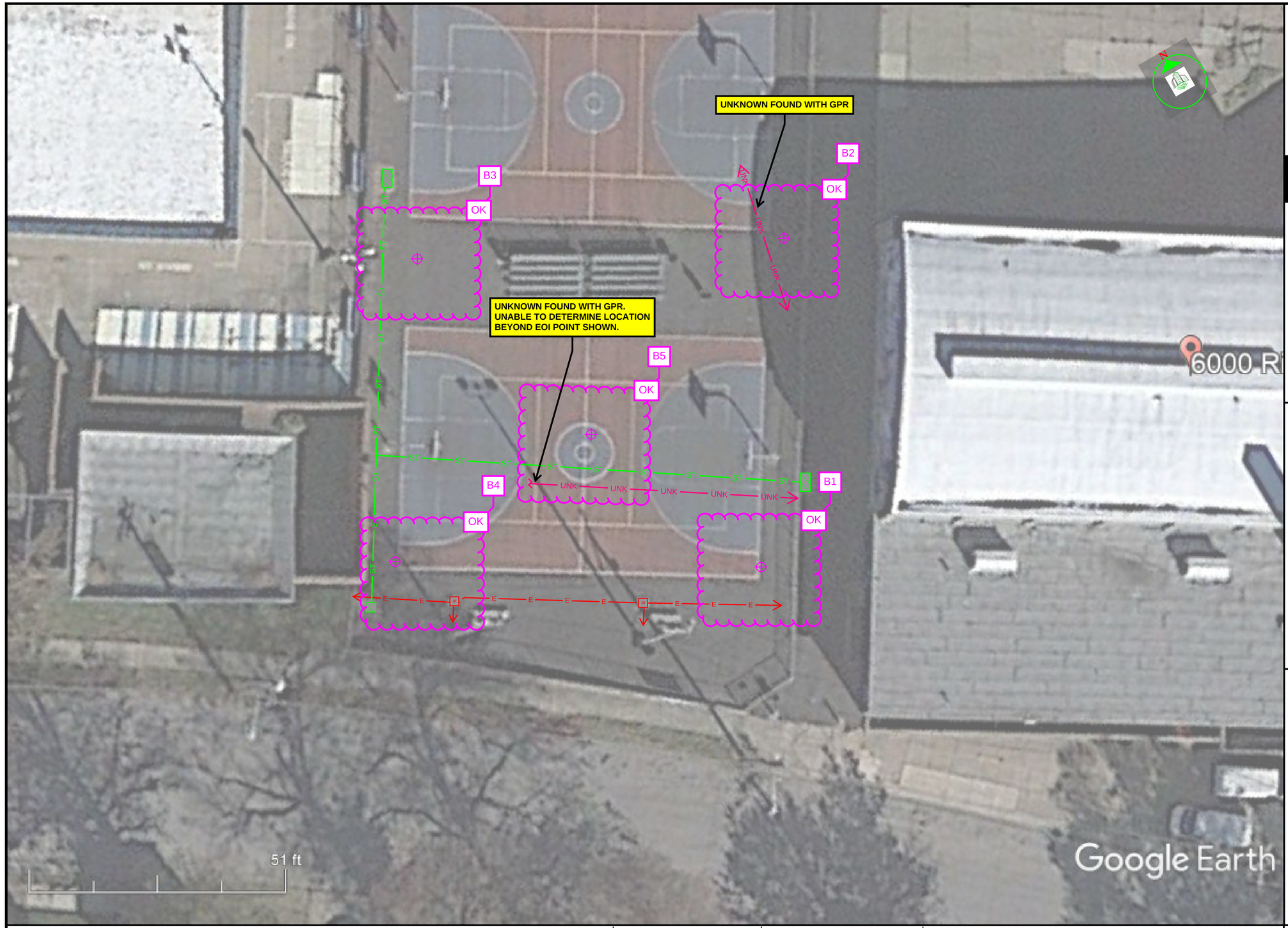
BORING PROFILES

PREPARED FOR

6000 RISING SUN AVE

PHILADELPHIA, PA

Project Number: 35247.00



TRINITY Subsurface Engineering LLC

14 Hadco Road, Wilmington,
Delaware 19804

(855) 387-4648

www.trinitysubsurface.com

FIELD SKETCH

APWA® UNIFORM COLOR CODE

E	ELECTRIC
C	COMMUNICATIONS
G	GAS
W	WATER
ST	STORM SEWER
SS	SANITARY SEWER
UNK	UNKNOWN
- - - - - - - - - -	ASSUMED LINE LOCATION (NOT CONFIRMED, COLOR CORRESPONDS WITH LINE TYPE)

