GEOTECHNICAL EVALUATION
NORTHERN RIVERS FACILITY
ALBANY, NEW YORK

Dente File No. FDE-17-192

I. INTRODUCTION

This report presents the results of a geotechnical evaluation completed by the Dente Group for the proposed Facility Building in Albany, New York. The evaluation was completed in general accord with Dente proposal number FDE-16-240, which was accepted by John Kellogg of BBL Construction Services of Albany, New York.

In general, our scope of services for this project consisted of the following:

- Review of Geotechnical studies completed by this office at nearby sites,
- Layout and completion of nine test borings,
- Preparation of this report, which summarizes the results of our explorations and presents recommendations to assist in planning for the geotechnical related aspects of the project.

This report and the recommendations contained within it were developed for specific application to the site and construction planned, as we currently understand it. Corrections in our understanding, changes in the structure locations, their grades, loads, etc. 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 field exploration. The borings were advanced 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

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different, and these differences may impact upon the conclusions reached and the recommendations offered. For this reason, we strongly recommend that we be retained to provide site observation services during construction.

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 contractors' bidding purposes, the contractors may make their own investigations, tests, and analyses for use in bid preparation.

The recommendations offered in this report concerning the control of surface and subsurface waters, moisture or vapor membranes address conventional Geotechnical Engineering aspects only and are not to be construed as recommendations for controlling or providing an environment that would prohibit or control infestations of the structure or its surroundings with mold or other biological agents.

II. SITE AND PROJECT DESCRIPTION

The site is located along the east side Academy Road as depicted on the USGS and Site Plan presented in Appendix A. The proposed building site is generally level and currently a lawn and playground area.

The new building is to be a 1 story slab on grade structure with a plan area of about 26,000sf.

III. SUBSURFACE CONDITIONS

The subsurface conditions at the site were investigated through the completion of nine test borings at the approximate locations shown on the plan in Appendix A. The test borings were completed using a standard rotary drill rig equipped with hollow stem augers. As the augers were advanced, the overburden soils were sampled and their relative density determined using split-spoon sampling techniques in general accord with ASTM D1586 procedures. Representative portions of the recovered soil samples were transported to our office for visual classification by a Geotechnical Engineer. Individual subsurface logs were prepared for the borings on this basis and are presented in Appendix B.

The subsurface logs should be reviewed for a description of the conditions encountered at the specific test locations. It should be understood that conditions are only known at the depths and locations sampled. Conditions at other depths and locations may be different.

Subsurface Profile

About nil to between two and four feet of fill material was found at the site in some areas and is composed of relatively loose mixtures of the native site fine sands with little to some silt. The underlying native soils were also composed of fine sand with little to some silt. These soils were initially brown, moist, and of a loose to firm relative density. These soils were mottled in some areas at depths as shallow as two to three feet, indicating seasonal high water. Underlying the granular soils are brown grading to grey varved and laminated silt and clay. These were of a medium/stiff grading to very soft consistency through the depths explored at this site, about 42 feet.

Groundwater Conditions

Groundwater measurements were attempted at completion of drilling and sampling and the results are noted on the individual subsurface logs. It should be understood that these measurements likely do not accurately reflect the actual groundwater depths because adequate time did not pass after completion of drilling for water to enter and achieve a static level in the augers.

Based on the change in the soil coloration, it appears that the static groundwater level was generally present below about 15 feet. Layers of trapped or perched groundwater should be expected to exist seasonally within the surface sand soils at very shallow depths.

IV. GEOTECHNICAL RECOMMENDATIONS

A. General Site Evaluation

Based upon our evaluation of the subsurface conditions disclosed through our investigation, we have developed the following general conclusions and recommendations to assist in planning for design and construction.

1. All existing fills should be removed and replaced beneath new building areas. Consideration can be given to leaving the fills in place beneath pavements provided that the surfaces are proof-rolled and stabilized and the Owner accepts some risk that settlement may occur and require maintenance.
2. The new buildings may be supported using ordinary spread foundations bearing upon the undisturbed native soils or on structural fill placed to establish design grades.
3. Layers of trapped or perched groundwater may be encountered in the site excavations at shallow depths, seasonally. For these reasons, perimeter swales and or underdrains should be provided along and beneath pavements, and foundation drains along the sides of the perimeter building foundations.

