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GEOTECHNICAL INVESTIGATION REPORT

For

Proposed Redevelopment
Franklin Courts
Tarrytown, Westchester, New York

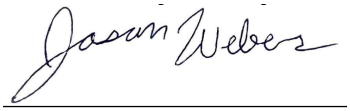

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Table of Contents

DRAWINGS

APPENDICES

1.0 INTRODUCTION

SESI Consulting Engineers (SESI) recently completed a geotechnical investigation for the proposed redevelopment of the Franklin Courts Development in Tarrytown, New York. This report summarizes SESI's geotechnical investigation, our findings, and our foundation design recommendations for the currently proposed redevelopment. The report also presents recommendations regarding other construction-related aspects of the proposed development, such as site preparation, groundwater control, temporary excavation support, retaining wall construction, and utility support. SESI has previously performed Phase I and Phase II environmental services for the subject site. Our most recent investigation included additional Phase II environmental sampling in conjunction with our geotechnical engineering exploration program, the results of which are presented under separate cover.

2.0 PROJECT DESCRIPTION

2.1 Site and Surrounding Conditions

According to the *Conceptual Grading Plan,* prepared by Insite Engineering, Surveying & Landscape Architecture, P.C. dated September 12, 2023, the proposed redevelopment site is generally divided into two areas. The Franklin Courts site covers approximately 7.4 acres within Tax Lot 1.70-29-32 and the Franklin Towers site covers approximately 1.4 acres of Tax Lot 1.70-29-34, 1.70-29-36, and 1.70-29-38 within the northern portion of the site. The overall redevelopment site is bounded to the south by a Westchester County Environmental Facility and single-family residential neighborhoods. The site is bounded to the west by several warehouse style industrial buildings with associated paved parking lots. There is a Metro North Hudson Line railroad which runs further west and the Hudson River beyond. To the north, the site is bounded by White Street with the Tarrytown Village Hall beyond. Franklin Street bounds the northeast edge of the site with Riverview Avenue running north to south along the remaining eastern boundary of the site with residential neighborhoods beyond.

The Franklin Courts portion of the site currently contains a townhouse style residential development with associated parking, drive aisles, landscaped areas containing full-grown trees, and recreational areas. Franklin Tower, situated on the northern end of the site, consists of an approximate10-story brick residential building with associated parking and drive aisles around the exterior of the building. Based on our observations during the investigation and information presented on the above referenced *Concept Grading Plan*, a majority of the site is relatively flat with surface elevations generally ranging from elevation (El) 7± to 12±. The eastern edge of the site, along Franklin Street and along Riverview Avenue, grades upward to the south and east. The surface elevations increase to the southeast from El 10± at the intersection of White Street and Franklin Street to El 53± at the intersection with Franklin Street and Riverview Avenue. The increasing grades continue along Riverview southbound to El 73± along the southeastern edge of the property. The approximate 2.5:1 slope connecting the surface elevations along Riverview with the flat, low-lying topography along the western majority of the site contains undeveloped wooded overgrowth. There are a few small concrete retaining walls cut into the bottom of the slope to provide parking along the main drive aisle through the townhouse development.

2.2 Proposed Development

Based on the provided *Concept Grading Plan* previously referenced, the proposed redevelopment will consist of a row of three- and four-unit townhouses through the center of the site which SESI understands to be approximately two-story, lightly loaded wood frame structures. There will be additional townhouses and two (2) twenty-unit multi-family buildings along the eastern side of the site. Based on conversations with WBP, we understand that the multi-family

buildings will be three to four stories. We have assumed a concrete podium on the first and second floors with wood framing above. The row of town houses through the center of the site will be separated by a single drive aisle with associated parking leading to a cul-de-sac at the southern end of the site. Additional site improvements will include a stormwater management area along the western side of the site, retaining walls to provide support for cut slopes on the eastern side of the site, a clubhouse at the northern end of the site, and a renovation of the Frankin Towers building.

The surface elevations through the center of the site will be raised by several feet, generally to El 14±. The existing slope along the eastern side of the site would be cut back and lowered to El 24±. A retaining wall is proposed behind the proposed multi-family buildings to retain the cut slope. The multi-family buildings and a majority of the townhouses will have a finished floor elevation (FFE) of 14±. The clubhouse and four of the townhouses along the north end of the site will be constructed with FFE ranging from 19.5± to 15.5±. Once the final site civil and structural plans are completed, SESI should be provided an opportunity to review the plans to confirm that our recommendations remain valid.

3.0 AVAILABLE INFORMATION REVIEW

We obtained and reviewed available historic topographic maps, historic aerial photographs, geologic maps, and FEMA flood map for the Site.

- FEMA Flood Insurance Rate Map - We researched and reviewed the FEMA Preliminary Flood Insurance Rate Map, Map Number 36119C0253F (effective as of September 28, 2007) which indicates that a majority of the western portion of the site is located within the 100-year flood plain. The *Concept Grading Plan* previously referenced indicates a flood elevation at El 9± in this area. We have assumed no special foundations are required by FEMA; however, this should be confirmed by the site civil engineer.
- Historic Topographic Maps and Aerial Photography – Historic aerial photographs and topographic maps indicate that a majority of the site was previously submerged within the Hudson River, reclaimed in the late 1930s for the construction of a rail yard. The existing Franklin Courts townhouse development was constructed in the 1950s followed by the construction of the Franklin Towers building in the late 1960s to early 1970s. There appears to have been several warehouse style buildings within the vicinity of the Franklin Towers building prior to its construction. While the aerial photographs indicate that previous structures were removed, the building foundations and other subgrade structures may remain in place.
- Geological Mapping – We reviewed the Surficial Geology of the White Plains 7.5-Minute Quadrangle Westchester County, New York by G. Gordon Connally, et. al. Based on our review of the surficial geology, most of the site consists of reclaimed fill underlain by stratified alluvial silt, sand, and gravel likely deposited by the Hudson River and nearby tributaries. Glacial till soils are indicated below the reclaimed fill and alluvial soils and along the elevated slopes on the eastern side of the site. Bedrock outcropping or near surface bedrock was also mapped within the vicinity of the site, notably along ridge crests.
- Previous Investigation Data – SESI reviewed historic subsurface data obtained during two separate geotechnical drilling investigations previously performed within the vicinity of the current Franklin Towers site. The first investigation was conducted by Reliable Drilling Co. in October 1962 and included four (4) borings to depths ranging from 36± to 56± below then existing grades. The boring logs indicate 7± to 9± feet of fill were encountered at the

surface consisting of miscellaneous sand, gravel, and bricks. A layer of alluvial silty sand and silty clay was encountered below the surficial fills extending to depths of 28± to 47± feet below then existing surface grades. The alluvial soils were observed to be in a generally loose/soft to medium dense/stiff condition based on Standard Penetration Tests (SPTs) blow counts. The alluvial soils were underlain by dense to very dense glacial tills consisting of silty sand and gravel with potential boulders.

A second geotechnical drilling investigation was performed by Warren George, Inc. in March 1965 and included eight (8) additional borings to depths ranging from 19± to 50± feet below then existing surface grades. Fill was observed at the surface in all the borings ranging in depth from 4± to 9± feet below the existing surface grades. An approximate 3- to 5-foot-thick layer of black silt was observed below the bottom of the fill within several of the borings within the western portion of the site. The alluvial soils consisting of layered silty sands, silty clays, and clayey silts were observed in all the borings either below the black silt or the surficial fill. The alluvial soils were again observed to be in a generally loose/soft to medium dense/stiff conditions based on SPT blow counts. The underlying glacial soils were encountered at depths ranging from 20± to 48± feet below the existing surface grades. Ground water readings were noted on all the boring logs ranging from 3.5± to 6± feet below the existing surface grades.

Based on our review of the historic subsurface data, the depth to the underlying dense glacial soils increased on the western side of the site; the thickness of the alluvial soil layer increased in this area. Black silt was also observed within the western portion of the site below the fill which may be an indication of the previous river bottom prior to placement of the fill.

SESI completed a Phase II Environmental Site Assessment (ESA) investigation in March of 2022 within the vicinity of the Franklin Courts townhouse site. The investigation included ten (10) direct push borings to depths ranging from 10 to 15 feet below existing surface grades. Although direct push sampling techniques do not provide the geotechnical data required to properly evaluate the soils from a geotechnical perspective, they do provide a preliminary understanding of the types of subsurface soils to be expected on the site. The soils encountered generally consisted of brown to gray coarse to fine sand with varying amounts of silty clay and gravel grading to a predominantly silty clay with varying amounts of sand. Groundwater was observed at 4± to 5± feet below existing surface grades.

The historical borings logs and previously performed environmental boring logs reviewed as part of our evaluation are presented in **Appendix C** of this report. The boring locations have been georeferenced on the *Exploration Location Plan*, attached as **Figure 1**.

4.0 SUBSURFACE INVESTIGATION AND LABORATORY PROGRAM

4.1 Field Investigation

Our engineering study consisted of a review of existing soils and geologic data discussed above, and a field investigation consisting of nine (9) geotechnical borings and twelve (12) environmental borings drilled on December 27 and December 28, 2022. The geotechnical boring locations were selected to be within currently accessible locations within or directly adjacent to proposed building footprints. The environmental boring locations were selected to further delineate environmental conditions on the site which are discussed in greater detail under separate cover. The borings were drilled to depths of approximately 10 to 51.5 feet below the existing ground surface using a subcontracted track-mounted drill rig utilizing direct push and mud rotary drilling techniques. The approximate locations of the borings are shown on the *Exploration Location Plan*, which is

included as **Drawing 1**. Individual boring logs, which describe the materials encountered along with a key to SESI soil terminology, are presented in **Appendix A**.

Soil samples suitable for identification purposes were extracted from the SPT borings at closely spaced intervals in accordance with the Standard Penetration Test (ASTM D1586-11). For this test, a standard split-spoon sampler (2 inches outside diameter, one and three-eighths inches inside diameter) is driven into the soil by a 140-pound weight falling 30 inches. After discounting the initial six inches of penetration due to possible disturbance of the material resulting from the drilling operation, the number of blows required to advance the sampler a distance of 12 inches is recorded and designated as the standard penetration resistance or "N" value. The "N" value is an indication of the relative compactness of the soil in-situ. SESI also collected three (3) relatively undisturbed Shelby tube samples of soft fine-grained soils at borings SB-108, SB-112, and SB-115 at depths ranging from 18± to 25± feet below the existing ground surface. The tube samples were collected to further evaluate the compressibility characteristics of the natural fine-grained soils.

The field work was performed under the direct technical observation of a geotechnical engineer and geologist from SESI Consulting Engineers. Our representative located the explorations in the field, maintained continuous logs of the explorations as work proceeded, and coordinated the soil sampling operations to develop the desired subsurface information. The boring locations were laid out in the field using in-house Geographic Information System (GIS) technology and an electronic device. Ground surface locations and elevations at each of the exploration locations were obtained from GIS Lidar mapping and correlated to the topographic information presented on the referenced concept. The actual boring locations may differ by several feet and should be confirmed by a survey, if required.

4.2 Preliminary Slope Evaluation

Concurrently with our subsurface field investigation, SESI completed a preliminary visual slope evaluation of the existing slope along the eastern edge of the site. SESI understands that the proposed site grading will require the slope to be cut back and retained with new retaining walls. Therefore, the purpose of our slope evaluation was to provide a preliminary understanding of the slope conditions and surface soils characteristics using visual observation which will aid in the development of excavation and retaining wall recommendations discussed within this report. The field observations were performed by a geologist from SESI Consulting Engineers.

The slope was generally observed to be covered in organic overgrowth and full-grown trees. The surface soils were generally characterized as various unassorted sand and gravel with intermixed cobbles and boulders, typical of the glacial soils associated with the area. The boulders and cobbles became more predominate near the top of the slope and within a shallow ravine along the south end of the slope. The boulders appeared to consist of gneiss rock which may have been cast aside during construction of Riverview Avenue and the excavation associated with below grade utility installation. Clear distinctions between large boulders and possible massive bedrock outcroppings could not be distinguished without further excavation. A ½-inch steel foundation probe was used to approximate the extent of the overburden soils which was generally observed to be greater than the probe length of (2.5-feet). Photographs of our observations of the existing slope are presented **Appendix D**.

4.3 Geotechnical Laboratory Program

Soil samples suitable for identification purposes were extracted from the borings. The soil samples were brought to our soil mechanics laboratory for additional classification and appropriate geotechnical testing. The laboratory testing program consisted of three (3)

mechanical grain size analysis, six (6) percent passing the sieve No. 200 tests, six (6) Atterberg Limits tests, three (3) one-dimensional consolidation tests, and nineteen (19) water contents. The results of the percent passing sieve No. 200 tests, water content determinations, and Atterberg Limits tests are presented on the individual boring logs. The results of the mechanical grain size analysis, Atterberg limits tests, and consolidation tests are presented in graphical form in **Appendix B**.

4.4 Subsurface Conditions

The investigation data indicates the subsurface conditions at the Site can be generally split into two separate subsurface stratifications; one along the east side of the site and the other observed over the central and western portion of the site. The subsurface generally consisted of surficial fill underlain by glacial deposits which include sands and gravels with varying amounts of silty clay and occasional cobbles and boulders along the east side of the site. Throughout the central and western portions of the site, the subsurface generally consisted of thicker uncontrolled fills consisting of sand and clayey silt/silty clay with varying amounts of man-made debris and organics, underlain by a layer of soft organic soils followed by soft to medium stiff varved silty clay with interbedded sand seams gradually transitioning to very dense glacial sands and gravels. The soils encountered in our borings generally agreed with the published geological records and topographic information. The various subsurface strata encountered during our investigation are presented on subsurface cross sections attached to this report as **Drawing No. 2** through **Drawing No. 4**. The following generalized strata are listed in the order of increasing depth.

4.4.1 Surficial Materials

Borings SB-101, SB-103, SB-109, SB-111, SB-112, and SB-113 were performed within the existing asphalt paved areas. The asphalt was observed to extend approximately 3- to 6-inches below the surface. Approximately 6-inches of recycled concrete aggregate (RCA) was encountered beneath the asphalt pavement at boring locations SB-101, SB-111, and SB-112. Topsoil with grass and organics (roots) were observed at the surface at the rest of the boring locations, extending approximately 3- to 6-inches below the ground surface.

4.4.2 Uncontrolled Fill

Uncontrolled fills were encountered below the surficial materials at all the boring locations. The uncontrolled fill generally consisted of fine to coarse sands with varying amounts of silty clay and gravel. The depth to the bottom of the uncontrolled fill varied across the site, with deeper fills observed along the central and western portions of the site, ranging in depths from 10± to 18± feet. There were occasional interbedded layers of predominantly silty clay and clayey silt with varying amounts of organics (roots and shells) observed throughout the central and western portions of the site along with various amounts of previous construction debris such as coal, wood, brick, glass, and metal fragments. The debris and organics along with our review of historic topographic information suggest that the fill throughout the central and western portion of the site likely consist of dredged fill soils previously placed across the site to raise the site grades.

Conversely, the uncontrolled fill observed at boring locations along the eastern side of the site extended to depths ranging from 1.5± to 6± feet below surface elevation. These eastern fills soils contained significantly less construction debris and organic materials; consisting predominately of sands with a comparable composition to the natural underlying glacial tills soils described below. The similarity between the uncontrolled fill and the natural underlying soils along the eastern side of the site suggests some of the fill originated from elsewhere on the site during construction grading of the current development. Based on the SPT blow counts, the uncontrolled

fill was observed to be in a generally soft/loose to stiff/very dense condition which is typical for uncontrolled fills.

4.4.3 Organic Soils

A highly organic layer of black silty clay was encountered between 12 and 16 feet below the ground surface at boring location SB-115 and 10 and 15 feet below the ground surface at boring location SB-117. This layer was determined to be highly compressible. Although more difficult to distinguish at our other boring locations, this compressible organic layer is likely present at the transition between the fill and underlying natural soils throughout the central and western portions of the site. These organic soils were observed to be in a very soft to stiff condition based on SPT blow counts.

4.4.4 Varved Silty Clay and Sand

Beneath the uncontrolled fill and organic soils along the central and western portion of the site at boring locations SB-102, SB-108, SB-112, SB-115, and SB-117, varved silty clay was encountered. The word “varved” refers to the layering of fine grained (silt and clay) and coarse grained (sand) soils into thin horizontal layers due to annual glacial lake deposition cycles. The thickness of these natural deposits varied across the central and western portion of site; ranging in thickness of 15± to 20± feet within the southern portion of the site to 4± to 6± feet within the northern portion of the site. Based on the results of SPT blow counts, these predominately fine grain soils were generally observed to be in a very soft to soft condition with exception of a layer of medium stiff silty clay at 21± feet below the ground surface at boring location SB-115. There was also a significant increase in stiffness observed at between 25 to 30 feet below the ground surface at boring locations SB-115 and SB-117. The results of oedometer testing indicates that the in-situ stress state of these materials is currently over consolidated with over consolidation ratios (OCR) between approximately 2 to 4; however, varved soils often contain complicated stress histories that required various means of data verification when estimating pre-consolidation pressures and settlement parameters.

4.4.5 Glacial Till

Beneath the uncontrolled fill and varved silty clays where encountered, we observed natural glacial till soils. These soils were first encountered at depths ranging from 22± to 34± feet below the existing ground surface along the central and western portions of the site and at depths ranging from 2 to 6 feet below existing ground surface along the eastern portion of the site. The glacial till soils generally consisted of sand and gravel with some to trace amounts of silt and clay. Based on our observations during the drilling operation, cobbles and boulders are likely intermixed within the sands and gravels, which is typical of glacial till deposits. The glacial till extended to the boring termination at all the geotechnical boring locations at depths ranging from 26± to 51± feet below existing surface elevations. Based on the SPT blow counts, these soils were observed to be in a medium dense to vary dense condition.

4.4.6 Groundwater

Groundwater was encountered in all the borings with the exception of boring SB-102 during the short period of time that the holes were left open, ranging from approximately 4- to 8-feet below the ground surface. This correlates to elevations El 9 to El 0 based on the approximated ground surface elevations. We have assumed that the fluctuations observed in groundwater elevation were likely due to tidal effects associated with the nearby Hudson River. Fluctuations in the groundwater levels should be anticipated based on the time of year and amount of recent precipitation.

5.0 EVALUATION AND RECOMMENDATIONS

5.1 Introduction

The recommended site preparation and building support considerations discussed in this report are based primarily on the geotechnical investigation and geotechnical engineering considerations. Our geotechnical design considerations may require modifications to address environmental and/or legal considerations. This may include the handling and disposal of soils, pumping/treating of groundwater, etc.

Based on the results of our geotechnical study, the eastern side of the site contains subsurface conditions suitable to support the proposed development on conventional shallow foundations with moderately high bearing capacities; however, careful considerations should be taken in evaluating the excavation of existing slopes and containment of the cut slopes along the eastern portion of the site. Our recommendations regarding the excavation of the slopes and construction of new retaining wall structures are presented herein under Section 7.4.

The central and western portions of the site contain several problematic subsurface conditions which will need to be mitigated prior to providing satisfactory support for the proposed site redevelopment. The uncontrolled fills encountered throughout the central and western portion of the site are not suitable for support of the proposed building without improvement in-place or by-passing using deep foundations. In addition, the existing organic soils encountered in several of the borings would consolidate under the new fill and building loads resulting in unacceptable total and differential settlement. It is also possible that depending on the amount of new fill placed on the site, the settlement could extend to the varved clays, further increasing the total and differential settlement.

In lieu of supporting the proposed foundations on economically costly deep foundation piles, we have considered several alternative ground improvement options to mitigate the problematic subsurface conditions which include conventional shallow foundation systems supported on rigid inclusions or densified stone columns; however, these options would also be costly for the scale of the proposed development. Additionally, the stone columns may not be able to extend to the depths necessary to provide the required improvement needed. SESI believes that a dynamic compaction (DC) ground improvement program is the most economical approach to improving the uncontrolled fill encountered throughout the site. A surcharge program is recommended in addition to the dynamic compaction program within the building footprints containing organic soils to improve these deep compressible soils in-place. If the timing of the project is critical, not allowing for the proposed surcharge program, then SESI would recommend that proposed buildings within compressible soil areas be supported on rigid inclusions in lieu of dynamic compaction and surcharge. Based on our current understanding of the subsurface conditions at the site SESI also recommends further investigation to delineate the extent of the organic soils on the site, specifically within the proposed building footprints.

Dynamic compaction and surcharging are a combined method of compacting/consolidating thick deposits of marginal materials in-place without the need for removal and replacement or expensive soil bypassing techniques. This combined approach will greatly reduce both total and differential settlements, does not require excavation and dewatering, and is significantly less costly than the various soil bypassing options. Some long-term post-construction settlements will occur with this option, but they should be well within tolerable limits for the planned type of construction. The primary negative aspect of this option is the time for the surcharge to be completed, which may not fit within the overall project schedule, the volume of material needed for the surcharge (depending on Site grades), and the cost to remove the surcharge material from

the Site if there is excess material from the surcharge pile that is not needed to raise the site. Other constraints that may negatively impact the dynamic compaction and surcharge may be the possible presence of nearby underground utilities that may be sensitive to settlement or vibrations. The existing utility easement running though the site and the neighboring railroad will both likely require additional consideration during the design of the DC program and continuous vibration monitoring during the implementation of the DC program.

5.2 Dynamic Compaction

In general, the dynamic compaction procedure consists of dropping a large weight (8 to 15 tons) from heights of 30' to 80'± to compact loose and variable fill deposits. It will also reduce the compressibility of the upper portions of the organic layer. This procedure has been used on thousands of projects throughout Europe since the early 1970s and in the United States since the late 1970s. Our firm has been involved in the design and inspection of over 300 dynamic compaction projects, most of which have involved uncontrolled fills over soft compressible soils.

The primary goal of dynamic compaction is to change an uncontrolled fill into a controlled fill. This is done by providing sufficient energy at the ground surface to cause densification of the underlying fill deposits, thereby reducing the compressibility of these deposits, and providing suitable bearing for building foundations. Dynamic compaction is an exploration tool as well as a ground improvement method. If weak deposits are present below the ground surface, they will be revealed during the impact process by a greater than normal lowering of the ground surface.

To handle the worst conditions on this site, we estimate a 16-ton weight dropped from heights of up to 35± feet will be required. We estimate that two (2) complete passes with approximately five (5) drops per location, per pass will provide sufficient densification of the existing fills. Each successive pass will be more closely spaced with a lower drop height. The actual number of drops per location will be determined in the field as part of the inspection process. Drop locations will be spaced at approximately 12 to 15± feet on centers. Drop weight, spacing, and number of passes will be determined upon completion of the final Site and Grading Plans. The general configuration of the dynamic compaction drop plan can be provided by our office once the final site grading and cut/fill plans have been developed.

Prior to beginning the dynamic compaction, surcharging or fill placement, the project Site should be stripped of the existing pavement, concrete, vegetation, and topsoil, where encountered. Any building foundations or storage tanks below the existing ground surface should also be removed during the demolition of the existing structures on the Site. The existing underground and overhead utilities will need to be removed from within the building area plus a minimum of 15± feet beyond. Once the demolition/stripping is completed, the building area and 15± feet beyond should be proof rolled prior to placing fill to raise grades. A granular fill such as Item 4 or recycled concrete aggregate may be utilized in the top 1 to 2± feet, to provide a suitable surface for the dynamic compaction equipment. We recommend that the extent of any new fill be limited to 2-feet prior to DC implementation within the proposed building areas. The fill required to reach the proposed grades should be a granular fill placed in approximately 12-inch-thick lifts and compacted to a firm condition. The environmental and geotechnical engineer shall review and approve all fill materials prior to importation as described in Section 7.1.

