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AMS Acquisitions
One Bridge Plaza North
Suite 840
Fort Lee, NJ 07024

Attn: Mr. Ryan Sutherland, AIA LEED AP BD&C
Director of Design and Development

Re: Report on Subsurface Soil and Foundation Investigation
Proposed 4 Story Building
Albany Post Road and Craft Lane
Buchanan, NY (CSA Job #23-34)

Dear Mr. Sutherland:

In accordance with our proposals dated 6 March 2023 and 11 October 2023 and your subsequent authorization, we have completed a Subsurface Soil and Foundation Investigation for the referenced site. The purpose of this study was to determine the nature and engineering properties of the subsurface soil and groundwater conditions for the new construction, to recommend a practical foundation scheme, to determine the allowable bearing capacity of the site soils, to define the transition areas from a pile foundation to shallow spread footings on bedrock, and to preliminary determine the subsurface conditions in the new stormwater management areas.

We understand that the planned construction will consist of a new 4 story building with 1 level of below-grade parking. The proposed construction will also include soil and rock slopes, site retaining walls, stormwater management areas, new underground utilities, and new asphalt-paved driveways and parking areas. To guide us in our study, you have provided us with plans that indicate the existing site conditions and the location of the proposed construction.

Our scope of work for this project included the following:

1. Reviewed the proposed layout, the existing site conditions, the expected soil conditions, and planned this study.

2. Retained Environmental Technical Drilling Inc. to advance 19 test borings at the subject site.

3. Retained American Tree and Landscape Corp. to excavate 12 test pits at the site and Traficante Contracting Inc. to excavate 17 test pits at the site.

4. Laid out the boring and test pit locations in the field, provided full time inspection of the explorations, obtained soil samples, and prepared detailed logs and a Boring & Test Pit Location Plan (Figure 1).

5. Performed soil identification tests on selected soil samples in our laboratory.

6. Analyzed the field and laboratory test data and prepared this report containing the results of this study.

1.0 SITE DESCRIPTION

The subject property is located behind 3115 and 3119 Albany Post Road at the intersection with Craft Lane in Buchanan, Westchester County, New York. The property is currently undeveloped and wooded with varying (sparse to dense) vegetation. The site grades generally slope down from east to west and vary from approximately +120.0 to +66.0.

There is a pond on the adjacent property to the south that extends into the southern portion of the subject site. Historic aerial photographs indicate that the pond was larger at one time and extended further to the north into the area of the proposed building. The pond was filled sometime between 1964 and 1974.

2.0 PROPOSED CONSTRUCTION

We understand that the planned construction will consist of a new 4 story building with 1 level of below-grade parking. The finished floor elevation for the new building will be at elevation +79.0. Based on the existing site conditions, we anticipate that cuts up to 21 feet will be required in the southeast and northeast corners of the building and minor fills up to 2 feet will be required on the west side of the building to achieve the finished floor elevation. Based on the plans, we understand that the proposed construction will also include soil and rock slopes, new retaining walls, stormwater management areas, underground utilities, and asphalt-paved driveways and parking areas.

We also understand that the foundation plan has not been prepared as of the date of this report. Based on provided preliminary information, we expect that the tops of the new footings and piles caps will be about 12 inches to 24 inches below the floor slab elevation and that the footings and pile caps will range from approximately 36 inches to 54 inches in thickness. The preparation of the foundation plan must be coordinated with Carlin-Simpson & Associates, as discussed later in this report.

The following evaluation is based on the information that has been provided to our office as of the date of this report. The recommendations below are considered preliminary in nature and are intended to give guidance in the planning and designing of the new construction. Once the site plans and foundation plans have been further developed, a copy of the plans should be forwarded to our office so that we can review them along with the recommendations in this report. At that time, any changes or additional recommendations can be provided, if required.

3.0 SUBSURFACE CONDITIONS

To determine the subsurface soil and groundwater conditions at the site 19 borings and 29 test pits were performed for the referenced project. The borings were performed by Environmental Technical Drilling Inc. using hollow stem augers and split spoon sampling. The test pits were excavated by American Tree and Landscape Corp. using a backhoe. Detailed boring and test pit logs have been prepared and are included in this report.

The borings were completed in July 2023 and November 2023 under the full-time inspection of Carlin-Simpson & Associates. The test pits were excavated in June 2023 and November 2023 under the full-time inspection of Carlin-Simpson & Associates. Our field engineer visually identified all of the soil samples obtained during the boring and test pit operations and select samples were tested in our laboratory.