4. Site preparation should preferably be done during a seasonal dry period to reduce the adverse impacts of soft/wet subgrades on construction. This will minimize the quantity of undercutting that will be required to remove and replace soft and/or wet soils and establish a stable base for construction. A contingency should be carried in the project budget for undercutting and replacement of soft and/or wet subgrade soils.
5. The on-site soils, in some areas and at certain depths, contain appreciable amounts of silt, and they will be very sensitive to construction activities and even slight variations in moisture content.

The following report sections provide detailed recommendations to assist in planning for design and construction. We should review plans and specifications prior to their release for bidding to allow us to refine our recommendations, if required, and confirm that our recommendations were properly interpreted and applied.

B. Seismic Design Considerations

For seismic design purposes, we evaluated the site conditions in accord with Section 1613 of the International Building Code (2015) adopted by New York State. On this basis, it was determined that Seismic Site Class “D - Stiff Profile” is applicable to this project. Based upon the composition of the site soils, liquefaction should not occur in response to earthquake motions. The site classification and liquefaction analyses is based, in part, upon shear wave velocity testing conducted in similar subsurface profiles in the general project area.

C. Site Preparation and Earthwork

We caution that the subgrade soils, where silt rich, will easily soften and lose strength when subjected to ordinary construction equipment traffic when the soils are wet. The contractor should make efforts to maintain the subgrades in a dry and stable condition. These efforts may include the installation of drainage trenches and shaping of subgrade surfaces to promote runoff away from the construction areas, restricting construction equipment traffic from traveling across the subgrade surface when it is wet, and installing temporary haul and construction roads as appropriate for the specific weather conditions and equipment he intends to employ at the site.

Site preparation in the proposed building pad and pavement areas should commence with the clearing and stripping of topsoil and surficial organics along with the installation of perimeter swales to intercept and divert runoff away from the work areas. All existing fills should be removed from beneath new building pads and extending at least five (5) feet beyond their perimeter. The fills may be left in place

beneath pavements provided that the surfaces are proof-rolled and stabilized as recommended below and the Owner accepts some risk that settlement may occur.

The subgrades must be shaped, crowned, and sloped to promote their drainage at all times and that of the granular structural fills which will overlie them. Prior to placing fills, the building and pavement subgrades should be proof-rolled by completing at least three (3) passes using a steel drum roller with a static weight of at least ten (10) tons. The roller should operate in the static mode unless directed otherwise by a Geotechnical Engineer observing the work. Any subgrade soils that are or become soft and wet should be undercut and stabilized accordingly.

Both suitable site soils and Imported Structural Fill may be used as fill and backfill in building and pavement areas, and they should consist of well graded bank-run sand and gravel with no particles larger than three (3) inches, between 30 and 70 percent passing the No. 4 sieve, and less than 15 percent, by weight, of material finer than a No. 200 mesh sieve. The fill should not contain recycled asphalt, bricks, glass, pyritic shale, or recycled concrete, unless the recycled concrete is from a NYSDOT approved stockpile, and even then only with the owner's specific consent.

The Structural Fill should be placed in uniform loose layers no more than about one (1) foot in thickness where heavy vibratory compaction equipment is used. Smaller lifts should be used where hand operated equipment is required for compaction. Each lift should be compacted to no less than 95 percent of the maximum dry density for the soil which is established by the Modified Proctor Compaction Test, ASTM D1557. In landscape areas, the compaction may be reduced to 90 percent of maximum dry density.

D. Foundations

New building foundations may be seated on the undisturbed native soils or imported Structural Fill placed to increase site grades.

The foundations may be proportioned for a maximum net allowable bearing pressure equal to 3,000 psf. Continuous wall and isolated column foundations should have minimum widths of 18 and 36 inches, respectively, even if this results in a bearing pressure which is less than the maximum allowable. Exterior foundations should bear at least four (4) feet beneath final adjacent exterior grades to afford frost penetration protection. Interior foundations may be seated at a nominal two (2) foot depth below the floor slab if allowed by local codes.

Assuming standard care is used in preparing the bearing grades, we estimate that total foundation settlement should be less than one (1) inch. The settlements should occur within a few days after construction is completed and each load increment is applied.