SYMBOL LEGEND

(COLOR WILL CORRESPOND WITH UTILITY TYPE)

- UTILITY POLE
- MANHOLE
- SITE LIGHT
- TRANSFORMER
- VALVE
- IRRIGATION BOX
- SQUARE INLET
- ROUND INLET
- ROOF DRAIN
- POST INDICATOR VALVE
- JUNCTION BOX
- CLEANOUT
- WATER VAULT
- FIRE HYDRANT
- GAS METER
- CONTINUOUS LINE
- END OF INFORMATION
- BORING OR TEST HOLE LOCATION

FIELD NOTES

SCANNED AREA AROUND EACH OF THE 5 BORE LOCATIONS USING EM, RADIO/60Hz POWER SCANS, SPLIT-BOX, & GPR.

MARKED UNKNOWN FOUND WITH GPR THROUGH AREA OF B2.

MARKED SITE LIGHTING THROUGH AREAS OF B1 & B4.

MARKED STORM THROUGH AREAS OF B3, B4, &B5.

MARKED UNKNOWN FOUND WITH GPR THROUGH AREA OF B5 TO END OF INFORMATION (EOI) POINT. UNABLE TO DETERMINE LOCATION OF THIS LINE BEYOND EOI POINT.

LAWNCREST REC CENTER - PHILADELPHIA, PA	22-9575.001	10/11/2022	BRENDAN McWILLIAMS	1/1
PROJECT NAME	PROJECT NUMBER	DATE	DRAFTED BY	SHEET NUMBER

APPENDIX

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-1**
SHEET **1** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **139.5**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **23.6'** ; WATER: DEPTH: ____ TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: ____ TIME: ____ DATE: ____
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH / ELEVATION	
0.5								0.5 / 139.0 6" Asphalt	
	S-1	7 5 5	1.5'	-	ml/sm	d/m		1.0 / 138.5 6" Stone Sandy silt to silty sand, trace gravel, asphalt, concrete; Brown, black (FILL)	Easy drilling 0.0'-13.0'
2.0	S-2	18 16 16 13	2.0'	-	ml/sm	m			
4.0								4.0 / 135.5	
	S-3	2 2 2 2	1.7'	-	sm	m		Silty sand, trace gravel, micaceous; Black, tan brown, white, dark brown, gray tan, gray (Residual)	
6.0	S-4	3 3 2 2	1.5'	-	sp/sm	m			
8.0	S-5	0 1 2 4	1.7'	-	sp/sm	m			
10.0									
13.0	S-6	6 10 9 9	2.0'	-	ml/sm	m			Moderate drilling 13.0'-20.0' Borehole collapse at 13.3'
15.0									
18.0	S-7	2 2 2 3	2.0'	-	ml/sm	m			
20.0									

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-1**
SHEET **2** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **139.5**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **23.6'** ; WATER: DEPTH: TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: TIME: DATE:
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH ELEVATION	
								Silty sand, trace gravel, micaceous; Black, tan brown, white, dark brown, gray tan, gray (Residual) *(continued)*	Moderate to difficult drilling 20.0'-23.6'
23.0									
23.6	S-8	8 3 5 7	0.6'	-	ml/sm	m/w		23.6 115.9	Auger refusal at 23.6'

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-2**
SHEET **1** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **139.7**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **21.0'** ; WATER: DEPTH: ____ TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: ____ TIME: ____ DATE: ____
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
0.0								DEPTH ELEVATION	
	S-1	71 15 5 5	1.7'	-	ml/sm	m		0.5 139.2 6" Asphalt	Easy drilling 0.0'-13.0'
								1.0 138.7 6" Stone	
2.0								Sandy silt to silty sand, trace to some gravel, mica, concrete; Dark brown, white, black (FILL)	
	S-2	6 8 10 12	1.5'	-	ml/sm	m			
4.0									
	S-3	3 3 2 3	2.0'	-	ml/sm	m			
6.0								6.0 133.7	
	S-4	2 3 2 3	1.7'	-	sp/sm	m		Silty sand, trace gravel, micaceous; Black, dark brown, tan brown (Residual)	
8.0									
	S-5	2 2 2 2	2.0'	-	sp/sm	m			
10.0									
13.0									Moderate to difficult drilling 13.0'-21.0' Borehole collapse at 13.0'
	S-6	2 4 5 6	2.0'	-	ml/sm	m			
15.0									
18.0									
	S-7	5 4 3 4	1.2'	-	ml/sm	m/w			
19.1									

