SESI
CONSULTING
ENGINEERS

GEOTECHNICAL INVESTIGATION and REPORT

FOR

Proposed Assisted Living Facility
250 Lafayette Avenue
Montebello, Rockland County, New York

PREPARED FOR:

FILBEN GROUP, LLC
800 Westchester Avenue, Suite S-712
Rye Brook, New York 10573

PREPARED BY:

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Job No. 9403

DATE:
May 6, 2016

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INTRODUCTION

This report presents the results of a geotechnical investigation conducted for a proposed assisted living facility which may be constructed in the Village of Montebello, Rockland County, New York by the FilBen Group, LLC. The site of the proposed facility is located in a wooded parcel (6.2± acres) northwest of the intersection of NYS Route 59 and Hemion Road. The site is identified as 250 Lafayette Avenue, and lies just north of an existing shopping center.

We understand that the proposed facility will consist of the construction of a four (4) story structure. Paved parking and roadway areas will be located to the south and east of the proposed building location. The proposed building will reportedly occupy a footprint area of approximately 33,900 square feet, and will have a "walk-out" basement level on the order of 32,000 square feet.

The available information indicates that the basement level of the structure will likely be established at 392 feet. Based on our review of the topographic data presented on a plan of the site entitled "Layout Plan", prepared by Brooker Engineering, PLLC, dated 7/02/15, cuts of up to approximately 22 feet below the existing surface grades and fills of up to 10 feet to reach the proposed basement elevation will be required to accommodate the proposed construction. The cuts will generally be required in the southern portions of the building area, while the fills will generally be required in the northern portions of the building area. The available information indicates that minimal fills, and cuts of up to approximately 8 feet below the existing surface grades will be required in the proposed paved areas.

Structural loading information was not provided to us. Based on our experience with similar projects, we anticipate that maximum column and wall loads will be on the order of 350 kips and 7 kips/linear foot, respectively. Ground floor live loads are anticipated to be less than 100 pounds per square foot, or less.

FIELD INVESTIGATION AND LABORATORY TESTING PROGRAM

Our geotechnical investigation consisted of eleven (11) test pits located throughout the accessible areas of the site. The test pits were excavated using a large track-mounted excavator (Caterpillar Model 314E), and extended to depths ranging from approximately 10 to 14½ feet below the existing surface grades. The approximate locations of the test pits performed for this study are shown on Figure 1.

All field work was performed under the direct technical observation of geotechnical engineer from SESI Consulting Engineers, P.C. Our representative located the test pits in the field relative to the existing site features, maintained continuous logs of the explorations as work proceeded, and obtained bulk soil samples of the encountered materials from selected test pit excavations. All soil samples were brought to our office and examined in our soil mechanics laboratory. Detailed descriptions of the subsurface conditions encountered in the test pits performed for this study are presented on Figures 2 through 12. A key to the soil terminology is attached as Figure 13.

A laboratory testing program consisting of mechanical grain-size analyses was performed on selected soil samples for geotechnical evaluation purposes. The results of these tests are presented on Figures 14 through 18.

SITE CONDITIONS

Surface Features

In general, the property is heavily wooded and blanketed by light to moderately thick underbrush. Numerous, relatively large boulders ranging from approximately 3 feet, to as much as 8 feet in dimensions are scattered throughout the surface of the site. Several relatively long stone walls (3 to 4 feet in height) traverse the site, generally trending in a north-south direction. The remains of a small stone foundation wall, abandoned well and manhole structure are present in the south-central portion of the site. The stone walls, abandoned well and manhole structure, as well as two (2) large boulders were noted on the Brooker Engineering, PLLC Layout Plan.

In addition to the above, the higher southeastern portion of the proposed building area and the adjacent proposed paved areas are believed to be underlain by relatively deep deposits of surface fill based on our field observations and the results of Test Pits 2 and 6 which are discussed in the **Subsurface Conditions** section below. The approximate area of suspected surface fill is noted on Figure 1 for planning purposes. Scattered, localized areas of surface debris, including concrete and asphalt, were observed throughout this areas at the time of our field investigation.

The available topographic data indicates that the site slopes gently to moderately downward from north to south with existing surface grades ranging from a high of about +420 feet, to a low of about +370 feet near the northwest corner of the site. The existing surface grades within the proposed building location generally range from about +384 to +416 feet.

Subsurface Conditions

The subsurface conditions encountered in the test pits performed for this study consisted of the following generalized subsurface strata in order of increasing depth:

Topsoil: Topsoil and leaves ranging from approximately 12 to 24 inches in thickness was encountered at the locations of the test pits performed for this study.

Fill Materials/Buried Topsoil: Fill materials were encountered beneath the topsoil layer at the locations of Test Pits 2 and 6, and extended to depths on the order of 5 and 10½ feet below the ground surface, respectively. The fill materials generally consisted of silty sand and gravel with frequent cobbles and occasional boulders, containing minor amounts of debris (roots/vegetation, bottles and pockets/layers of cinders). As previously mentioned above, we suspect that the southeastern portion of the proposed building area and the adjacent proposed paved areas are underlain by fill materials. The approximate area of suspected fill, based on topography and field observations, is shown on Figure 1 for planning purposes. It should be anticipated that the depths, composition and percentage/type of debris within this area could be highly variable, and not indicative of the fill materials encountered in Test Pits 2 and 6. Fill materials were not encountered in the remaining test pits performed for this study.

The fill materials encountered in Test Pit 6 were found to be underlain by a 12 inch thick layer of buried topsoil.

Glacial Soils: Dense to very dense glacial soils were encountered beneath the fill/buried topsoil materials in Test Pits 2 and 6, and beneath the topsoil in the remaining test pits, and extended to the completion depths of the test pits. The glacial soils consist of a relatively homogeneous mixture of sand/gravel/silt, containing frequent cobbles and occasional boulders.

Groundwater: Slight groundwater seepage was encountered in Test Pits 10 and 11 at a depth of about 9 feet below the ground surface, corresponding to about Elevations 375 to 379 feet, respectively. Groundwater seepage was not encountered in the remaining test pits performed for this study upon completion.

CONCLUSIONS and RECOMMENDATIONS

General

Based on the results of our study, it is our opinion that:

1. The existing fill and buried topsoil are unsuitable for support of foundations or floor slabs constructed at grade. These materials should be removed from within the proposed building area and be replaced with controlled compacted fill. These materials may remain in-place within proposed paved areas, provided they consist primarily of granular soils and can be compacted to a dense and stable condition during the initial earthwork construction activities.

