

**Dente
Engineering**

**June 17, 2014
Report**



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June 17, 2014

Mr. Timothy Cassidy
Senior Living Management, LLC
823 West Park Avenue, #256
Ocean, New Jersey 07712

Re: Slope Stability Evaluation
Proposed Senior Living Facility
Town of Guilderland, New York
Dente File No. FDE-14-075

Dear Mr. Cassidy,

At your request we completed an evaluation of the slopes at the site east of New Karner Road in Guilderland, New York where planning for a new Senior Living Facility is underway. The purpose of our evaluation was to determine safe setback lines from the top of the slopes for the proposed construction. The slope evaluation was performed in general accord with our proposal number PFDE-13-168 and included:

- Site reconnaissance by a Geotechnical Engineer,
- Completion of two test borings to depths of 65 feet,
- Computer aided slope stability evaluations to assist in establishing setback lines for new construction at the site,
- Preparation of this report which summarizes the results of our investigations and evaluations.

This report and the recommendations contained within it were developed for specific application to the site as we currently understand it. Corrections in our understanding, should be brought to our attention so that we may evaluate their effect upon the recommendations offered in this report.

It should be understood that this report was prepared, in part, on the basis of a limited number of site explorations. The explorations were made at discrete locations and the overburden soils sampled at specific depths. Conditions are only known at the locations and through the depths investigated. Conditions at other locations and depths may be different, and these differences may impact upon the conclusions reached and the recommendations offered.

A sheet entitled *"Important Information about your Geotechnical Engineering Report"* prepared by the Association of Engineering Firms Practicing in the Geosciences is attached. This sheet should never be separated from this report and be carefully reviewed as it sets the only context within which this report should be used.

This report was prepared for informational purposes only and should not be considered part of the contract documents. It should be made available to interested parties in its entirety only. Should the data contained in this report not be adequate for the contractor's purposes, the contractor may make their own investigations, tests and analyses for use in bid preparation.

PROJECT AND SITE DESCRIPTION

The scope of this evaluation was limited to the west side of the ravine which bisects the project site in a north to south direction. We understand that the area east of the ravine will be dedicated to the Albany Pine Bush. Development of the site west of the ravine will include several single story structures with associated entrance roads and parking lots as shown on the Preliminary Concept Plan prepared by Hershberg & Hershberg Consulting Engineers and Land Surveyors, last revised 2/28/14.

The site is wooded, with ground surface elevations ranging between 270 and 295 feet at the top of a dune in the area planned for development. The ravine on the east side of this area is about 55 to 60 feet deep with overall slopes in the range of one vertical on 2.5 to 3 horizontal. A small stream, the Kaikout Kill, flows through the ravine in a south direction. No readily observable indications of slope failure were noted, however, the stream has formed very steep banks up to about five feet high. The types of vegetation observed indicate that seepage of groundwater likely occurs from the face of the slope in some areas.

SITE INVESTIGATIONS

The site's subsurface conditions were investigated through the completion of two test borings at the approximate locations shown on the attached Subsurface Investigation Plan. Individual subsurface logs for the test borings were prepared by a Geotechnical Engineer based on a visual classification of the soils encountered. The logs are attached together with cross-sections which illustrate the sloping topography and subsurface conditions revealed by the borings.

It should be understood that the subsurface logs present a description of the conditions encountered on the date, specific location investigated and the depths sampled. Conditions at locations and depths other than those investigated may differ. It should also be understood that conditions can change with time.

The explorations first encountered about 15 to 20 feet of relatively loose density fine sand with little to some silt. This was followed by a deposit of loose to compact silt which contained partings and occasional thin layers of silt and clay. The silt deposit extended about 45 to 60 feet below grade where medium consistency varved silt and clay soils were encountered. The borings were ended in the silt and clay at a depth of about 65 feet.

Groundwater was present in the upper layer of sand at depths of 10.5 feet below grade in test boring B-1 and 9.0 feet below grade in boring B-2. The groundwater depths may vary by several feet with seasonal fluctuations in precipitation and runoff.

SLOPE STABILITY EVALUATION

Three representative cross-sections through the slope were analyzed using the WINSTABL computer program to evaluate stability. The surface topography from the plans provided to us and the soil and groundwater profiles found by our investigation were input for the computer analyses. In the first step of our analyses, the soil strength parameters were adjusted until a safety factor equal to 1.0 was found for the existing slope. These strength parameters were then compared to those developed for similar soil deposits in the area and found to be within the expected range.