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-2**
SHEET **2** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **139.7**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **21.0'** ; WATER: DEPTH: TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: TIME: DATE:
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH ELEVATION Silty sand, trace gravel, micaceous; Black, dark brown, tan brown (Residual) 21.0 *(continued)* 118.7	Auger refusal at 21.0'

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-3**
SHEET **1** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **140.0**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **25.0'** ; WATER: DEPTH: ____ TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: ____ TIME: ____ DATE: ____
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH / ELEVATION	
0.5								0.5 / 139.5 6" Asphalt	
	S-1	8 10 5	0.3'	-	sm/gm	d		1.0 / 139.0 6" Stone	Easy drilling 0.0'-25.0'
2.0	S-2	2 2 2 2	1.5'	-	ml	m		Sandy silt to silty sand, trace to some gravel, mica, concrete; Dark brown, white, black (FILL)	
4.0	S-3	1 2 2 2	2.0'	-	sp/sm	m		4.0 / 136.0 Silty sand, trace gravel, micaceous; Black, dark brown, tan brown, gray tan (Residual)	
6.0	S-4	2 1 2 2	1.7'	-	ml/sm	m			
8.0	S-5	4 4 4 4	1.8'	-	ml/sm	m			
10.0									Borehole collapse at 10.7'
13.0	S-6	3 5 12 28	2.0'	-	ml/sm	m			
15.0									
18.0	S-7	6 6 8 9	1.7'	-	ml/sm	m			
20.0									

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-3**
SHEET **2** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **140.0**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **25.0'** ; WATER: DEPTH: _____ TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: _____ TIME: _____ DATE: _____
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH ELEVATION	
								Silty sand, trace gravel, micaceous; Black, dark brown, tan brown, gray tan (Residual) *(continued)*	
23.0									
	S-8	11 11 9 13	2.0'	-	ml/sm	m			
25.0								25.0 115.0	End of borehole at 25.0'

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-4**
SHEET **1** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **140.0**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **21.5'** ; WATER: DEPTH: ____ TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: ____ TIME: ____ DATE: ____
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH 0.4 — ELEVATION 139.6: 5" Asphalt	
0.5								DEPTH 0.9 — ELEVATION 139.1: 6" Stone	Easy drilling 0.0'-10.0'
	S-1	5 3 3	1.5'	-	sm	d/m		Sandy silt to silty sand, trace gravel, asphalt, concrete; Tan brown, black (FILL)	
2.0	S-2	3 3 3 3	1.8'	-	ml/sm	m			
4.0								DEPTH 4.0 — ELEVATION 136.0	
	S-3	4 4 4 4	1.8'	-	sm	m		Silty sand, trace gravel, micaceous; Black, tan brown, dark brown, gray tan, gray (Residual)	
6.0	S-4	5 8 11 11	1.7'	-	sp/sm	m			
8.0	S-5	16 16 15 16	2.0'	-	sp/sm	m			
10.0									Moderate to difficult drilling 10.0'-21.5' Borehole collapse at 10.4'
13.0	S-6	26 25 24 38	2.0'	-	ml/sm	m			
15.0									
18.0	S-7	8 8 12 22	2.0'	-	ml/sm	m			
20.0									

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-4**
SHEET **2** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **140.0**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **21.5'** ; WATER: DEPTH: TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: TIME: DATE:
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH ELEVATION	
								Silty sand, trace gravel, micaceous; Black, tan brown, dark brown, gray tan, gray (Residual) *(continued)*	
								21.5 118.5	Auger refusal at 21.5'

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

BORING NO. **B-5**
SHEET **1** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **139.8**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **21.0'** ; WATER: DEPTH: ____ TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: ____ TIME: ____ DATE: ____
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.5								0.4 / 139.4 — 5" Asphalt	
								0.9 / 138.9 — 6" Stone	Easy drilling 0.0'-10.0'
2.0	S-1	9 5 4	1.5'	-	ml/sm	m		Sandy silt to silty sand, trace gravel, asphalt, concrete; Dark brown, black (FILL)	
	S-2	4 4 8 8	1.5'	-	ml/sm	m			
4.0								4.0 / 135.8	
	S-3	4 4 3 4	1.7'	-	sp/sm	m		Silty sand, trace gravel, micaceous; Black, white, gray tan, gray (Residual)	
6.0	S-4	4 4 4 4	1.7'	-	sp/sm	m			
8.0	S-5	8 3 4 3	1.7'	-	ml/sm	m			
10.0									Moderate to difficult drilling 10.0'-21.0'
									Borehole collapse at 12.0'
13.0	S-6	15 13 15 16	1.7'	-	ml/sm	m			
15.0									
18.0	S-7	20 31 28 24	2.0'	-	ml/sm	m			
20.0									