It is imperative that the dynamic compaction craters be filled at the end of each day, particularly if wet weather is anticipated. The craters should be filled by pushing the high points between the craters into the holes and then compacting the area with a large vibratory roller.

At the completion of the dynamic compaction, the area should be graded level and compacted with a conventional vibratory roller. Any additional fill required to attain finished subgrade

elevation should be placed in accordance with Section 7.1 of this report. We estimate that the amount of overall ground lowering from the dynamic compaction will be on the order of 6 to 12± inches over the entire dynamically compacted areas.

The dynamic compaction process transmits ground vibrations that may be felt in the nearby buildings; however, our experience indicates that with the proposed dynamic compaction program, at distances greater than 50± feet from the impact point, no structural damage will occur. There is the potential of cracked plaster (both real and imagined) so that a pre-construction survey of any existing buildings within 200± feet is advisable as well as full-time seismic monitoring of ground vibrations during construction.

Utility lines can withstand vibration levels of 5.0 to 10.0 inches per second. With a proposed maximum vibration level of 1.0 inches per second at the property lines, no damage will occur to offsite utilities. All existing utility locations should be verified prior to commencement of any work which could adversely impact the utilities.

Published guidelines from geotechnical engineering references, such as Foundation Engineering Handbook (2006) by Robert W. Day, provides allowable limits for angular distortion (differential settlement) for various types of structures. We have summarized these in the following table:

Angular distortion	**Damage Criteria***
1/750 (0.8”/50’)	Limit where difficulties with machinery sensitive to settlements may occur
1/500 (1.2”/50’)	Safe limit for buildings where cracking is not permissible
1/300 (2”/50’)	Limit where first cracking in panel walls is to be expected

*Damage Criteria (After Bjerrum, 1963)

5.3 Surcharge Program

A surcharge program generally consists of placing fill over the areas containing soft organics soils within proposed building footprints and allowing the weight of the surcharge soils to consolidate the soft soils over a period of several months. As previously discussed, potentially highly compressible organic soils were encountered within the south half of the central/western portion of the site within boring SB-115 and SB-117. Further information should be obtained to better evaluate the extent of the soft organic layer on the site as discussed in Section 9.0 of this report prior to development of a formal surcharge program. Typically, the top edge of the surcharge should extend approximately 10 feet beyond the proposed building footprint within the assumed extent of the organic layer and then slope down on a 1.5H to 1V slope to meet existing grade. Based on our current understanding of organic soils, we recommend that the surcharge settlement be monitored for approximately 2 to 3± months. The length of time for the surcharge will depend on the final Site grades, height of the surcharge, and the results of the settlement plate readings.

The surcharge material may consist of any inorganic soil, rock, concrete, etc. and need only be tight rolled at the surface; however, if the surcharge material will be used to raise site grades, we recommend that the material be a granular material with a maximum of 15% fines. The surcharge material will also require the approval of the site environmental engineer.

At the beginning of the surcharge, several settlement plates should be installed and periodically surveyed to monitor the progress of the settlement to determine the length of time that the surcharge will have to remain in place. The monitoring should be done a minimum of 2 times in the first week to develop a baseline, then weekly during the placement of the surcharge and then every 2 to 4 weeks thereafter.

Once the extent of the organic soils has been sufficiently delineated on the site, a cut and fill analysis should be completed prior to any earthwork to determine proper sequencing for the dynamic compaction and surcharging program. An accurate calculation should be performed to determine the total volume of fill that will be required for the surcharge program and to raise the site to the finished floor elevation. It will likely be necessary to raise the site from existing grade so dynamic compaction can be performed a minimum of 5 feet above the existing ground water table. Sequencing of the dynamic compaction and surcharge should be completed to complement the total volume of fill that is required for the site and the construction timeline. The surcharge could also be complete in phases to limit the amount of surcharge material required. SESI should be provided the opportunity to discuss this with the development team once formal construction planning begins.

5.4 Rigid Inclusions (RI)s

As previously mentioned, if the construction timeline does not allow for the time associated with the above discussed surcharge program, SESI recommends that the proposed buildings footprints within the soft organic soils should be supported by ridged inclusions (RIs). RIs are utilized to improve the subsurface soils and transfer the loads to the underlying bearing stratum. RIs will allow for the building to be constructed on shallow foundations with moderate allowable bearing capacities, which will be determined during the design phase for the RIs.

RIs consist of grouted inclusions that work together with the surrounding soil to provide a stiff composite ground mass. RIs are installed by drilling a hollow auger through the uncontrolled fill soft organic soils, soft varved clay layers, and into the underlying dense glacial soils. The auger displaces the soil it drills through laterally, which increases the density of the surrounding soil. The displacement method reduces the quantity of spoils that are generated during the operation. A grout mixture would then be injected under pressure through the auger as it is withdrawn, developing a grouted column. The RIs would be installed on a grid pattern throughout the building, loading dock, and at-grade parking footprint with the spacing based determined by the specialty geotechnical contractor. The result is a composite system, where the soil and the grouted column share the building load.

A Load Transfer Platform (LTP), which typically consists of a compacted granular soil layer, would be installed over the RIs to transfer the loads from the building footings and slab to the RIs. The LTP materials generally need to meet a very strict gradation requirement and compaction criteria to meet the design specifications. The LTP material typically consists of recycled concrete aggregate or Item 4 placed in controlled compacted lifts. Regardless, the thickness of the LTP can vary depending on the site soils and design of the rigid inclusion system. The LTP will typically vary between 6 inches and 3 feet thick beneath the footings and floor slab.

A formal RI Improvement design plan will need to be developed for the project in advance of the building construction with a specialty ground improvement contractor. The specialty contractor will provide RI spacing and the approximate depth of the RIs based on the required loading and designed bearing capacity. The results of this report and other evaluations at the site should be considered in the final RI design.

6.0 FOUNDATION DESIGN CRITERIA

6.1 Allowable Bearing Capacity and Minimum Foundation Dimensions

After the site preparation procedures and ground improvement programs have been successfully completed, the building foundations may be designed as conventional foundations with spread footings with conventional slab-on-grade floor systems. The spread footings may be placed on dense glacial deposits, compacted structural fill, or a LTP above RIs. The footings may be designed for a maximum net allowable bearing pressure of 2.0 tsf (4,000 psf) or as determined by the specialty ground improvement contractor if supported on RIs. Regardless of the loads, the minimum plan dimension of isolated footings should be 36-inches and the minimum width of continuous footings should be 24-inches. Exterior footings and those footings potentially exposed to frost action should be founded a minimum 4 feet below adjacent exterior grades or protected from frost action in accordance with ASCE 32-01 protection guidance per the 2020 International Building Code of New York State. Interior footings within heated buildings areas may be founded at conventional depths below the slab.

6.2 Slab Construction

The floor slabs should be designed using a subgrade modulus of 150 pci, assuming a 6-inch-thick layer of granular material with a maximum particle size of 1.5 inches and a maximum percent passing the No. 200 mesh sieve of 12 percent is placed beneath the floor slabs.

6.3 Seismic Design Parameters

Due to the variability in the subsurface conditions across the site, the site soil has been classified under two separate seismic site classes depending on the location of the proposed building on the site.

The proposed building to be constructed in areas not containing compressible organics and varved clays (eastern portion of the site) can be classified as Site Class D for seismic design purposes in accordance with ASCE 7-16 and the 2020 International Building Code of New York State. Based on a structural occupancy/risk category of II and information provided by the ASCE 7 Hazard Tool, the following seismic design criteria should be used for Site Class D:

Mapped Spectral Response Acceleration for Short Periods	S_S = 0.297g
Mapped Spectral Response Acceleration for 1-Second Period	S_1 = 0.062g
Site Coefficient	F_a = 1.562
Site Coefficient	F_v = 2.4
Spectral Response for short periods	S_{MS} = 0.464g
Spectral Response for 1 second period	S_{M1} = 0.148g
Design Spectral Response Acceleration for Short Periods	S_{DS} = 0.309g
Design Spectral Response Accelerations for 1-Second Period	S_{D1} = 0.099g

The proposed buildings to be constructed in areas containing compressible organics and varved clays (central/western portion of the site) can be classified as Site Class E for seismic deign purposes in accordance with ASCE 7-16 and the 2020 International Building Code of New York State. Based on a structural occupancy/risk category of II and information provided by the ASCE 7 Hazard Tool, the following seismic design criteria should be used for Site Class E:

Mapped Spectral Response Acceleration for Short Periods	S_S = 0.297g
Mapped Spectral Response Acceleration for 1-Second Period	S_1 = 0.062g
Site Coefficient	F_a = 2.268
Site Coefficient	F_v = 4.2

Spectral Response for short periods	S_{MS} = 0.674g
Spectral Response for 1 second period	S_{M1} = 0.259g
Design Spectral Response Acceleration for Short Periods	S_{DS} = 0.449g
Design Spectral Response Accelerations for 1-Second Period	S_{D1} = 0.172g

6.4 Anticipated Post Construction Settlement

After satisfactory completion of the recommended ground improvement, footings and floor slabs founded on the natural soils or improved soils within the eastern portion of the site should have post-construction settlements less than ¾-inch with less than ½-inch differential settlement over a 30-foot span. The estimated post-construction differential settlement in the central/western portion of the site following the recommended dynamic compaction and surcharge is estimated at approximately ¾-inch over a 30-foot span. The total settlement in this area is subject to the results of further delineation of the soft organic soils and the final site grading plans. If RIs are implemented at the site, the specialty contractor will provide the anticipated post-construction settlement criteria.

7.0 ADDITIONAL CONSTRUCTION RECOMMENDATIONS

7.1 Fill Sources and Backfill Procedures

The fill materials may be obtained from suitable excavated fill from the site provided that the material is free of organics and any deleterious materials. Some of the existing site soil contains a significant percentage of silt and clay making them moisture sensitive. Soils containing more than 15% fines are considered moisture sensitive and may require moisture conditioning prior to their use as structural fill. Moisture sensitive soils will be difficult to work or compact when significantly over optimum water content and will require drying prior to their reuse. The ease with which moisture sensitive soils can be constructed on this site will, to a degree, depend on the time of year in which construction takes place and the construction procedures utilized by the earthwork contractor. SESI understands that the site grades will generally need to be raised to meet the proposed site grades, likely requiring offsite borrow material. If offsite borrow material is required, it should consist of a granular material with the maximum particle size of 3 inches and a maximum amount of fines (percentage passing a No. 200 mesh sieve) of 15% to help facilitate construction during wet weather. The “fines” should be non-plastic.

All controlled compacted fill should consist of suitable onsite soils or imported granular fill placed in maximum 12-inch-thick lifts. Each lift should be compacted using a large vibratory compactor (minimum 10-ton static drum weight) making a minimum of 4 complete coverages. The fill should be compacted using a large vibratory roller to achieve a minimum dry density of 92 percent and an average density of greater than 95 percent of Modified Proctor as determined from laboratory test ASTM D 1557. In-place field density tests should be performed, when applicable, to determine the adequacy of the compacted soil fill.

Backfill in confined areas such as utility trenches and foundations within load bearing or paved areas should be placed in maximum 6-inch-thick layers and compacted to a minimum dry density of 92 percent and an average density of greater than 95 percent of Modified Proctor as determined from laboratory test ASTM D 1557

The subgrade should be graded to drain and tight-rolled at the end of the day, particularly if wet weather is anticipated. If stormwater seepage is encountered during construction, gravel filled sumps with pumps should be installed below the subgrade elevation to allow for dewatering of the excavation.

Roadway and build areas should be proof rolled upon reaching final subgrade elevation. The proof roll should consist of making four (4) complete coverages of the area. If any soft areas are encountered during the proof rolling, they should be excavated to stable material and replaced with a controlled compacted fill. The thickness of individual lifts of soil fill should be limited to 12 inches. The compaction criteria for fills in the roadway areas may consist of 92 percent, except in the uppermost 2 feet where 95 percent should be achieved to provide for good pavement support. Visual observations and in-place field density tests should be made to determine the adequacy of the compaction. The proof rolling should be inspected by a qualified geotechnical engineer prior to placing any compacted fill.

The roadway subbase materials may consist of Item 4, Recycled Concrete Aggregate (RCA), or Asphalt Millings. All subbase materials must be approved by the geotechnical and environmental engineer prior to their placement.

7.2 Utility Lines

The site soils will provide suitable support for the proposed utility lines. Cobbles greater than 4 inches in diameter should be removed from the utility line subgrade or a minimum 4-inch-thick sand layer placed beneath the utility lines. If utility lines fall within soft soils, the excavation should be extended an additional 12 inches and replaced with ¾-inch clean crushed stone or clean sand and gravel.

Backfill material placed around utility lines to 6 inches above the utility line should have a maximum particle size of 1.5 inches. Backfill of utility trenches that fall within load-bearing areas should be placed in maximum 12-inch-thick lifts and compacted to the same density requirements as in the building/parking areas. Trench backfill in non-load bearing areas should be compacted to 90 percent of Modified Proctor density (ASTM D1557).

7.3 Control of Groundwater

Groundwater levels were observed at depths ranging from approximately 4 to 8 feet below the ground surface during our investigation; approximately EL 9 to EL 0. Groundwater may be encountered in excavations extending at or slightly above these elevations due to fluctuations in seasonal groundwater levels and tidal influence. Groundwater seepage may be encountered during construction, trapped throughout the overburden soils, especially during periods of wet weather or during below grade utility installation. Gravel filled sumps with pumps may be used for temporary dewatering.

7.4 Retaining Wall Recommendations

As previously indicated, the *Conceptual Grading Plan,* prepared by Insite Engineering, Surveying & Landscape Architecture, P.C. dated September 12, 2023 will require cuts into the existing slope on the eastern side of the site. These cuts are shown to be contained by several proposed retaining walls along the eastern side of the site. The proposed walls will range in height from 2± to 11± feet with a bottom of wall elevation ranging from El 14± to 24±. Due to the steep slopes and abundance of cobbles and boulders observed along the slope, SESI recommends that these retaining walls be designed as gravity walls using Recon Wall blocks. A gravity wall uses its own self weight to resist the soil loads imposed on it by the retained soils. Therefore, these walls are typically heavy, requiring suitable subgrade soils which the eastern portion of the site has. Additionally, gravity walls typically do not require a reinforced geogrid zone behind the wall requiring additional excavation and backfill into the side of the slope making this retaining wall option idea for this site.

The contractor should be prepared to excavate boulders and potentially ledge bedrock while cutting grades along the eastern slope of the site. If bedrock or large boulders are encountered during excavation, excavation will likely be difficult without the aid of a hoe-ram hammer, or chipper. Over-breaking the rock should be avoided to minimize unnecessary excavation and undermining of the existing slope. Depending on the extent of the bedrock if encountered, line drilling with hole spacing at about 6 to 12 inches should be used to limit overbreak of the rock. The orientation and potential movement of rock due natural fractures should be carefully observed by a qualified geotechnical engineer during the excavation process. It may be necessary to stabilize the rock face. The slope above the excavation should be grubbed, graded, and stabilized prior to the start of excavation. Loose boulders and cobbles should be removed from the slope to prevent potential rock fall. It is recommended that a supplemental test pit investigation be performed along the slope once demolition of the existing buildings is complete to gain a better understanding of the subsurface conditions in this area.

7.5 Excavation Support

OSHA requires that all excavations in excess of four (4) feet be shored, braced or adequately benched/sloped in order to provide protection from sidewall collapses in accordance with 29 CFR Part 1926 “Safety and Health Regulations for Construction”, Subpart P “Excavations”. For the open cut excavation required to reach proposed excavation elevations along the eastern side of the site, the upper fill materials and natural soils will need to be supported or properly benched and/or sloped to allow for safe construction of the proposed retaining walls. Any excavation support systems should be designed by a geotechnical engineer licensed in New York.

8.0 TESTING AND INSPECTION REQUIREMENTS

8.1 Testing Requirements

During the placement of all fills, visual observations and in-place density tests shall be performed to determine the adequacy of the compacted fill. In-place density testing shall be conducted in accordance with appropriate ASTM testing standards. Additionally, SESI recommends utility trench and footing backfill compaction be visually observed, and in-place density tests be performed where deemed necessary by the geotechnical engineer. Density testing should be done in accordance with the following minimum frequency requirements; or as determined by the geotechnical engineer.

Building Pad Subgrade Areas: Minimum of 4 tests per 12-inch lift; spacing not to exceed 50 feet between test locations, or as determined by the geotechnical engineer.

Parking/Roadway Areas: Minimum of 3 tests per 12-inch lift; spacing not to exceed 100 feet between test locations, or as determined by the geotechnical engineer.

Utility Trenches: Minimum of 1 test per 6-inch lift; spacing not to exceed 50 feet between test locations, or as determined by the geotechnical engineer.

8.2 Inspection

The recommendations presented in the previous sections of this report are based on the assumption that the site preparation procedures will be done under engineering inspection by a representative of this office. SESI should observe the ground improvement program, the placement of fill/backfill, the proof rolling operations, foundation subgrade preparation, utility installation, construction of retaining walls, and pavement placement. Visual observations and in-place density testing should be done throughout fill construction to determine that the work is done in accordance with our recommendations. We should also inspect and approve the bottom

of all footing excavations prior to placement of concrete to determine that the founding materials are capable of supporting the anticipated foundation loads.

9.0 SUPPLEMENTAL INVESTIGATION

The scope of our investigation was to provide the recommendations presented within this report; therefore, we recommend that the site be further investigated once the demolition of the existing buildings has been complete. SESI recommends that a supplemental investigation be complete which would include test pits along the eastern slope of the site to gather additional information about the slope subsurface conditions and several Cone Penetration Test (CPT) soundings throughout the central and western portion of the site. The CPTs will be used to further delineate the organic soft soils and confirm the result of oedometer testing completed on the varved clays. This additional information will be used to develop the surcharge design for the site. A supplemental investigation will also likely need to be performed once a stormwater management plan is prepared to collect information for the final design of stormwater management basins.

10.0 LIMITATIONS

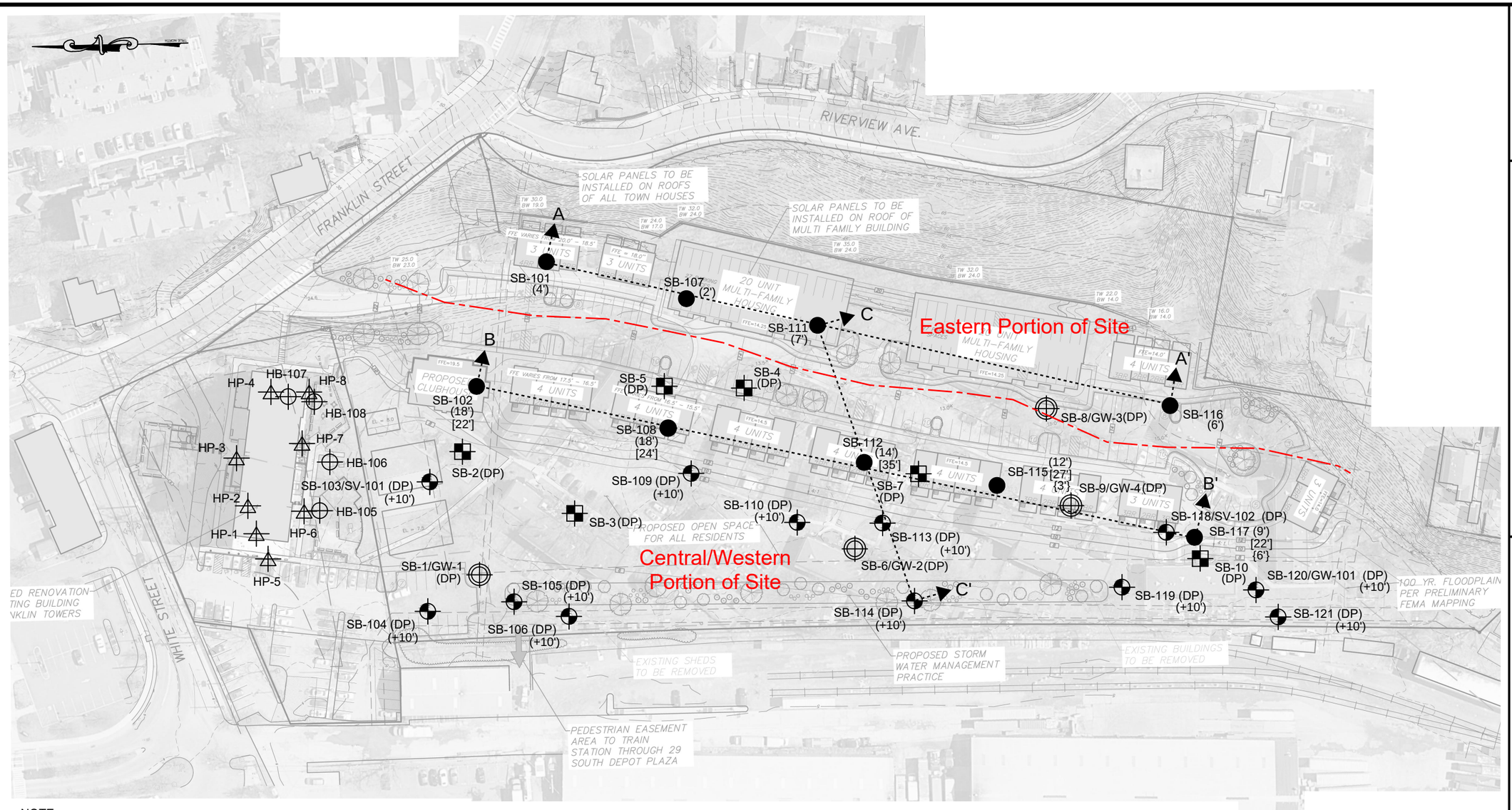
The subsurface investigation performed identifies the subsurface conditions only at the locations of the explorations and at the depths where the samples were taken. SESI Consulting Engineers reviews the published geologic data and the field and laboratory data and uses their professional judgment and experience to render an opinion on the subsurface conditions throughout the Site. Because the actual subsurface conditions may differ, we recommend that SESI be retained to provide construction inspection in order to minimize the risks associated with unanticipated conditions. This report should not be used:

- When the nature of the proposed buildings are changed;
- When the size or configuration of the proposed buildings are altered;
- When the location or orientation of the proposed buildings are modified;
- When there is a change in ownership; or
- For application to an adjacent or any other site.

SESI shall not accept any responsibility for problems, which may occur if SESI is not consulted when there are changes to the factors considered in this report's development. The soil logs should not be separated from the Engineering Report in order to minimize the possibility of soil log misinterpretation.