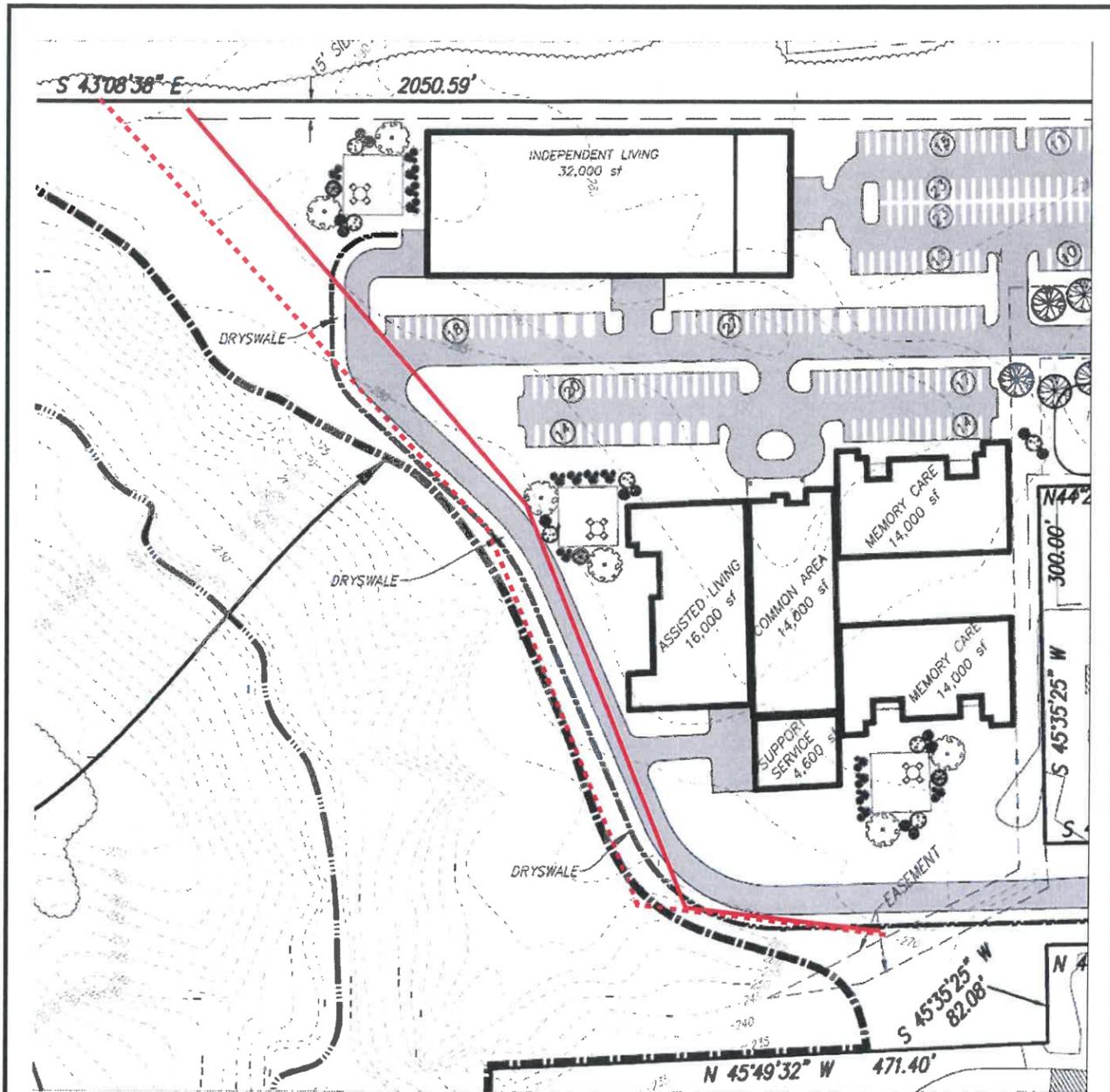
Using the calculated soil strength parameters as input for the second step in our computer analyses, the upper limit of the failure surface was incrementally moved back from the top of the slope until the safety factor increased to an acceptable value for the various types of construction planned. On this basis setback lines for the construction were established which would result in safety factors equal to at least 1.5 for buildings and 1.3 for site improvements including roads, storm water basins and any permanent type structure such as pools or decks. These setback lines are shown on Figure No. 1.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our evaluation we recommend that site improvements and building construction be setback from the top of the slope as indicated in Figure No. 1. For preliminary planning purposes it should be assumed that storm water basins planned near the top of the slope will need to be lined with an impermeable membrane to restrict infiltration which could reduce stability of the slopes. We should review final storm water basin designs to confirm that the liner is required. The following guidelines should also be implemented:

- No grade increases should be allowed between the top of the slope and the red dashed line on Figure No. 1.
- Surface runoff from the site should not be directed to the slopes. If necessary, the runoff may be solid piped to properly designed outlets at the bottom of the slope and/or channeled through stone lined trenches. The trenches, if used, should be lined with an impermeable membrane to limit infiltration of water into the slope soils.
- Vegetation and trees should not be removed from the slopes. Any areas that are disturbed by construction activities should be protected from erosion with the placement of stone where slopes are steeper than 1V:3H and through the establishment of a thick vegetative cover where slopes are flatter than 1V:3H.

Dente Engineering should review grading plans for the new construction when they are developed to confirm that our recommendations were properly understood and applied, and to allow for a refinement of the recommendations if warranted.



LEGEND

- Slope Setback Line for Building Construction - Safety Factor for Slope Failure >1.5
- - - - - Slope Setback Line for Site Improvements (roads, basins, and permanent structures such as pools, decks, ...) - Safety Factor for Slope Failure >1.3

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 594 Broadway - Watervliet, New York 12189
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Scale: N.T.S.

SLOPE SETBACK PLAN
Senior Living Facility
 Guilderland, New York

Drawn By: ECG

Date: 6/16/2014

Figure No. 1

It should be understood that stability of the slopes can be affected in the future by erosion, other natural events, and/or alteration of the slope geometry on adjoining properties beyond the subject property limits. After site development is complete, excavations into the slope and other slope or drainage alterations should not be allowed unless they are first evaluated and found to be acceptable by a Geotechnical Engineer.

CLOSURE

This report was prepared for specific application to the project site using methods and practices common to Geotechnical Engineering in the area and at the time of its preparation, no other warranties expressed or implied are made. We should be retained to review plans and specifications for the project to confirm that our recommendations were properly interpreted and applied.

We appreciate the opportunity to be of service. Should questions arise or if we may be of any other service, please contact us at your convenience.

Yours truly,
Dente Engineering, P.C.



Edward C. Gravelle, P.E.
Vice President



Fred A. Dente, P.E.
President

Attachments;

Information Regarding Geotechnical Report
Subsurface Investigation Plan and Cross-Sections
Test Boring Logs and Key

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you - should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ-sometimes significantly from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led

to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechnical Engineer For Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