The installation of a perimeter foundation drain is recommended for the new building.

E. Floor Slabs

Floor slabs should be constructed upon a minimum eight (8) inch thick subbase of Imported Structural Fill and four (4) inch thick base of crushed stone (ASTM Blend 57 material). A vapor retarder (Stego Wrap 15 mil Class A or equivalent) should be installed if floor coverings or moisture sensitive coatings are to be placed on the slab. The vapor retarder should be positioned above or below the stone base in accord with the American Concrete Institute Manual of Concrete Practice Manual Section 302.1R. A modulus of subgrade reaction equal to 150 pounds per cubic inch (pci) at the top of the stone base layer may be assumed for the slab design purposes.

F. Pavements

Two flexible pavement sections are provided for consideration at the site dependent upon anticipated traffic types. A Heavy Section should be used for entrance drives and areas subject to repeated truck traffic, and a Light Section employed for areas subject to automobile parking and occasional delivery and/or service trucks. We should review final grading plans to determine if modifications to the pavement design are needed.

MATERIAL SECTION	THICKNESS (inches)		NYSDOT SPECIFICATION
	Light Section	Heavy Section	
Wearing Course	1	1	403 Type 6
Binder Course	2	3	403 Type 3
Base Course	8	12	304 Type 2
Fabric – Mirafi 500X or Eq.	Yes	Yes	-

Note: The base course thickness may be reduced to 8" where at least 12" of imported Structural Fill is placed beneath the subgrade elevation.

Rigid Portland concrete pavement may be designed to bear upon twelve (12) inches of NYSDOT Type 2 material and the synthetic fabric recommended above, and designed in accord with the recommended procedures of the American Concrete Institute or Portland Cement Association using a composite modulus of subgrade reaction equal to 150 pounds per cubic inch when constructed upon the subgrades prepared as recommended previously.

All base course layers and their subgrades should be drained through sloping and crowning of subgrades to the peripheral swales and/or french drains recommended previously, or to underdrains where appropriate to the final grading plan to assure satisfactory performance. Peripheral and intermediate under drains should also be incorporated, as well as gravel backfilled utilities with sloped subgrades, to assure that drained base courses are provided. All base course materials should be compacted to 95 percent of the material's maximum dry density as established through the Modified Proctor Test, ASTM D-1557.

It should be understood that sidewalks and pavements constructed upon the site's soils will heave as frost seasonally penetrates the subgrades. The magnitude of the seasonal heave will vary with many factors, and result in differential movements. As the frost leaves the ground, the sidewalks and pavements will settle back, but not entirely in all areas, and this may accentuate the differential movements across the pavement areas. Where curbs, walks, and storm drains meet these pavements, these differential heave and settlements may result in undesirable movements, and create trip hazards. To limit the magnitude of heave and the creation of these uneven joints to generally tolerable magnitudes for most winters, a sixteen (16) inch thick crushed stone base course, composed of Blend 57 aggregate, may be placed beneath the sensitive sidewalk, drive, etc. areas. The stone layer must have an underdrain placed within it.

It should also be understood that the recommended pavement sections were not designed to support heavy construction equipment loads which would require an augmented section. The contractor should construct temporary haul and construction roadways and routes about the site as appropriate for the specific weather conditions and construction equipment he intends to employ, and the overburden soil conditions encountered in the specific areas. Construction period traffic should not be routed across the recommended pavement sections unless augmented.

Finally, all pavements require routine maintenance and occasional repairs. Failure to provide maintenance and complete the required repairs in a timely manner will result in a shortened pavement service life.

G. Plan Review and Construction Monitoring

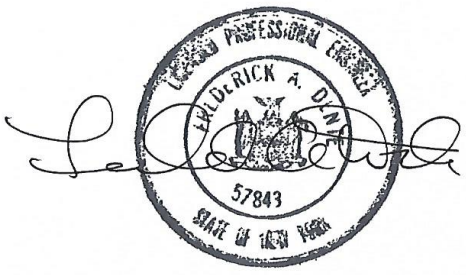
The Dente Group should be retained to review plans and specifications related to site grading, foundations, and earthwork prior to their release for bidding to confirm that the recommendations contained herein were properly interpreted and applied.