11.0 DISCLAIMER

This Report was prepared by SESI for the sole and exclusive use of WBP LLC. Nothing under the Professional Services Agreement between SESI and its client WBP LLC. shall be construed to give any rights or benefits to anyone other than Client and SESI, and all duties and responsibilities undertaken pursuant to the Agreement will be for the sole and exclusive benefit of Client and SESI and not for the benefit of any other party. This Report has been prepared and issued subject to the express condition that same is not to be disseminated to anyone other than Client, without the advance written consent of SESI (which SESI, in its sole discretion, is free to grant or withhold). Use of the Report by any other person is unauthorized and such use is at the sole risk of the user.



NOTE:
THIS PLAN IS FOR LOCATING BORINGS AND VAPOR POINTS ONLY.
OTHER SITE WORK SHOWN HERE IS NOT INTENDED FOR CONSTRUCTION.

REFERENCE:
1. EXISTING CONDITIONS & BOUNDARY ARE TAKEN FROM "CONCEPTUAL GRADING PLAN - DWG NO. CG-1", PROVIDED BY INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C., DATED 9-12-23, REV. 12-4-23.

LEGEND:

- SB-113 - ENVIRONMENTAL BORING NUMBER & APPROX. LOCATION (SESI 2023)
- SB-4 - ENVIRONMENTAL BORING NUMBER & APPROX. LOCATION (SESI 2022)
- SB-4 - ENVIRONMENTAL BORING/TEMP WELL NUMBER & APPROX. LOCATION (SESI 2022)
- SV-1 - ENVIRONMENTAL VAPOR POINT NUMBER & APPROX. LOCATION (SESI 2022)
- SB-116 - GEOTECH BORING NUMBER & APPROX. LOCATION (SESI 2023)
- HB-106 - HISTORIC BORING NUMBER & APPROX. LOCATION (OTHERS 1965)
- HP-4 - HISTORIC BORING NUMBER & APPROX. LOCATION (OTHERS 1962)
- A A' - GEOTECHNCIAL CROSS SECTION LINE
- (X') - APPROXIMATE DEPTH TO BOTTOM OF FILL
- [X'] - APPROXIMATE DEPTH TO BOTTOM OF SOFT SILTY CLAY
- (DP) - DIRECT PUSH ENVIRONMENTAL BORING
- {X'} - APPROXIMATE THICKNESS OF ORGANIC SOILS
- APPROXIMATE PARTION LINE BETWEEN THE EASTERN AND CENTERAL/WESTERN PORTIONS OF THE SITE

SCALE: 1"=100'
0 100 200

dwg by: AW
chk by: JW
scale: AS NOTED
date: 12/28/2023

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959 ROUTE 46E, 3RD FLOOR, PARSIPPANY, NJ 07054 PH: 973.808.9050

project: PROPOSED FRANKLIN COURTS REDEVELOPMENT
FRANKLIN COURTS
VILLAGE OF TARRYTOWN
WESTCHESTER COUNTY, NEW YORK

title: EXPLORATION LOCATION PLAN

job no: 12345
drawing no: DWG-1

N: \ACAD\12345\CAD\GEOTECH\12345.DWG_EXPLORATION_LOC_PLAN.DWG 12/28/23 09:26:00AM, alan.ward, LAYOUT:FIG-1 EXPLORATION PLAN

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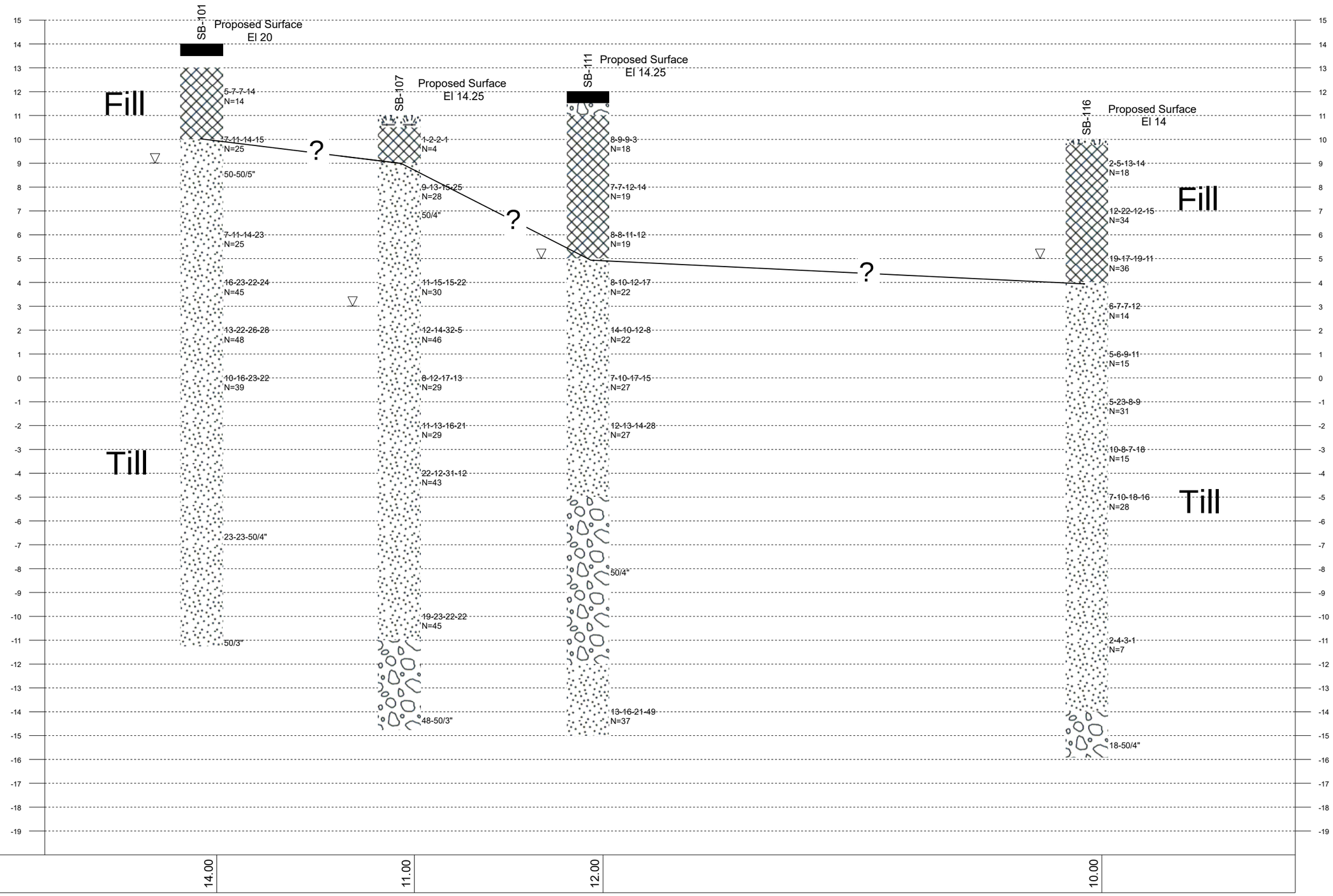
DRAWING No. 2 - Section Line A-A'

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York	**VERTICAL SCALE**	1:50
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88	**HORIZONTAL SCALE**	1:800



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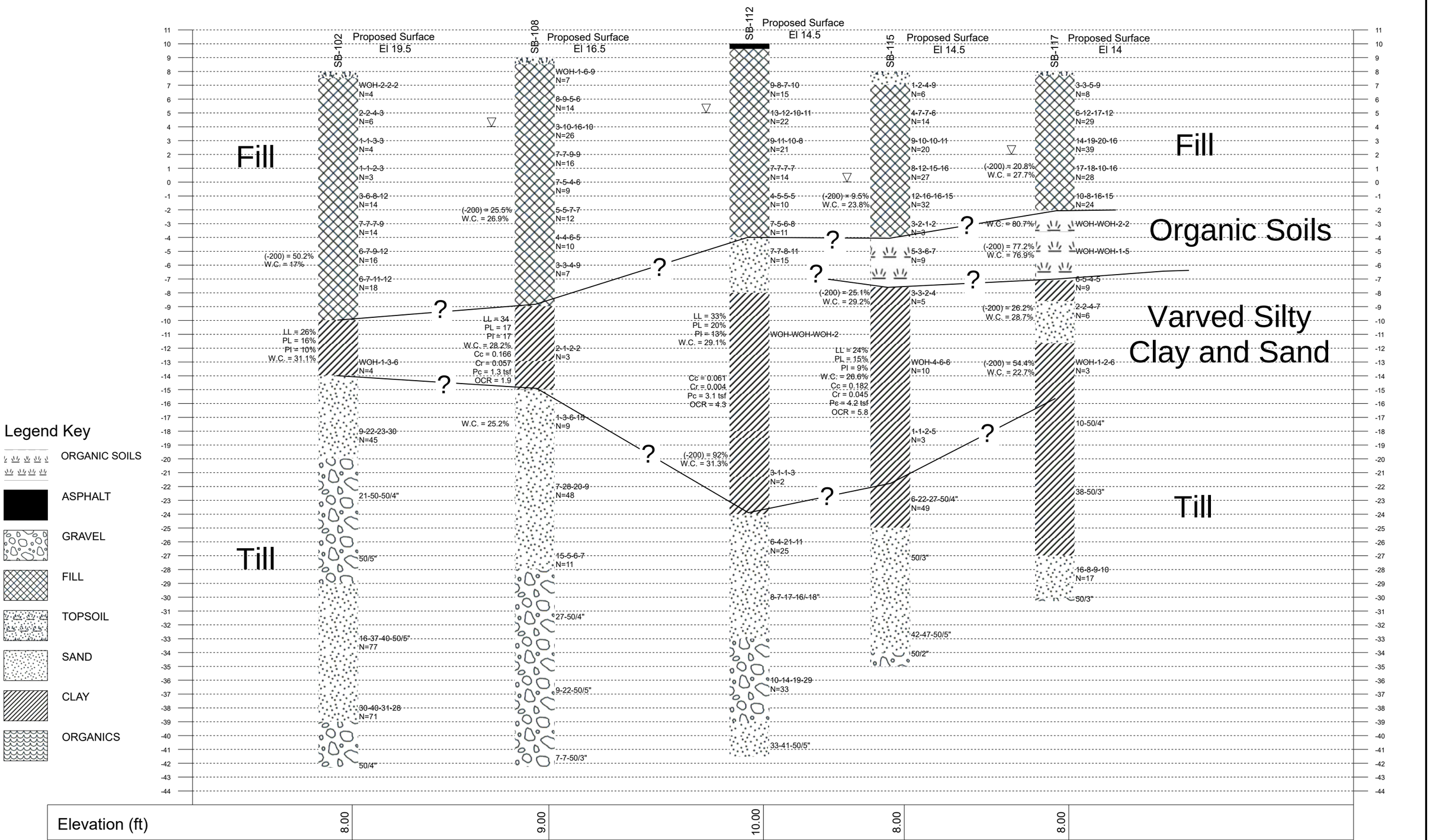
DRAWING No. 3 - Section Line B-B'

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York	**VERTICAL SCALE**	1:80
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88	**HORIZONTAL SCALE**	1:1000



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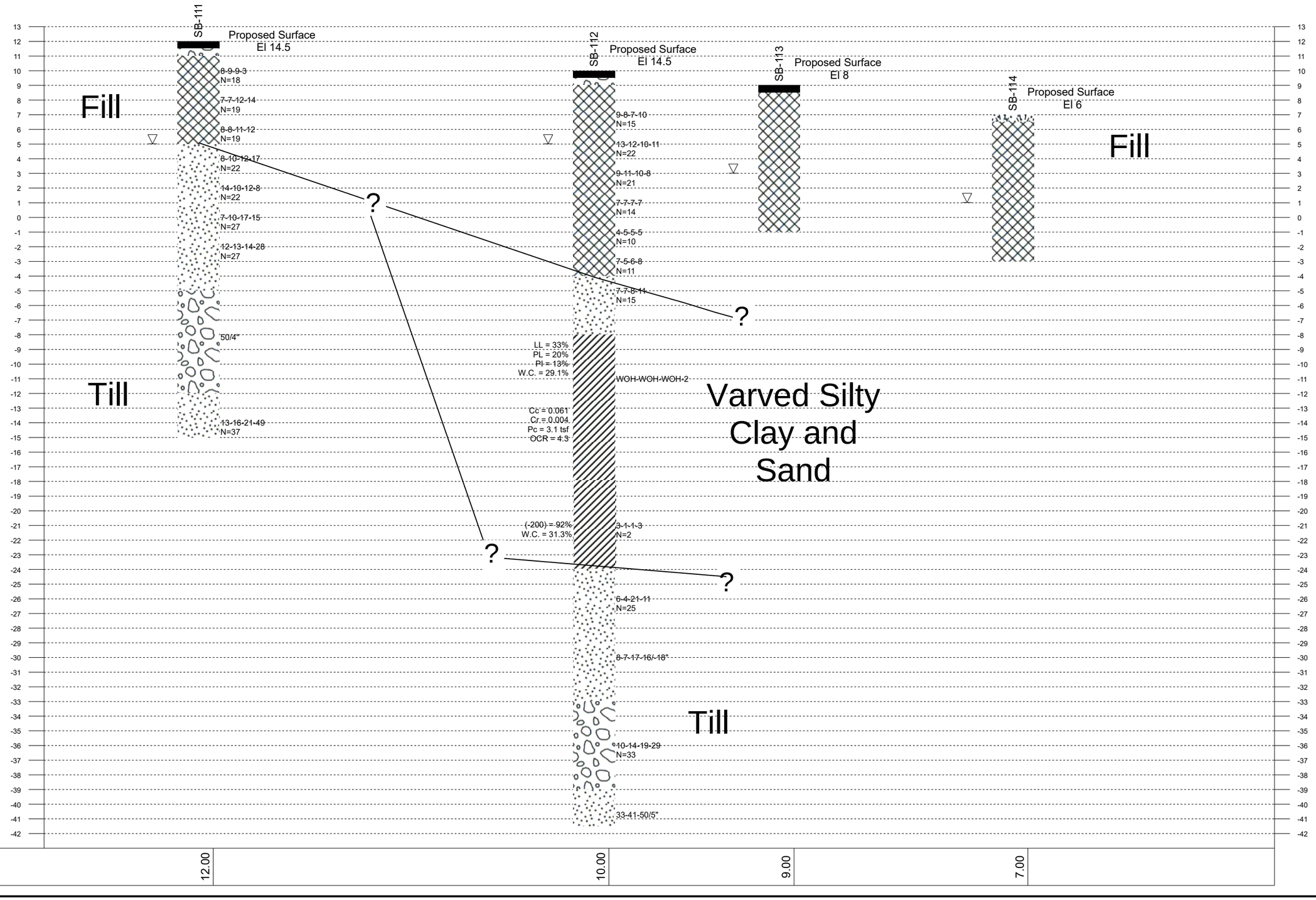
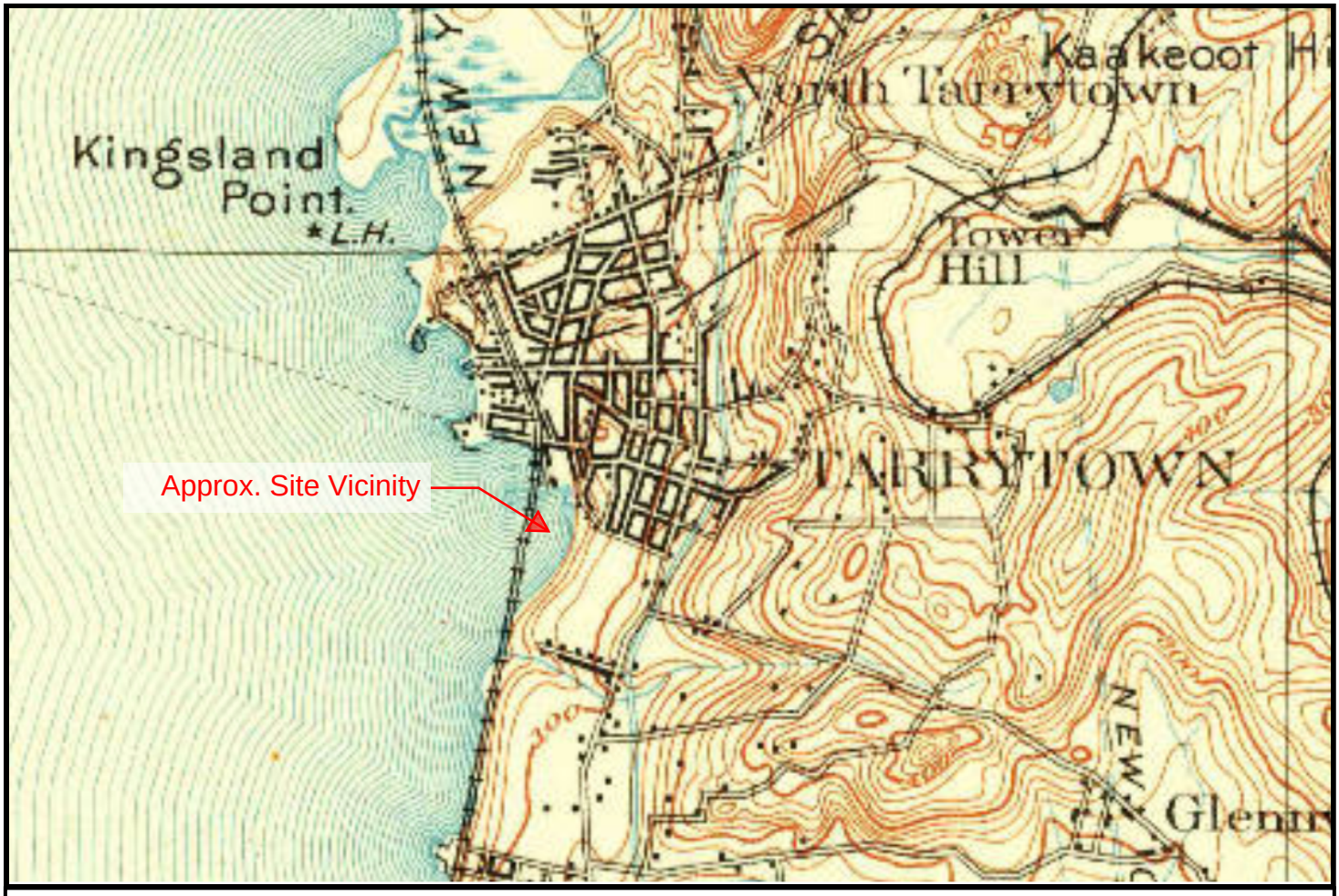
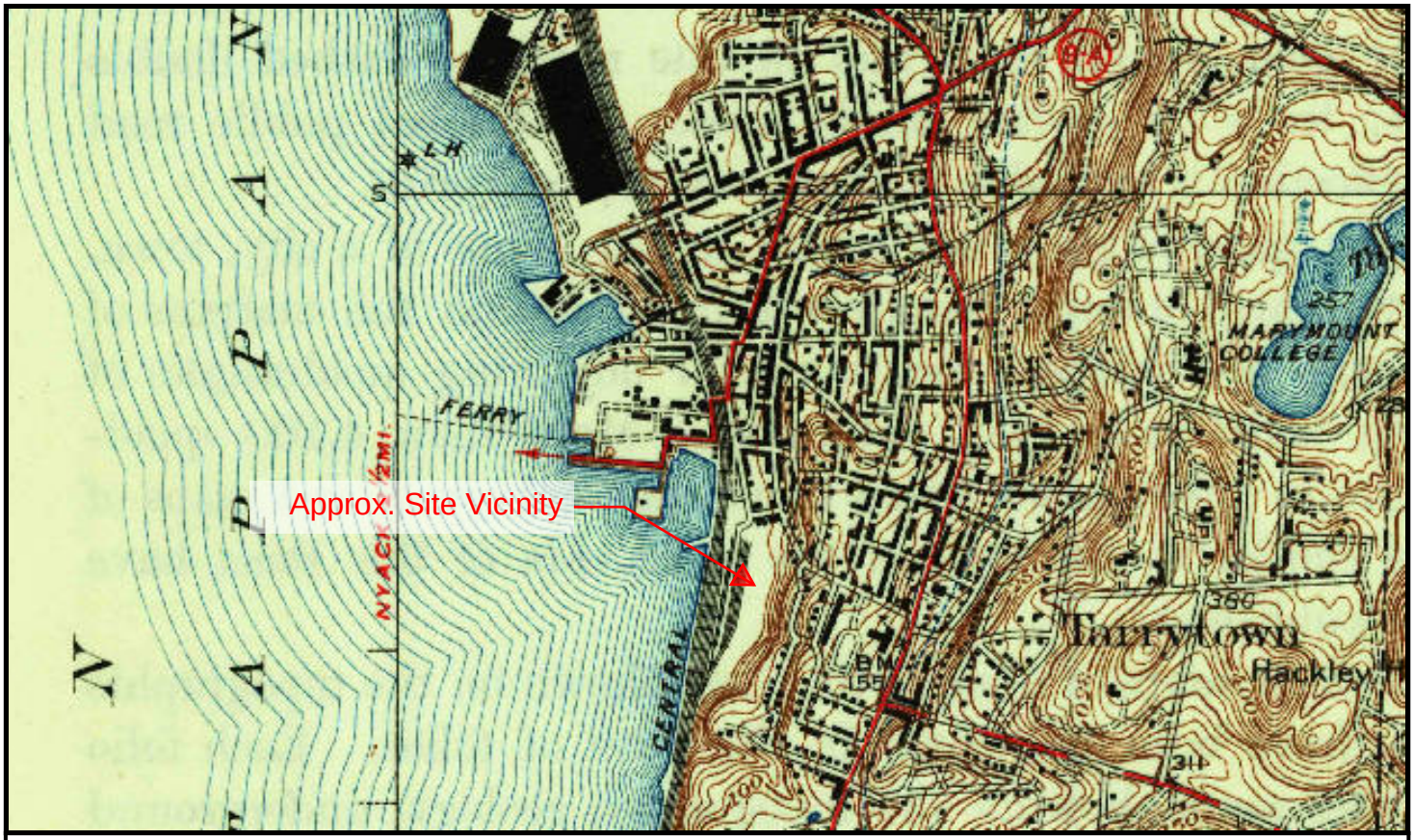
DRAWING No. 4 - Section Line C-C'

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York	**VERTICAL SCALE**	1:80
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88	**HORIZONTAL SCALE**	1:400





Drawing No. 5 - U. S. Geloogical Survey; Surveyed 1890.



Drawing No. 6 - U. S. Department of Interior Geological Survey; Surveyed1932.

Appendix A

SESI Soil Classification and
Exploration Log Key

SESI Boring Logs

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SOILS CLASSIFICATION AND EXPLORATION LOG KEY

Our experience has shown that the following field identification system, which is pattered somewhat after the Burmister System, permits a more detailed breakdown of the components within a soil sample than other identification systems allow. It also compels the supervising technician to examine a sample quite closely in order to accurately describe the components within the sample.