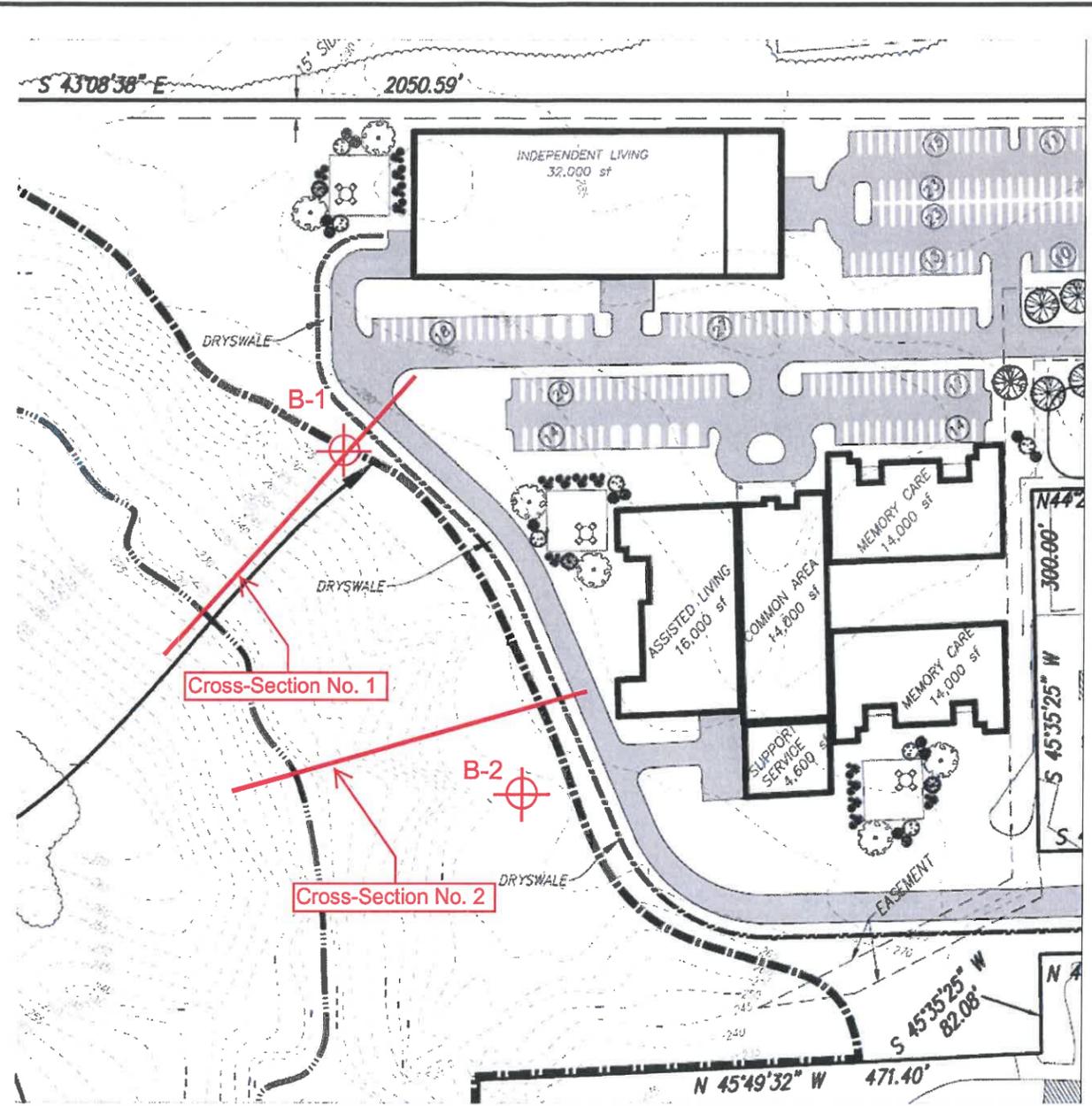


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**SUBSURFACE INVESTIGATION PLAN
AND CROSS-SECTIONS**

*Senior Living Facility
Town of Guilderland, New York*



LEGEND

B- Approximate Test Boring Location

DENTE ENGINEERING, P. C.
 594 Broadway - Watervliet, New York 12189
 Voice 518-266-0310 Fax 518-266-9238

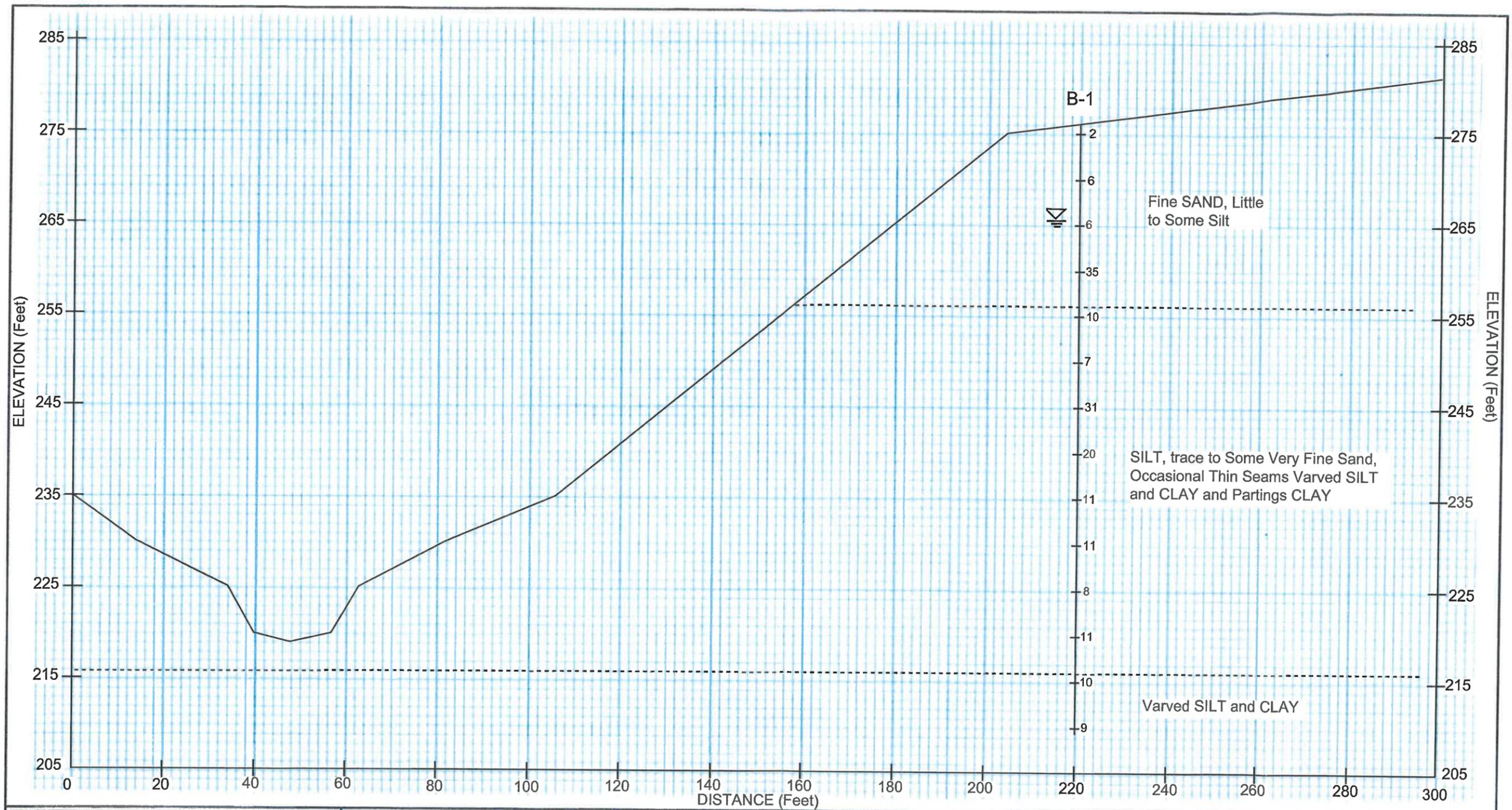
Scale: N.T.S.