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

BORING LOG

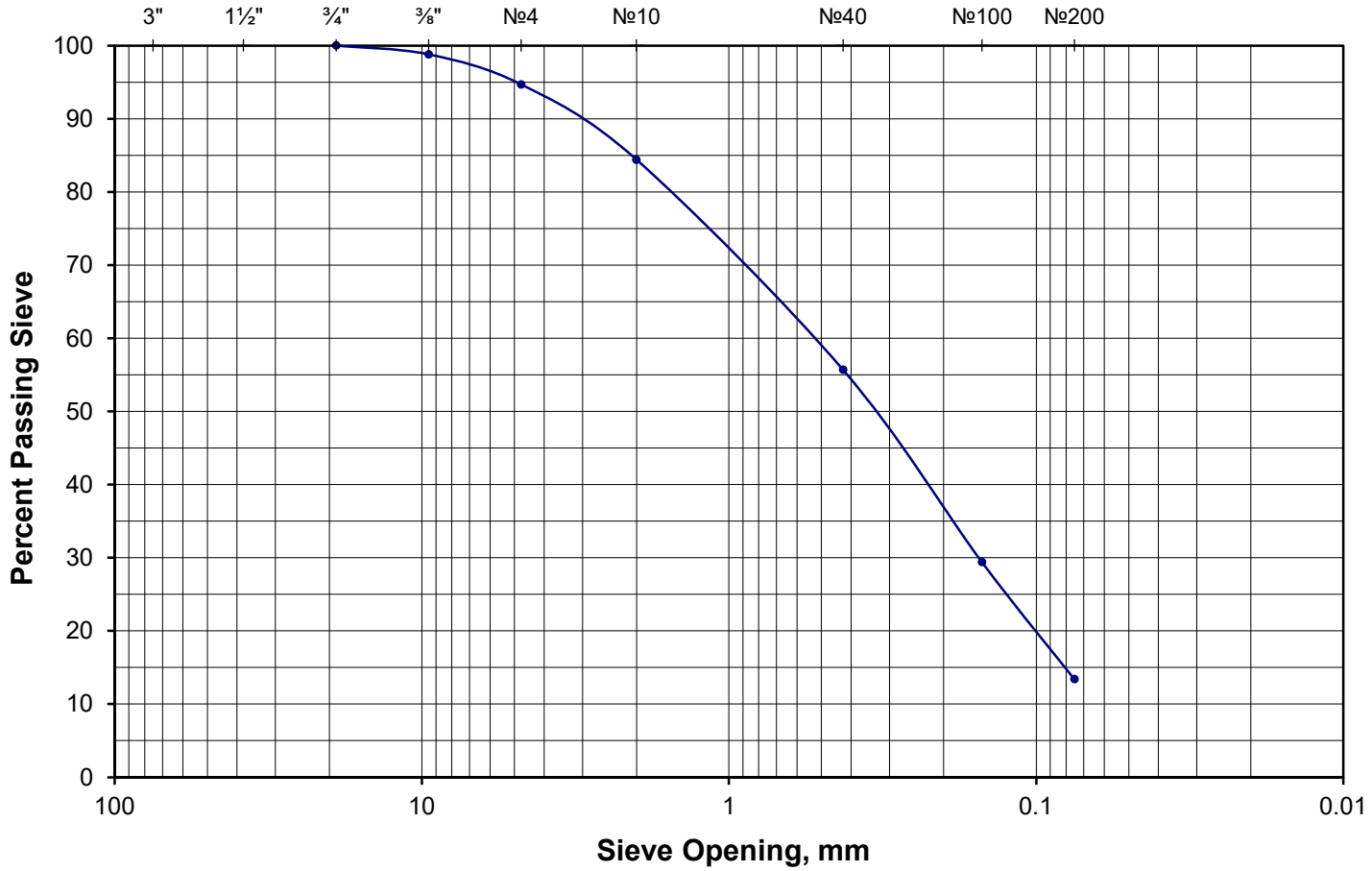
BORING NO. **B-5**
SHEET **2** OF **2**
DATE: START **10/11/22**
END **10/11/22**
SURFACE ELEV. (FT) **139.8**