Grain Size and Classifications

Gravel:
Coarse gravel ranges from 3-in to 1-in
Medium gravel ranges from 1-in to 3/8-in
Fine gravel ranges from 3/8-in to No. 10 sieve

Sand:
Coarse sand ranges from No. 10 to No. 30 sieve
Medium sand ranges from No. 30 to No. 60 sieve
Fine sand ranges from No. 60 to No. 200 sieve

Silt:
Material which passes the No. 200 sieve
Exhibits little to no plasticity

Clay:
Material which passes the No. 200 Sieve
Exhibits varying degrees of plasticity

Component Classification

CAPITALS	More than 50% of the sample by weight
Proper Case	Less than 50% of the sample by weight

Proportion Terms

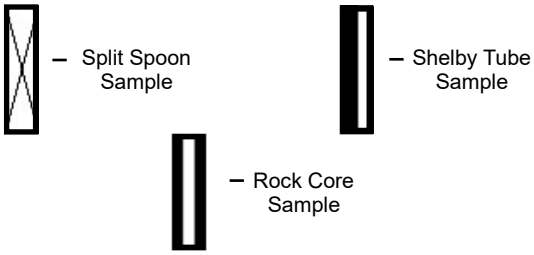
and	Component ranges from 35% to 50% of the sample by weight
some	Component ranges from 20% to 35% of the sample by weight
little	Component ranges from 10% to 20% of the sample by weight
trace	Component ranges from 0% to 10% of the sample by weight

Gradation Designation

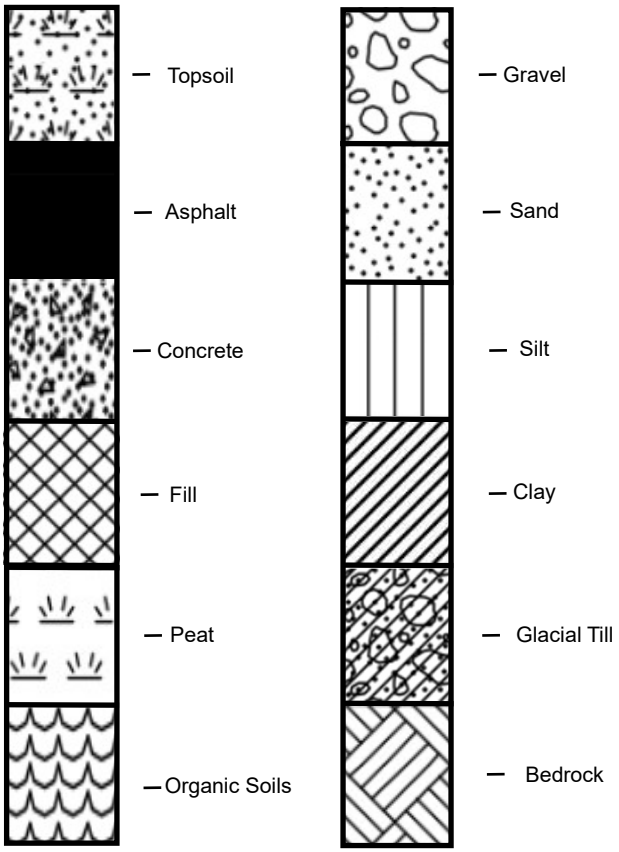
Coarse to fine (c-f)	All fractions greater than 10% of the component
Coarse to Medium (c-m)	Less than 10% of the component is fine
Medium to fine (m-f)	Less than 10% of the component is coarse
Coarse (c)	Less than 10% of the component is medium or fine
Medium (m)	Less than 10% of the component is coarse or fine
Fine (f)	Less than 10% of the component is coarse or medium

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgement of such authorized users. Information on the logs should not be relied upon without the geotechnical engineer's recommendations contained in the report from which these logs were extracted.

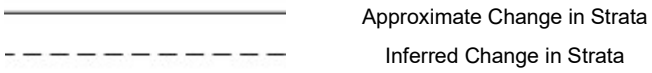
Sampling Types



Generalized Stratum Types



Strata Separation



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BOREHOLE NUMBER: SB-101

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-19-2023	**COMPLETED**	12-19-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.074919	**LONGITUDE**	-73.862979
CASING DIAMETER	4.00 in	**CASING DEPTH**	14.0 ft
FINAL DEPTH	25.2± ft		

GROUND ELEVATION 14.0±
OUTER DIAMETER
GROUNDWATER LEVELS:
AT TIME OF DRILLING 5.00± ft
AT END OF DRILLING
AFTER DRILLING

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		6" Asphalt							PID = 0.0
		6" RCA Subgrade							Moist
		Fill: Brown coarse to fine SAND, some medium to fine Gravel, little Clayey Silt		S-1		12	5-7-7-14 (14)		Env taken 2.5-3 PID = 0.2
				S-2		14	7-11-14-15 (25)		Moist PID = 0.0
	9	Brown/gray-brown coarse to fine SAND, little Silty Clay, little coarse to fine Gravel, with Grass and Organics	5	S-3		18	50-50/5"		Wet
		Brown coarse to fine SAND, little Silt, little medium to fine Gravel							Install casing PID = 0.0
		Gray-brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay		S-4		12	7-11-14-23 (25)		Moist PID = 0.0
	4	Gray-brown SAND, little fine Gravel, little Silty Clay, grading to coarse to medium SAND, some Silty Clay, with Organics	10	S-5		18	16-23-22-24 (45)		Wet W.C. = 10.1% PID = 0.0
		Same as above, medium to fine Gravel		S-6		17	13-22-26-28 (48)		Wet PID = 0.0
		Same as above, medium to fine Gravel		S-7		16	10-16-23-22 (39)		Wet Drill to 20'
	-1		15						
	-6	Gray-brown SAND, little medium to fine Gravel, little Clayey Silt	20	S-8		10	23-23-50/4"		PID = 0.0 Moist Drill to 25'
	-11	No Recovery	25	S-9			50/3"		
		BORING COMPLETED AT 25.25± FEET DUE TO REFUSAL							
	-16		30						

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BOREHOLE NUMBER: SB-102

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-19-2023	**COMPLETED**	12-19-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.075165	**LONGITUDE**	-73.863356
GROUND ELEVATION	8.0±	**OUTER DIAMETER**	
CASING DIAMETER	4.00 in	**GROUNDWATER LEVELS:**	
CASING DEPTH	20.0 ft	▽ **AT TIME OF DRILLING**	
FINAL DEPTH	50.3± ft	▼ **AT END OF DRILLING**	
		▼ **AFTER DRILLING**	

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		6" Topsoil							
		Fill: Brown coarse to fine SAND, little medium to fine Gravel, little Silty Clay, with glass, grass and roots		S-1		10	WOH-2-2-2 (4)		PID = 0.0
		Fill: Brown/gray-brown coarse to fine SAND, little Clayey Silt, trace fine Gravel, with glass		S-2		11	2-2-4-3 (6)		PID = 0.0 Env taken (3-3.5)
	3	Fill: Brown/gray-brown coarse to fine SAND, little Silty Clay, trace fine Gravel, with shell fragments	5	S-3		19	1-1-3-3 (4)		PID = 0.0
		Fill: Brown/gray-brown coarse to fine SAND, little Silty Clay, trace fine Gravel, with roots, grading to medium to fine SAND		S-4		18	1-1-2-3 (3)		
		Same as above		S-5		12	3-6-8-12 (14)		
	-2	Same as above with glass fragments	10	S-6		24	7-7-7-9 (14)		
		Fill: Gray-brown Clayey SILT, and coarse to fine Sand, trace medium to fine Gravel		S-7		20	6-7-9-12 (16)		(-200) = 50.2% W.C. = 17%
	-7	Fill: Gray-brown coarse to fine SAND, little medium to fine Gravel, trace Silty Clay Bottom of spoon medium to fine SAND, some Silty Clay, with Organics and Roots	15	S-8		20	6-7-11-12 (18)		Drill to 20' Install casing
	-12	Gray-brown Silty CLAY, some medium to fine Sand	20	S-9		11	WOH-1-3-6 (4)		PID = 0.0 LL = 26% PL = 16% PI = 10% W.C. = 31.1%
	-17	Gray/dark gray/white coarse to fine SAND, little coarse to fine Gravel, trace Silty Clay	25	S-10		8	9-22-23-30 (45)		Grinding at 22' Drill through Boulder PID = 0.0 Moist Possible Glacial Till or weathered rock Drill to 30'
	-22	Gray medium to fine GRAVEL, trace Silty Clay, trace Sand	30	S-11		11	21-50-50/4"		PID = 0.0 Wet Drill to 35'

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-102

PROJECT NAME Franklin Courts Redevlopment
PROJECT LOCATION Tarrytown, New York
PROJECT NO. 12345
ELEVATION DATUM NAVD88
GROUND ELEVATION 8.0 ft ±

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		Gray medium to fine GRAVEL, little coarse to medium Sand, trace Silt		S-12	⊠	3	50/5"		PID = 0.0 Wet
	-32	Gray-brown coarse to fine SAND, some coarse to fine Gravel, trace Clayey Silt	40	S-13	⊠	18	16-37-40-50/5" (77)		PID = 0.0 Drill to 45' Grinding
	-37	Same as above	45	S-14	⊠	15	30-40-31-28 (71)		PID = 0.0 Moist Drill to grinding
	-42	Brown-dark gray coarse to fine GRAVEL, trace coarse Sand, trace Silty Clay	50	S-15	⊠	3	50/4"		PID = 0.0 Wet
		BORING COMPLETED AT 50.3± FEET DUE TO REFUSAL							
	-47		55						
	-52		60						
	-57		65						
	-62		70						

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-103

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.075312 **LONGITUDE** -73.863608

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 6.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 4.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		6" Asphalt								
		Fill: Tan-brown coarse to fine SAND, little medium to fine Gravel, little Silt		S-1		10	S-1		0.0 0.0	
		Fill: Dark brown coarse to fine SAND, some Silt, little medium to fine Gravel, with trace coal fragments							0.0	
		Fill: Dark brownish black coarse to fine SAND, some Clayey Silt, with frequent wood fragments and Metal							0.0	
	1	Fill: Dark grayish brown coarse to fine SAND, some coarse to fine Gravel, trace Silt, with trace wood fragments	5				SB-103(4.5-5)		0.4	
				S-2		30	S-2		0.0 0.0 0.0 0.0	
	-4	BOREHOLE COMPLETED AT 10± FEET	10						0.0	Offset approximately 3' for installation of SV-101 after completion of boring.
	-9		15							
	-14		20							
	-19		25							
	-24		30							

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-104

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.075373 **LONGITUDE** -73.864054

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 6.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 5.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil								
		Fill: Brown medium to fine SAND, some Silt, some coarse to fine Gravel, with trace plastic		S-1		40	S-1		0.0 0.2 0.1 0.1	
	1	Fill: Dark brown coarse to fine SAND, some Clayey Silt, with frequent wood fragments	5						0.1	
		Fill: Dark gray Silty CLAY, little medium to fine Sand, little coarse to fine Gravel		S-2		24	SB-104(7-7.5) S-2		0.1 0.5	
		Fill: Dark gray Silty CLAY, some coarse to fine Sand, little coarse to fine Gravel							0.5 0.2	
	-4	BOREHOLE COMPLETED AT 10± FEET	10						0.1	
	-9		15							
	-14		20							
	-19		25							
	-24		30							

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-105

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.075150 **LONGITUDE** -73.864074

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 7.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 5.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil, with occasional roots								
		Fill: Brown medium to fine SAND, some Silt, little medium to fine Gravel							0.0	
									0.0	
				S-1		48	S-1			
		Fill: Dark brown Silty CLAY, little coarse to fine Gravel, with concrete and wood fragments							0.1	
									0.1	
	2	Fill: Tan-brown Clayey SILT, some medium to fine Sand, little medium to fine Gravel	5						0.1	
		Fill: Dark gray Silty CLAY, trace fine Sand, with Roots							0.1	
									0.1	
				S-2		48	S-2			
							SB-105(8-8.5)		0.2	
		Fill: Same as above with little coarse to fine Gravel							0.2	
	-3		10						0.1	
		BOREHOLE COMPLETED AT 10± FEET								
	-8		15							
	-13		20							
	-18		25							
	-23		30							

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-106

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.075014 **LONGITUDE** -73.864136

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 7.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 5.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil, with occasional roots								
		Fill: Brown medium to fine SAND, some Silt, little medium to fine Gravel, with coal fragments		S-1		48	S-1		0.0 0.0 0.0 0.0	
	2	Fill: Gray medium to fine SAND, some Silt, little coarse to fine Gravel	5						0.0	
		Fill: Tan-gray Clayey SILT, some coarse to fine Sand, little medium to fine Gravel, with Roots					SB-106(5.5-6)		0.1	
				S-2		49	S-2		0.1 0.1 0.1	
	-3	BOREHOLE COMPLETED AT 10± FEET	10						0.1	
	-8		15							
	-13		20							
	-18		25							
	-23		30							

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-107

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-18-2023	**COMPLETED**	12-18-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822 DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.074587	**LONGITUDE**	-73.863176
CASING DIAMETER	4.00 in	**GROUND ELEVATION**	11.0±
CASING DEPTH	14.0 ft	**OUTER DIAMETER**	
FINAL DEPTH	25.8± ft	**GROUNDWATER LEVELS:**	
		AT TIME OF DRILLING	8.00± ft
		AT END OF DRILLING	
		AFTER DRILLING	

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		6" Topsoil							
		Fill: Brown coarse to fine SAND, some Silty Clay, with Grass and Roots		S-1		14	1-2-2-1 (4)		PID = 0.0
		Brown coarse to fine SAND, little Silty Clay, trace fine Gravel, with Roots and Grass		S-2		14	9-13-15-25 (28)		PID = 0.0 Moist
		Brown coarse to fine SAND, some Clayey Silt		S-3		4	50/4"		
	6		5						Offset at 6" Drill to 6'
		Brown coarse to fine SAND, little coarse to fine Gravel, trace Silty Clay		S-4		15	11-15-15-22 (30)		
		Same as above		S-5		14	12-14-32-5 (46)		PID = 0.0 Wet
	1	Gray-brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay	10	S-6		5	8-12-17-13 (29)		PID = 0.0 Wet
		Same as above		S-7		4	11-13-16-21 (29)		PID = 0.0 Wet
		Same as above		S-8		24	22-12-31-12 (43)		PID = 0.0 Wet Drill to 20'
	-4		15						
	-9	Brown/gray coarse to fine SAND, and medium to fine Gravel, trace Silty Clay	20	S-9		8	19-23-22-22 (45)		PID = 0.0 Wet Drill to 25'
	-14	Gray-brown medium to fine Gravel, and coarse to fine Sand, trace Silty Clay	25	S-10		5	48-50/3"		Grinding PID = 0.0 Wet
		BORING COMPLETED AT 25.75± FEET							
	-19		30						

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BOREHOLE NUMBER: SB-108

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88 **GROUND ELEVATION** 9.0±
DATE STARTED	12-18-2023 **COMPLETED** 12-18-2023	**DRILLING METHOD**	Mud Rotary
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	**OUTER DIAMETER**
EQUIPMENT	7822DT Rig	**ROTARY BIT DIAMETER**	3.88 in **GROUNDWATER LEVELS:**
DRILLING FOREMAN	Brian **HELPER** Paul	**CASING DIAMETER**	4.00 in ▽ **AT TIME OF DRILLING** 5.00± ft
LOGGED BY	GM **CHECKED BY** J. Weber	**CASING DEPTH**	20.0 ft ▼ **AT END OF DRILLING**
LATITUDE	41.074695 **LONGITUDE** -73.863528	**FINAL DEPTH**	51.2± ft ▽ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		6" Topsoil							
		Fill: Brown coarse to fine SAND, little medium to fine Gravel, little Clayey Silt, with Grass and Roots		S-1		15	WOH-1-6-9 (7)		PID = 0.0 Moist
		Fill: Gray-brown medium to fine SAND, some Silty Clay		S-2		15	8-9-5-6 (14)		PID = 0.0 Moist
	4	Fill: Gray-brown coarse to fine SAND, little Silty Clay	5	S-3		14	3-10-16-10 (26)		PID = 0.0 Wet
		Fill: Gray-brown coarse to fine SAND, little medium to fine Gravel, some Silty Clay, with Organics		S-4		23	7-7-9-9 (16)		PID = 0.0 Wet
		Fill: Same as above, with Shells		S-5		18	7-5-4-6 (9)		PID =0.0 Wet
	-1	Fill: Same as above, with Organics and Shells	10	S-6		19	5-5-7-7 (12)		PID = 0.0 (-200) = 25.5% W.C. = 26.9%
		Fill: Gray/tan-brown coarse to fine SAND, some medium to fine Gravel, little Silty Clay, small brick fragments		S-7		15	4-4-6-5 (10)		PID = 0.0 Wet
	-6	Same as above, with Organics coal fragments	15	S-8		21	3-3-4-9 (7)		PID = 0.0 Wet Drill to 20' (easy)
	-11	Gray-brown Silty CLAY, little fine Sand	20	S-9		23	2-1-2-2 (3)		PID = 0.0 W.C. = 28.2%
		ıs above, with shell fragments		U-1		24			
	-16	Gray-brown coarse to fine SAND, some Silty Clay, trace fine Gravel, grading to Silty CLAY, little medium to fine fine Sand	25	S-10		20	1-3-6-15 (9)		PID = 0.0 Wet Drill to 30' W.C. = 25.2%
	-21	Gray-brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay	30	S-11		12	7-28-20-9 (48)		PID = 0.0 Wet Drill to 35'

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BOREHOLE NUMBER: SB-108

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88
GROUND ELEVATION 9.0 ft ±

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		Gray-brown/white coarse to fine SAND, some Silty Clay, little medium to fine Gravel		S-12		8	15-5-6-7 (11)		
	-31	Gray-brown coarse to fine GRAVEL, and coarse to fine Sand, trace Silty Clay	40	S-13		6	27-50/4"		PID = 0.0 Wet Possible weathered rock or glacial till Drill to 45', grinding
	-36	Same as above, medium to fine GRAVEL	45	S-14		4	9-22-50/5"		Same as above Drill to 50'
	-41	Gray-brown coarse to fine GRAVEL, some coarse to fine Sand, trace Silty Clay	50	S-15		5	7-7-50/3"		
		BORING COMPLETED AT 51.25± FEET DUE TO REFUSAL							
	-46		55						
	-51		60						
	-56		65						
	-61		70						

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-109

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.074633 **LONGITUDE** -73.863783

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 9.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 6.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		3" Asphalt								
		Fill: Brown medium to fine SAND, some Silt, little medium to fine Gravel							0.0	
		Fill: Dark brown Silty CLAY, trace fine Sand							0.0	
		Fill: Gray medium to fine SAND, little fine Gravel, little Silt		S-1			S-1		0.1	
									0.0	
	4		5						0.0	
				S-2			S-2		0.0	
									0.0	
		Fill: Gray Silty CLAY, little fine Sand, with Organics							0.0	
		Fill: Dark gray coarse to fine SAND, some medium to fine Gravel, some Silt, with coal, glass, and wood fragments							0.0	
	-1		10				SB-109(9.5-10)		0.0	
		BOREHOLE COMPLETED AT 10± FEET								
	-6		15							
	-11		20							
	-16		25							
	-21		30							

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BOREHOLE NUMBER: SB-110

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.074407 **LONGITUDE** -73.864011

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 10.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 6.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil							0.0	
		Fill: Brown SILT, some medium to fine Sand, trace medium to fine Gravel, with Roots							0.0	
		Fill: Same as above with Cobbles							0.0	
		Fill: Brown SILT, little coarse to fine Sand, little medium to fine Gravel, with Roots		S-1		36	S-1		0.0	
		Fill: Brown coarse to fine SAND, little medium to fine Gravel, trace Silt							0.0	
	5	Fill: Gray SILT, some medium to fine Sand	5				SB-110(4.5-5)		0.0	
		Fill: Gray coarse to fine SAND, little Silt, little medium to fine Gravel, with shell fragments							0.1	
		Fill: Grayish brown SILT, some medium to fine Sand		S-2		54	S-2		0.1	
		Fill: Gray coarse to fine SAND, some Silt, some medium to fine Gravel, with shell fragments, Organics, and plastic							0.1	
									0.1	
	0	BOREHOLE COMPLETED AT 10± FEET	10						0.1	
	-5		15							
	-10		20							
	-15		25							
	-20		30							

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BOREHOLE NUMBER: SB-111

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-15-2023	**COMPLETED**	12-15-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.074265	**LONGITUDE**	-73.863349
GROUND ELEVATION	12.0±	**OUTER DIAMETER**	
CASING DIAMETER	4.00 in	**GROUNDWATER LEVELS:**	
CASING DEPTH	19.0 ft	**AT TIME OF DRILLING**	7.00± ft
FINAL DEPTH	27.0± ft	**AT END OF DRILLING**	
		AFTER DRILLING	

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		6" Asphalt							
		6" RCA Subgrade							
		Fill: Gray-brown/tan-brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay, concrete at top of spoon		S-1		16	8-9-9-3 (18)		Envir Taken
		Fill: Gray-brown coarse to fine SAND, little Silty Clay, trace fine Gravel							PID = 0.0
				S-2			7-7-12-14 (19)		PID = 0.0 Moist
	7	Fill: Same as above, grading to medium to fine Sand	5						
				S-3		21	8-8-11-12 (19)		PID = 0.0
		Brown/gray-brown coarse to fine SAND, little medium to fine Gravel, trace Silty Clay							Moist
				S-4		24	8-10-12-17 (22)		PID = 0.0 Wet
	2	Brown/gray-brown coarse to fine SAND, little coarse to fine Gravel, trace Silty Clay	10	S-5		24	14-10-12-8 (22)		PID = 00.0 Wet
		Brown/gray-brown coarse to fine SAND, little medium to fine Gravel, trace Silty Clay		S-6		22	7-10-17-15 (27)		PID = 0.0 Wet
				S-7		24	12-13-14-28 (27)		PID = 0.0
		Same as above							Wet
	-3		15						Drill to 20'
									Grinding
	-8	Gray-brown medium to fine GRAVEL, some coarse to fine Sand, trace Silty Clay	20	S-8		3	50/4"		Wet
									Drill to 25'
									Grinding
	-13	Brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay	25	S-9		2	13-16-21-49 (37)		
		BORING COMPLETED AT 27± FEET							
	-18		30						

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-112

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-18-2023	**COMPLETED**	12-18-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER		**AUGER INNER DIAMETER**	
EQUIPMENT	7822DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.074216	**LONGITUDE**	-73.863834
CASING DIAMETER	4.00 in	**GROUND ELEVATION**	10.0±
CASING DEPTH	19.0 ft	**OUTER DIAMETER**	
FINAL DEPTH	51.5± ft	**GROUNDWATER LEVELS:**	
		▽ **AT TIME OF DRILLING**	5.00± ft
		▼ **AT END OF DRILLING**	
		▼ **AFTER DRILLING**	