SUBSURFACE INVESTIGATION PLAN
Senior Living Facility
Guilderland, New York

Drawn By: ECG

Date: 6/16/2014

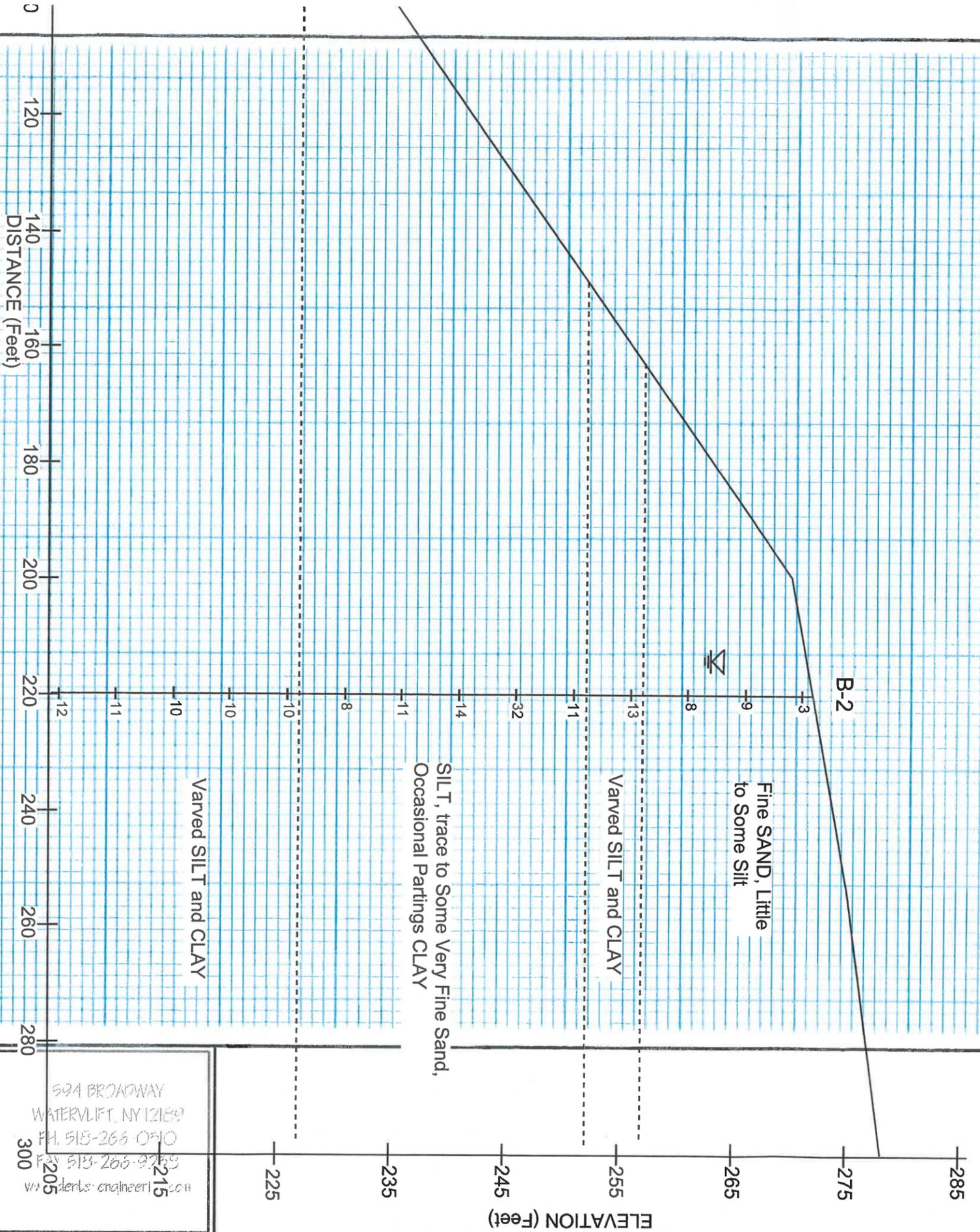
Drawing No. 1



NOTES:

1. Subsurface conditions are known only at the discrete test boring locations. The subsurface conditions can vary in an unknown manner between the test locations and they may differ from the approximate inferred stratification lines shown on the cross-section.
2. Groundwater levels were measured at the time of investigations under the conditions noted on the subsurface logs. Groundwater conditions can vary seasonally and in response to changes in land use.
3. Refer to the individual subsurface logs for the actual subsurface conditions at each discrete test location.

CROSS-SECTION NO. 1	
SLOPE STABILITY EVALUATION	
SENIOR LIVING FACILITY - GUILDERLAND, NY	
DATE: June 13, 2014	DRAWN BY: ECG
SCALE: As Shown	DRAWING NO. 2



CROSS-SECTION NO. 2

SLOPE STABILITY EVALUATION
 SENIOR LIVING FACILITY - GUILDERLAND, NY

DATE: June 13, 2014
 SCALE: As Shown

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 www.students-engineer.com

ENGINEERING
 DRAWN BY: ECG
 DRAWING NO. 3

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TEST BORING LOGS AND KEY

***Senior Living Facility
Town of Guilderland, New York***

INTERPRETATION OF SUBSURFACE LOGS

The Subsurface Logs present observations and the results of tests performed in the field by the Driller, Technicians, Geologists and Geotechnical Engineers as noted. Soil/Rock Classifications are made visually, unless otherwise noted, on a portion of the materials recovered through the sampling process and may not necessarily be representative of the materials between sampling intervals or locations.

The following defines some of the terms utilized in the preparation of the Subsurface Logs.

SOIL CLASSIFICATIONS

Soil Classifications are visual descriptions on the basis of the Unified Soil Classification ASTM D-2487 and USBR, 1973 with additional comments by weight of constituents by BUHRMASTER. The soil density or consistency is based on the penetration resistance determined by ASTM METHOD D1586. Soil Moisture of the recovered materials is described as DRY, MOIST, WET or SATURATED.