It should be understood that the actual subsurface conditions that exist across this site will only be known when the site is excavated. For this reason, we should be retained to monitor earthwork and bearing grade preparations for foundations, floor slabs, and pavements. The presence of the Geotechnical Engineer during the earthwork and foundation construction phases will allow validation of the subsurface conditions assumed to exist for this study and the design recommended in this report. We believe this construction sequence observation and testing should be provided by us as a consultant to the Owner, Architect, or Construction Manager. We do not believe these services should be provided through the general or earthwork contractor.

V. CLOSURE

This report was prepared for specific application to the project site and the construction planned using methods and practices common to Geotechnical Engineering in the area and at the time of its preparation. No other warranty, either expressed or implied, is made. 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.

Prepared by,
Dente Group



Fred A. Dente
Principal

Important Information about This

Geotechnical-Engineering Report

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

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering 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 given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- 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;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the 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. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include 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 personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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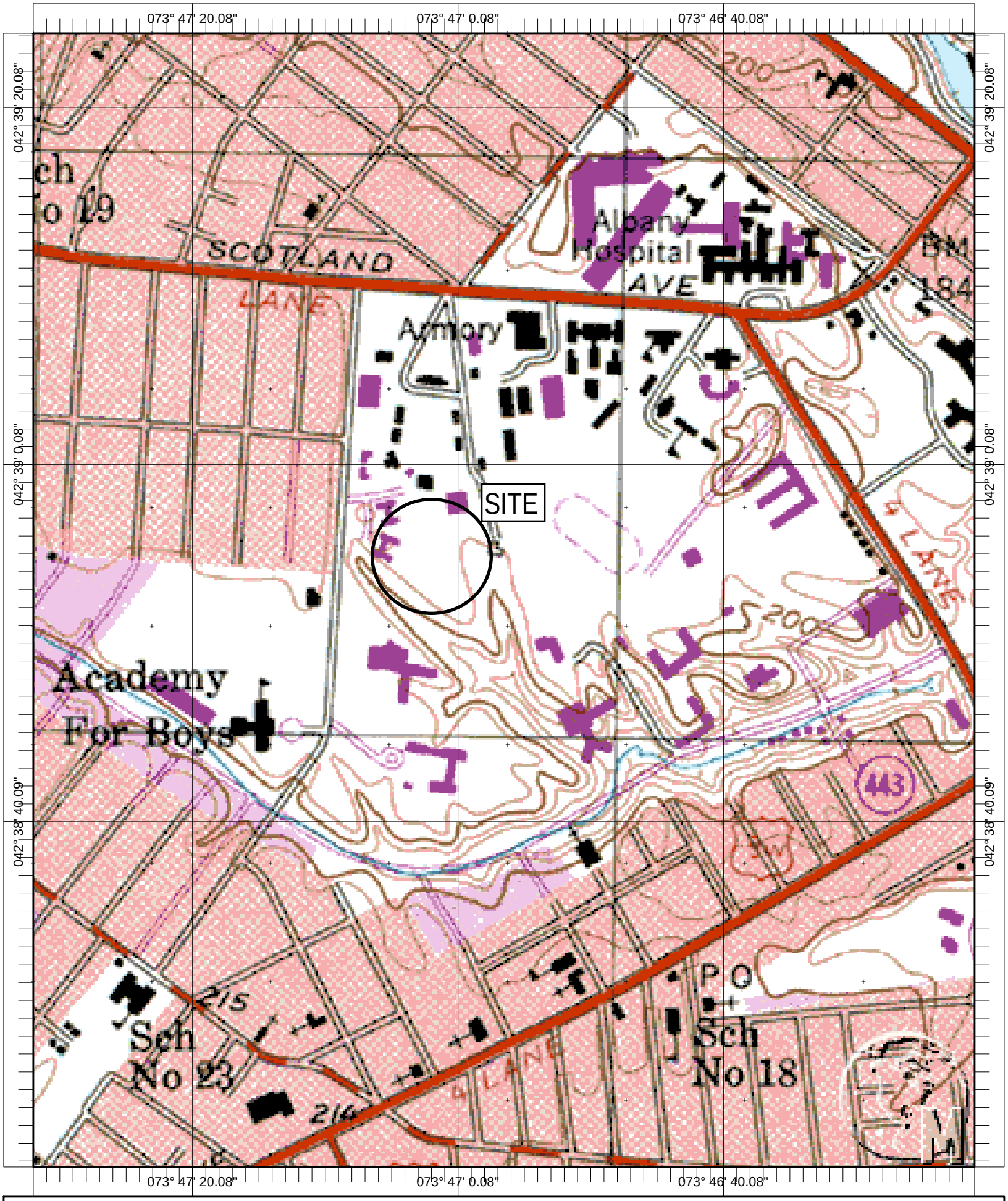