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		6" Asphalt							
		6" RCA Subgrade							
		Fill: Brown coarse to fine SAND, some medium to fine Gravel, little Silty Clay							PID = 0.0
		Fill: Gray-brown coarse to fine SAND, little Silty Clay, little fine Gravel		S-1		13	9-8-7-10 (15)		PID = 0 Moist
									PID = 0.0
	5		5	S-2		15	13-12-10-11 (22)		Wet
		Fill: Gray-brown coarse to fine Sand, some Silty Clay, trace fine Gravel							Env Taken
		Fill: Dark gray/black medium to fine Sand and Silt, with Organics		S-3		12	9-11-10-8 (21)		PID = 0.0 Wet
		Fill: Gray-brown coarse to fine SAND, and Silty Clay, little coarse to fine Gravel, with Shell fragments		S-4		16	7-7-7-7 (14)		PID = 0 Wet
	0	Fill: Tan/gray-brown coarse to fine SAND, some Silty Clay, trace medium to fine Gravel	10	S-5		11	4-5-5-5 (10)		PID = 0 Moist
		Fill: Gray-brown coarse to fine SAND, little medium to fine Gravel, trace Silty Clay, possible shell fragments		S-6		15	7-5-6-8 (11)		PID = 0 Moist
		Tan/gray-brown medium to fine SAND, and Silty Clay							
	-5		15	S-7		24	7-7-8-11 (15)		Drill to 20'
	-10	Gray-brown Silty CLAY, little medium to fine Sand	20	S-8		24	WOH-WOH-WOH-2		LL = 33% PL = 20% PI = 13% W.C. = 29.1%
				U-1					
	-15	Same as above	25						Shelby tube U-1, No recovery
									Drill to 30'
	-20	Gray-brown Clayey SILT, trace medium to fine Sand	30	S-10		17	3-1-1-3 (2)		PID = 0.0 (-200) = 92% W.C. = 31.3%
									Drill to 35'

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-112

PROJECT NAME Franklin Courts Redevlopment
PROJECT LOCATION Tarrytown, New York
PROJECT NO. 12345
ELEVATION DATUM NAVD88
GROUND ELEVATION 10.0 ft ±

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
									PID = 0.0
		Gray-brown/red medium to fine SAND, some coarse to fine Gravel, some Silty Clay		S-11		10	6-4-21-11 (25)		Moist Drill to 40' Grinding
	-30	No Recovery	40			0	8-7-17-16/-18"		Drill to 45' Grinding
	-35	Gray coarse to fine GRAVEL and coarse to fine Sand, litle Silty Clay	45	S-12		3	10-14-19-29 (33)		Moist Drill to 50' Grinding
	-40	Gray-brown coarse to fine SAND, some medium to fine Gravel, little Silty Clay	50	S-13			33-41-50/5"		
		BORING COMPLETED AT 51.5± FEET DUE TO REFUSAL							
	-45		55						
	-50		60						
	-55		65						
	-60		70						

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-113

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.074193 **LONGITUDE** -73.864061

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 9.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 6.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Asphalt								
		Fill: Brown coarse to fine SAND, some medium to fine Gravel, little Silt, with Asphalt fragments		S-1		36	S-1		0.0 0.1 0.0	
		Fill: Tan coarse to fine SAND, little fine Gravel, little Silt								
		Fill: Dark gray medium to fine SAND, little Silt, little medium to fine Gravel, with shell fragments							0.1	
	4		5						0.0	
				S-2		40	S-2		0.0 0.0 0.0	
		Fill: Dark brown medium to fine SAND, some Silt, little fine Gravel					SB-113(8.5-9)		0.0	
		Fill: Dark gray coarse to fine SAND, some Silt, little medium to Gravel, with Shell fragments, fabric and Organics							0.1	
	-1	BOREHOLE COMPLETED AT 10± FEET	10						0.1	
	-6		15							
	-11		20							
	-16		25							
	-21		30							

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-114

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.074148 **LONGITUDE** -73.864344

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 7.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 6.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil with Roots								
		Fill: Brown SILT, some coarse to fine SAND, little coarse to fine Gravel							0.0	
		Fill: Brown coarse to fine SAND, some medium to fine Gravel, trace Silt							0.1	
		Fill: Gray coarse to fine SAND, some Silt, some coarse to fine Gravel, with Shell fragments		S-1		40	S-1		0.1	
							SB-114(4-4.5)		0.1	
	2		5						0.2	
				S-2		48	S-2		0.0	
									0.1	
		Fill: Gray CLAY, trace fine Sand, with Roots							0.1	
		Fill: Dark gray coarse to fine SAND, some Silt, some coarse to fine Gravel, with shell fragments, fabric, and wood fragments							0.1	
	-3		10						0.2	
		BOREHOLE COMPLETED AT 10± FEET								
	-8		15							
	-13		20							
	-18		25							
	-23		30							

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-115

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-14-2023	**COMPLETED**	12-14-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822 DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.073886	**LONGITUDE**	-73.863986
GROUND ELEVATION	8.0±		
DRILLING METHOD	Mud Rotary		
OUTER DIAMETER			
CASING DIAMETER	4.00 in	**GROUNDWATER LEVELS:**	
CASING DEPTH	18.0 ft	**AT TIME OF DRILLING**	8.00± ft
FINAL DEPTH	43.0± ft	**AT END OF DRILLING**	
		AFTER DRILLING	

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		4" Topsoil							
		Fill: Tan-brown coarse to fine SAND, little Silty Clay, little medium to fine Gravel		S-1		22	1-2-4-9 (6)		PID = 0.0
		Fill: Brown/dark gray coarse to fine SAND, little Silty Clay, little fine Gravel		S-2		17	4-7-7-6 (14)		PID = 0.3
	3	Fill: Gray/brown coarse to fine SAND, little medium to fine Gravel, little Silty Clay with Organics	5	S-3		22	9-10-10-11 (20)		PID = 0.0
		Fill: Same as above, without organics		S-4		21	8-12-15-16 (27)		PID = 0.1 Moist
		Fill: Dark gray coarse to fine SAND, some medium to fine Gravel, trace Silt, with shell fragments		S-5		10	12-16-16-15 (32)		PID = 0.3 (-200) = 9.5% W.C. = 23.8%
	-2	Fill: Gray-brown coarse to fine SAND, and medium to fine Gravel	10						Drill grinding
				S-6		4	3-2-1-2 (3)		PID = 0.0
		Dark gray Silty CLAY, some medium to fine Sand, little fine Gravel, with Shell fragments, and Organics		S-7		17	5-3-6-7 (9)		PID = 0.2
	-7	Dark gray medium to fine SAND, some silty clay	15	S-8		20	3-3-2-4 (5)		PID = 0.1 (-200) = 25.1% W.C. = 29.2%
									PID = 0.9
		Gray-brown Silty CLAY, trace fine Sand		U-1					Shelby tube 18
	-12	Gray brown Silty CLAY, trace fine Sand	20	S-10		22	WOH-4-6-6 (10)		PID = 0.1 LL = 24% PL = 15% PI = 9% W.C. = 26.6%
	-17	Gray-brown Silty CLAY, little medium to fine Sand	25	S-11		23	1-1-2-5 (3)		PID = 0.1 Drill to 30'
	-22	Gray-brown Silty CLAY, little fine Gravel, little medium to fine Sand	30	S-12		3	6-22-27-50/4" (49)		PID = 0.1 Drill to 35' Grinding at 34'-35'

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GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-115

PROJECT NAME Franklin Courts Redevlopment
PROJECT LOCATION Tarrytown, New York
PROJECT NO. 12345
ELEVATION DATUM NAVD88
GROUND ELEVATION 8.0 ft ±

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		Gray-brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay		S-13		3	50/3"		PID = 0.0 Drill to 40' Grinding
	-32	Same as above	40	S-14		6	42-47-50/5"		PID = 0.0 Drill to 43'
		Gray-brown medium to fine GRAVEL, some coarse to fine Sand, trace Silty Clay		S-15			50/2"		PID = 0.0
		BORING COMPLETED AT 43± FEET DUE TO SPLIT SPOON REFUSAL							
	-37		45						
	-42		50						
	-47		55						
	-52		60						
	-57		65						
	-62		70						

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-116

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-18-2023	**COMPLETED**	12-18-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822 DT Rig	**ROTARY BIT DIAMETER**	3.88 in
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.073385	**LONGITUDE**	-73.863698
		CASING DIAMETER	4.00 in
		CASING DEPTH	19.0 ft
		FINAL DEPTH	25.9± ft

GROUND ELEVATION 10.0±
OUTER DIAMETER
GROUNDWATER LEVELS:
AT TIME OF DRILLING 5.00± ft
AT END OF DRILLING
AFTER DRILLING

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		4" Topsoil							
		Fill: Brown coarse to fine SAND, little fine Gravel, little Silty Clay, with Grass		S-1		12	2-5-13-14 (18)		PID = 0.0
		Fill: Gray-brown coarse to fine SAND, little Silty Clay, trace fine Gravel		S-2		12	12-22-12-15 (34)		PID = 0.0 Moist at 3'
	5	Fill: Brown/gray-brown coarse to fine SAND, little medium to fine Gravel, trace Silty Clay	5	S-3		15	19-17-19-11 (36)		PID = 0.0 Wet at 5'
		Brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay		S-4		21	6-7-7-12 (14)		PID = 0.0 Wet
		Same as above		S-5		13	5-6-9-11 (15)		
	0	Brown coarse to fine SAND, some medium to fine Gravel, trace Silty Clay	10	S-6		13	5-23-8-9 (31)		Envi taken
		Brown coarse to fine SAND, little medium to fine Gravel, trace Silty Clay		S-7		19	10-8-7-18 (15)		
		Same as above							
	-5		15	S-8		22	7-10-18-16 (28)		Drill to 20'
	-10	Brown coarse to fine SAND, little medium to fine Gravel, little Silty Clay	20	S-9		6	2-4-3-1 (7)		Drill to 25'
	-15	Dark-brown/gray-brown coarse to fine Gravel, and coarse to fine Sand, trace Silty Clay	25	S-10		8	18-50/4"		
		BORING COMPLETED AT 25.9± FEET							
	-20		30						

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-117

PROJECT NAME	Franklin Courts Redevlopment	**PROJECT LOCATION**	Tarrytown, New York
PROJECT NO.	12345	**ELEVATION DATUM**	NAVD88
DATE STARTED	12-18-2023	**COMPLETED**	12-18-2023
DRILLING CONTRACTOR	Coastal	**SAMPLE HAMMER**	Auto
SAMPLER	SPT	**AUGER INNER DIAMETER**	
EQUIPMENT	7822 DT Rig	**ROTARY BIT DIAMETER**	
DRILLING FOREMAN	Brian	**HELPER**	Paul
LOGGED BY	GM	**CHECKED BY**	J. Weber
LATITUDE	41.073498	**LONGITUDE**	-73.864152

GROUND ELEVATION	8.0±
DRILLING METHOD	Mud Rotary
OUTER DIAMETER	
CASING DIAMETER	4.00 in
CASING DEPTH	
FINAL DEPTH	38.2± ft

GROUNDWATER LEVELS:
- ▽ **AT TIME OF DRILLING** 6.00± ft
- ▼ **AT END OF DRILLING**
- ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		4" Topsoil							
		Fill: Brown medium to fine SAND, some Silt, little medium to fine Gravel		S-1		23	3-3-5-9 (8)		PID = 0.0
		Same as above, with trace Roots		S-2		8	6-12-17-12 (29)		PID = 0.0
		Fill: Brown Silt, little medium to fine Sand, trace Gravel, with Roots							PID = 0.0
	3	Fill: Gray coarse to fine Sand, little fine Gravel, little Silt with Shell fragments	5	S-3		17	14-19-20-16 (39)		Moist
		Same as above, grading to medium to fine SAND, some Silt, trace medium to fine Gravel		S-4		21	17-18-10-16 (28)		PID = 0.0 (-200) = 20.8% W.C. = 27.7%
		Same as above		S-5		22	10-8-16-15 (24)		PID = 0.2 Wet Env Sam (9-9.5) W.C. = 80.7% Begin mud rotary at 10'
		Fill: Gray/dark brown Silty CLAY, with Organics							
	-2	No Recovery	10	S-6			WOH-WOH-2-2		
		Black Silty CLAY, trace fine Sand, with Organics		S-7		22	WOH-WOH-1-5		PID = 0.0 (-200) = 77.2% W.C. = 76.9%
		Same as above							PID = 0.0
	-7	Gray-Black coarse to fine SAND, some Silty Clay, trace fine Gravel	15	S-8		23	6-5-4-5 (9)		Wet
				S-9		20	2-2-4-7 (6)		(-200) = 26.2% W.C. = 28.7% PID = 0.0 Wet
									Drill to 20'
	-12	Gray Silty CLAY, some medium to fine Sand	20	S-10		18	WOH-1-2-6 (3)		(-200) = 54.4% W.C. = 22.7%
									Drill to 25'
	-17	Gray Silty CLAY, little medium to fine Gravel, trace medium to fine Sand	25	S-11		6	10-50/4"		PID = 0.0
									Drill to 30'
	-22	Gray-brown Silty Clay, little medium to fine Gravel, trace medium to fine Sand	30	S-12		8	38-50/3"		
									Drill to 35'

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-117

PROJECT NAME Franklin Courts Redevlopment
PROJECT LOCATION Tarrytown, New York
PROJECT NO. 12345
ELEVATION DATUM NAVD88
GROUND ELEVATION 8.0 ft ±

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		Gray-brown coarse to fine SAND, some medium to fine Gravel, little Silt		S-13		9	16-8-9-10 (17)		PID = 0.0
									Drill to 40'
									Grinding at 38'
		Dark brown coarse to fine Gravel, trace Sand, trace Silt		S-14		2	50/3"		Weathered Gneiss Rock fragments
		BORING COMPLETED AT 38.25± FEET DUE TO SPLIT SPOON REFUSAL							
	-32		40						
	-37		45						
	-42		50						
	-47		55						
	-52		60						
	-57		65						
	-62		70						

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-118

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.073487 **LONGITUDE** -73.864267

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 12.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 6.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil								
		Fill: Brown medium to fine SAND, some Silt, little coarse to fine Gravel, with roots		S-1		38	S-1		0.0 0.0 0.0 0.0	
		Fill: Gray medium to fine SAND, some Silt								
	7		5						0.0	
		Fill: Gray coarse to fine SAND, some Silt, some medium to fine Gravel		S-2		20	S-2		0.0 0.0 0.0	
		Fill: Gray CLAY, little fine Sand, trace fine Gravel							0.0 0.0	
	2	BOREHOLE COMPLETED AT 10± FEET	10						0.0	Offset approximately 3' for installation of soil vapor point SV-102 after completion of the boring. Unable to collect vapor sample.
	-3		15							
	-8		20							
	-13		25							
	-18		30							

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-119

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.073623 **LONGITUDE** -73.864421

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 8.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 6.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil with Roots								
		Fill: Brown SILT, some medium to fine Sand, little coarse to fine Gravel, with Roots		S-1		42	S-1		0.0 0.0 0.0 0.0	
	3	Fill: Gray SILT, little medium to fine Sand	5						0.0	
		Fill: Gray medium to fine SAND, some coarse to fine Gravel, little Silty Clay		S-2		60	S-2		0.1 0.1	
		Fill: Gray coarse to fine SAND, some Silty Clay					SB-119(8-8.5)		0.1 0.1	
	-2	BOREHOLE COMPLETED AT 10± FEET	10						0.1	
	-7		15							
	-12		20							
	-17		25							
	-22		30							

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-120

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.073289 **LONGITUDE** -73.846448

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 10.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 5.00± ft
CASING DEPTH ▼ **AT END OF DRILLING** 6.00± ft
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil with Roots								
		Fill: Brown SILT, little fine Sand, little coarse to fine Gravel							0.1	
									0.1	
				S-1		36	S-1			
		Fill: Dark brownish black SILT, little medium to fine Sand, trace Gravel, with Roots					SB-120(3-3.5)		0.1	
		Fill: Gray medium to fine SAND, some Silt, little fine Gravel							0.1	
	5		5						0.1	
		Fill: Brownish gray CLAY, some medium to fine Sand, trace Gravel							0.1	
		Fill: Gray coarse to fine SAND, some coarse to fine Gravel, little Silt, with shell fragments, fabric and tile							0.1	
				S-2		60	S-2			
									0.1	
									0.1	
	0	BOREHOLE COMPLETED AT 10± FEET	10						0.1	Boring converted to temporary groundwater monitoring well GW-101 after completion of the boring.
	-5		15							
	-10		20							
	-15		25							
	-20		30							

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: SB-121

PROJECT NAME Franklin Courts Redevlopment
PROJECT NO. 12345
DATE STARTED 12-13-2023 **COMPLETED** 12-13-2023
DRILLING CONTRACTOR Coastal
SAMPLER Direct Push
EQUIPMENT 7822DT Rig
DRILLING FOREMAN Brian **HELPER** Paul
LOGGED BY T. Jodexnis **CHECKED BY** J. Weber
LATITUDE 41.073246 **LONGITUDE** -73.864611

PROJECT LOCATION Tarrytown, New York
ELEVATION DATUM NAVD88 **GROUND ELEVATION** 8.0±
DRILLING METHOD Direct Push
SAMPLE HAMMER
AUGER INNER DIAMETER **OUTER DIAMETER**
ROTARY BIT DIAMETER **GROUNDWATER LEVELS:**
CASING DIAMETER ▽ **AT TIME OF DRILLING** 5.00± ft
CASING DEPTH ▼ **AT END OF DRILLING**
FINAL DEPTH 10.0± ft ▼ **AFTER DRILLING**

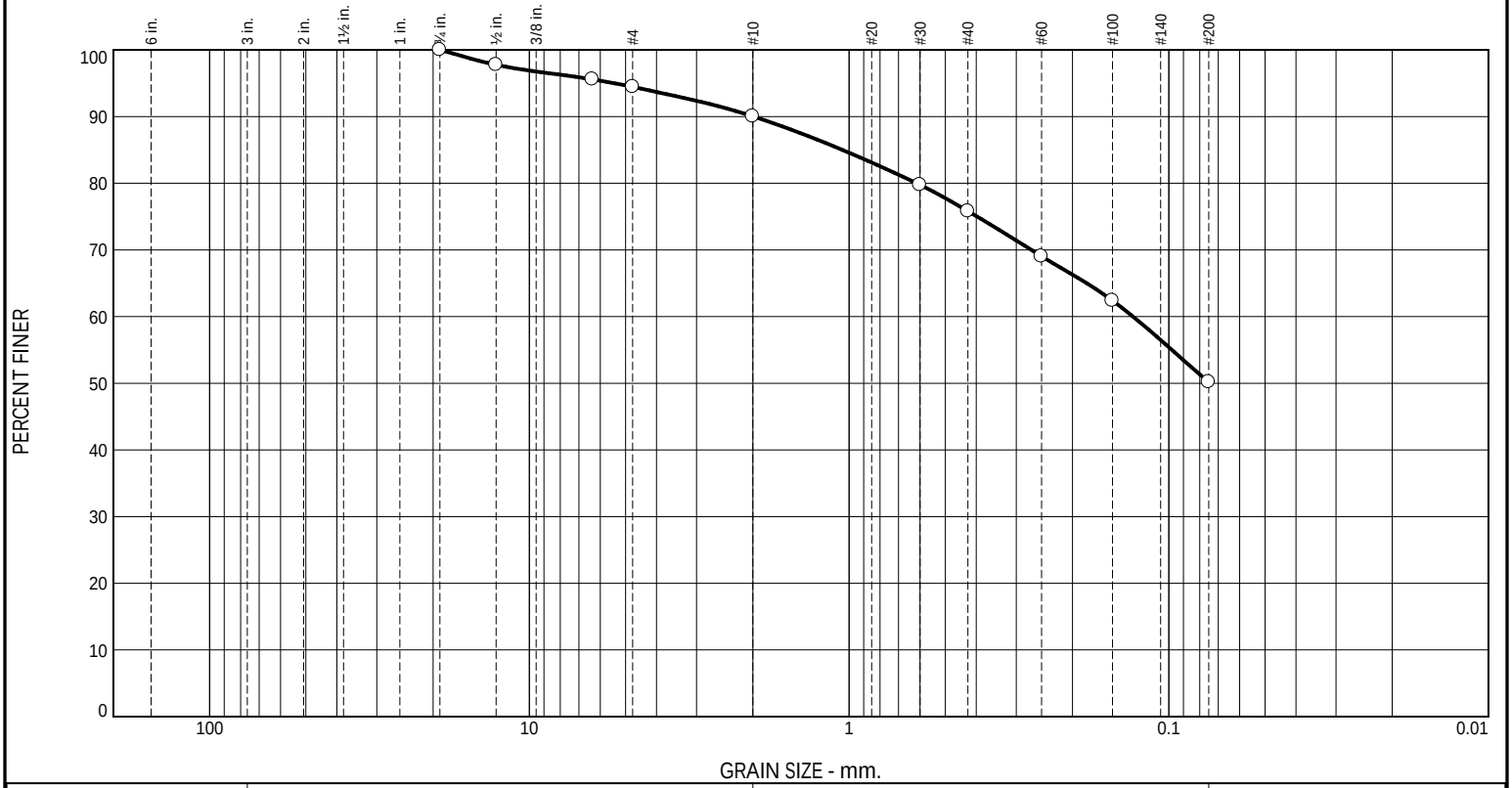
Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sleeve Number	Sample Data: Type	Sample Data: Rec. (in)	Sample Data: Environmental Soil Sample Name	Sample Data: Blows/6-in Core time/ft	Sample Data: PID (ppm)	Remarks
		Topsoil with Roots								
		Fill: Brown SILT, some medium to fine Sand, trace coarse to fine Gravel, with Roots							0.0	
		Fill: Tan-gray coarse to fine SAND, some fine Gravel, little Silt							0.0	
		Fill: Dark gray Silty CLAY, little fine Sand, with Organics		S-1		38	S-1		0.0	
		Fill: Gray coarse to fine SAND, some medium to fine Gravel, some Silt, with Shell fragments							0.0	
	3		5						0.0	
				S-2		60	S-2		0.0	
		Fill: Gray CLAY, trace fine Gravel, trace fine Sand, with wood fragments							0.0	
							SB-121(9-9.5)		0.0	
	-2		10						0.0	
		BOREHOLE COMPLETED AT 10± FEET								
	-7		15							
	-12		20							
	-17		25							
	-22		30							

Appendix B

Geotechnical Laboratory Testing
Results

Particle Size Distribution Report

ASTM D6913



% +3"	% Gravel=**10.0**			% Sand=**39.8**			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	3.2	6.8	10.2	10.7	18.9	50.2

Test Results (ASTM D6913)

Sieve Size or Diam. (**in.**)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
.75	100.0			
0.5	97.8			
0.25	95.6			
#4	94.5			
#10	90.0			
#30	79.8			
#40	75.8			
#60	69.1			
#100	62.4			
#200	50.2			

* (no specification provided)

Material Description

Gray-brown Clayey SILT, and coarse to fine Sand, trace medium to fine Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.9886 D_{85}= 1.0486 D_{60}= 0.1294
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks

Water Content(%)= 17.0

Location: SB-102
Sample Number: S-7 Depth: 12-14 Sample Date: 01/02/2024

SESI CONSULTING ENGINEERS

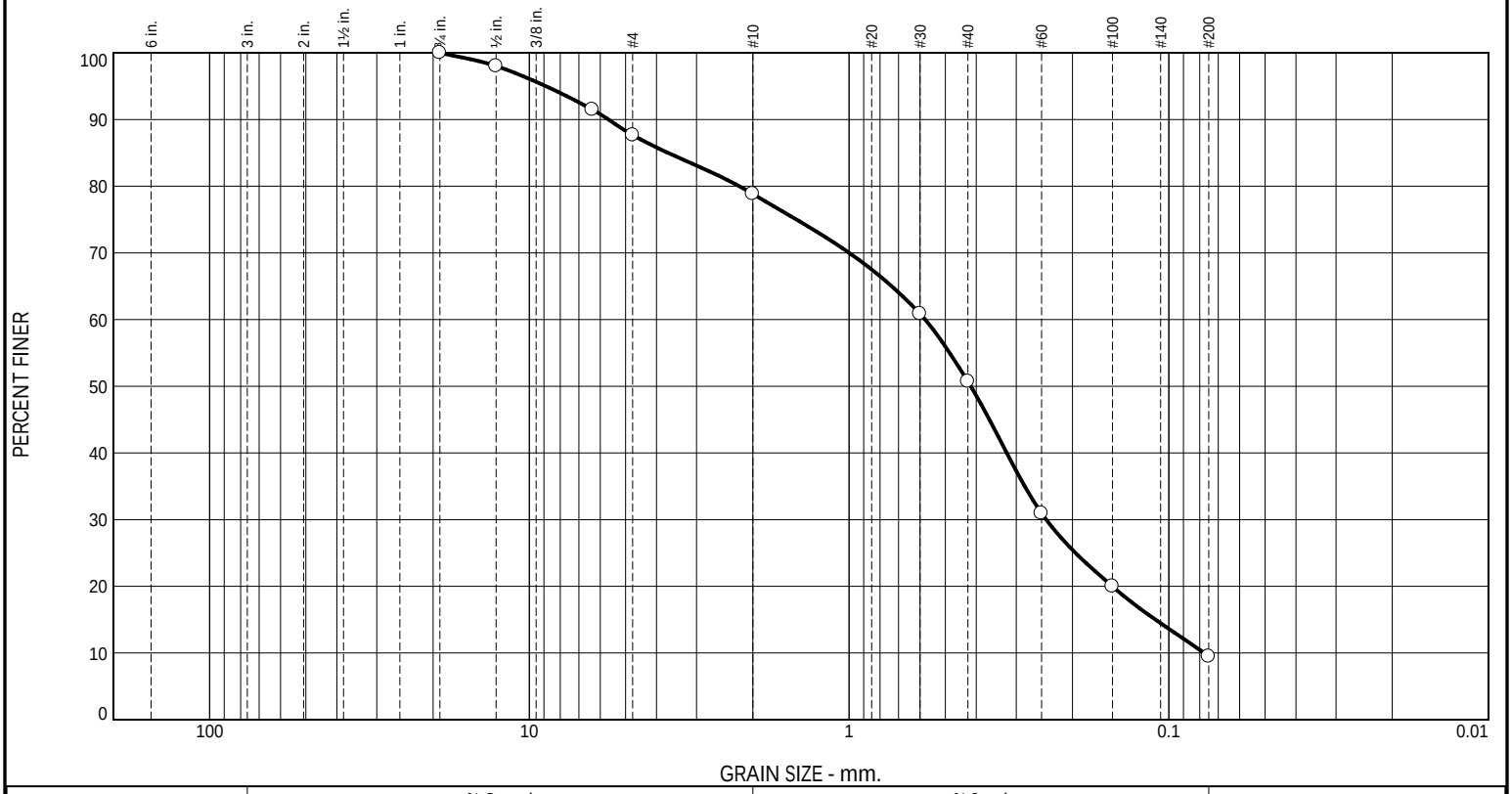
Client: WBP Development LLC
Project: Franklin Courts Redevelopment

Project No: 12345 Figure 1

Tested By: NCO Checked By: MLT

Particle Size Distribution Report

ASTM D6913



% +3"	% Gravel=**21.2**			% Sand=**69.3**			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	4.3	16.9	17.9	29.9	21.5	9.5

Test Results (ASTM D6913)

Sieve Size or Diam. (**in.**)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
.75	100.0			
0.5	98.0			
0.25	91.5			
#4	87.7			
#10	78.8			
#30	60.9			
#40	50.7			
#60	31.0			
#100	20.0			
#200	9.5			

* (no specification provided)

Material Description

Dark gray coarse to fine SAND, some medium to fine Gravel, trace Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 5.6534 D_{85}= 3.6802 D_{60}= 0.5781
D_{50}= 0.4161 D_{30}= 0.2417 D_{15}= 0.1101
D_{10}= 0.0776 C_u= 7.45 C_c= 1.30

Classification

USCS= AASHTO=

Test Remarks

Water Content(%)= 23.8

Location: SB-115
Sample Number: S-5 Depth: 8-10 Sample Date: 01/02/2023

SESI CONSULTING ENGINEERS

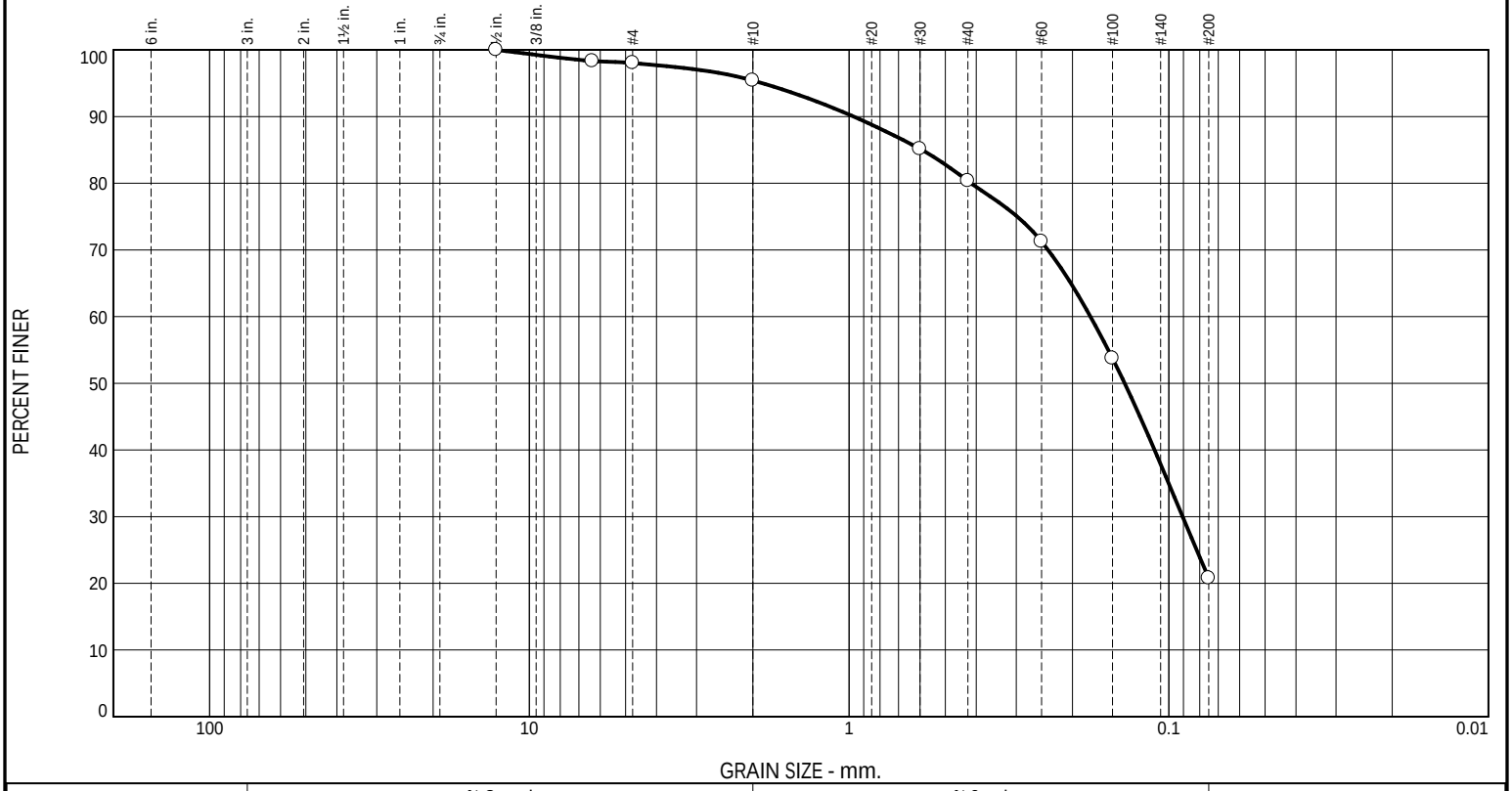
Client: WBP Development LLC
Project: Franklin Courts Redevelopment

Project No: 12345 Figure 2

Tested By: MLT Checked By: MLT

Particle Size Distribution Report

ASTM D6913



% +3"	% Gravel=**4.6**			% Sand=**74.6**			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	0.7	3.9	10.2	13.9	50.5	20.8

Test Results (ASTM D6913)

Sieve Size or Diam. (**in.**)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.5	100.0			
0.25	98.3			
#4	98.0			
#10	95.4			
#30	85.2			
#40	80.4			
#60	71.3			
#100	53.8			
#200	20.8			

* (no specification provided)

Material Description

Brown coarse to fine SAND, some Silty Clay, trace medium to fine Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.9671 D_{85}= 0.5921 D_{60}= 0.1759
D_{50}= 0.1373 D_{30}= 0.0905 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Test Remarks

Water Content(%)= 27.7

Location: SB-117
Sample Number: S-4 Depth: 6-8 Sample Date: 12/26/2023

SESI CONSULTING ENGINEERS

Client: WBP Development LLC
Project: Franklin Courts Redevelopment

Project No: 12345 Figure 3

Tested By: TF Checked By: MLT

Skylands Testing, LLC

LOG OF TUBE

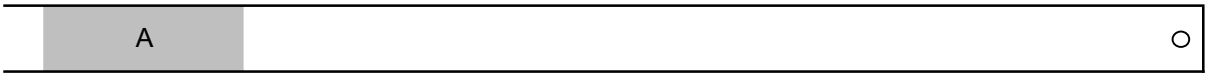
Project SESI #12345 - Franklin Courts Redevelopment Job No. 23-208

Location of Project Tarrytown, NY

Tested By RS / EJS Test Date 12-28-2023

BOTTOM TOP

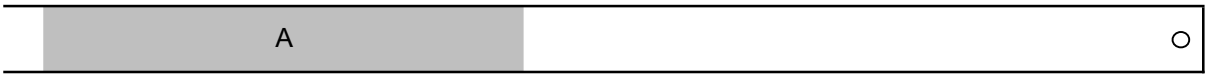
Boring SB-108 Sample U-1 Depth 22-24 ft. Rec.* 6½" / 5"



A - Gray CLAY, little fine Sand (sandy clay, USCS)

Notes:
Drill rig water jet hole extended 3 in. into top of sample.

Boring SB-112 Sample U-1 Depth 24-26 ft. Rec.* 9¼" / 11¾"



A - Gray and red-brown CLAY and Silty CLAY; f Gravel ±4 in. up from bottom

Notes:

Boring SB-115 Sample U-1 Depth 18-20 ft. Rec.* 23¾" / 23½"

A - Red-gray Silty CLAY, trace c-m Gravel

Notes:

* Pre- / Post- sample extrusion. NMF - no meaningful figure
Soil descriptions per D.M. Burmister, unless otherwise noted.

UNDISTURBED SAMPLE PHOTOS

SESI – Franklin Courts Redevelopment **SESI Project 12345**
Tarrytown, NY **ST Project 23-208**

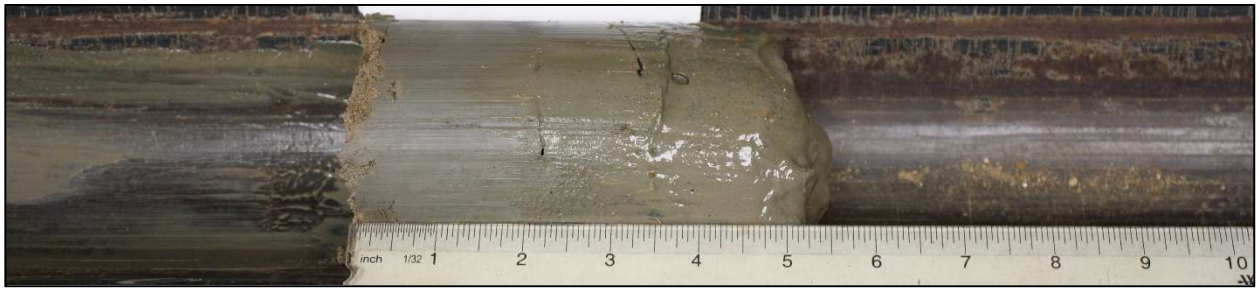


Photo 1 – SB-108 U-1 Extruded sample (top of sample at right).

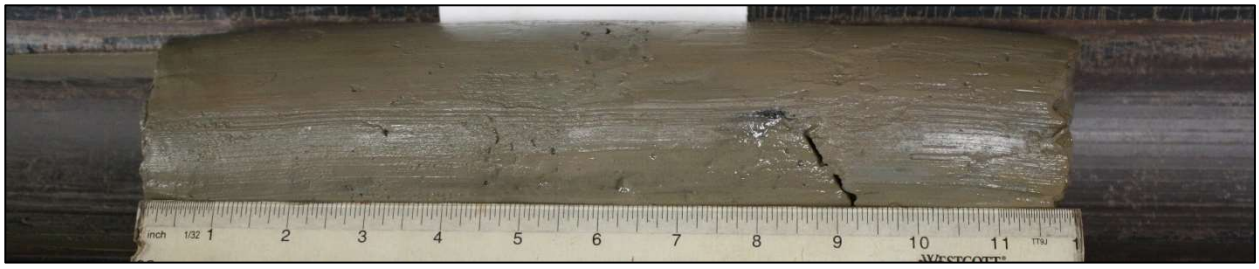


Photo 2 – SB-112 U-1 Extruded sample (top of sample at right).

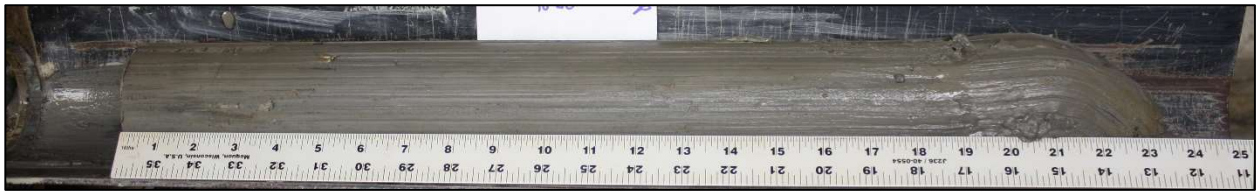
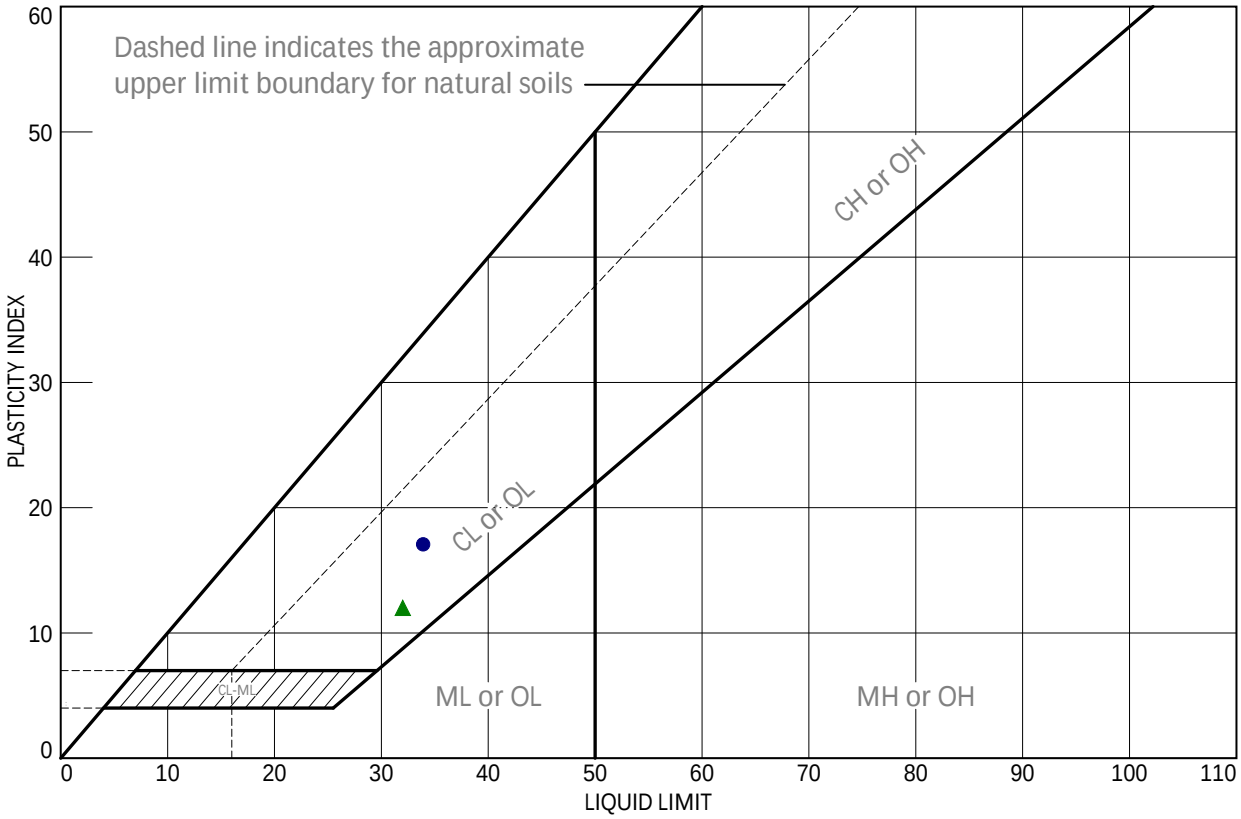


Photo 3 – SB-115 U-1 Extruded sample (top of sample at right).

ATTERBERG LIMITS REPORT



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	SB-108	U-1	22-24 ft.	28.0	17	34	17	0.6	
■	SB-112	U-1	24-26 ft.	22.0	NP				
▲	SB-115	U-1	18-20 ft.	24.4	20	32	12	0.4	

SKYLANDS TESTING, LLC

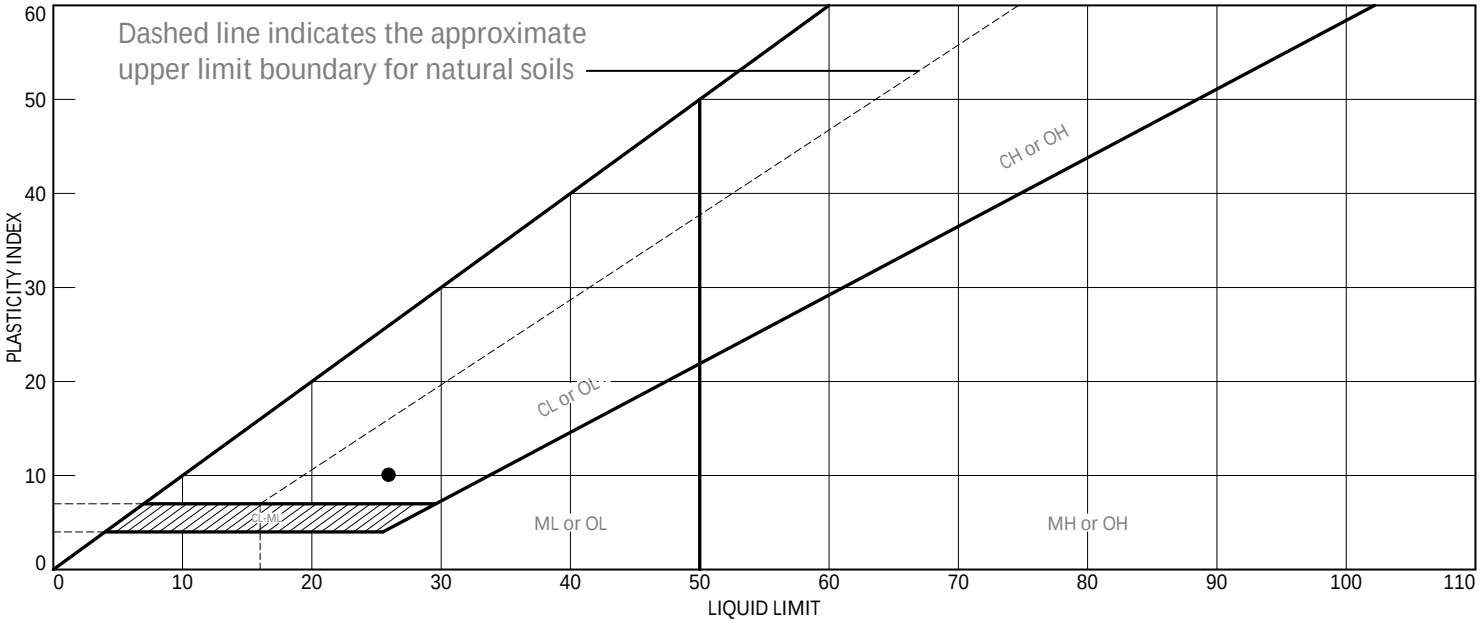
Sparta, NJ

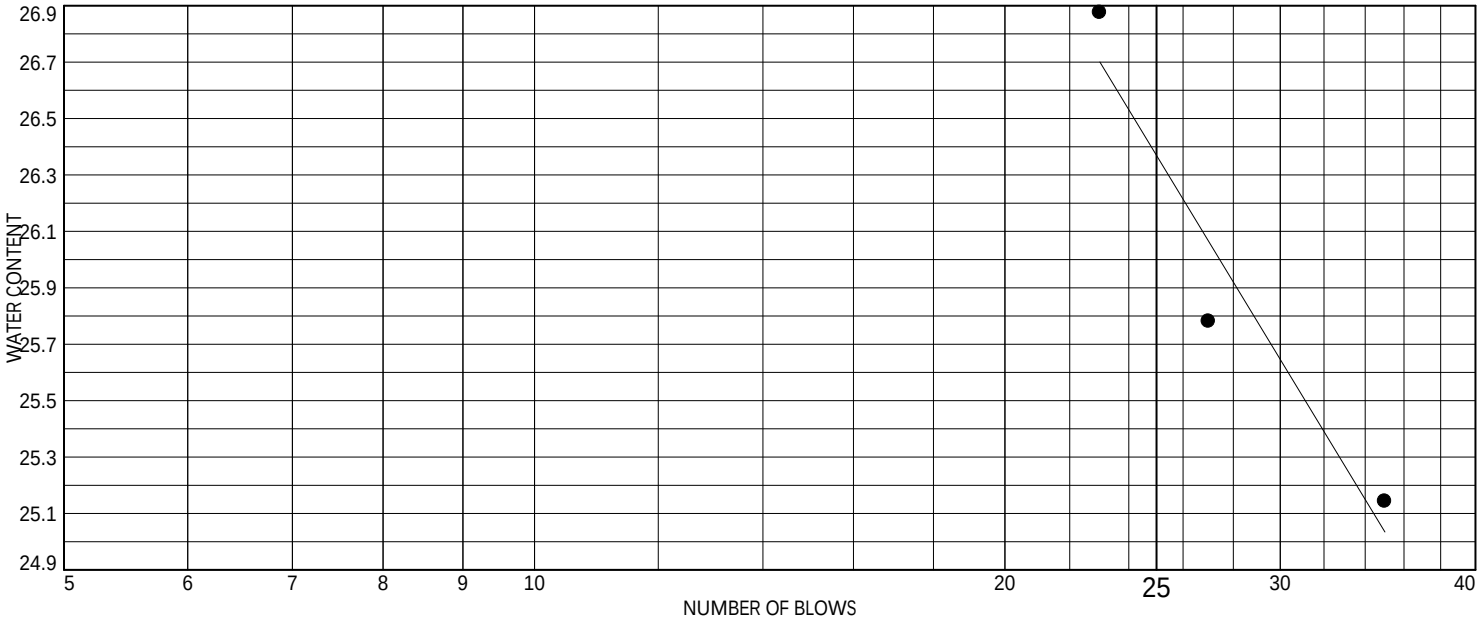
Client: SESI Consulting Engineers **Date**: 1-9-2024