2. Following our recommended site preparation procedures, the proposed building may be supported by conventional spread foundations and the basement floor slab may derive support from the undisturbed glacial soils, or controlled compacted fill placed to reach the planned subgrade elevation.

3. Groundwater-related difficulties are not anticipated to be encountered during construction. However, the management of surface runoff and temporary control of localized "perched or trapped" seepage should be expected to be required during construction. Further, localized "springs" could be encountered during construction considering the sloping terrain of the site, and the required depths of excavation to reach the planned subgrade level of the proposed structure.

4. Construction excavations required to attain the proposed building area subgrade level can be performed using conventional, heavy excavating equipment without the need for blasting or other rock removal methods. However, the removal of relatively large boulders should be anticipated to be required during construction. We recommend that the project specifications require all construction excavations to be performed on an "unclassified" basis to avoid disputes during construction.

Further discussions of these geotechnical-related items are presented in subsequent sections of this report.

Site Preparation and Earthwork

The existing surface vegetation and topsoil should be completely removed from within and at least 5 feet beyond the limits of the proposed construction areas. These materials will not be suitable for reuse as controlled compacted fill or backfill in proposed building or paved areas. The stripped topsoil could be reused in proposed landscaped areas to the extent possible.

The available information indicates that excavations of up to 22 feet below the existing surface grades will be required to reach the basement floor level along the southern side of the proposed building. Based on the available information, we anticipate that the majority of the existing fill and/or buried topsoil will be removed to reach the anticipated basement subgrade level. All remaining fill and/or buried topsoil following excavation, should be removed from within and 5 feet beyond the limits of the proposed building area. The surface fill and buried topsoil may remain in-place within proposed paved areas provided that the materials are primarily granular in nature and can be compacted to a dense and stable condition during construction. Otherwise, complete or partial over-excavation of these materials could be required to provide conditions suitable for support of pavements. The approximate area of suspected surface fill is indicated on Figure 1 for planning purposes. It should be anticipated that the depths, composition and percentage/type of debris within this area could be highly variable, and not indicative of the fill materials encountered in the test pits performed for this study.

Following the initial site preparation procedures and required excavations to reach the planned subgrade levels, the exposed subgrade soils should be compacted to a dense and stable condition using a heavy vibratory smooth-drum compactor (static weight of at least 10-tons) prior to construction or placement of fill. Any localized areas which cannot be so compacted should be moisture-conditioned as required to achieve the desired results, or excavated to stable subgrade soils and backfilled with approved granular controlled compacted fill. Minimal excavation of unstable or unsuitable soils is anticipated based on the encountered subsurface conditions.

Excavated soils generated during construction are anticipated to consist primarily of the sandy/gravelly glacial soils, and to a lesser degree, existing fill and buried topsoil. In our opinion, the glacial soils would be well-suited for reuse as controlled compacted fill and backfill during construction. In our opinion, the excavated fill/buried topsoil materials will not be suitable for reuse as controlled compacted fill in building or paved areas, but could be used as general in landscaped areas to the extent possible or legally disposed of off-site. In addition, numerous cobbles and boulders should be anticipated to be encountered during the earthwork construction, including boulders greater than 4 feet. We recommend a maximum particle size of 8 inches for excavated on-site soils proposed for use as fill and backfill. Considering that relatively large boulders will be encountered during construction, we recommend that the project specifications require all excavations to be performed on an "unclassified basis" to avoid disputes during construction.

Imported fill, if required, should consist of relatively well-graded granular soils containing less than 15% by weight of material passing a U.S. No. 200 sieve and a maximum particle size of 6 inches.

All sources of proposed controlled compacted fill or backfill (on-site or imported) should be approved for use by an experienced geotechnical engineer prior to placement.

Fill materials installed within the proposed building and paved areas should be placed in horizontal layers on the order of 12 inches in thickness, and uniformly compacted to at least 95% of maximum dry density as determined by the ASTM D-1557 test procedure. Backfill placed in confined areas (i.e. foundation and utility trench excavations, etc.) should be placed in thinner layers and compacted to the same degree using portable compaction equipment.

Construction excavations should be sloped, benched or braced in accordance with all applicable codes, including the latest OSHA excavation regulations. In our opinion, the natural soil deposits, or controlled compacted fill consisting of similar soils should be considered a Type "C" as defined by the OSHA excavation guidelines for planning purposes.

Temporary Control of Surface Runoff and Groundwater

The results of the test pits performed for this study indicate that groundwater-related difficulties are not anticipated to be a major concern during development of the site. However, all surface runoff, as well as any encountered "perched or trapped" groundwater seepage should be diverted and/or effectively removed from the construction areas to enable the construction to be performed in a relatively dry environment, and to prevent disturbance of the exposed subgrade soils. We estimate that any groundwater seepage encountered during construction could be temporarily controlled by pumping from sumps established within or adjacent to the excavations. In addition, localized "springs" could be encountered during construction considering the sloping terrain of the property and the required depths of excavation to reach the planned subgrade level of the proposed building. The construction of temporary diversions ditches or swales could be required to help convey surface water and/or seepage around the construction areas, particularly in the lower elevated portions of the site.

We recommend that the contract documents require the contractor to provide and maintain all equipment and labor necessary to adequately control surface water runoff and groundwater seepage during construction.

Foundation Design Criteria

It is our opinion that the proposed structure can be supported by conventional spread foundations which derive their support from the undisturbed natural glacial soils or controlled compacted fill placed in accordance with our previous recommendations. Foundations for the proposed structure may be designed to impose a maximum allowable net bearing pressure of up to 4,000 pounds per square foot.

Exterior foundations should be established at least 3½ feet below the lowest adjacent exterior grades, or deeper if required by local building code, to provide protection from frost penetration. Foundations in permanently heated portions of the structure may be established at convenient depths beneath the basement floor slab.

We suggest that foundation concrete be placed as soon as possible after excavating to the desired subgrade levels to minimize disturbance of the exposed subgrade materials. Any foundation subgrade materials which become disturbed should be excavated and replaced with lean concrete, clean 3/4 inch crushed stone or similar materials. We recommend that all foundation subgrades be observed by a representative of SESI Consulting Engineers, P.C. prior to foundation construction to confirm the adequacy of the exposed foundation materials to support the anticipated building loads.

We estimate that foundations designed and installed in accordance with our recommendations will experience post-construction settlements on the order of three-quarters of one inch, or less. We expect that the anticipated settlement will occur rapidly; practically upon application of load, and the post-construction differential settlements between adjacent columns will be on the order of one half of one inch, or less.

Based on the results of the test pits and a review of published geologic literature, the site subsurface conditions may be classified as Site Class C based on the 2010 Building Code of New York State.