SIZE DESCRIPTION		RELATIVE DENSITY/CONSISTENCY (basis ASTM D1586)			
SOIL TYPE	PARTICLE SIZE	GRANULAR SOIL		COHESIVE SOIL	
		DENSITY	BLOWS/FT.	CONSISTENCY	BLOWS/FT.
BOULDER	> 12				
COBBLE	3" - 12"	LOOSE	< 10	VERY SOFT	< 3
GRAVEL-COARSE	3" - 3/4"	FIRM	11 - 30	SOFT	4 - 5
GRAVEL - FINE	3/4" - #4	COMPACT	31 - 50	MEDIUM	6 - 15
SAND - COARSE	#4 - #10	VERY COMPACT	50 +	STIFF	16 - 25
SAND - MEDIUM	#10 - #40			HARD	25 +
SAND - FINE	#40 - #200				
SILT/NONPLASTIC	< #200				
CLAY/PLASTIC	< #200				

SOIL STRUCTURE		RELATIVE PROPORTION OF SOIL TYPES	
STRUCTURE	DESCRIPTION	DESCRIPTION	% OF SAMPLE BY WEIGHT
LAYER	6" THICK OR GREATER	AND	35 - 50
SEAM	6" THICK OR LESS	SOME	20 - 35
PARTING	LESS THAN 1/4" THICK	LITTLE	10 - 20
VARVED	UNIFORM HORIZONTAL PARTINGS OR SEAMS	TRACE	LESS THAN 10

Note that the classification of soils or soil like materials is subject to the limitations imposed by the size of the sampler, the size of the sample and its degree of disturbance and moisture.

ROCK CLASSIFICATIONS

Rock Classifications are visual descriptions on the basis of the Driller's, Technician's, Geologist's or Geotechnical Engineer's observations of the coring activity and the recovered samples applying the following classifications.

CLASSIFICATION TERM	DESCRIPTION
VERY HARD	NOT SCRATCHED BY KNIFE
HARD	SCRATCHED WITH DIFFICULTY
MEDIUM HARD	SCRATCHED EASILY
SOFT	SCRATCHED WITH FINGERNAIL
VERY WEATHERED	DISINTEGRATED WITH NUMEROUS SOIL SEAM
WEATHERED	SLIGHT DISINTEGRATION, STAINING, NO SEAMS
SOUND	NO EVIDENCE OF ABOVE
MASSIVE	ROCK LAYER GREATER THAN 36" THICK
THICK BEDDED	ROCK LAYER 12" - 36"
BEDDED	ROCK LAYER 4" - 12"
THIN BEDDED	ROCK LAYER 1" - 4"
LAMINATED	ROCK LAYER LESS THAN 1"
FRACTURES	NATURAL BREAKS AT SOME ANGLE TO BEDS

Core sample recovery is expressed as percent recovered of total sampled. The ROCK QUALITY DESIGNATION (RQD) is the total length of core sample pieces exceeding 4" length divided by the total core sample length for N size cored.

GENERAL

- Soil and Rock classifications are made visually on samples recovered. The presence of Gravel, Cobbles and Boulders will influence sample recovery classification density/consistency determination.
- Groundwater, if encountered, was measured and its depth recorded at the time and under the conditions as noted.
- Topsoil or pavements, if present, were measured and recorded at the time and under the conditions as noted.
- Stratification Lines are approximate boundaries between soil types. These transitions may be gradual or distinct and are approximated.

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-1.1
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PROJECT: SENIOR LIVING FACILITY	DATE	START: 5/27/14	FINISH: 5/27/14
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LOCATION: Guilderland, New York	METHODS: 2-1/4" I.D. Hollow Stem Augers
CLIENT: Senior Living Management, LLC	with ASTM D1586 Sampling
JOB NUMBER: FDE-14-075	SURFACE ELEVATION:
DRILL TYPE: CME 55 ATV Mounted Rig	CLASSIFICATION: E. Gravelle, PE

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	1	WH	1				± 10" Topsoil over Light Brown Very Fine SAND, Some Silt, Moist
				1	1	2	
5'	2	2	3				Grades Brown Fine SAND, Little to Some Silt, Moist
				3		6	
10'	3	3	3				Grades Brown Mottled Fine SAND, Little Silt, Moist to Wet
				3		6	
15'	4	13	18				Grades Dark Grayish Brown Fine SAND, Some Silt with Partings Clay, Wet
				17		35	
							(MOIST TO WET, LOOSE TO COMPACT)
20'	5	5	5				Dark Grayish Brown SILT with thin seams Varved SILT and CLAY, Wet
				5		10	
25'	6	4	2				Grades Gray SILT, Wet
				5		7	
							(WET, LOOSE)