Name: ALBANY
Date: 10/19/117
Scale: 1 inch equals 666 feet

Location: 042° 38' 52.5" N 073° 46' 56.7" W

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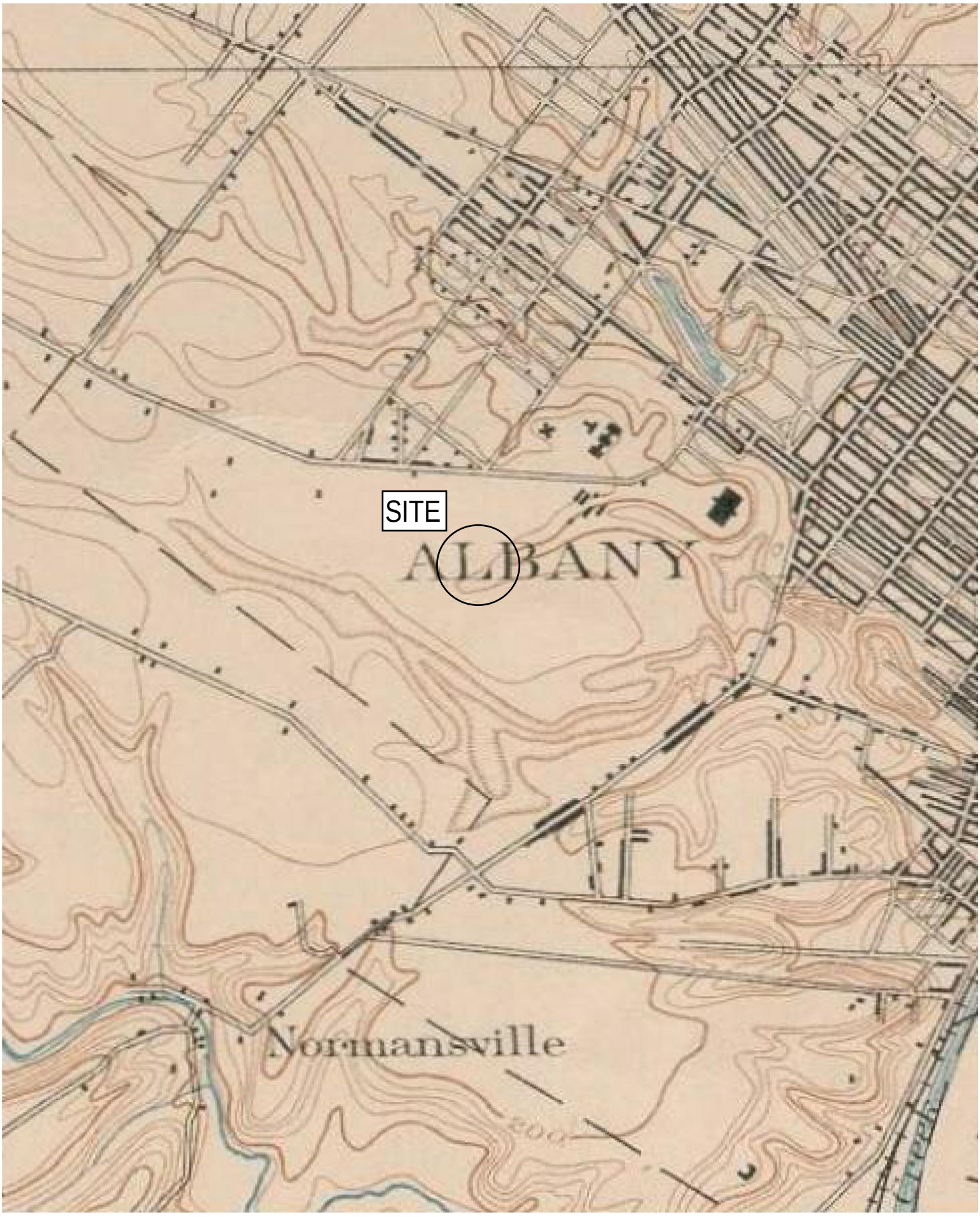