Basement Floor Slab Design Criteria

The basement floor slab of the proposed structure may derive support from the undisturbed natural soils or controlled compacted fill/backfill placed in accordance with our previous recommendations. Subgrade soils disturbed during construction should be re-compacted to a dense and stable condition, or be removed and replaced with approved granular controlled compacted fill prior to floor slab construction.

Considering that groundwater was encountered at considerable depths below the planned basement floor subgrade level, a subslab drainage system is not considered necessary. However, the Architect and design consultants should consider appropriate measures to minimize capillary moisture from developing at the base of the slab.

At a minimum, we recommend that the basement floor slab be underlain by a minimum four inch thick layer of clean 3/4 inch crushed stone, washed gravel, or similar free-draining materials to provide a capillary break between the bottom of the slab and the underlying supporting subgrade materials, and to provide a uniform base on which to construct the slab.

In our opinion, the basement floor slab supported by the undisturbed natural glacial soils or granular controlled compacted fill/backfill may be designed based on a Westergaard modulus of vertical subgrade reaction (K_v) = 200 pounds per cubic inch.

We estimate that post-construction settlements of the ground floor slab deriving support from subgrade materials prepared in accordance with our recommendations will be on the order of one-half of one inch, or less.

Below-Grade Structural Walls

The available information indicates that below-grade structural walls will be required along the southern wall of the walk-out basement level of the proposed building. We recommend that continuous foundation drains be installed behind the below-grade structural wall to collect and dispose of any localized groundwater seepage which may accumulate behind the walls and to prevent the build-up of hydrostatic pressures. We recommend that the below-grade walls also be waterproofed.

The foundation drains may consist of minimum 4 inch diameter perforated ADS pipes wrapped in filter fabric. The pipes should be hydraulically connected to a vertical drainage layer installed adjacent to the below-grade walls which extends to within 1½ feet of the adjacent subgrade levels. The vertical drainage layer may consist of a pre-manufactured system (Enkadrain, Miradrain, etc.), or a vertical stone column. If a vertical stone column is used, we recommend that the layer consist of clean 3/4 crushed stone or washed gravel at least 12 inches in width. Filter fabric should be placed adjacent to and on top of the vertical stone column to prevent the migration of backfill soils into the stone layer.

The subsurface drainage system behind the wall could be designed to daylight beyond the northern building limit, if considered appropriate. Otherwise, the subsurface drainage system should be designed to flow by gravity into the site stormwater drainage system, or hydraulically connected to one or more sumps and removed by pumping. We suggest that back-up pumps and power supplies be provided if sumps are required.

We recommend that the below-grade walls be backfilled with approved portions of the on-site granular soils or imported materials as previously recommended. The backfill soils should be placed in layers on the order of 12 inches or less in loose thickness, and be compacted to at least 92% of maximum dry density as determined by the ASTM D-1557 test procedure. The upper 24 inches of backfill under pavements, slabs or sidewalks should be compacted to at least 95% of maximum dry density.

Assuming that the walls are backfill as specified and that adequate drainage is provide, the following estimated soil parameters may be used for wall design purposes:

- Estimated angle of internal friction (fill or natural) = 34 degrees.
- Estimated compacted total unit weight (fill or natural) = 130 pcf.
- Coefficient of friction between mass concrete and undisturbed granular compacted fill or natural soils = 0.35.

The structural design of the below-grade walls should include consideration of potential additional lateral pressures caused by temporary or permanent surcharge loads, including those imposed by construction equipment, stockpiled materials, adjacent structural loads and/or post-construction traffic loads.

Pavement Design Criteria

The soils anticipated to be exposed in proposed paved areas will generally consist of the sandy/gravelly glacial soils (fill or natural), and to a lesser degree, dense and stable granular existing fill of similar nature. We recommend that the pavement subgrade soils be proofrolled/compacted using a heavy vibratory compactor prior to pavement construction. Any detected unsuitable areas should be locally removed to suitable subgrade soils and backfilled with controlled compacted fill.

It is our opinion that the soils anticipated to be exposed at the pavement subgrade levels will likely yield a California Bearing Ratio (CBR) value of greater than 10%. As such, we estimate that a CBR value of 10% would be appropriate for design purposes.

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 visually inspect the initial proofrolling/compaction of building and pavement subgrades prior to fill placement and construction, foundation subgrade soils prior to the placement of concrete, and the placement of controlled compacted fill and backfill required during construction to verify that the work is performed in accordance with our recommendations and the project specification requirements.

LIMITATIONS

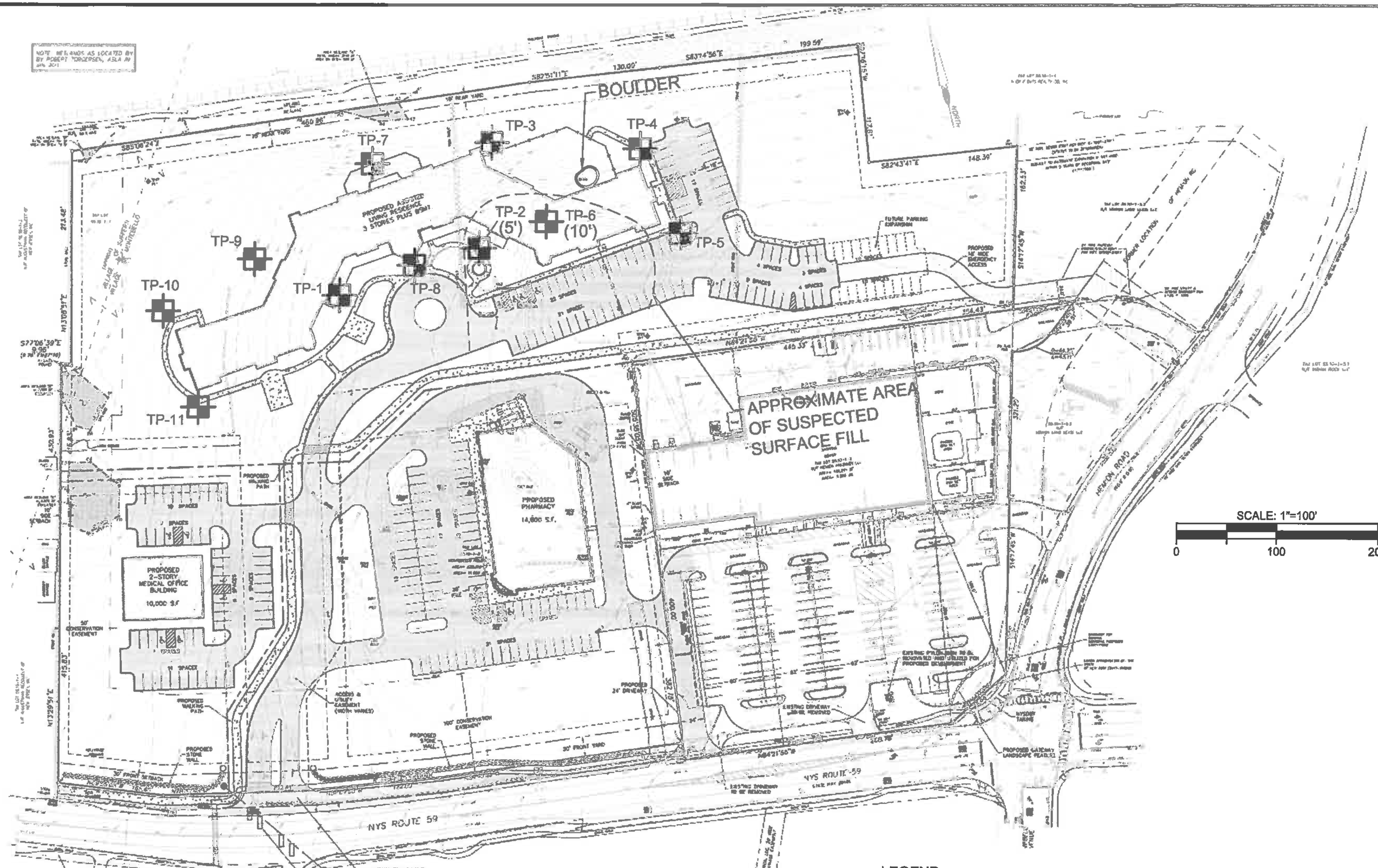
The subsurface investigation performed identifies the subsurface conditions only at the locations of the explorations and at the depths where the samples were taken. SESI Consulting Engineers, P.C. reviews the published geologic data and the field and laboratory data and uses their professional judgment and experience to render an opinion on the subsurface conditions throughout the site.