3.1 Soil and Rock

The soil descriptions shown on the boring and test pit logs are based on the Burmister Classification System. In this system, the soil is divided into three components: Sand (S), Silt ($) and Gravel (G). The major component is indicated in all capital letters, the lesser in lower case letters. The following modifiers indicate the quantity of each lesser component:

Modifier	Quantity
trace (t)	0 -10%
little (l)	10% - 20%
some (s)	20% - 35%
and (a)	35% - 50%

The subsurface soil and rock conditions encountered in the borings and test pits can be summarized as follows:

Stratum 1A Topsoil	The surface layer in 19 of the borings and test pits consists of dark brown or black topsoil that ranges from approximately 0’2” to 1’4” in thickness.
Stratum 1B Asphalt	At the surface in 4 of the borings is asphalt pavement that ranges from approximately 0’2” to 0’8” in thickness.
Stratum 2 Existing Fill	Beneath the surface layers in 14 borings and 16 test pits is existing fill that generally consists of loose to dense brown, gray, black coarse to fine Sand, trace (to some) Silt, trace (to some) coarse to fine Gravel, with varying amounts of cobbles, boulders, organic material, and debris. Organic material and/or debris was noted in 5 of the test pits and 4 of the borings and consisted of roots, buried topsoil, plastic, wood, concrete, brick, and asphalt. The existing fill was encountered to depths ranging from 1’6” to more than 27’0” below the existing ground surface at the boring and test pit locations.
Stratum 3 Sand, Silty Sand, or Sandy Gravel	Below the surface layers and existing fill in many locations is a shallow layer of medium dense to dense brown, gray coarse to fine SAND, trace (to and) Silt, trace (to and) coarse to fine Gravel or coarse to fine GRAVEL some (to and), coarse to fine Sand, trace Silt. Many cobbles and boulders were encountered in this stratum. This layer was encountered to depth ranging from 1’0” to 8’3” below the existing ground surface at the boring and test pit locations.

Stratum 4
Clayey Silt or Silty Clay

Underlying the above layers in borings B-8, B-12, B-103, and B-104 and in test pit TP-12 is soft to stiff brown, gray or mottled red brown, brown, gray Clayey SILT, trace coarse to fine Sand or Silty CLAY, trace fine Sand. Boring B-8 was terminated in this stratum at a depth of 29’0” below the ground surface and test pit TP-12 was terminated in this stratum at a depth of 9’6” below the surface. At boring B-12, this stratum continued to a depth of 10’2” below the ground surface and at borings B-103 and B-104, this layer continued to depths of 23’6” and 33’0” below the surface, respectively.

Stratum 5
Gravelly Sand

Below the Clayey Silt or Silty Clay in borings B-103 and B-104 is dark gray, black, or brown coarse to fine SAND, trace (to little) Silt, some coarse to fine Gravel that continued to depths of 28’6” and 45’0” below the existing ground surface, respectively.

Stratum 6
Weathered Bedrock

Beneath the existing fill and virgin soil layers is weathered bedrock. In some test pit locations, the upper few feet of the bedrock was completely weathered and rippable. However, the completely weathered rock quickly transitioned to harder rock. Auger or bucket refusal on probable harder bedrock was encountered in 29 of the boring and test pit locations at depths ranging from 1’0” to 45’0” below the existing ground surface. At boring B-12, spoon refusal on possible bedrock was encountered at a depth of 10’2” below the ground surface.

At borings B-9 and B-101 through B-105, the upper 5 to 10 feet of the bedrock was cored. The rock generally consisted of gray diorite with hornblende and biotite, was moderately jointed, and was slightly to moderately weathered. The rock core recoveries ranged from 92% to 100% and the rock quality designation (RQD) of the recovered cores was 25% and 95%. Based on the rock core RQD values and visual inspection, the upper portion of the bedrock varies from poor to excellent quality ranging from a shattered, very blocky and seamy condition to an intact rock condition.

3.2 Bedrock

Bedrock or refusal on probable bedrock was encountered at depths ranging from 1’0” to 45’0” below the existing ground surface (elevation +34.5 to +90.0) at many of the boring and test pit locations. Based on our experience, the bedrock will generally transition from completely or highly weathered rock to harder bedrock with increasing depth. The bedrock observations are summarized in Table 1 below.

Based on the provided grading plan, cuts are planned for portions of the site. The boring data indicates that many of these excavations will extend into bedrock. Only limited bedrock core samples were obtained from the cut areas outside the building footprint during this investigation. We recommend that additional borings and rock coring be performed for select rock cut areas.

Penetration into the bedrock and completely weathered rock with excavation equipment will depend on the degree of weathering and fracturing in the rock. The upper few feet of rock may be “rippable” by using large construction equipment, but we anticipate that the “rippability” of the bedrock will be variable and very limited. It should not be assumed that the completely weathered rock (very dense material in a soil-like state) can be excavated with conventional equipment. Zones of harder rock will be encountered within the completely weathered rock layer. Where harder rock is encountered in the site excavations, the use of hydraulic hammers and/or rock blasting will be required to excavate the harder bedrock. Rock removal recommendations are discussed in a later section of this report.

3.3 Groundwater

During this investigation, groundwater was encountered in 17 of the boring and test pit locations at depths ranging from 2’6” to 14’0” (elevations +80.0 to +62.8) below the ground surface. In some locations, the observed groundwater may be trapped in the fill layer or perched on the bedrock surface. The groundwater observations are summarized in Table 1 below.

Groundwater on the subject site will generally be controlled by the topography and the underlying bedrock surface. During construction, we expect that perched or trapped water may be encountered within the existing fill, in the silty site soils, and/or along the soil/rock interface, especially during wet periods. Proper groundwater control measures will be required where water is encountered in the site excavations.