Northern Rivers, Albany, New York 1893


73° 47' 6" W
73° 46' 55" W
42° 38' 57" N
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Soil Map may not be valid at this scale.
Map Scale: 1:1,170 if printed on A landscape (11" x 8.5") sheet.
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Meters
0 15 30 60 90
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Albany County, New York
Survey Area Data: Version 14, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2015—Mar 29, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Uh	Udorthents, clayey-Urban land complex	6.0	100.0%
Totals for Area of Interest		**6.0**	**100.0%**

Albany County, New York

Uh—Udorthents, clayey-Urban land complex

Map Unit Setting

National map unit symbol: 9pj2
Mean annual precipitation: 36 to 41 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, clayey, and similar soils: 40 percent
Urban land: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Clayey

Typical profile

H1 - 0 to 18 inches: silty clay
H2 - 18 to 72 inches: stratified silt loam to clay

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.2 inches)

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Minor Components

Scio

Percent of map unit: 10 percent
Hydric soil rating: No

Hudson

Percent of map unit: 10 percent
Hydric soil rating: No

Rhinebeck

Percent of map unit: 7 percent
Hydric soil rating: No

Madalin

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Albany County, New York
Survey Area Data: Version 14, Sep 23, 2016

View southwest from the area of B-2

View east from the area of B-1

View northwest from the area of B-7

View northwest from the area of B-4

C2

FOR MUNICIPAL APPROVAL ONLY-NOT INTENDED FOR CONSTRUCTION

Soil Boring Locations

B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

GENERAL NOTES

1. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209-2, OF THE NEW YORK STATE EDUCATION LAW.
2. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH THE LAND SURVEYOR'S SIGNATURE AND ORIGINAL EMBOSSED OR INK SEAL SHALL BE CONSIDERED VALID TRUE COPIES.
3. THIS SURVEY WAS PREPARED FOR THE PARTIES AND PURPOSE INDICATED HEREON. ANY EXTENSION OF THE USE BEYOND THE PARTIES OR PURPOSE INDICATED IS POSSIBLY FORBIDDEN WITHOUT WRITTEN RELEASE OR PERMISSION OF FRANCIS G. MCCLOSKEY, LICENSE No. 049441.
4. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT SURVEYED OR EXAMINED OR CONSIDERED AS PART OF THIS SURVEY.
5. THIS SURVEY MAP IS SUBJECT TO WHATEVER FACTS AN ACCURATE AND CURRENT ABSTRACT OF TITLE MAY SHOW.
6. SPOT ELEVATIONS AND CONTOURS ARE BASED ON NAVD88 DATUM.
7. UNDERGROUND UTILITIES SHOWN ARE TAKEN FROM FIELD LOCATION WHERE POSSIBLE AND FROM RECORD DATA. THERE EXIST CALL DIG SAFELY NEW YORK AT 1-800-962-7962 TO HAVE UTILITIES MARKED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

LEGEND

R.O.W.	RIGHT OF WAY	⊠	MONUMENT
ena.	ENCROACHMENT	⊙	IRON ROD
P.O.B.	POINT OF BEGINNING	⊙	MANHOLE
S.F.	SQUARE FEET	⊞	CATCHBASIN
N/F	NOW OR FORMERLY	⊸	SIGN
N	NORTH	≡	BOLLARD
S	SOUTH	——x——	FENCE LINE
E	EAST	——OHW——	OVERHEAD WIRE UTILITY POLE # OHT WIRE
W	WEST	———	GUARD RAIL
tel.	TELEPHONE	⊕	WATER SHUT OFF
elec.	ELECTRIC	⊗W	WATER VALVE
L.	LIGHT	☆	HYDRANT
P.	PAGE	⊗GV	GAS VALVE
	STREET LIGHT	☼	LIGHT POLE
	STORM LINE		CONCRETE
	SEWER LINE		PAVEMENT
	WATER LINE		STONE
	GAS LINE		
	OVERHEAD ELECTRIC		
	UNDERGROUND ELECTRIC		