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.

DISCLAIMER

This Report was prepared by SESI for the sole and exclusive use of FilBen Group, LLC. Nothing under the Professional Services Agreement between SESI and its client, FilBen Group, LLC, shall be constructed 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.



LEGEND:

- NUMBER & APPROX. LOCATION OF TEST PIT BY SESI

(5') - APPROX. THICKNESS OF FILL

NOTE:

THIS PLAN IS FOR LOCATING TEST PITS ONLY. OTHER SITE WORK SHOWN HERE IS NOT INTENDED FOR CONSTRUCTION.

REFERENCE:

ALL INFORMATION TAKEN FROM DRAWING ENTITLED "LAYOUT PLAN" PREPARED BY BROOKER ENGINEERING, PLLC. DATED 7/02/15.

dwg by: yy
chk by: WS
scale: 1" = 100'
date: 04/22/16

SESI CONSULTING ENGINEERS, PC
SOILS / FOUNDATIONS
SITE DESIGN
ENVIRONMENTAL
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project: PROPOSED ASSISTED LIVING FACILITY
250 LAFAYETTE AVENUE
MONTEBELLO, ROCKLAND COUNTY, NEW YORK

drawing title: TEST PIT LOCATION PLAN

job no: 9403
drawing no:

FIG-1

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 1
LOCATION	SEE FIGURE 1	APPROX. ELEV.	404'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0	14"± Topsoil & leaves	
1		
2	Brown coarse to fine GRAVEL, and coarse to fine Sand, little Silt with frequent cobbles and occasional boulders	dense to very dense
3	(Sample 1 @ 2½'±)	
4		
5		
6		
7		
8		
9		
10	grading to trace Silt @ 10'±	
11		
12	(Sample 2 @ 12'±)	
13	Test Pit Completed @ 13'±	
14	Groundwater not encountered upon completion	

NOTE:

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Fig. # 2

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 2
LOCATION	SEE FIGURE 1	APPROX. ELEV.	408'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 1	12"± Topsoil & leaves	
1 – 5	FILL: Dark Brown & Black coarse to fine SAND, some coarse to fine Gravel, little Silt with some roots, frequent cobbles, occasional boulders and several bottles	
5 – 14	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders (Sample 1 @ 7'±) Test Pit Completed @ 14½'± Groundwater not encountered upon completion	dense to very dense

NOTE:

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Fig. # 3

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 3
LOCATION	SEE FIGURE 1	APPROX. ELEV.	384'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 2	24"± Topsoil & leaves	
2 – 10	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders	dense to very dense
10 – 14	Test Pit Completed @ 10'± Groundwater not encountered upon completion	

NOTE:

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Fig. # 4

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 4
LOCATION	SEE FIGURE 1	APPROX. ELEV.	400'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 2	24"± Topsoil & leaves	
2 – 12½	Brown coarse to fine SAND, and coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders (Sample 1 @ 6'±)	dense to very dense
12½ – 14	Test Pit Completed @ 12½'± Groundwater not encountered upon completion	

NOTE:

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Fig. # 5

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 5
LOCATION	SEE FIGURE 1	APPROX. ELEV.	408'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 1½	18"± Topsoil & leaves	
1½ – 12½	Brown coarse to fine SAND, and coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders (Sample 1 @ 4'±)	dense to very dense
12½ – 14	Test Pit Completed @ 12½'± Groundwater not encountered upon completion	

NOTE:

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Fig. # 6

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 6
LOCATION	SEE FIGURE 1	APPROX. ELEV.	414'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0	6"± Topsoil & leaves	
1	FILL: Dark Brown & Black coarse to fine SAND, some coarse to fine Gravel, little Silt with some roots, frequent cobbles and occasional boulders	
2		
3		
4		
5		
6		
7		
8		
9	grading with layers & pockets of cinders @ 9'±	
10		
11	12"± Buried Topsoil	
12	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders	dense
13	Test Pit Completed @ 12½'±	
14	Groundwater not encountered upon completion	

NOTE:

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Fig. # 7

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 7
LOCATION	SEE FIGURE 1	APPROX. ELEV.	386'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 2	24"± Topsoil & leaves	
2 – 11	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders	dense to very dense
11 – 14	Test Pit Completed @ 11'± Groundwater not encountered upon completion	

NOTE:

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Fig. # 8

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 8
LOCATION	SEE FIGURE 1	APPROX. ELEV.	406'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 1½	18"± Topsoil & leaves	
1½ – 12½	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders	dense to very dense
12½ – 14	Test Pit Completed @ 12½'± Groundwater not encountered upon completion	

NOTE:

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Fig. # 9

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 9
LOCATION	SEE FIGURE 1	APPROX. ELEV.	388'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 1	16"± Topsoil & leaves	
2 – 11	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders (Sample 1 @ 3'±)	dense to very dense
12 – 14	Test Pit Completed @ 11½'± Groundwater not encountered upon completion	

NOTE:

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Fig. # 10

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 10
LOCATION	SEE FIGURE 1	APPROX. ELEV.	384'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 1½	18"± Topsoil & leaves	
1½ – 12½	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders grading to trace Silt @ 9'±	dense to very dense
12½	Test Pit Completed @ 12½'± Slight groundwater seepage encountered @ 9'±	

NOTE:

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Fig. # 11

PROJECT NO.	9403	PROJECT	Montebello, NY	TEST PIT NO.	TP- 11
LOCATION	SEE FIGURE 1	APPROX. ELEV.	388'±	INSPECTED BY	WMS
WATER OBSERVATION	See Below			DATE EXCAVATED	4/21/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 – 2	24"± Topsoil & leaves	
2 – 8	Brown coarse to fine SAND, and coarse to fine Gravel, little Silt with frequent cobbles and occasional boulders (Sample 1 @ 3'±)	dense to very dense
8 – 12	Brown coarse to fine SAND, some Silt, some medium to fine Gravel (very moist @ 8'±) (Sample 2 @ 9½'±)	dense
12 – 14	Test Pit Completed @ 12'± Slight groundwater seepage @ 9'±	

NOTE:

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Fig. # 12

Definitions of Identification Terms for Granular Soils

Our experience has shown that the following field identification system, which is patterned 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.

Principal Component (All Capitalized)

- GRAVEL — More than 50% of the sample by weight is Gravel
- SAND — More than 50% of the sample by weight is Sand
- SILT — More than 50% of the sample by weight is Silt

Minor Component (Proper Case)

- Gravel — Less than 50% of the sample by weight is Gravel
- Sand — Less than 50% of the sample by weight is Sand
- Silt — Less than 50% of the sample by weight is Silt

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

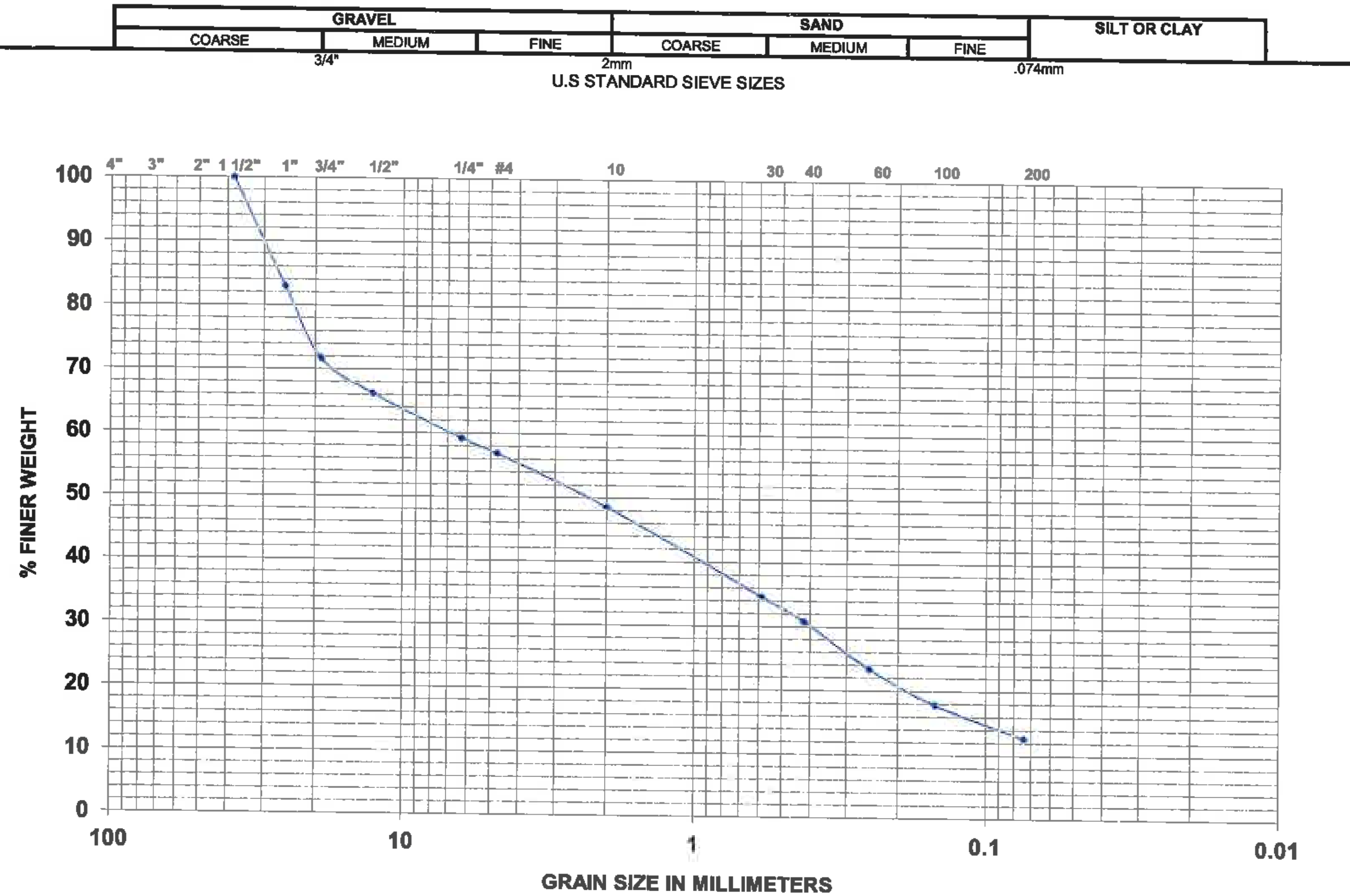
Size of Soil Components

- Gravel
  - Coarse gravel ranges from 3 inches to 1 inch
  - Medium gravel ranges from 1 inch to 3/8 inch
  - Fine gravel ranges from 3/8 inch to No. 10 sieve
- Sand
  - Coarse sand ranges from No. 10 sieve to No. 30 sieve
  - Medium sand ranges from No. 30 sieve to No. 60 sieve
  - Fine sand ranges from No. 60 sieve to No. 200 sieve
- Silt
  - Material which passes the No. 200 sieve
- Clay
  - Material which passes the No. 200 sieve
  - Exhibits varying degrees of plasticity