Variations in the location of the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, and other factors not immediately apparent at the time of this exploration.

3.4 Summary of Boring and Test Pit Observations

A summary of the boring and test pit observations is provided in Table 1 below. Borings B-2 through B-8, B-10, B-12, B-13, and B-101 through B-106 were performed within the proposed building area. In addition, test pits TP-6 and TP-101 through TP-117 were performed within the proposed building area.

Table 1 – Summary of Boring and Test Pit Observations

Boring or Test Pit No.	Approximate Existing Ground Surface Elevation	Depth to Bottom of Existing Fill (Elevation)	Depth to Groundwater (Elevation)	Depth to Bedrock (Elevation)
B-1	+70.0	4’0” (+66.0)	NE to 4’0”	AR @ 4’0” (+66.0)
B-2	+78.0	>9’0” (+69.0)	7’0 (+71.0)	NE to 9’0”
B-3	+81.0	1’6” (+79.5)	NE to 5’3”	AR @ 5’3” (+75.8)
B-4	+79.0	>3’7” (+75.4)*	NE to 3’7”	AR @ 3’7” (+75.4)*
B-5	+79.5	5’6” (+74.0)	NE to 6’8”	AR @ 6’8” (+72.8)
B-6	+78.5	2’5” (+76.1)	NE to 2’5”	AR @ 2’5” (+76.1)
B-7	+80.0	NE	NE to 1’2”	AR @ 1’2” (+78.8)
B-8	+79.0	5’6” (+73.5)	14’0” (+65.0)	NE to 29’0”
B-9	+88.0	NE	NE to 1’0”	C @ 1’0” (+87.0)
B-10	+78.5	>27’0” (+51.5)	3’0” (+75.5)	NE to 27’0”
B-11	+88.5	NE	NE to 1’9”	AR @ 1’9” (+86.8)
B-12	+79.0	8’0” (+71.0)	4’7” (+74.4)	SR @ 10’2” (+68.8)
B-13	+79.0	NE	NE to 1’4”	AR @ 1’4” (+77.7)
B-101	+79.0	15’0” (+64.0)	NE to 15’0”	C @ 15’0” (+64.0)
B-102	+78.0	16’0” (+62.0)	NE to 10’0”	C @ 16’0” (+62.0)
B-103	+79.5	12’0” (+67.5)	W @ 12’0” (+67.5)	C @ 28’6” (+51.0)
B-104	+79.5	10’0” (+69.5)	W @ 10’0” (+69.5)	C @ 45’0” (+34.5)

Boring or Test Pit No.	Approximate Existing Ground Surface Elevation	Depth to Bottom of Existing Fill (Elevation)	Depth to Groundwater (Elevation)	Depth to Bedrock (Elevation)
B-105	+78.5	16'0" (+62.5)	W @ 13'0" (+65.5)	C @ 16'0" (+62.5)
B-106	+78.5	11'0" (+67.5)	W @ 5'0" (+73.5)	RR @ 18'6" (+60.0)
TP-1	+68.0	7'9" (+60.3)	5'3" (+62.8)	NE to 8'3"
TP-2	+71.0	5'9" (+65.3)	8'3" (+62.8)	NE to 8'6"
TP-3	+80.0	NE	NE to 1'0"	BR@ 1'0" (+79.0)
TP-4	+78.5	NE	NE to 1'0"	BR @ 1'0" (+77.5)
TP-5	+77.0	>7'6" (+69.5)	6'9" (+70.3)	NE to 7'6"
TP-6	+95.0	NE	NE to 5'0"	BR @ 5'0" (+90.0)
TP-7	+70.0	3'0" (+67.0)	NE to 3'0"	BR @ 3'0" (+67.0)
TP-8	+68.0	4'6" (+63.5)	NE to 4'6"	BR @ 4'6" (+63.5)
TP-9	+82.0	NE	NE to 1'3"	BR @ 1'3" (+80.8)
TP-10	+88.0	NE	NE to 1'1"	BR @ 1'1" (+86.9)
TP-11	+87.0	NE	NE to 2'8"	BR @ 2'8" (+84.3)
TP-12	+72.0	8'2" (+63.8)	7'6" (+64.5)	NE to 9'6"
TP-101	+79.0	5'6" (+73.5)	NE to 5'6"	BR @ 5'6" (+73.5)
TP-102	+79.0	3'0" (+76.0)	T @ 2'6" (+76.5)	BR @ 3'0" (+76.0)
TP-103	+84.0	>7'0" (+77.0)	T @ 4'0" (+80.0)	NE to 7'
TP-104	+86.0	*----- Not Performed – No Access -----*		
TP-105	+80.0	*----- Not Performed – No Access -----*		
TP-106	+78.0	5'0" (+73.0)	NE to 6'3"	NE to 6'3"
TP-107	+79.0	4'0" (+75.0)	NE to 5'0"	NE to 5'0"
TP-108	+79.0	3'0" (+76.0)	T @ 3'0" (+76.0)	NE to 4'0"
TP-109	+78.5	4'0" (+74.5)	NE to 7'0"	NE to 7'0"
TP-110	+78.5	6'0" (+72.5)	NE to 6'6"	NE to 6'6"
TP-111	+79.5	6'0" (+73.5)	6'0" (+73.5)	BR @ 6'0" (+73.5)
TP-112	+79.5	NE	NE to 3'0"	BR @ 3'0" (+76.5)
TP-113	+79.0	NE	NE to 6'3"	BR @ 6'3" (+72.7)
TP-114	+79.0	NE	NE to 4'6"	BR @ 4'6" (+74.5)
TP-115	+79.0	NE	NE to 2'0"	BR @ 2'0" (+77.0)
TP-116	+79.0	NE	NE to 5'0"	NE to 5'0"
TP-117	+79.0	>4'6" (+74.5)	T @ 4'0" (+75.0)	NE to 4'6"