REVISIONS

REMARKS	DATE	REMARKS	DATE	REMARKS	DATE

HERRSHBERG & HERRSHBERG
Consulting Engineers and Land Surveyors
18 Locust Street
Albany, New York 12203

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SITE PLAN FOR
No. 60 ACADEMY ROAD
ALBANY, NEW YORK

FILE: 170316 | SCALE: 1"=30' | DRN: MLW | CHK'D: DRH | DATE: 9/14/17 | 170216-LDWG

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	
BOULDER	> 12	DENSITY	BLOWS/FT.	CONSISTENCY	BLOWS/FT.
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 GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-1

PROJECT: Northern Rivers	**DATE**	**START:** 9/28/17	**FINISH:** 9/28/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 218.5’
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 3" Topsoil
	1	4	7				**FILL**: Brown Fine SAND, Some Silt, gravel
				4	5	11	Noted (MOIST)
	2	4	3				Grades Brown Fine SAND, Little to trace silt,
				2	1	5	**(MOIST, FIRM TO LOOSE)**
	3	WH	1				Dark Brown Fine SAND, trace silt, roots noted
5'				1	2	2	**(MOIST, LOOSE)**
	4	3	4				
				5	6	9	Brown SILT and CLAY
	5	4	8				Grades Little Gray Mottling
				9	12	17	
10'	6	4	6				Grades Silt Partings
				6	8	12	
15'	7	1	2				Grades Gray
				2	3	4	**(MOIST, MEDIUM & STIFF TO SOFT)**
							End of boring 17.0’ depth.
							Groundwater was not present within auger
20'							casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-2

PROJECT: Northern Rivers	**DATE**	**START:** 9/28/17	**FINISH:** 9/28/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 219.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 3" Topsoil
	1	2	2				**POSSIBLE FILL**: Brown Mottled Fine SAND,
				3	3	5	Little Silt (MOIST)
	2	4	5				Grades Brown/Orange Mottled, Some Silt
				6	6	11	**(MOIST, LOOSE TO FIRM)**
	3	3	7				Brown SILT and CLAY
5'				8	11	15	
	4	14	16				
				14	16	30	
10'	5	3	3				Grades Gray
				4	4	7	
15'	6	1	1				Silt Seams noted
				4	4	5	**(MOIST, MEDIUM & HARD TO SOFT)**
							End of boring 17.0' depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-3

PROJECT: Northern Rivers	**DATE**	**START:** 9/27/17	**FINISH:** 9/27/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 219.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 2" Topsoil
	1	2	5				**POSSIBLE FILL**: Brown Fine SAND, Some
				7	7	12	Silt (MOIST)
	2	5	6				Grades Little Gray Mottling
				5	6	11	**(MOIST, FIRM)**
	3	1	4				
5'				8	12	12	Brown SILT and CLAY, Silt Seams noted
	4	14	18				Grades Gray
				20	18	38	
10'	5	3	4				
				4	4	8	
15'	6	1	1				
				1	3	2	**(MOIST, MEDIUM & HARD TO V. SOFT)**
							End of boring 17.0' depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-4

PROJECT: Northern Rivers	**DATE**	**START:** 9/27/17	**FINISH:** 9/27/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 218.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 4" Topsoil
	1	1	2				**POSSIBLE FILL:** Brown/Gray Mottled Fine
				3	4	5	SAND, Little Silt (MOIST)
	2	5	7				Grades Little Gray Mottling, perched water
				8	8	15	Noted **(MOIST, LOOSE AND FIRM)**
	3	3	1				
5'				5	8	6	Brown SILT and CLAY
	4	12	13				Grades Brown/Gray Mottled
				14	18	27	
							Grades Gray
10'	5	1	3				
				3	3	6	
15'	6	1	2				Similar with Silt Seams
				2	3	4	**(MOIST, MEDIUM & HARD TO SOFT)**
							End of boring 17.0' depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-5

PROJECT: Northern Rivers	**DATE**	**START:** 9/27/17	**FINISH:** 9/27/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 218.0’
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	1	1	3				**POSSIBLE FILL**: Brown/Orange Mottled Fine
				3	5	6	SAND, Some Silt
	2	4	5				**(MOIST, LOOSE)**
				3	2	8	Brown SILT and CLAY
	3	4	7				
5'				11	14	18	
	4	16	16				
				18	20	34	
	5	4	6				Grades Gray
				5	6	11	
10'	6	1	2				
				3	3	5	
15'	7	3	5				Silt Seams noted
				4	5	9	
20'	8	1	1				
				1	2	2	
25'	9	WH	1/12”				
				-	1	1	

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-5 contin.