PROJECT NAME **6000 Rising Sun Ave**
PROJECT LOCATION **Philadelphia, PA**
PROJECT NUMBER **35247.00**
INSPECTOR NAME **M. Ngami**
EQUIPMENT USED **B-37X track rig**
DRILLER NAME/COMPANY **A. Fisher/SANO Drilling, Inc.**
DRILLING METHODS **2" Split spoon sampling continuous to 10.0'**
AUGER: SIZE: **3.25" ID HSA** TOTAL DEPTH: **21.0'** ; WATER: DEPTH: TIME: **0.25 hrs** DATE: **10/11/2022**
CHECKED BY: **T. Carlin** ; DATE: **10/27/2022** DEPTH: TIME: DATE:
NOT ENCOUNTERED [X]

DEPTH (FT)	SAMPLE NO./ TYPE/CORE RUN	BLOWS/0.5 FT. ON SAMPLER	RECOVERY (Ft.)	RECOVERY(%) / RQD (%)	USCS / AASHTO	H_2O CONTENT	GRAPHIC LOG	DESCRIPTION	REMARKS
								DEPTH ELEVATION	
								Silty sand, trace gravel, micaceous; Black, white, gray tan, gray (Residual)	
								21.0 *(continued)* 118.8	Auger refusal at 21.0'

** D = DRY, M = MOIST, W = WET

Particle Size Analysis of Soils



As-rec'd water content: 10.1 moist **Odor:** NR

% Gravel: 5.3 **Coarse:** 0.0 **Fine:** 5.3

% Sand: 81.3 **Coarse:** 10.3 **Medium:** 28.7 **Fine:** 42.3

Gravel description: light brown to brown, micaceous, subangular to subrounded

Sand description: brown, micaceous, subangular to subrounded

Consistency: firm **Hardness:** NR

Cementation: NR **Dry Strength:** NR

Structure: homogeneous **Dilatency:** NR

Reaction to HCl: NR **Toughness:** NR

USCS Classification: SM, silty sand

AASHTO Classification: A-2-4

Project: 35247.00 - 6000 Rising Sun Ave.- PHL- Investigation

Client: Community Ventures

Sample: B-1, S-4 (2-3-2-2) & S-5 (4-4-6-6)

Depth: 6.0'- 8.0', & 8.0'- 10.0'

Description: Brown silty sand

Remarks:

Particle Size				
US Standard Sieve Size			Diameter,	% Finer
GRAVEL	Coarse	3"	75	
		1½"	38.1	
		¾"	19.0	100.0
	Fine	⅜"	9.5	98.8
		№ 4	4.75	94.7
SAND	Coarse	№ 10	2.00	84.4
	Medium	№ 40	0.425	55.7
	Fine	№ 100	0.150	29.4
		№ 200	0.075	13.4
Hydrometer Analysis		Clay Size	0.005	NR
		Colloids	0.001	NR