NE – Not Encountered
C – Cored Bedrock
AR/BR/RR – Auger, Bucket, Rollerbit Refusal on Bedrock
SR – Spoon Refusal on Possible Bedrock
T – Trapped Groundwater
W – Wet Soil Samples Encountered
(*) – Probable boulders

4.0 SUMMARY OF DESIGN RECOMMENDATIONS

Below is a summary of the major design and construction considerations for this project. Additional recommendations are provided in the following sections of this report.

- *Subsurface Conditions (Section 3.0)*
  - Existing fill was encountered in 31 of the 48 test locations to depths ranging from 1'6" to more than 27'0" below the existing ground surface (elevations +79.5 to +51.5).
  - A pond was formerly present in the southwest portion of the proposed building. Borings B-2, B-4, B-10, and B-12 as well as test pit TP-5 encountered fill with boulders, debris (concrete,

brick, plastic, brick), and organic material (roots and topsoil) that had been used to previously fill the pond. Borings B-101 through B-106 also encountered fill with boulders. The fill in this area extended to depths ranging from 3'7" to more than 27'0" below the ground surface. Existing fill outside the pond area extended to depths ranging from 1'6" to 8'2" below the ground surface.

- Groundwater was encountered in 17 of the 48 test locations at depths ranging from 2'6" to 14'0" below the ground surface (elevations +80.0 to +62.8).
- Weathered bedrock was encountered in 31 of the 48 test locations at depths ranging from 1'0" to 45'0" below the existing ground surface (elevations +90.0 to +34.5). The use of hydraulic hammers and/or blasting will likely be required to achieve subgrade elevations in portions of the site.
- A summary of the subsurface observations is provided in Table 1.

- *Building Evaluation (Section 5.0)*
  - The existing fill is not suitable for support of the proposed building foundations or floor slab. In addition, the boring and test pit data indicates that there are abrupt changes from deep soil to shallow bedrock within the building area. To eliminate the potential for damaging differential settlements, micropiles shall be used in areas that are underlain by existing fill or virgin soil. Where bedrock is at or above the foundation elevation, shallow spread footings may bear directly on bedrock.
  - Drilled micropiles foundations capable of supporting axial capacities of 100 to 125 tons can be used for the new building. A load test will be required to confirm the micropile capacity.
  - Where shallow spread footings can be constructed directly on bedrock, the net design bearing pressure shall be 8,000 psf.
  - The building floor slab shall be designed as a structural slab for the entire building.
  - Sub-slab drainage may be required for portions of the building.
  - Seismic Site Class is C or Very Dense Soil or Soft Rock Profile.

- *Additional Site Recommendations (Section 6.0)*
  - *Soil and Rock Slopes (Section 6.2)*
    - Soil slopes (where required) shall be graded on a 2.5H:1V slope or flatter angle.
    - Rock slopes of approximately 4V:1H (76 degrees) can be achieved with proper landing zones, anchoring, and stabilization methods (i.e. rock anchors and steel wire mesh).
    - Additional borings with rock coring are recommended for select rock slope areas.
  - *New Retaining Walls (Section 6.3)*
    - Retaining walls will still be required in areas where rock slopes are not feasible. A cast-in-place steel reinforced concrete wall or a large segmental block wall can be considered for this project.
  - *Utilities (Section 6.3) and Pavement (Section 6.4)*
    - Densified existing fill, virgin soil, new compacted fill, and weathered rock may be used to support the new utilities and pavement.
    - The use of hydraulic hammers and/or blasting may be required in areas to achieve the proposed subgrade elevations.

5.0 BUILDING EVALUATION

We understand that the planned construction will consist of a new 4 story building with 1 level of below-grade parking. The finished floor elevation of the new building will be at +79.0. Based on existing and proposed grades, we anticipate cuts up to 21 feet will be required in the southeast and northeast corners of the building and minor fills up to 2 feet will be required on the west side of the building. The southeast and northeast cuts will require rock excavation to achieve the planned finished floor elevation. The use of hydraulic hammers and/or blasting (if permitted) will be required.