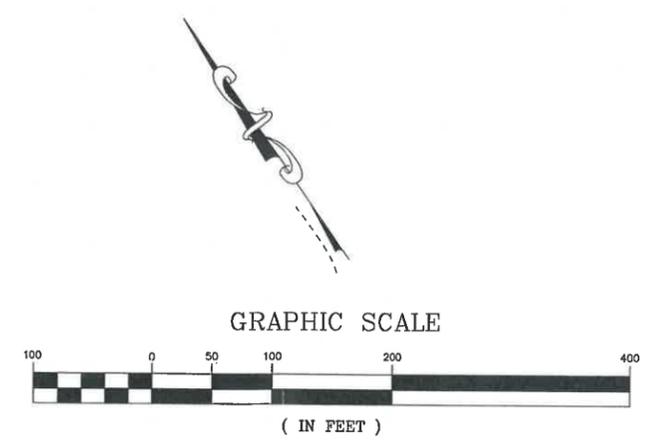
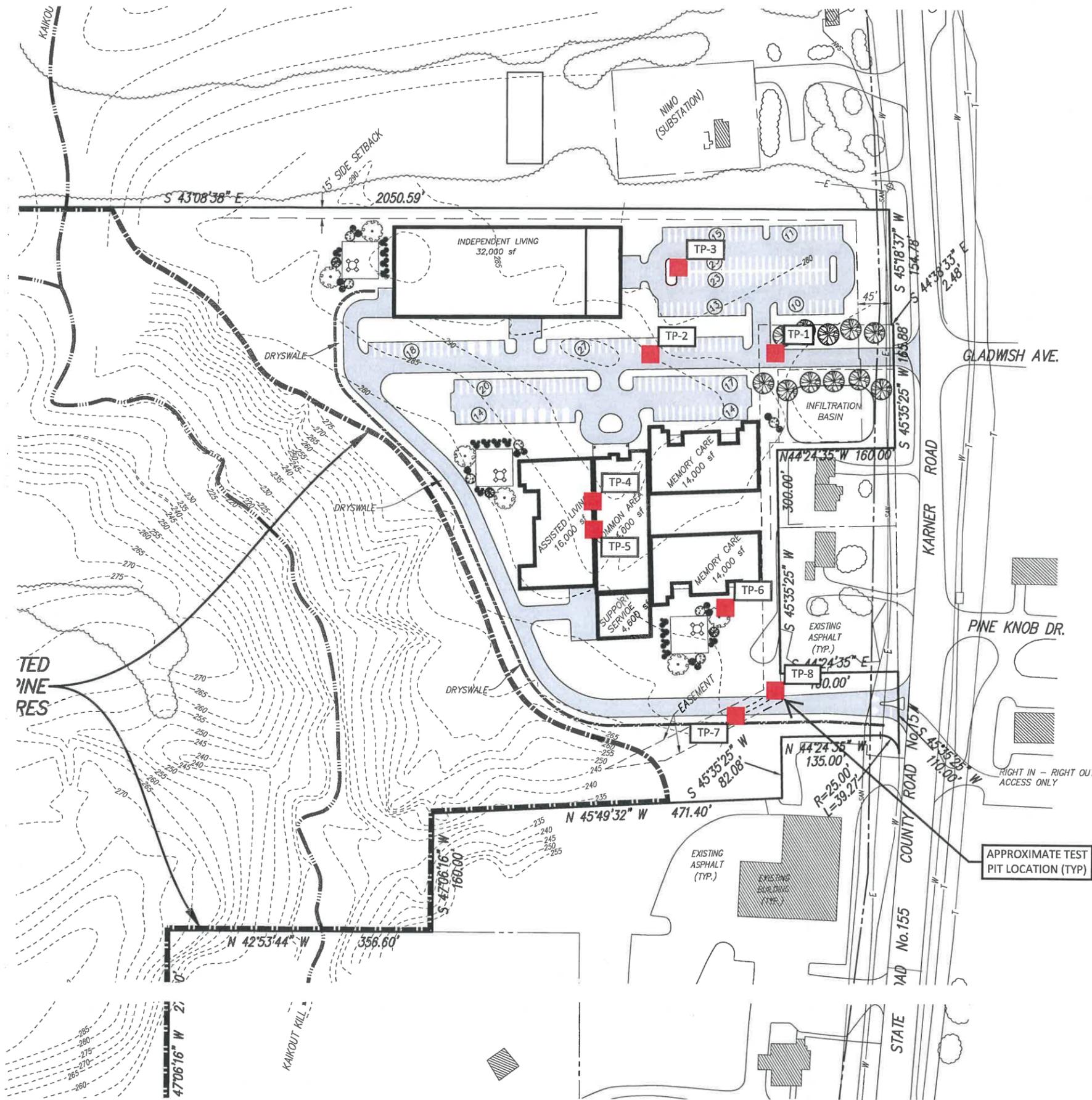
DENTE ENGINEERING, P.C.		SUBSURFACE LOG B-1.2					
PROJECT: SENIOR LIVING FACILITY		DATE	START: 5/27/14	FINISH: 5/27/14.			
LOCATION: Guilderland, New York		METHODS: 2-1/4" I.D. Hollow Stem Augers					
CLIENT: Senior Living Management, LLC		with ASTM D1586 Sampling					
JOB NUMBER: FDE-14-075		SURFACE ELEVATION:					
DRILL TYPE: CME 55 ATV Mounted Rig		CLASSIFICATION: E. Gravelle, PE					
SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	7	8	14				Dark Gray SILT, Little Very Fine Sand, Wet
				17		31	
35'	8	4	8				Similar to above with thin seams Varved SILT and CLAY, Wet
				12		20	
40'	9	3	4				Grades Gray SILT, Wet
				7		11	
45'	10	4	5				Grades trace to Some Very Fine Sand, Wet
				6		11	
50'	11	3	4				Similar to above with partings Clay, Wet
				4		8	
55'	12	3	4				Similar to above
				7		11	
							(WET, COMPACT TO LOOSE)

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-2.1
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PROJECT: SENIOR LIVING FACILITY	DATE	START: 5/27/14	FINISH: 5/28/14
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LOCATION: Guilderland, New York	METHODS: 2-1/4" I.D. Hollow Stem Augers
CLIENT: Senior Living Management, LLC	with ASTM D1586 Sampling
JOB NUMBER: FDE-14-075	SURFACE ELEVATION:
DRILL TYPE: CME 55 ATV Mounted Rig	CLASSIFICATION: E. Gravelle, PE

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	1	WH	1				± 10" Topsoil over Light Brown Very Fine SAND, Some Silt, Moist
				2	2	3	
5'	2	4	4				Grades Brown Fine SAND, Little Silt, Moist
				5		9	
10'	3	2	4				Grades Brown Fine SAND, Some to and Silt, Wet (MOIST TO WET, LOOSE)
				4		8	
15'	4	5	6				Gray Varved SILT and CLAY, Wet (WET, MEDIUM)
				7		13	
20'	5	4	5				Dark Gray SILT, trace to Little Very Fine Sand, Wet
				6		11	
25'	6	4	15				Similar to above (WET, FIRM TO COMPACT)
				17		32	



DENTE ENGINEERING
594 BROADWAY
WATERVLIET, NY 12189
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SENIOR LIVING FACILITY
GUILDERLAND, NY
TEST PIT LOCATION PLAN
SCALE: AS SHOWN
DATE: JUNE 16, 2014
DRAWN BY: J.ROBICHAUD

APPROXIMATE TEST
PIT LOCATION (TYP.)

RIGHT IN - RIGHT OUT
ACCESS ONLY

INTERPRETATION OF SUBSURFACE LOGS

The Subsurface Logs present observations and the results of tests performed in the field by the Driller, Technicians, Geologists and Geotechnical Engineers as noted. Soil/Rock Classifications are made visually, unless otherwise noted, on a portion of the materials recovered through the sampling process and may not necessarily be representative of the materials between sampling intervals or locations.

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SIZE DESCRIPTION		RELATIVE DENSITY/CONSISTENCY (basis ASTM D1586)			
SOIL TYPE	PARTICLE SIZE	GRANULAR SOIL		COHESIVE SOIL	
		DENSITY	BLOWS/FT.	CONSISTENCY	BLOWS/FT.
BOULDER	> 12				
COBBLE	3" - 12"	LOOSE	< 10	VERY SOFT	< 3
GRAVEL-COARSE	3" - 3/4"	FIRM	11 - 30	SOFT	4 - 5
GRAVEL - FINE	3/4" - #4	COMPACT	31 - 50	MEDIUM	6 - 15
SAND - COARSE	#4 - #10	VERY COMPACT	50 +	STIFF	16 - 25
SAND - MEDIUM	#10 - #40			HARD	25 +
SAND - FINE	#40 - #200				
SILT/NONPLASTIC	< #200				
CLAY/PLASTIC	< #200				

SOIL STRUCTURE		RELATIVE PROPORTION OF SOIL TYPES	
STRUCTURE	DESCRIPTION	DESCRIPTION	% OF SAMPLE BY WEIGHT
LAYER	6" THICK OR GREATER	AND	35 - 50
SEAM	6" THICK OR LESS	SOME	20 - 35
PARTING	LESS THAN 1/4" THICK	LITTLE	10 - 20
VARVED	UNIFORM HORIZONTAL PARTINGS OR SEAMS	TRACE	LESS THAN 10

Note that the classification of soils or soil like materials is subject to the limitations imposed by the size of the sampler, the size of the sample and its degree of disturbance and moisture.