Gradation Designations

- 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 and fine
- Medium (m) — Less than 10% of the component is coarse and fine
- Fine (f) — Less than 10% of the component is coarse and medium

Fig. 13



Symbol	◆	■	▲
Boring	TP-1		
Sample	S-1		
Depth	2.5'		
% +3"			
% Gravel	51.33		
% Sand	35.99		
% Fines	12.68		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	7%		
Particle Size Sieve #	Percent Finer Than		
3"	-		
1 1/2"	100.00		
1"	83.06		
3/4"	71.79		
1/2"	66.31		
1/4"	59.31		
4	56.99		
10	48.67		
30	34.80		
40	30.89		
60	23.38		
100	17.86		
200	12.68		

PARTICLE SIZE DISTRIBUTION

CLIENT: FilBen Group, LLC
PROJECT: Montebello, NY
DATE: April 26, 2016
JOB NO. 9403 FIGURE No 14

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine GRAVEL, and coarse to fine Sand, little Silt
■	
▲	

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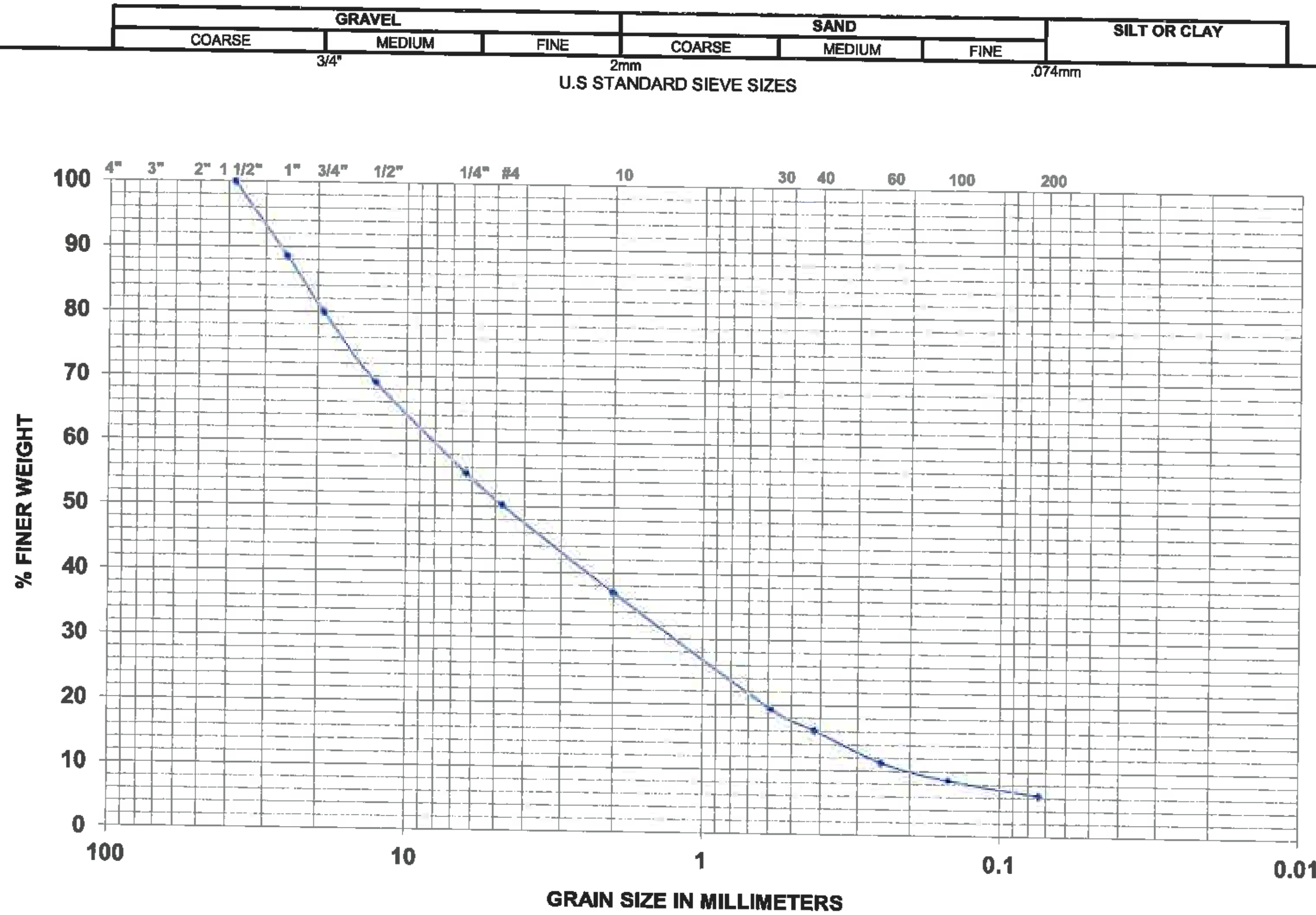


Symbol	◆	■	▲
Boring	TP-1		
Sample	S-2		
Depth	12'		
% +3"			
% Gravel	62.96		
% Sand	30.68		
% Fines	6.36		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	6%		