As discussed above, there was previously a pond located in the proposed building area that was filled sometime between 1964 and 1974. The approximate pond limits are shown on the attached Boring & Test Pit Location Plan (Figure 1). The boring data indicates that the existing fill material within the proposed building area extends to depths ranging from 1'6" to more than 27'0" below the existing ground surface (elevations +79.5 to +51.5). The depth and extent of the existing fill are variable, and the fill may be deeper in unexplored areas of the site. The existing fill is not an acceptable bearing material for the new building foundations or floor slab. The consistency and density of the fill are not predictable. Certain areas may contain clean dense soil while other areas may contain loose material, void spaces, and/or debris, as shown by the boring and test pit data. The existing fill creates the possibility of intolerable differential settlements under loading. In addition, the boring and test pit data indicates that there are abrupt changes from deep soil to shallow bedrock within the proposed building area that can result in unacceptable differential settlement.

To eliminate the potential for damaging differential settlements, micropiles shall be used in areas that are underlain by existing fill or virgin soil. Based on the boring and test pit data, we anticipate that micropiles will be required in the central and southwestern portions of the building. Where bedrock is at or above the foundation elevation, which is expected in the northern and southeastern portions of the building, shallow spread footings may bear directly on bedrock. The approximate limits of these areas are shown on the attached Building Foundation Area Plan (Figure 2). However, this plan is based on the available boring and test pit data and the anticipated foundation and/or pile cap subgrade elevations. The foundation plan was not available at the time of this report; therefore, the delineation lines shown on the plan are subject to change. The preparation of the foundation plan must be coordinated with Carlin-Simpson & Associates.

It should also be noted that borings and test pits were not performed at each column location and conditions are likely to vary between test locations. Additional test pits or probes may be required during construction to further evaluate the subsurface conditions at individual locations. For example, test pits or probes could be performed in transition areas to see if footings can be lowered to bear on rock and/or if piles can be eliminated.

Recommendations for preparation of the building area are provided in Section 5.1 below. Micropile foundation recommendations are provided in Section 5.2. Recommendations for foundations bearing on bedrock are provided in Section 5.3 below. Floor slab and foundation wall recommendations can be found in Section 5.4 and Section 5.5 below, respectively.

5.1 Building Area Preparation

In order to prepare the site for construction, all surface materials such as surface vegetation, topsoil, and asphalt shall be removed from the planned building areas, extending at least 10 feet beyond the new construction limits, where practical.

Rock Removal - Blasting

In order to develop the site and achieve the proposed grades, rock removal will be required. Rock or weathered rock cuts ranging from approximately 2 feet to 27 feet are anticipated. Based on our experience, the in-situ bedrock will be variable, ranging from completely weathered rock to harder intact bedrock. The top 1 to 5 feet of rock may be "rippable" by using large construction equipment. However, we anticipate that the "rippability" of the bedrock will be variable and very limited. The use of hydraulic hammers and/or blasting will be required to excavate the harder bedrock and zones of harder rock within the completely weathered rock stratum. Nearby structures could be affected by the blasting.

Prior to the start of any construction, a Blasting Management Plan shall be prepared by the blasting contractor for this project. This plan shall be in accordance with State regulations and the Explosive Materials Code, NFPA No. 495, National Fire Prevention Association. Additionally, all blasting should adhere to the provisions of 29 CFR Ch. XVII Section 1910.109 for explosives and blasting agents and to all local requirements.

Prior to any blasting work being done, a licensed professional engineer shall be retained to perform a detailed pre-blast survey of existing structures located within 500 feet of the planned blast area. The pre-blast survey shall be conducted in accordance with the requirements of local authorities. A copy of all reports prepared by the licensed engineer shall be submitted to the Town Engineer and the owner's representative in a timely manner.

Prior to the beginning of blasting, a notice will be sent to all residential and commercial property owners within a 500-foot radius of the blast area. This notification will be given at least 48 hours before blasting takes place. A contact person will be established and named in this notice to respond to all concerns raised by nearby residents during the blasting phase of the project. The contact person will respond to any inquiries within 24 hours.

The blasting operation shall be monitored by a seismologist using a seismograph. The maximum peak particle velocity on any one component of an instrument measuring three-component motion shall not exceed the limits indicated in Table 2 below.

Table 2 – Distance Versus Peak Particle Velocity Method

Distance from Blast in Feet	Peak Particle Velocity of any One-Component in Inches per Second
0 to 100	1.50
100 to 200	1.25
200 to 500	1.00
500 to 1,000	0.50
Over 1,000	0.25

Each blast will be monitored independently to ensure that this criterion is not exceeded. The monitoring results shall be provided to the blasting contractor as soon as possible so that the blasting program can be modified if necessary.

We recommend that a minimum of 4 monitoring points be established, to the north, east, south and west of the planned blast area. The seismograph sensors should be placed near the closest structure and at any structures identified during the pre-blast survey that are considered to be susceptible to vibration damage. Where possible, the seismograph sensors should be placed on the bedrock surface. This will require shallow excavations through the overburden soils in the monitoring areas.

The blasting contractor must avoid over-blasting the rock. Over-blasting will disturb the deeper intact rock that will be used as bearing material for the proposed foundations. Over-blasting could also disturb exposed rock faces. Any material that is over-blasted will have to be removed. In the building area, the over-blasted material shall be removed under the full-time inspection of Carlin-Simpson & Associates and replaced with concrete. Carlin-Simpson & Associates will be responsible for determining what material is to be removed and will direct the contractor during the excavation.