Project: 12345 - Franklin Courts Redevelopment
Tarrytown, NY

Project No.: 23-208 Fig.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Lean CLAY* *Note: some coarse to fine Sand, based on visual observation of the sample	26	16	10	34.3		CL

Project No. 12345 Client: WBP Development LLC

Project: Franklin Courts Redevelopment

Location: SB-102
Sample Number: S-9 Depth: 20-22

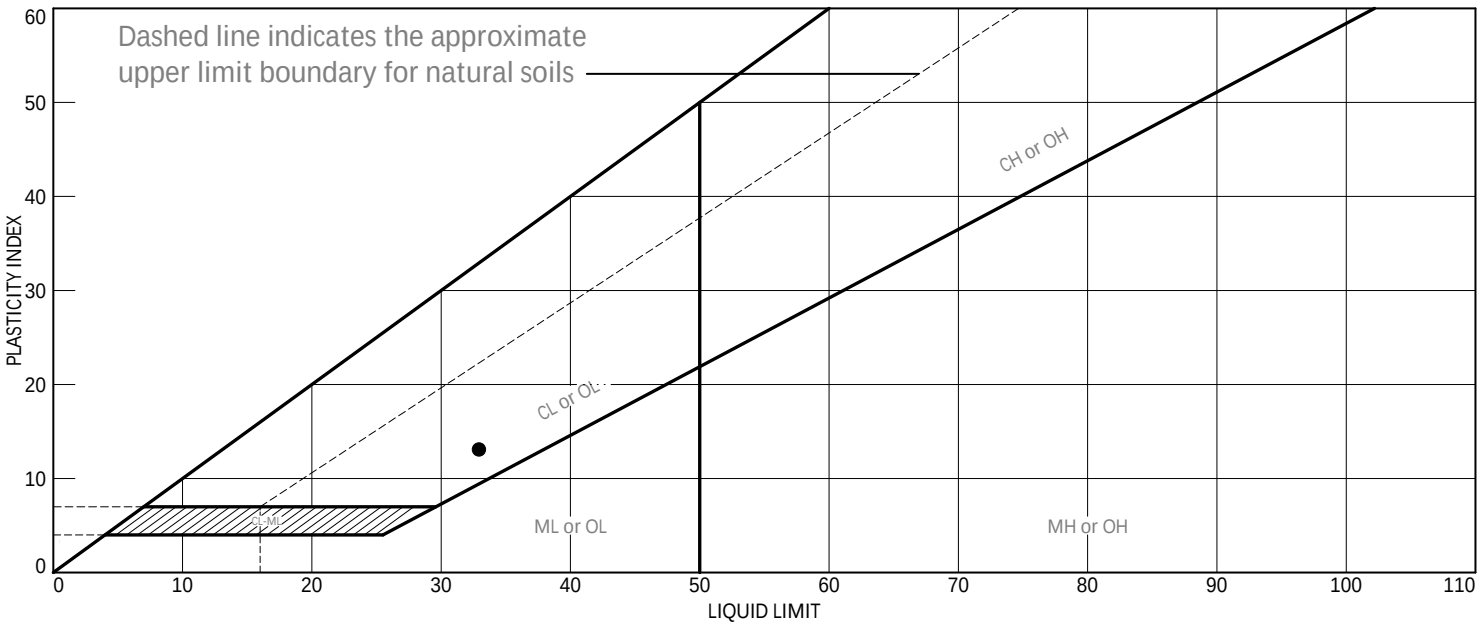
SESI
CONSULTING ENGINEERS

Remarks:
●Water Content(%)= 31.1

Figure

Tested By: LM Checked By: MLT

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Lean CLAY* *Note: some coarse to fine Sand, based on visual observation of the sample	33	20	13	39.2		CL

Project No. 12345 Client: WBP Development LLC

Project: Franklin Courts Redevelopment

Location: SB-112
Sample Number: S-8 Depth: 20-22

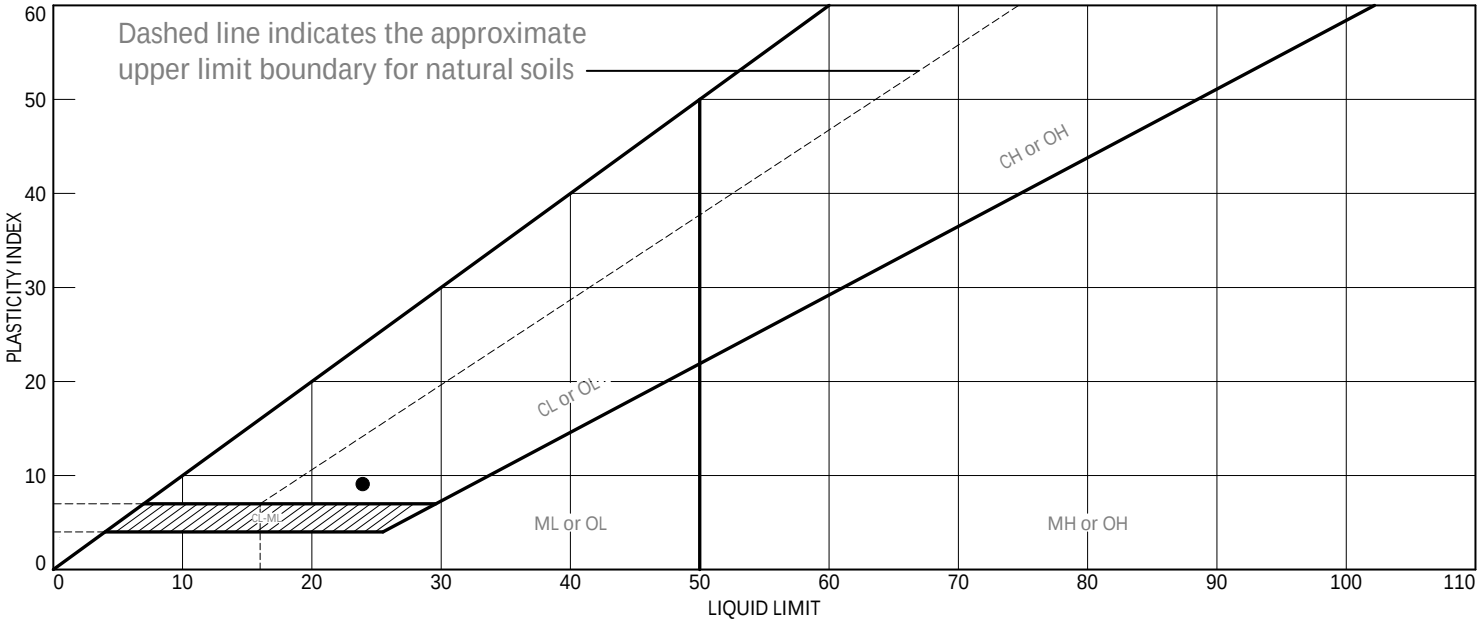
SESI
CONSULTING ENGINEERS

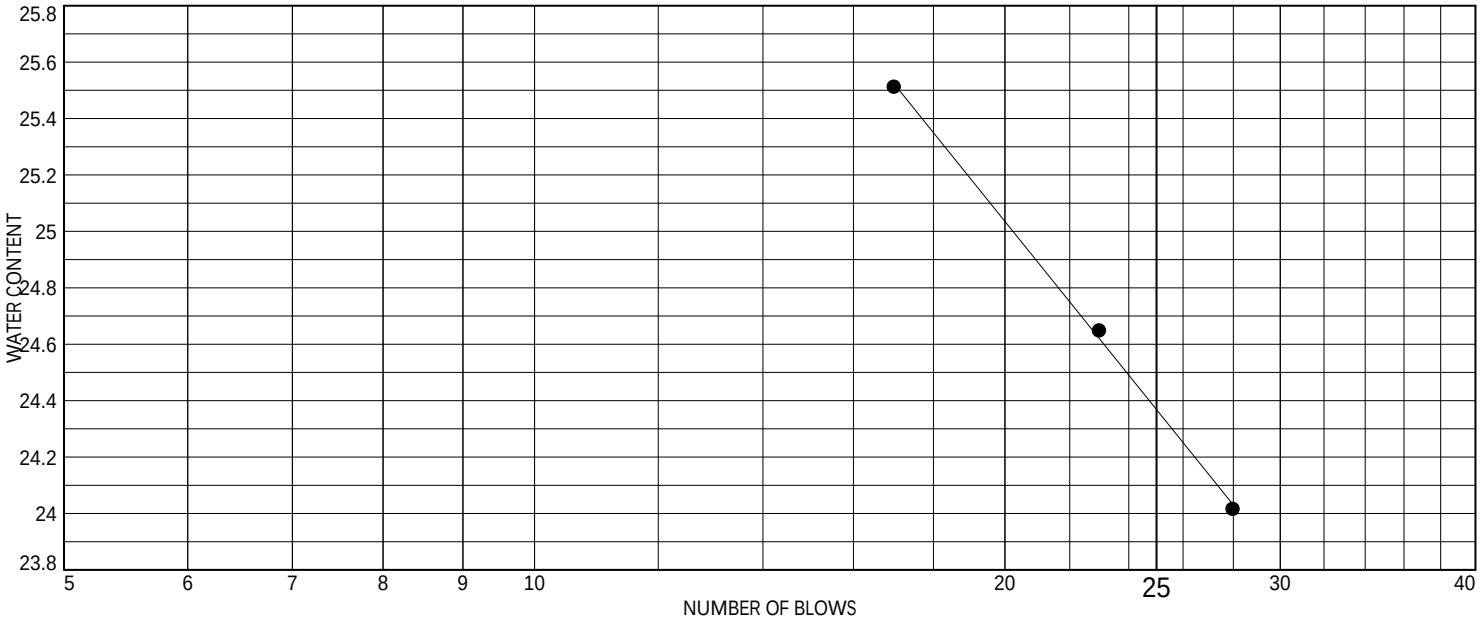
Remarks:
●Water Content(%)= 29.1

Figure

Tested By: MG/MHM Checked By: MLT

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Lean CLAY* *Note: some coarse to fine Sand, based on visual observation of the sample	24	15	9	30.4		CL

Project No. 12345 Client: WBP Development LLC

Project: Franklin Courts Redevelopment

Location: SB-115
Sample Number: S-10 Depth: 20-22

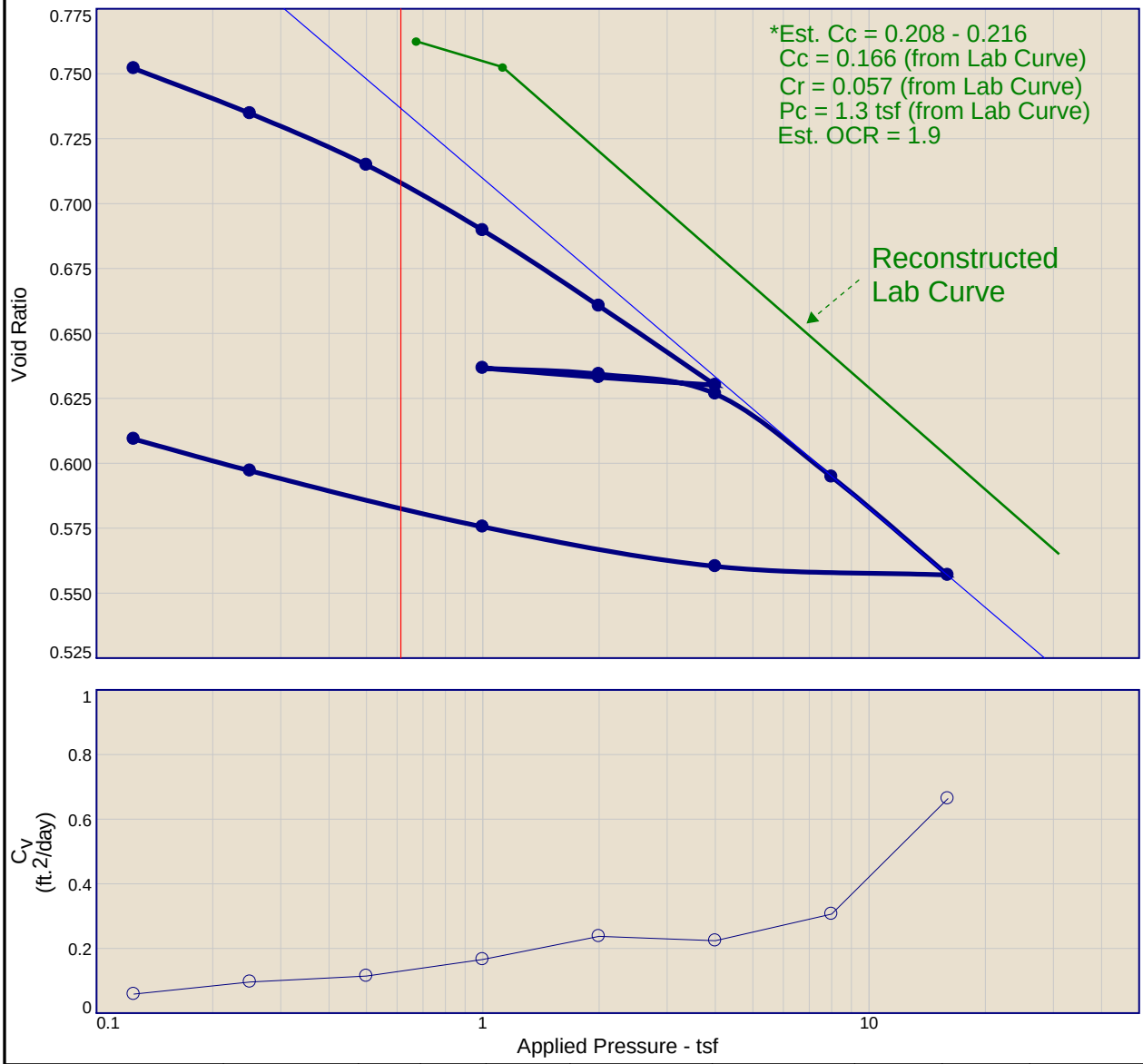
SESI
CONSULTING ENGINEERS

Remarks:
●Water Content(%)= 26.6

Figure

Tested By: MLT Checked By: MLT

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
103.0 %	28.0 %	99.9			2.83	0	1.3	0.13	0.02	0.768

MATERIAL DESCRIPTION	USCS	AASHTO
Top 3/4=Gray-brown Silty CLAY, bot. 1/4=varved f Sand, and Silt. 3/8 in. diam. pocket of f Sand near center of spec.		

Project No. 23-208 **Client:** SESI Consulting Engineers **Date:** 1-8-2024

Project: 12345 - Franklin Courts Redevelopment
Tarrytown, NY

Source of Sample: SB-108 **Depth:** 22-24 ft. **Sample Number:** U-1

SKYLANDS TESTING, LLC

Sparta, NJ

Remarks:

Spec. depth=23.5 ft.
Inundated before 1/8 tsf. Negl. swell

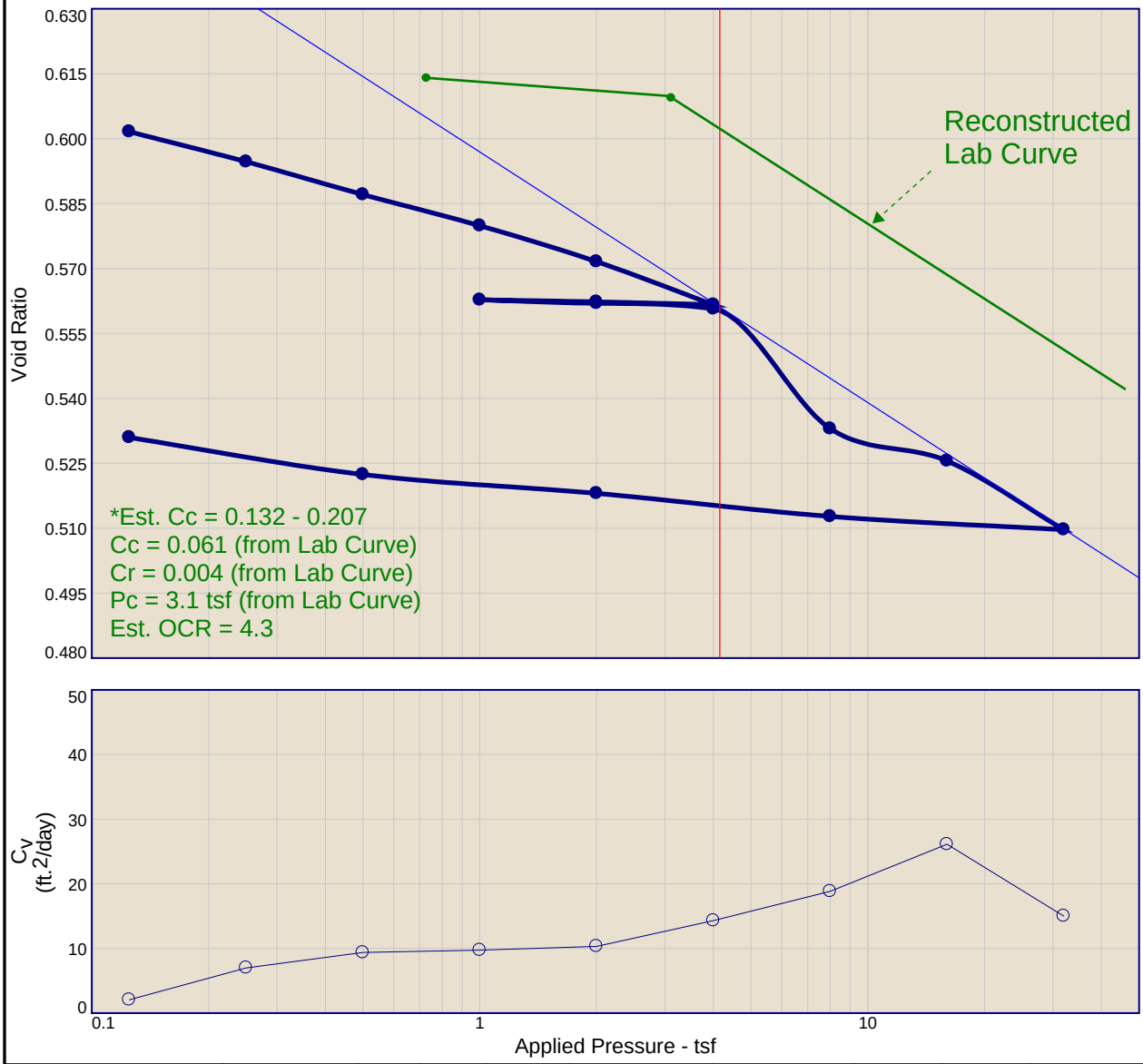
*Est. Cc from Published Correlations between LL and WC

Fig.

Tested By: RS, EJS **Checked By:** EJS

SB-108 U-1 Post-consolidation specimen split to show layering/fabric.

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
102.1 %	22.0 %	110.2			2.85	0	4.6	0.06	0.01	0.614

MATERIAL DESCRIPTION	USCS	AASHTO
Green-gray and brown-green-gray varved Clayey SILT, and f Sand		

Project No. 23-208 **Client:** SESI Consulting Engineers **Date:** 1-8-2024

Project: 12345 - Franklin Courts Redevelopment
Tarrytown, NY

Source of Sample: SB-112 **Depth:** 24-26 ft. **Sample Number:** U-1

SKYLANDS TESTING, LLC

Sparta, NJ

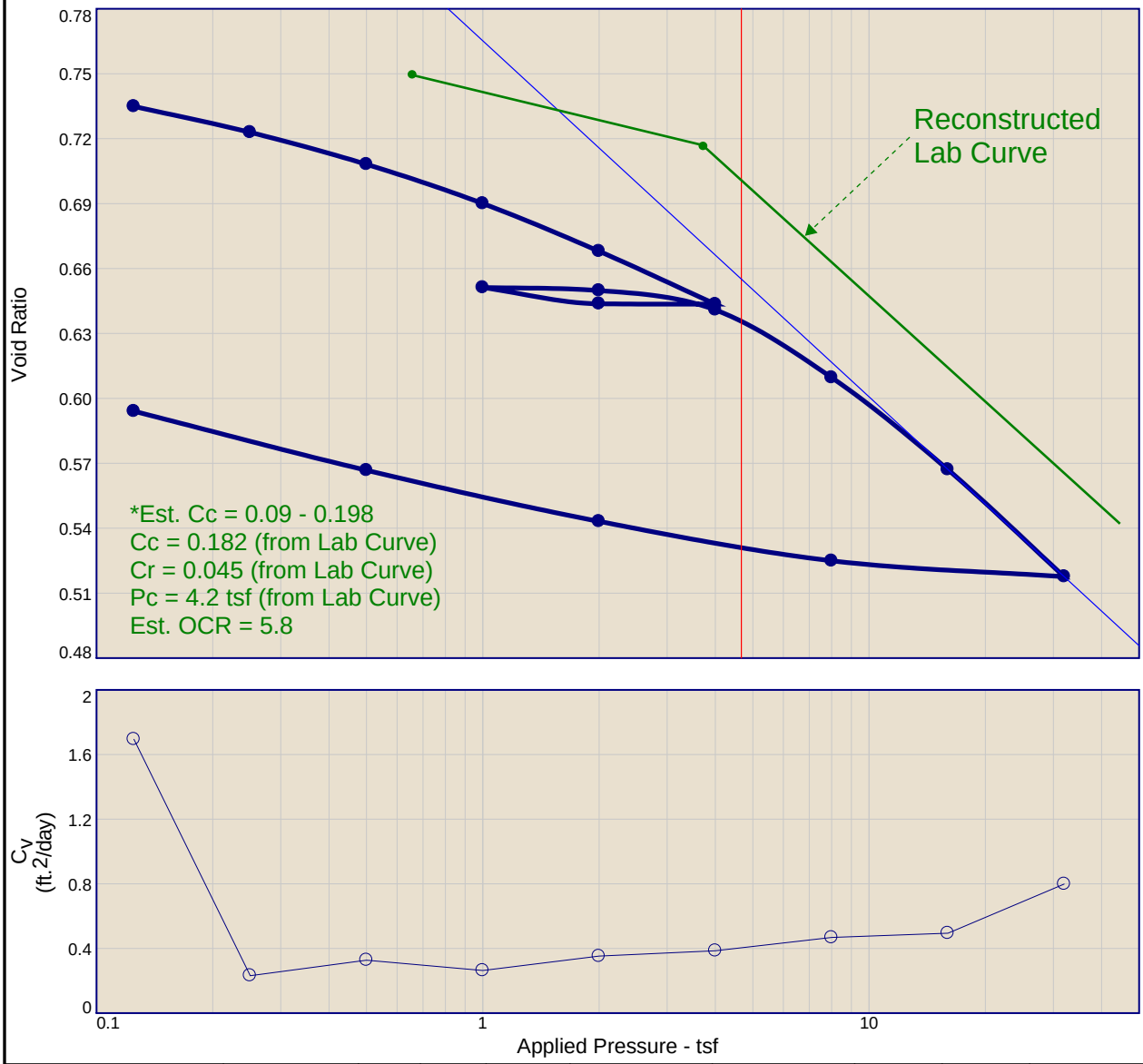
Remarks:
Spec. depth=25.6 ft.
Inundated before 1/8 tsf. Negl. swell
*Est. Cc from Published Correlations between LL and WC

Fig.