ROCK CLASSIFICATIONS

Rock Classifications are visual descriptions on the basis of the Driller's, Technician's, Geologist's or Geotechnical Engineer's observations of the coring activity and the recovered samples applying the following classifications.

CLASSIFICATION TERM	DESCRIPTION
VERY HARD	NOT SCRATCHED BY KNIFE
HARD	SCRATCHED WITH DIFFICULTY
MEDIUM HARD	SCRATCHED EASILY
SOFT	SCRATCHED WITH FINGERNAIL
VERY WEATHERED	DISINTEGRATED WITH NUMEROUS SOIL SEAM
WEATHERED	SLIGHT DISINTEGRATION, STAINING, NO SEAMS
SOUND	NO EVIDENCE OF ABOVE
MASSIVE	ROCK LAYER GREATER THAN 36" THICK
THICK BEDDED	ROCK LAYER 12" - 36"
BEDDED	ROCK LAYER 4" - 12"
THIN BEDDED	ROCK LAYER 1" - 4"
LAMINATED	ROCK LAYER LESS THAN 1"
FRACTURES	NATURAL BREAKS AT SOME ANGLE TO BEDS

Core sample recovery is expressed as percent recovered of total sampled. The ROCK QUALITY DESIGNATION (RQD) is the total length of core sample pieces exceeding 4" length divided by the total core sample length for N size cored.

GENERAL

- Soil and Rock classifications are made visually on samples recovered. The presence of Gravel, Cobbles and Boulders will influence sample recovery-classification-density/consistency determination.
- Groundwater, if encountered, was measured and its depth recorded at the time and under the conditions as noted.
- Topsoil or pavements, if present, were measured and recorded at the time and under the conditions as noted.
- Stratification Lines are approximate boundaries between soil types. These transitions may be gradual or distinct and are approximated.

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-1
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 283'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
1'	± 4" FOREST BOTTOM / TOPSOIL / ROOTS	E	
2'	FILL: Brown Fine SAND, Little Silt with roots noted (MOIST)	E	
3'		E	
4'		E	
5'		E	
6'		Possible ±6" thick Original Topsoil Layer at ±5'-6" depth	E
7'	Orange / Brown Fine SAND, Little Silt (MOIST)	E	
8'		E	
9'	End of test pit at 8' depth from ground surface.		
10'	No groundwater in test pit at completion of excavation.		
11'	Area appears to have been filled using on site soils to create roadway into site.		
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-2
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 290'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
1'	± 3" FOREST BOTTOM / SANDY TOPSOIL	E	
2'	Brown Fine SAND, Little Silt with roots noted (MOIST)	E	
3'	Grades to Brown / Orange around 2' depth from ground surface	E	
4'		E	
5'		E	
6'		E	
7'		E	
8'		E	
9'	End of test pit at 8' depth from ground surface.		
10'	No groundwater in test pit at completion of excavation.		
11'			
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-3
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 280'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
1'	FILL: Brown Fine SAND, Little Silt with roots noted (MOIST)	E	
2'		E	
3'		E	
4'		E	
5'		E	
6'	Possible ± 2" thick Original Topsoil Layer at ±5' depth Orange Fine SAND, Little Silt	E	
7'	End of test pit at 7' depth from ground surface.		
8'	No groundwater in test pit at completion of excavation.		
9'			
10'			
11'			
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-4
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 288'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
1'	± 8" SANDY TOPSOIL	E	
2'	Tan / Brown Fine SAND, Little Silt (MOIST)	E	
3'		E	
4'		E	
5'		E	
6'		E	
7'	End of test pit at 6' depth from ground surface.		
8'	No groundwater in test pit at completion of excavation.		
9'	Mixed debris including metal, plastic, section of wood fence, noted on top of the ground surface at this test pit location.		
10'			
11'			
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-5
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 286'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
	± 1' TOPSOIL / ROOTS / PLASTIC	E	
1'	Tan Fine SAND, Little Silt (MOIST)	E	
2'		E	
3'		E	
4'		E	
5'		E	
6'		E	
7'		E	
8'		E	
9'	End of test pit at 8' depth from ground surface.		
10'	No groundwater in test pit at completion of excavation.		
11'	Thick brush with concrete fragments, plastic and metal at the ground surface at this location.		
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-6
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 282'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
± 1'	DARK BROWN TOPSOIL WITH METAL AND PLASTIC NOTED	E	
1'	Tan Fine SAND, Little Silt (MOIST)	E	
2'		E	
3'		E	
4'		E	
5'		E	
6'		E	
7'		E	
8'	End of test pit at 7' depth from ground surface.		
9'	No groundwater in test pit at completion of excavation.		
10'	Concrete fragments noted at ground surface.		
11'			
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-7
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 280'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
1'	FILL: Dark Brown F-C SAND, SILT and GRAVEL with cobbles, boulders, glass, metal fragments and wire noted Multiple C sized boulders were noted in the fill	D	
2'		D	
3'		D	
4'		D	
5'		D	
6'		D	
7'		D	
8'		D	
9'	End of test pit at 8' depth from ground surface due to difficulty excavating and presence of large boulders.		
10'			
11'	No groundwater in test pit at completion of excavation. The native site soils were not encountered through the depths explored. Fills appear to have been placed at the head of a ravine finger.		
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

DENTE ENGINEERING

TEST PIT FIELD LOG

PROJECT: Senior Living Facility		NUMBER: TP-8
LOCATION: Guilderland, New York		FILE NO. FDE-14-075
CONTRACTOR: Wm. J. Keller & Sons Construction Corp.		DATE: 5-19-14
MAKE: Kubota	MODEL: KX121-3 Mini	ENGINEER: J.Robichaud, P.E.
WEATHER: Mostly Sunny	CAPACITY: 1/4 yd ³	BOOM REACH: 12'
GROUND LEVEL: ± 280'	TIME START: N/A	TIME STOP: N/A

DEPTH	SOIL DESCRIPTION	EXCAVATION EFFORT	BOULDER COUNT
1'	± 18" DARK BROWN SANDY TOPSOIL	E	
2'	Orange / Brown Fine SAND, Little Silt (MOIST)	E	
3'		E	
4'		E	
5'		E	
6'		E	
7'	End of test pit at 6' depth from ground surface.		
8'	No groundwater in test pit at completion of excavation.		
9'			
10'			
11'			
12'			
13'			
14'			
15'			

Remarks: Ground surface elevation is interpolated from "Preliminary Concept Plan For No. 145 New Karner Road," Sheet C1, last revision dated 2/28/14, prepared by Hershberg & Hershberg. Plan shows 5' topo intervals.