Handling Groundwater and Wet Subgrades

Based on the boring and test pit data, groundwater is not expected to be encountered above the planned finished floor elevation during construction. However, perched or trapped groundwater may be present in the existing fill, in the silty site soils, along the soil/rock interface, and/or in the bedrock fractures. In the event that perched or trapped groundwater is encountered in the site excavations, proper groundwater control measures (i.e. construction dewatering) will be required.

Where required, temporary groundwater control measures shall consist of 1 or more sumps and pumps. The sumps shall consist of a perforated pipe at least 8 inches in diameter, surrounded by crushed stone and filter fabric. The sump pits must be installed just outside the planned excavation area and at least 2 feet below the lowest anticipated subgrade elevation. The sumps and pumps must be set and in operation prior to excavating below the water table. The pumps shall be used to temporarily lower the surrounding groundwater level and keep the excavation relatively dry.

In the event that the exposed subgrade soil within the excavation becomes wet or soft, stabilizing the subgrade surface may be required. The subgrade may be stabilized with geotextile filter fabric and crushed stone. The geotextile filter fabric shall consist of Mirafi 500X or equivalent. Adjacent layers of geotextile filter fabric should be overlapped a minimum of 6 inches. As necessary, approximately 12 inches of 3/4-inch clean crushed stone will be installed on top of the filter fabric layer to provide a firm working surface, provide protection for the geotextile filter fabric, minimize pumping, and to stabilize the subgrade soil. Carlin Simpson & Associates will determine the need for subgrade stabilization and will direct the contractor during construction.

Installation of New Structural Fill

New fill required to achieve final grades shall consist of either engineer-approved on-site soil or imported sand and gravel. The new fill shall be placed in layers not exceeding one (1) foot in thickness and each layer shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D1557). Each layer must be compacted, tested, and approved by the Carlin-Simpson & Associates field representative prior to placing subsequent layers. The suitability of the on-site soil and rock for reuse as compacted fill is discussed in Section 6.6 below.

If imported structural fill will be required during construction, the imported structural fill shall meet the following specified gradation:

US Standard Sieve Size	Percent Finer By Weight
3-inch	100
No. 4	30-80
No. 40	10-50
No. 200	0-20

Based on the grading plan, rock cuts are also required at the site to achieve proposed grades. We anticipate that excavated boulders and rock material will be processed onsite for use of backfill material. Refer to section 6.6 below for recommendations regarding use of excavated cobbles, boulders, and rock material.

5.2 Micropile Foundations

For this project, drilled in-place grout-filled steel pipe piles (micropiles) can be used to support the new building foundations and the floor slab in the existing fill and deep virgin soil areas. Based on the boring and test pit data, we expect that micropiles will be required for the central and southwestern portions of the proposed building, as preliminarily shown on the attached Building Foundation Area Plan (Figure 2). The piles must extend through the existing fill and soil layers and develop their load carrying capacity with a bond zone formed in the underlying bedrock. To accomplish this, the piles must be cased through the existing fill and soil layers.

The depth to bedrock within the anticipated micropile areas of the building varies significantly. Based on the boring and test pit observations, we expect bedrock to be encountered approximately 4’0” to more than 29’0” below the existing ground surface.

The project structural engineer shall determine the number of piles required and their locations. The micropiles shall be designed by a micropile contractor to meet the specified loading conditions as shown on the structural drawings. The piles must also be designed and installed in accordance with the New York State Building Code.

For this project, we recommend that the steel pipe casing have a minimum nominal diameter of 8 inches and a wall thickness of at least 0.408 inches. The casing shall extend at least 1 foot into the bond zone upon the completion of the grouting and shall remain in place permanently. The micropiles shall be filled with cement grout having a minimum 28-day compressive strength of at least 5,000 psi. The grout mix shall be designed and proportioned so as to produce a pumpable mixture. A maximum water/cement ratio of 0.44, by weight is recommended. Center to center spacing shall be at least three times the outside diameter of the steel casing but not less than 30 inches.

For this project, 8-inch diameter piles with an allowable capacity of 100 to 125 tons could be considered for the proposed building. This would require a rock socket length of approximately 8 to 12 feet. The estimated pile lengths, assuming a finished floor elevation at +79.0, can be found in Table 3 below. The structural engineer shall select the required allowable pile capacity based on the design loads of the proposed structure.

Table 3 – Pile Recommendations

Pile Capacity	Estimated Cased Length	Rock Socket Length	Estimated Total Length
100	4 to 45 feet	8 to 10 feet	12 to 55 feet
125	4 to 45 feet	10 to 12 feet	14 to 57 feet

Reinforcing steel extending to the bond zone shall be placed in the casing to the bottom of the bond zone prior to placing grout. The full length of the micropile shall contain either a steel pipe and/or steel reinforcement. Reinforcement steel shall be in accordance with ASTM A615 Grade 60 or 75 or ASTM A722 Grade 150. Preliminarily, we anticipate that the core reinforcement steel will consist of a single steel threaded bar, ASTM A615 Grade 150 (150 ksi yield strength), extending the full length of the pile. As required for structural design, steel reinforcement bars shall extend from the micropile and up into the pile cap, grade beam, and/or floor slab.