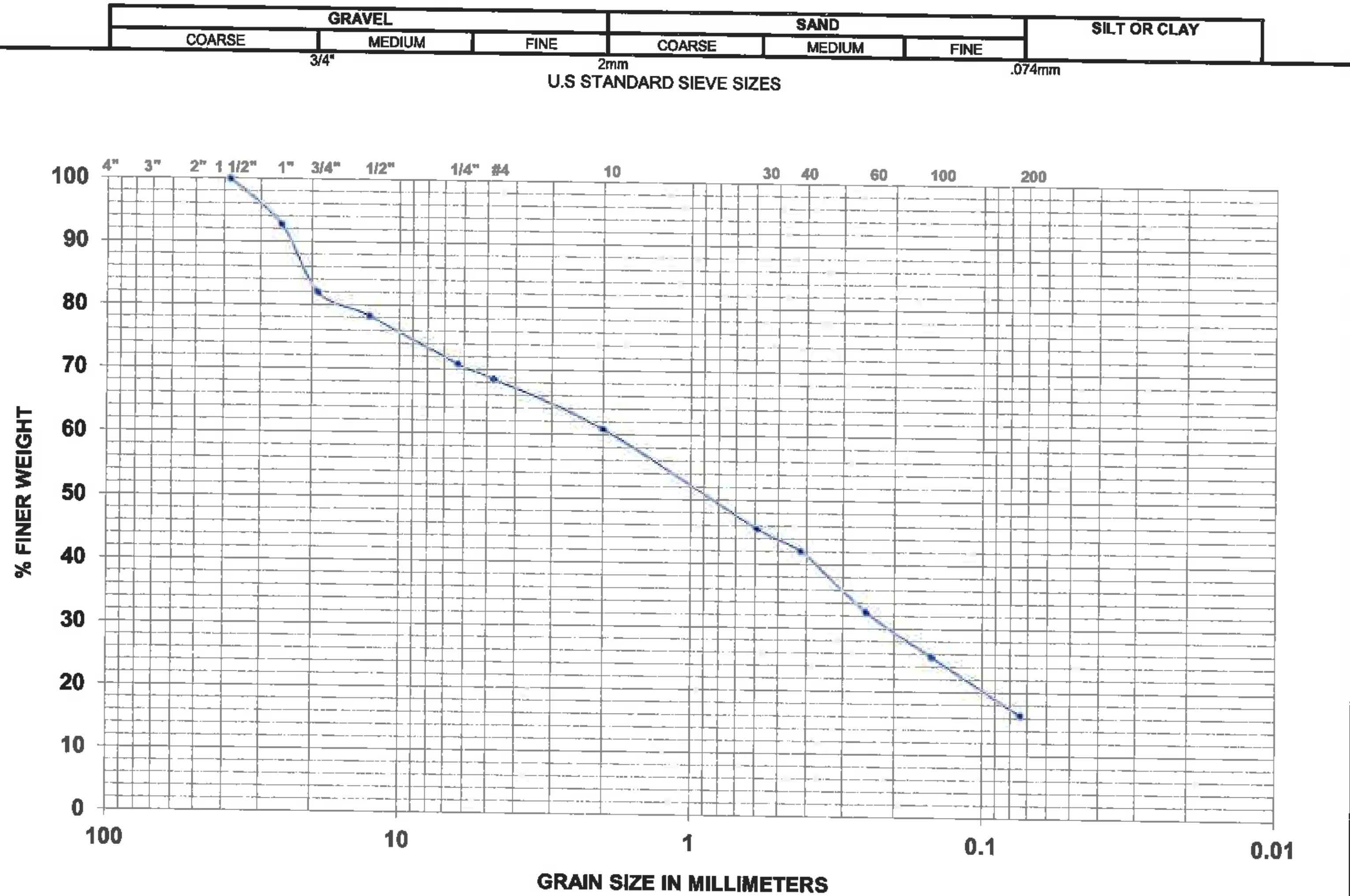
Particle Size Sieve #	Percent Finer Than		
3"	-		
1 1/2"	100.00		
1"	88.64		
3/4"	80.03		
1/2"	69.10		
1/4"	55.17		
4	50.33		
10	37.04		
30	19.44		
40	16.18		
60	11.29		
100	8.63		
200	6.36		

PARTICLE SIZE DISTRIBUTION

CLIENT: FilBen Group, LLC
PROJECT: Montebello,NY
DATE: April 26, 2016
JOB NO. 9403 FIGURE No 15

SESI CONSULTING ENGINEERS

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine Gravel, some coarse to fine Gravel, trace Silt
■	
▲	



Symbol	◆	■	▲
Boring	TP-5		
Sample	S-1		
Depth	4'		
% +3"			
% Gravel	39.14		
% Sand	44.46		
% Fines	16.40		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	7.5%		

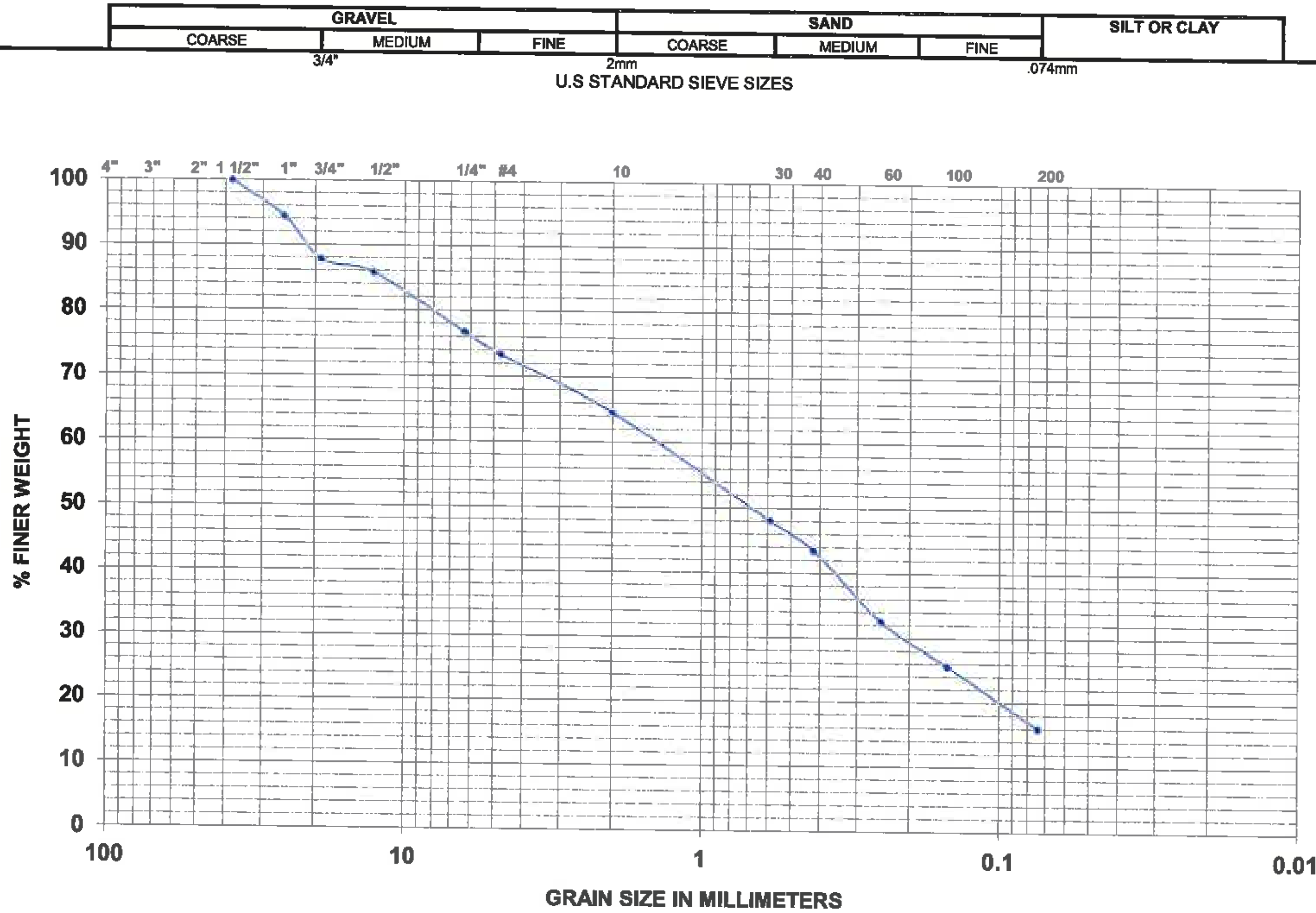
Particle Size Sieve #	Percent Finer Than		
3"	-		
1 1/2"	100.00		
1"	92.76		
3/4"	82.10		
1/2"	78.34		
1/4"	70.91		
4	68.58		
10	60.86		
30	45.55		
40	42.14		
60	32.65		
100	25.57		
200	16.40		