BOULDER COUNT		ABBREVIATIONS	EXCAVATION EFFORT
SIZE RANGE CLASSIFICATION	LETTER DESIGNATION	F = FINE M = MEDIUM C = COARSE F-M = FINE TO MEDIUM F-C = FINE TO COARSE GR = GRAY BN = BROWN YEL = YELLOW	EASY.....E
6" - 18"	A		MODERATE.....M
18" - 36"	B		DIFFICULT.....D
36" & OVER	C		

**Dente
Engineering**

**Oct. 17, 2014
Supplemental
Report**



ALBANY AREA

594 Broadway
Watervliet, NY 12189
Voice 518-266-0310
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BUFFALO AREA

PO Box 482
Orchard Park, NY 14127
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Fax 716-648-3521

October 7, 2014

Mr. Timothy Cassidy
Senior Living Management, LLC
823 West Park Avenue, #256
Ocean, New Jersey 07712

Re: Supplemental Slope Stability Evaluation
Proposed Senior Living Facility
Town of Guilderland, New York
Dente File No. FDE-14-075

Dear Mr. Cassidy,

This supplemental report was prepared to address concerns raised by the Town's reviewing agencies regarding stability of the site slopes during an earthquake and the potential impacts of stream erosion on slope stability. Specifically, in their letter dated September 30, 2014 to Delaware Engineering, Gifford Engineering had the following comments based on their review of our original Slope Stability Evaluation for the site:

1. Seismic analyses should be performed to determine its impact on the slope stability at the site.
2. Erosion of the toe of the slope by the stream could negatively impact slope stability. This was not addressed in the report.

As detailed below, our analysis indicates that no change to the construction setback lines presented in our original slope stability evaluation is required to address the seismic concerns. In addition, efforts to minimize stream erosion are not considered to be necessary at this time.

Seismic Slope Stability

As a basis for our evaluation we obtained a seismic deaggregation for the site from the USGS Earthquake Hazards website. The deaggregation indicates that the peak ground acceleration on bedrock for the site is 0.09g with a magnitude 6.0 earthquake. We adjusted the peak ground acceleration to 0.135g to account for possible amplification of the seismic motions through the soil deposits overlying bedrock at the site. This amplification was based on published relationships between maximum acceleration on rock and local site conditions recommended by Seed and Idriss.

In the first step of the evaluation the pseudo-static safety factor for the slope was determined using the maximum ground acceleration 0.135g. This yielded a safety factor less than 1.0 for the three cross-sections analyzed. This does not indicate that a slope failure will occur, rather it means that the seismic motions may induce some movement of the slope which can be estimated using a permanent seismic deformation analysis and then compared to acceptable values.

The first step in the deformation analysis entails calculation of the ground acceleration that results in a pseudo-static safety factor equal to 1.0. This is termed the yield acceleration, which for the setback line for site improvements was a minimum 0.075g and for the building setback line was a minimum 0.105g. The permanent displacements are then related to the ratio of the yield ground acceleration to the maximum ground acceleration in a chart developed by Makdisi and Seed. The chart indicates that permanent displacements at the setback line for site improvements should be less than two (2) centimeters and for the building setback line the displacements should be less than 0.2 centimeters.

Stream Erosion Impacts

In general the slope is relatively gently in the vicinity of the stream and the eroded banks less than two feet high as shown on the photographs below. While stream erosion may continue to occur, it is our opinion that it will have negligible impact on the overall slope stability at this time.



General Site Photographs (10/07/2014)
(Site is on left side of stream)

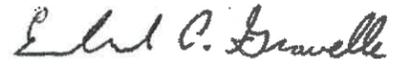
Summary

In summary, it is our opinion that no changes to the setback lines presented in our original Slope Stability Evaluation dated June 17, 2014 are required to address seismic concerns. If the design earthquake were to occur, the movements induced by the ground motions should be well below acceptable levels. In addition, it is our opinion that future stream erosion should have minimal impact on overall slope stability as it relates

to the recommended set back lines. The installation of rip-rap or other stream bed erosion control is not considered necessary at this time.

We appreciate the opportunity to be of service. Please contact us at your convenience if you have any questions or if additional information is required.

Yours truly,
Dente Engineering, P.C.



Edward C. Gravelle, P.E.
Vice President



Fred A. Dente, P.E.
President

**Guilderland
Zoning Board**

Oct. 30, 2014

**Non-
Jurisdiction
Letter**

Town of Guilderland

ALBANY COUNTY, ROUTE 20

P.O. BOX 339

GUILDERLAND, N.Y. 12084-0339

KENNETH D. RUNION
SUPERVISOR

(518) 356-1980
FAX: (518) 356-5514

October 30, 2014

Mr. Dan Hershberg
Hershberg & Hershberg
18 Locust Street
Albany NY 12203

Re: Pine Bush Senior Living
Town of Guilderland, Tax Map #40.00-2-18

Dear Mr. Hershberg,

We have been provided with the following information;

- Preliminary Concept Plan C-1, C-2 and C-AR with the last revision dated 10/16/2014

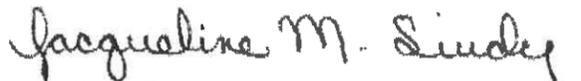
Pursuant to this revision, I would like to advise you that a variance from the angle of repose setback required by the Town of Guilderland Zoning Code is no longer required. The plans submitted propose to locate all habitable structures outside of said setback.

Please be advised that this letter only addresses the variance request related to the angle of repose setback. There may still be aspects of the project that require variances from other sections of the Zoning Code, including parking requirements. However, additional variances can be considered concurrent with an application for a Special Use Permit for the facility.

At this time, it will be necessary for your client to apply for a rezone of the property as the current zoning (BNRP) does not permit the construction of a multiple residence building. Application for rezones must be submitted to the Town Clerk. Should the parcel be rezoned by the Town Board, our office will be in a position to accept a Special Use Permit application for the project.

If additional information is needed, do not hesitate to contact this office.

Sincerely,



Jacqueline M. Study
Building Inspector and
Acting Zoning Administrator

Cc: Mr. Timothy Cassidy, Senior Living Management
Mr. Kenneth Johnson, Delaware Engineerig