The pile to pile cap or grade beam connection shall be designed by the project structural engineer. The top of the pile should be embedded into the grade beam or pile cap a minimum of 6 inches and should be at least 6 inches from the edges of the grade beam or cap. Typically, the top of the pile is terminated with a bearing plate that extends into the pile cap or grade beam to transfer the applied load. Structural steel plates shall conform to ASTM A36 or ASTM A572 Grade 50.

Based on the boring observations, obstructions and debris (i.e. cobbles, boulders, brick, concrete, etc.) are present within the existing fill layer. Depending upon the depth of the obstruction below the bottom of the pile cap or grade beam, the contractor shall either remove the obstruction or clear away the obstruction by excavating or other means, or abandon the pile and install an additional pile at the locations determined by the project structural engineer.

Micropile Submittals

For this project, the pile contractor will design the individual pile elements and select the pile construction process and installation equipment. The foundation specialty contractor shall submit shop drawings and design calculations to Carlin-Simpson & Associates and the project structural engineer for review and approval.

At a minimum the contractor's submittal should include the following: 1) pile design calculations and shop drawings for all structural steel and pile components prepared and stamped by a New York State registered Professional Engineer; 2) a detailed description of the construction procedure proposed, including type of equipment to be used for installing the piles; 3) a pile location and numbering plan; 4) the proposed concrete or cement grout mix design(s) and procedures for placing the concrete or cement grout; and 5) detailed plans and procedures for the pile load test(s), including load test apparatus set-up for the pile load testing and current calibration report for the hydraulic jack and gauges.

Micropile Load Tests and Inspection

A compressional load test will be required to confirm the micropile contractor's pile design. The test may be performed on either a production pile or a sacrificial pile. However, production piles shall not be used as reaction piles. The pile load test(s) must be performed under the full time inspection of a Carlin-Simpson & Associates representative. Piles used for the pile load test should be installed at least 1 week prior to testing to allow time for the grout to obtain adequate strength for testing.

The piles shall be installed under the full time inspection of a representative from Carlin-Simpson & Associates. At the completion of the pile installation, Carlin-Simpson & Associates will provide a letter of compliance stating that the piles have been installed in accordance with our recommendations and the project specifications, and that they are capable of supporting the design loads.

5.3 New Building Foundations on Bedrock

Where bedrock is near or above the foundation subgrade elevation, which is expected in the northern and southeastern portions of the building, shallow spread footings may bear directly on the bedrock surface. The preliminary limits of these areas are shown on the attached Building Foundation Area Plan (Figure 2). The new building foundations in these areas may be designed as shallow spread footings using a net design bearing pressure as listed in Table 4 below.

All of the exterior and interior footings shall bear directly on bedrock, which is not susceptible to frost. In some areas, we expect that the footings will have to be lowered or step down approximately 1 to 3 feet below the foundation subgrade elevation to bear on the bedrock surface. Care must be taken during rock excavation to not disturb the bedrock that will remain and support the new foundations. If the bedrock is disturbed/over-blasted, either the unsuitable bearing material will have to be over-excavated and replaced with concrete or micropiles will be required.

The excavations for the new foundations shall be performed under the full-time inspection of Carlin-Simpson & Associates. The on-site representative shall confirm that the foundation bearing material is capable of supporting the design bearing pressure.

Table 4 – Foundation Design Parameters for Rock

Description	Value
Foundation Bearing Material	Bedrock
Net Design Bearing Pressure	8,000 psf
Minimum Column Dimension	30 inches
Minimum Wall Dimension	18 inches

5.4 Floor Slab

The existing fill is not suitable for support of the proposed floor slab. Where a new floor slab will be constructed as part of the proposed construction, we recommend that it be designed as a structural slab. Pile recommendations are discussed in the previous section of this report.

Floor Slab Underdrains

Preliminarily, we believe that a permanent dewatering system consisting of a sub-slab drainage system may be required for the southeast and/or northeast portions of the proposed building where substantial cuts into rock are required to achieve the planned finished floor elevation. Based on the site conditions, we expect that an underdrain system can be drained by gravity to the stormwater management system, but a sump pit and pump system could be required. Carlin-Simpson & Associates will determine the need for and the extent of the sub-slab drainage system as the project plans are further developed.

Where required, the underdrain system shall consist of one or more main drain lines with branching laterals at intervals of no more than 15 feet on centers. The drainpipes shall consist of 4-inch diameter rigid perforated PVC or smooth wall HDPE pipes placed at the bottom of the 12-inch drainage stone layer below the floor slab. The drainpipe and crushed stone shall be separated from the surrounding soil using a geotextile filter fabric (Mirafi 140N or equivalent) to prevent soil from clogging the pipes. The edges of the filter fabric shall be folded on top of the stone fill. The subgrade should be graded ("pitched") towards the underdrain. Water collected in the underdrain system shall be piped to a suitable discharge location or to a sump pit.