PARTICLE SIZE DISTRIBUTION

CLIENT: FilBen Group, LLC
PROJECT: Montebello,NY
DATE: April 26, 2016
JOB NO. 9403 FIGURE No 16

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine SAND, and coarse to fine Gravel, little Silt
■	
▲	

SESI CONSULTING ENGINEERS



Symbol	◆	■	▲
Boring	TP-11		
Sample	S-1		
Depth	3'		
% +3"			
% Gravel	35.41		
% Sand	48.60		
% Fines	15.99		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	8%		

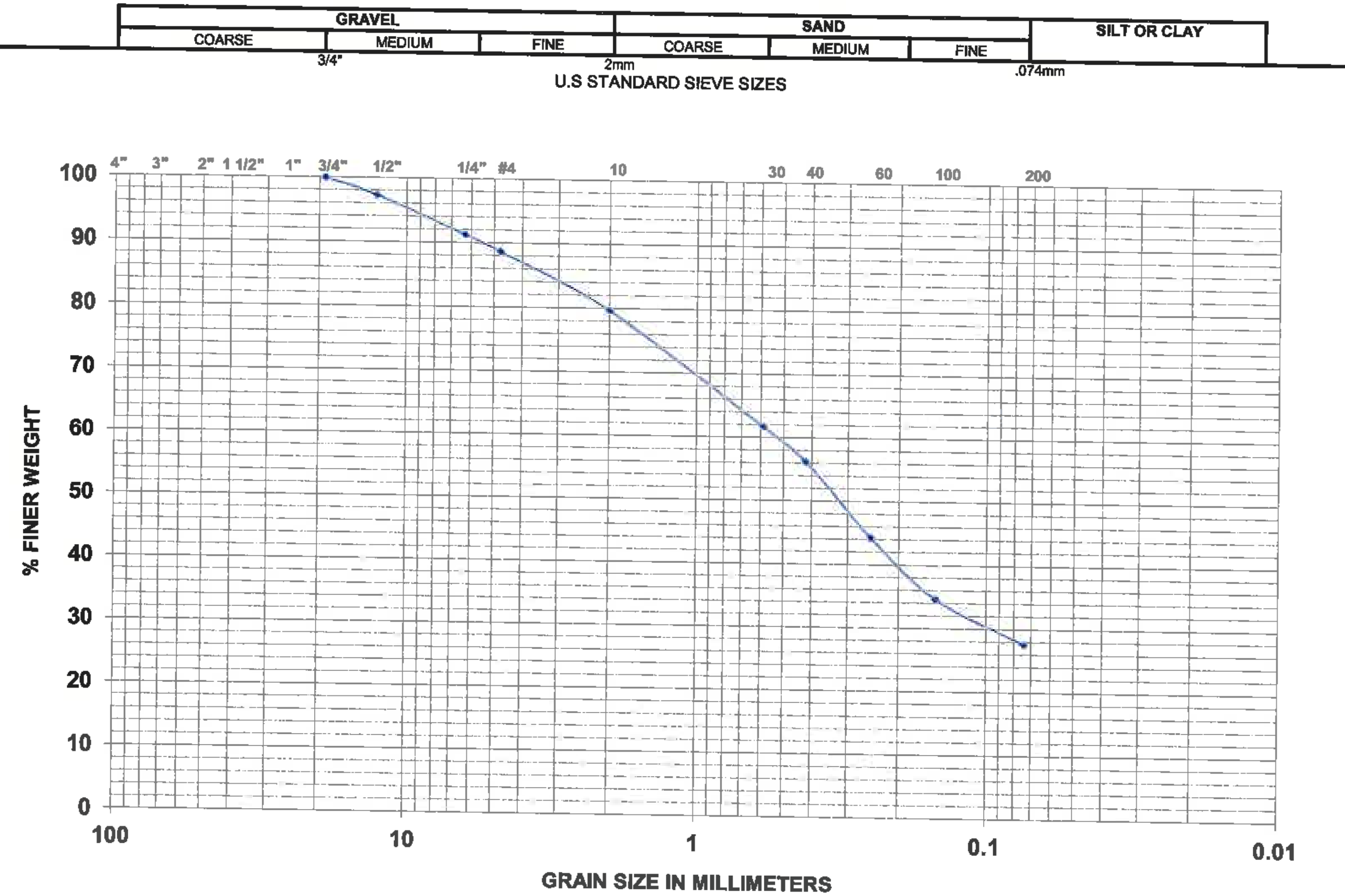
Particle Size Sieve #	Percent Finer Than		
3"	-		
1 1/2"	100.00		
1"	94.48		
3/4"	87.79		
1/2"	85.79		
1/4"	76.82		
4	73.43		
10	64.59		
30	48.16		
40	43.50		
60	32.63		
100	25.61		
200	15.99		

PARTICLE SIZE DISTRIBUTION

CLIENT: FilBen Group, LLC
PROJECT: Montebello,NY
DATE: April 26, 2016
JOB NO. 9403 FIGURE No 17

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine Sand, and coarse to fine Gravel, little Silt
■	
▲	

SESI CONSULTING ENGINEERS



Symbol	◆	■	▲
Boring	TP-11		
Sample	S-2		
Depth	9.5'		
% +3"			
% Gravel	20.31		
% Sand	52.07		
% Fines	27.62		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	10.5%		
Particle Size Sieve #	Percent Finer Than		
3"	-		
1 1/2"	-		
1"	-		
3/4"	100.00		
1/2"	97.35		
1/4"	91.30		
4	88.71		
10	79.69		
30	61.72		
40	56.26		
60	44.27		
100	34.57		
200	27.62		

PARTICLE SIZE DISTRIBUTION

CLIENT: FilBen Group, LLC
PROJECT: Montebello, NY
DATE: April 26, 2016
JOB NO. 9403 FIGURE No 18

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine SAND, some silt, some medium to fine Gravel
■	
▲	

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