G_s: NR C_u: N/A C_c: N/A

LL: NP **PL:** NP **PI:** NP

EARTH ENGINEERING INCORPORATED

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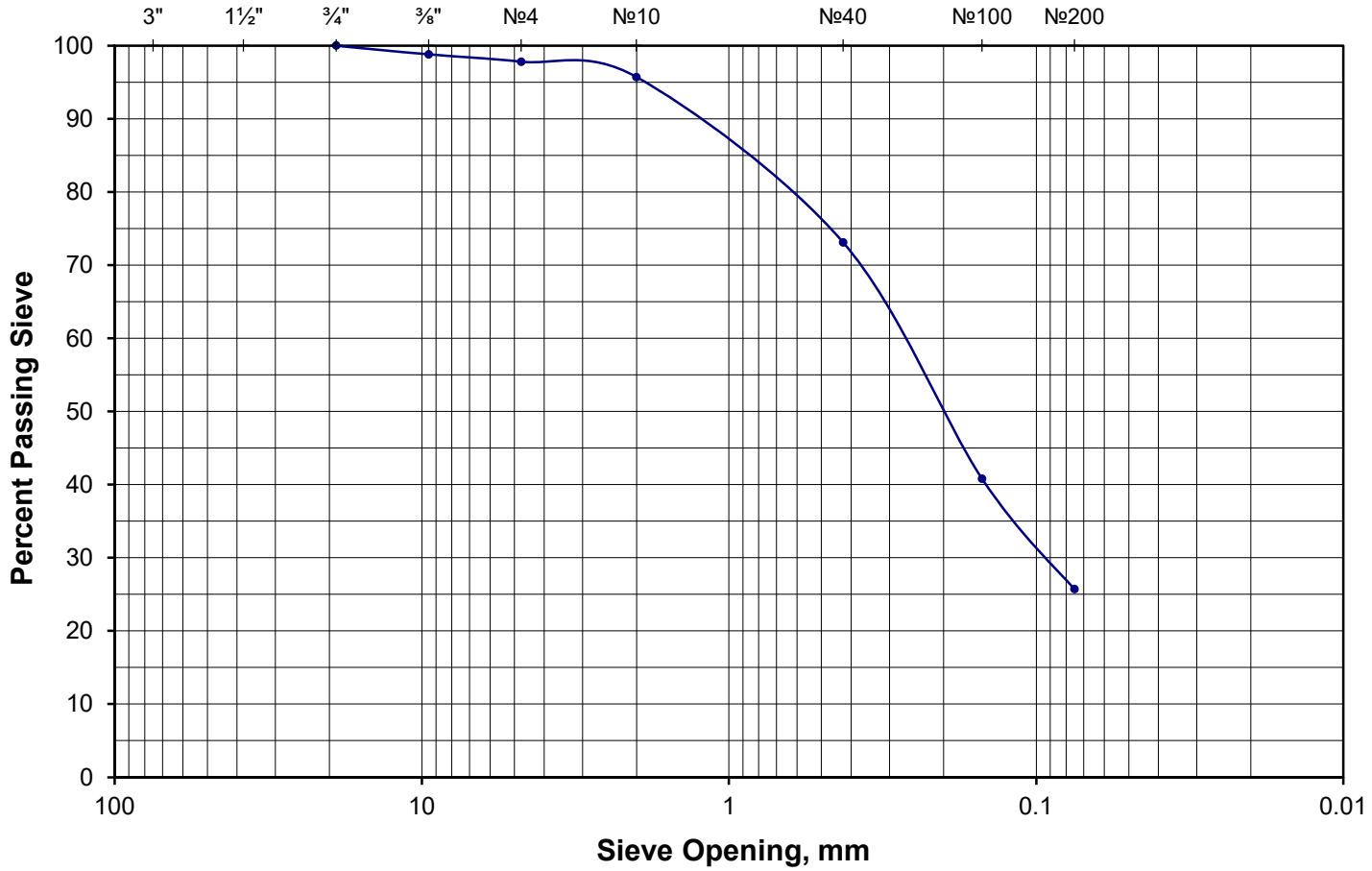
Classification of Soils, ASTM D 2487-17 / D 2488-09a ***October 26, 2022***

Particle Size Analysis of Soils



As-rec'd water content: 16.3 moist	**Odor:** NR		Particle Size				
% Gravel: 2.2 **Coarse:** 0.0	**Fine:** 2.2		US Standard Sieve Size			Diameter,	% Finer
% Sand: 72.1 **Coarse:** 2.1	**Medium:** 22.6	**Fine:** 47.4	GRAVEL	Coarse	3"	75	
Gravel description: dark brown to brown, micaceous, subangular to subrounded					1½"	38.1	
					¾"	19.0	100.0
Sand description: dark brown to brown, micaceous, subangular to subrounded				Fine	⅜"	9.5	98.8
					№ 4	4.75	97.8
Consistency: firm	**Hardness:** NR		SAND	Coarse	№ 10	2.00	95.7
Cementation: NR	**Dry Strength:** NR			Medium	№ 40	0.425	73.1
Structure: homogeneous	**Dilatency:** NR			Fine	№ 100	0.150	40.8
Reaction to HCl: NR	**Toughness:** NR				№ 200	0.075	25.7
USCS Classification: SM, silty sand			Hydrometer Analysis		Clay Size	0.005	NR
AASHTO Classification: A-2-4					Colloids	0.001	NR
			G_s: NR	C_u: N/A	C_c: N/A		
Project: 35247.00 - 6000 Rising Sun Ave.- PHL- Investigation			**LL:** NP	**PL:** NP	**PI:** NP		
Client: Community Ventures							
Sample: B-3, S-4 (2-1-2-2) & S-5 (4-4-4-4)							
Depth: 6.0'- 8.0', & 8.0'- 10.0'							
Description: Brown silty sand							

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Remarks:

Classification of Soils, ASTM D 2487-17 / D 2488-09a ***October 26, 2022***