Tested By: RS, EJS **Checked By:** EJS

SB-112 U-1 Post-consolidation specimen split to show layering/fabric.

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
93.0 %	24.4 %	102.1			2.86	0	6.8	0.16	0.02	0.749

MATERIAL DESCRIPTION	USCS	AASHTO
Gray-brown CLAY & SILT, with inclined f Sand varves Gravel		

Project No. 23-208 **Client:** SESI Consulting Engineers **Date:** 1-8-2024

Project: 12345 - Franklin Courts Redevelopment
Tarrytown, NY

Source of Sample: SB-115 **Depth:** 18-20 ft. **Sample Number:** U-1

SKYLANDS TESTING, LLC

Sparta, NJ

Remarks:

Spec. depth=19.1 ft.
Inundated before 1/8 tsf. Negl. swell
*Est. Cc from Published Correlations between LL and WC

Fig.

Tested By: RS, EJS **Checked By:** EJS

SB-115 U-1 Post-consolidation specimen split to show layering/fabric.

SB-115 U-1 Post-consolidation - inclined f sand varves

Appendix C

Historic Subsurface Data and
Previous SESI Boring Logs

ELEVATION IN FEET

+10 0 -10 -20 -30 -40 -50

BORING #1
Elev. 4.51

7				
9				
8	FILL			
G.W. 6				
5				
4		A_T	1	1
3	Black SILT			
7		1	2	2
12	Gray CLAY &			
14	SILT, fine	2	2	2
10	layers of sand.			
12				
16	Grayish brown			
14	CLAY & SILT, fine	3	4	6
18	layers of sand.			7
17				
20				
21				
22				
14				
18	Brown CLAY	4	2	3
17				
23	& SILT, fine			
27				
25	layers of	5	2	2
18				
16	Sand.			
17				
24				
31		6	1	1
19			2	
23				
28				
31				
34		7	1	2
30			2	
28				
34				
36				
28		8	3	4
40			4	
42				
37				
80				
		9	30	168

Driller: J. IMPARATO
Helper: F. BRANDT
Water reading taken 10:15 A.M.
JAN. 14, 1965

BORING #2
Elev. 5.64

18				
20				
14	FILL			
G.W. 10				
12				
8		1	3	3
9			3	
12				
16	Black SILT.			
18		2	2	2
17			2	
20				
18	Gray silty			
16	SAND.			
21		3	4	4
23	Gray CLAY &		4	
24	SILT, sand			
18	layers.			
19				
17		4	2	3
21			3	
23	Brown CLAY &			
30				
32	SILT, sand			
34		5	2	3
30	layers.		3	
23				
27				
31				
20		6	1	3
36			3	
38	Gray silty			
42	SAND.			
36				
51	Red-brown SILT,	7	2	3
165	trace med. to coarse		4	
	gravel.			
	Grey SAND & SILT, med.	8	27	27
	to coarse gravel. (compact)		50	75

Driller: J. IMPARATO
Helper: F. BRANDT
Water reading taken 2:30 P.M.
Jan 15, 1965

BORING #3
Elev. 6.16

6				
7				
G.W. 5	FILL			
6				
6				
4		A_T	2	3
8			3	4
9	Fine to coarse	1	8	8
20	brown SAND,		8	
24	med. to coarse	2	6	8
8	gravel.		10	18
12				
14				
14	Gray CLAY &			
16	SILT, sand	3	6	8
12	layers		8	9
16				
19	Brown CLAY &			
22				
26	SILT, sand			
24	layers	4	2	3
36	(stiff)		3	4
35				
37				
33				
34	Red-brown fine	5	6	8
38	to med. SAND,		8	12
51	some silt.			
172				
150	Red-brown fine to med. SAND, some med. to coarse gravel			
	Gray SAND & SILT, med. to coarse gravel.	6	27	37
			47	67

Driller: J. IMPARATO
Helper: F. BRANDT
Water reading taken 9:45 A.M.
JAN. 15, 1965

BORING #4
Elev. 9.53

8				
12				
10	FILL			
7				
G.W. 8				
9		1	4	7
12			7	12
27	Brown med.			
8	to fine	2	10	
7	SAND &		32	72
10	WOOD FILL			
89				
32				
24	Gray SILT,	3	8	
20	fine sand,		10	14
12	trace of			
19	gravel.			
34				
73				
102		Ave. 100 - No Penetration.		

Driller: J. IMPARATO
Helper: F. BRANDT.
Water reading taken 3:00 PM.
JAN. 12, 1965

BORING #5
Elev. 4.39

5				
6				
6				
7	FILL			
G.W. 6				
4		1	2	2
8			2	1
10				
7	Black SILT			
7		A_T	2	
6			3	
10		2	3	4
9			4	4
8	Gray CLAY,			
10	silt & sand			
15	layers.	3	4	5
18			5	5
20				
19				
20				
14		4	1	
20			2	
26				
31				
30	Gray brown			
20		5	2	
10	CLAY, silt		2	
29	& sand			
32	layers.			
37				
21		6	1	
29			3	
32				
36				
24		7	6	
29			8	
36				
38				
35		8	2	
17			5	
18				
27				
42				
48	Gray silty			
51	SAND.	9	7	
52			8	
105			16	
112	Grey fine SAND & SILT, med. to coarse gravel. (Compact)			
		10	21	
			34	
		OPEN END Rod		

Driller: J. IMPARATO
Helper: F. BRANDT.
Water reading taken 3:15 PM
JAN. 14, 1965

BORING #6
Elev. 5.25

6				
8				
37	FILL			
G.W. 5				
5				
3		1	3	4
2			4	2
2				
3				
10	Black silty			
12	SAND.	2	3	5
11			5	
11				
12	Gray CLAY &			
18	SILT, layers of			
20	fine sand.			
22				
20				
28				
24		3	3	4
21			4	6
27				
29				
32				
33				
30	Brown CLAY			
32		4	4	5
27	& SILT,		5	
29				
36	layers of			
24		5	3	4
27	fine sand.		4	
27				
31				
32				
20		6	2	3
30			3	
29				
27				
34		7	3	2
27			2	1
29				
34				
84				
160	Gray			
		8	3	5
			5	
		9	18	
			33	
			63	

Driller: J. IMPARATO
Helper: F. BRANDT.
Water reading taken 12 P.M.
JAN. 13, 1965

BORING #7
Elev. 6.89

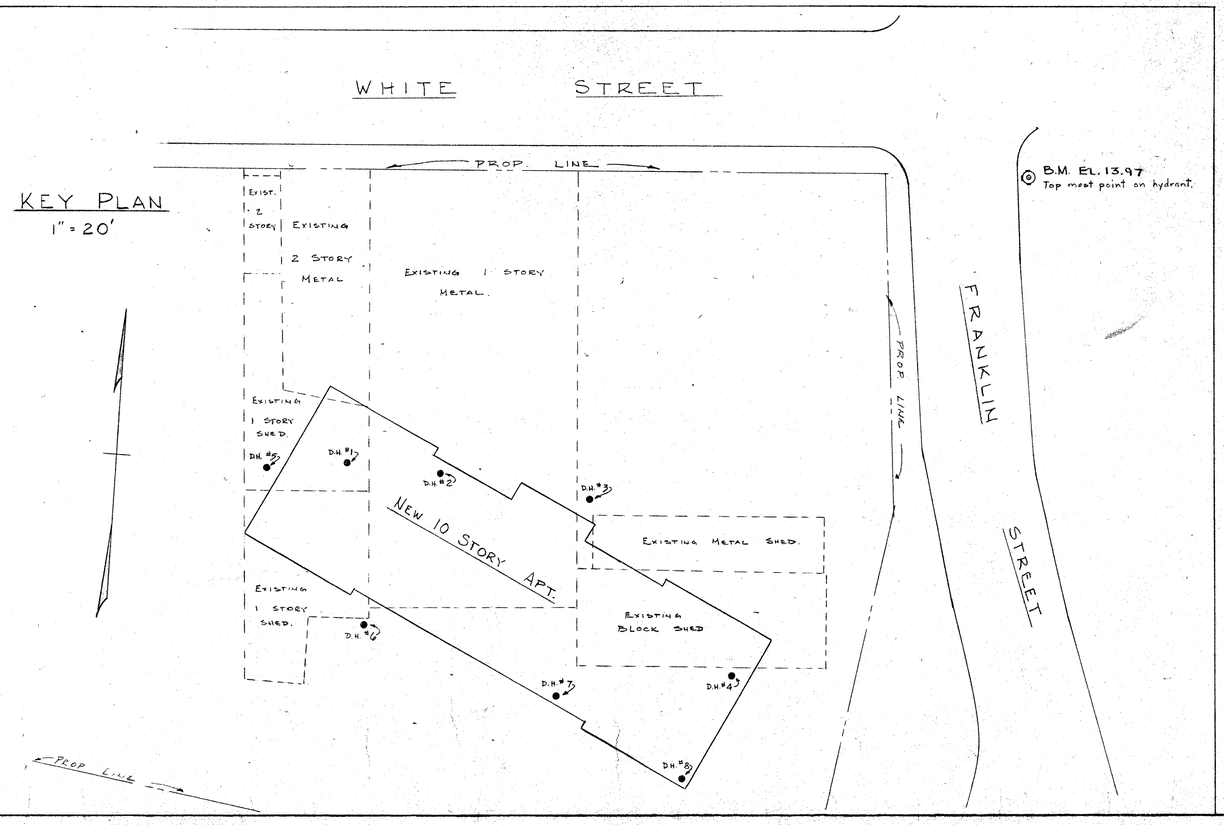
12				
7				
5				
6				
G.W. 5	FILL			
3		1	2	1
4			1	
7				
7				
9				
10	Fine to med.			
14	gray brown	2	10	14
19	SAND, some		14	20
20	med. gravel.			
22				
15				
50				
60				
70				
69	Brown CLAY,	3	6	10
20	some silt,		10	17
27	trace of			
33	fine sand.			
32				
37		4	3	5
26			5	5
39				
42	Fine to med. gray			
63	brown SAND,	5	5	6
73	med. to large		6	8
	gravel.			
		6	18	
			35	
			61	

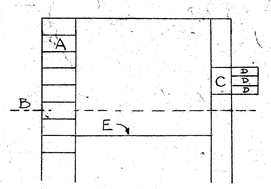
Driller: J. IMPARATO
Helper: F. BRANDT.
Water reading taken 11:40 A.M.
JAN. 12, 1965.

BORING #8
Elev. 9.27

10				
6				
7	FILL			
6				
G.W. 6				
3		1	3	7
4			7	7
3	Fine brown			
4	SAND, trace			
5	of silt.			
7		2	7	6
12			6	12
28	Fine to coarse			
35	gray brown			
27	SAND & SILT			
10	Red brown CLAY,	3	5	6
18	some silt,		6	6
21	layers of fine			
21	sand.			
19				
18	Gray SILT with	4	4	6
30	med. to coarse		6	9
40	gravel.			
52				
60	Fine gray SAND,			
103	med. to coarse	5	24	60
210	gravel. (compact)		60	65
	REFUSAL @ 27'			

Driller: J. IMPARATO
Helper: F. BRANDT.
Water reading taken 3:10 PM
JAN. 11, 1965.





A - Blows on 2½" casing, 300 lb. hammer, 24" drop.
B - G.W. - Ground water elevation
C - Sample number
D - Blows on 2" spoon, 140 lb. hammer, 30" drop
E - Elevation of change between strata.

LOW-RENT HOUSING PROJECT NO. N.Y. 13-2
FOR THE
TARRYTOWN MUNICIPAL HOUSING AUTHORITY
TARRYTOWN NEW YORK

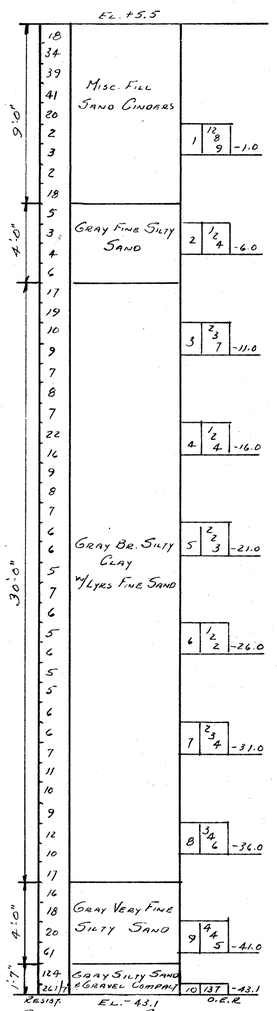
TEST BORINGS
by
WARREN GEORGE, INC.

JOHN A. PRUYN, A.I.A. architect
119 east 18th street new york, ny 10003
3:15:65

ABRAHAMS, HERTZBERG & CANTOR
consulting structural engineers
HERMAN SCHERR
consulting mechanical & electrical engineer
LEO A. [illegible]
consulting [illegible]

D1

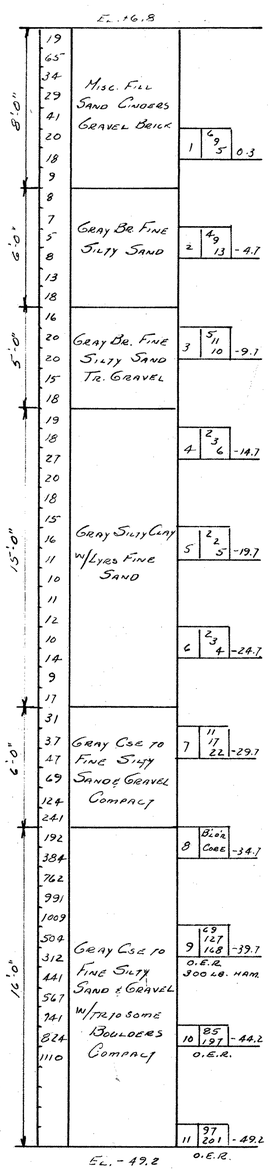
5



Daily Water Readings

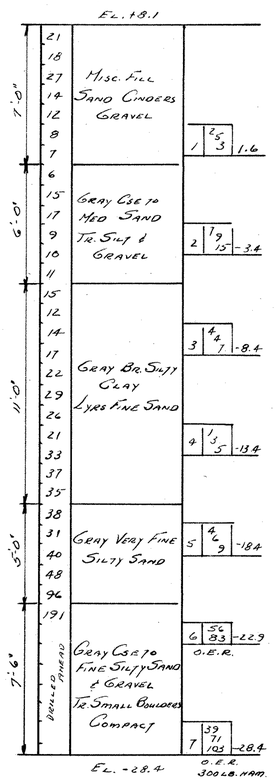
	8:40 A.M.	4:15 P.M.
10-17-62	El. +1.7	El. +2.1
10-18-62	El. +2.5	El. +2.8
10-19-62	El. +2.3	El. +2.7
10-22-62	El. +2.2	El. +2.7

6



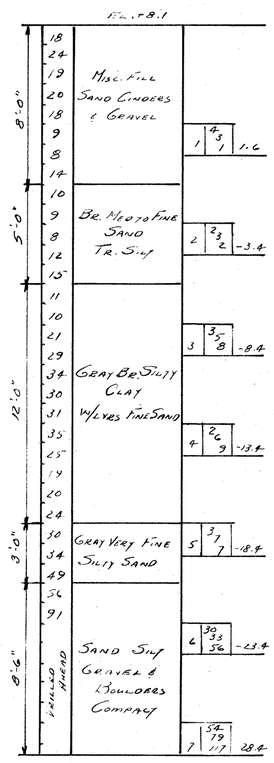
Water El. +2.8
Drilled & Chopped Ahead of Casing from 40' to 55'

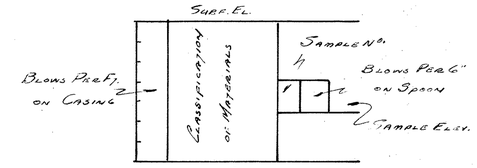
7



Water El. +2.4

8

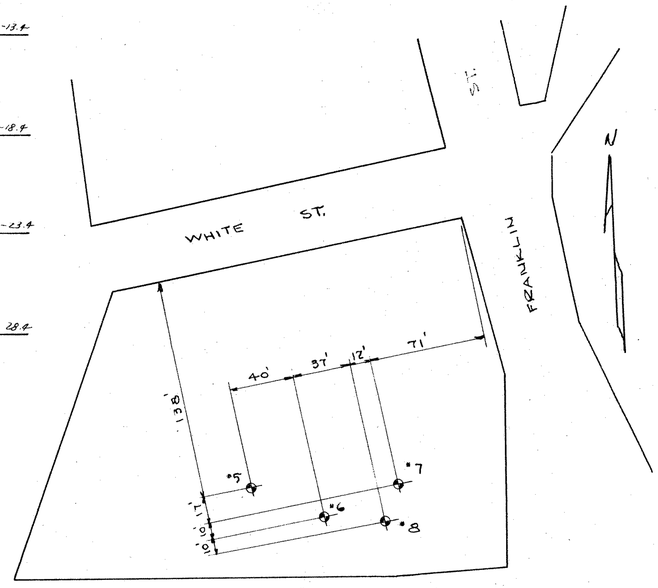




LEGEND

1. Elevations are based on 1909 Village of Tarrytown Datum.
2. 300 lb. hammer with 24" drop used to drive 2½" casing
3. 140 lb. hammer with 30" drop used to drive 2" ϕ spoon
4. O.E.R. indicates open end rod sample

SESI NOTES:
Borings 1 through 4 where not performed within the vicinity of the current project site and were therefore removed from this document for clarity.
Borings 5 through 8 relabeled on SESI Exploration Location Plan as HB-105 through HB-108.



828-63

TEST BORINGS
FOR
PROPOSED LOW RENT HOUSING
UNDERHILL RENEWAL PROJECT
TARRYTOWN NEW YORK

JOHN A. PRUYN
ARCHITECT
119 E. 18TH ST. NEW YORK

RELIABLE DRILLING CO.
BORING CONTRACTOR
34 14 61ST ST. WOODSIDE L.I.Y.

REGISTERED ARCHITECT JOHN AVERY PRUYN NO. 7823 STATE OF NEW YORK

SCALES: PLAN: 1"=50' SECTIONS: 1"=1'-0"
DWG. No. A 3
DATE: 10-29-62
DWN BY: RJ
CHKD BY:

JOB 62-69

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-1**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 4'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	35	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
						Fill: Black to gray coarse to fine SAND, little coarse to fine Gravel, trace Silt, pieces of brick	0
							0
					SB-1 (3.5')	Black to gray coarse to fine SAND, little Silty Clay, trace fine Gravel	0
5				5			0
	54	2	5				0
							0
						Black to gray Silty Clay, little medium to fine Sand	0
							0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-2**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 4'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	31	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
						Fill: Black to gray coarse to fine SAND, little coarse to fine Gravel, trace Silt	0
							0
						Brown coarse to fine SAND, little Silty Clay, trace fine Gravel	0
5				5			0
	44	2	5				0
					SB-2 (7')		0
						Black to gray Silty Clay, little medium to fine Sand	0
							0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

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Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-3**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	39	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
							0
						Black to gray coarse to fine SAND, little Silty Clay, trace fine Gravel	0
5				5	SB-3 (5')		0
	28	2	5				0
						Black to gray Silty Clay, little medium to fine Sand	0
							0
							0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

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Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-4**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 4.5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	37	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
							0
							0
5				5		Black to gray coarse to fine SAND, little Silty Clay, trace fine Gravel	0
	56	2	5		SB-4 (6')		0
						Black to gray Silty Clay, some coarse to fine Sand	0
							0
							0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

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Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-5**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	32	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
							0
						Gray to brown coarse to fine SAND, little Silt, trace fine Gravel	0
5				5			0
	58	2	5			Black to gray Silty Clay, some coarse to fine Sand	0
							0
							0
					SB-5 (9')	Black to gray Silty CLAY, little medium to fine Sand	0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

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Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-6**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	28	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
							0
							0
5				5	SB-6 (5')		0
	26	2	5			Gray to brown Silty Clay, some coarse to fine Sand	0
							0
							0
							0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

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Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-7**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/28/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/28/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	33	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
					SB-7 (3')	Fill: Gray to brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
5				5			0
	47	2	5			Gray Silty Clay, some coarse to fine Sand	0
							0
						Gray Silty CLAY, little medium to fine Sand	0
							0
10				10			0
						End of Boring at 10' Below Ground Surface	
15							
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

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Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-8**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/29/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/29/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	35	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
						Gray to brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
5				5			0
	46	2	5				0
					SB-8 (7')		0
						Gray Silty CLAY, little medium to fine Sand	0
							0
10				10			0
	56	3	10				0
					SB-8 (12')		0
							0
							0
15				15			0
						End of Boring at 15' Below Ground Surface	
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-9**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/29/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/29/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	15	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
							0
							0
5				5			0
	0	2	5			No Recovery	0
							0
							0
							0
10				10			0
	58	3	10			Gray Silty CLAY, little medium to fine Sand	0
							0
							0
							0
15				15	SB-9 (15')		0
						End of Boring at 15' Below Ground Surface	
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

SESI CONSULTING ENGINEERS

PROJECT NAME:	Tarrytown, NY	GEOPROBE NO.	**SB-10**
LOCATION:	Franklin Ct	JOB NO.	12345
METHOD:	Direct Push	GROUND ELEVATION:	
GEOPROBE BY: Coastal Environmental	DATE STARTED:	3/29/2022	GROUNDWATER TABLE DEPTH: 5'
INSPECTOR: Jack Norgard	DATE COMPLETED:	3/29/2022	0 Hr. / 24 Hr. / Date

DEPTH (ft)	RECOVERY (in)	SAMPLE TUBE No.	DEPTH FROM (ft)	DEPTH TO (ft)	ENVIRONMENTAL SOIL SAMPLE NAME	SOIL DESCRIPTION AND STRATIFICATION	PID
0	33	1	0			Brown coarse to fine SAND, little Silt, trace coarse to fine Gravel	0
							0
							0
						Brown to gray coarse to fine Sand, some Clay, trace fine Gravel	0
5				5	SB-10 (5')		0
	58	2	5			Gray Silty CLAY, little medium to fine Sand	0
							0
							0
							0
10				10			0
	58	3	10				0
							0
							0
							0
15				15			0
						End of Boring at 15' Below Ground Surface	
20							
25							
30							
35							
40							

Nominal I.D. of Hole	in.
Nominal I.D. of Barrel Sampler	1⅜ in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; DP: Direct Push

Approximate Change in Strata: _____ Inferred Change in Strata: _ _ _ _ _ _ _ _ _ _ _ _

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #

Appendix D

Preliminary Slope Evaluation Photos