PROJECT: Northern Rivers	**DATE**	**START:** 9/27/17	**FINISH:** 9/27/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 218.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	10	WH	WH				Gray SILT and CLAY
				WH	1	WH	
35'	11	WH	WH				
				2	3	2	
40'	12	WH	WH				**(MOIST, MEDIUM, HARD, STIFF AND**
				2	2	2	**VERY SOFT)**
							End of boring 42.0' depth.
							Groundwater was not present within auger
45'							Casings upon completion of borehole.
50'							
55'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-6

PROJECT: Northern Rivers	**DATE**	**START:** 9/28/17	**FINISH:** 9/28/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 217.5’
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 1” Topsoil
	1	2	2				**POSSIBLE FILL:** Brown Fine SAND, Little Silt
				2	2	4	
	2	2	4				**(MOIST, LOOSE)**
				4	4	8	
	3	2	3				Brown SILT and CLAY
5'				7	9	10	
	4	15	16				
				18	17	34	
10'	5	3	4				Grades Gray with Silt Bands
				5	5	9	
15'	6	2	3				
				4	4	7	**(MOIST, MEDIUM AND HARD)**
							End of boring 17.0’ depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-7

PROJECT: Northern Rivers	**DATE**	**START:** 9/28/17	**FINISH:** 9/28/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 217.5’
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 3" Topsoil
	1	1	2				**POSSIBLE FILL**: Brown/Gray Mottled Fine
				2	2	4	SAND, Little Silt (MOIST)
	2	3	3				**(MOIST, LOOSE)**
				4	3	7	
	3	3	7				Brown SILT and CLAY, Little Gray Mottling
5'				9	11	16	
	4	14	15				
				20	16	35	
10'	5	3	2				Grades Gray
				4	3	6	
15'	6	2	2				
				3	4	5	**(MOIST, MEDIUM & HARD TO SOFT)**
							End of boring 17.0’ depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-8

PROJECT: Northern Rivers	**DATE**	**START:** 9/28/17	**FINISH:** 9/28/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 217.5'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 2" Topsoil
	1	2	2				**POSSIBLE FILL**: Brown/Gray Mottled Fine
				3	3	5	SAND, Little Silt (MOIST)
	2	3	3				Grades Brown Fine SAND, Little Silt
				4	4	7	**(MOIST, LOOSE)**
	3	3	2				
5'				5	7	7	Brown SILT and CLAY
	4	8	12				
				16	16	28	Grades Gray
10'	5	3	3				
				4	5	7	
15'	6	2	3				
				4	4	7	**(MOIST, MEDIUM AND HARD)**
							End of boring 17.0' depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							

DENTE GROUP, A TERRACON COMPANY	SUBSURFACE LOG: B-9

PROJECT: Northern Rivers	**DATE**	**START:** 9/28/17	**FINISH:** 9/28/17

LOCATION: Albany, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: BBL Construction Services	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-17-192	**SURFACE ELEVATION**: +/- 217.5’
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 2” Topsoil
	1	2	2				**POSSIBLE FILL:** Brown/Orange Mottled
				3	3	5	Fine SAND, Some Silt (MOIST)
	2	4	4				Grades Little Gray Mottling, perched water
				6	6	10	Noted **(MOIST, LOOSE)**
	3	1	4				Brown SILT and CLAY
5'				7	9	11	
	4	14	14				Grades Gray with Fine Sand Partings
				16	16	30	
10'	5	2	2				
				3	4	5	
15'	6	2	2				
				3	3	5	**(MOIST, MEDIUM & HARD TO SOFT)**
							End of boring 17.0’ depth.
							Groundwater was not present within auger
20'							Casings upon completion of borehole.
25'							