In addition to the underdrain system, the below-grade foundation walls must be waterproofed and a perimeter foundation drain, as described in the following section of this report, must be provided around the outside perimeter of the foundation walls. Water stops shall also be provided where the foundation wall meets the footing and for all concrete joints in the foundation walls and floor slab. Carlin-Simpson & Associates can prepare a drainage plan design and/or provide additional information regarding sumps and an underdrain system as an additional service upon request.

5.5 Foundation Walls

Where foundation walls are required, the soil adjacent to the building walls will exert a horizontal pressure against the wall. This pressure is based on the soil density and Coefficient of Earth Pressure at Rest (k_o), which is applicable to non-yielding building walls. Foundation wall design parameters are listed in Table 5 below.

Table 5 – Foundation Wall Design Parameters

Soil Type	On-Site Soils
Moist Unit Weight (γ)	130 pcf
Coefficient of Earth Pressure at Rest (k_o)	0.5
Equivalent Fluid Pressure	65 psf/ft
Foundation Sliding Coefficient. Virgin Soils or New Structural Fill: Clean Sound Rock:	 0.45 0.55

Where foundation walls are required, we recommend that a footing drain be placed around the exterior of the new building to prevent water from accumulating against the foundation wall. This drain may consist of a minimum 4-inch diameter, rigid wall perforated PVC pipe surrounded by at least 12 inches of 3/4-inch clean crushed stone. The stone shall be wrapped in a geotextile fabric, such as Mirafi 140N or equivalent. The foundation drainpipe should be extended to daylight, if possible, or to the stormwater collection system. The outside face of the foundation wall, where it extends below grade, shall be waterproofed.

Outside the building, the backfill placed adjacent to the foundation walls and above the footing drain shall consist of either clean crushed stone or an imported sand and gravel mixture containing less than 10% by weight passing a No. 200 sieve and placed in layers not exceeding 12 inches in thickness. This clean sand and gravel or crushed stone backfill shall extend a minimum of 12 inches horizontally from the back face of the foundation walls, and shall extend vertically up the wall face to 2 feet below the finished ground surface elevation. Where retained soils are not covered by concrete or pavement and are exposed to weather, the top 2 feet of backfill should consist of low permeable soil. This will help to minimize water infiltration behind the wall. Surface grades should be sloped away from the building to prevent water from accumulating adjacent to the wall.

Beyond this point, the foundation walls should be backfilled with suitable soil placed in layers up to 12 inches in thickness. The suitability of the on-site soil for reuse as compacted fill is discussed in a separate section below. The new fill should be compacted with a vibratory drum trench compactor (i.e. Wacker Model RT560), a heavy vibratory plate tamper (i.e. Wacker BPU 3545A or equivalent), or "jumping jack" style tamper (i.e. Wacker Model BS 600) to at least 92% of its Maximum Modified Dry Density (ASTM D1557). Heavy equipment should not be operated near the building walls as damage to the walls could occur.

5.6 Seismic Design Considerations

From site-specific test boring data, the Site Class was determined from New York State Building Code Section 1613.2.2. The site-specific data used to determine the Site Class typically includes soil test borings to determine Standard Penetration resistances (N-values). Based on estimated average N-values in the upper 100 feet of soil profile, the site can be classified as Site Class C – Very Dense Soil and Soft Rock Profile.

New structures should be designed to resist stress produced by lateral forces computed in accordance with Section 1613 of the New York State Building Code. The values in Table 6 shall be used for this project.

Table 6 – Seismic Design Values

Description	Value
Mapped Spectral Response Acceleration for Short Periods, [Fig 1613.2.1 (1)]	S_S=0.284g
Mapped Spectral Response Acceleration at 1-Second Period, [Fig 1613.2.1 (2)]	S_1=0.061g
Site Coefficient [Table 1613.2.3 (1)]	F_a= 1.3
Site Coefficient [Table 1613.2.3 (2)]	F_v= 1.5
Max Considered Earthquake Spectral Response for Short Periods [Eq 16-36]	S_{MS}=0.37g
Max Considered Earthquake Spectral Response at 1-Second Period [Eq 16-37]	S_{M1}=0.091g
Design Spectral Response Acceleration for Short Periods [Eq 16-38]	S_{DS}=0.246g
Design Spectral Response Acceleration for 1-Second Period [Eq 16-39]	S_{D1}=0.061g

We expect that the proposed building will have a Risk Category of II. Based on this assumption, the Seismic Design Category (SDC) is B. The Risk Category and SDC should be verified by the project structural engineer. In the event that the structure has a different Risk Category, the SDC should be updated in accordance with Section 1613 of the New York State Building Code

Liquefaction Potential

Liquefaction is a phenomenon in which saturated or partially saturated soils lose strength and stiffness when subjected to earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact and collapse of the soil skeleton which causes stresses in the soil to be completely transferred to the pore water fluid. Liquefaction is most often observed in saturated, loose sandy soils at depths shallower than 50 feet below the ground surface. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

The liquefaction potential was evaluated with the available boring data, including the SPT blow counts, soil classification, total unit weight, soil fines content, and depth to groundwater. We have determined the potential for liquefaction of the non-cohesive soils below the groundwater table and less than 50 feet below the ground surface is considered unlikely. Therefore, a liquefaction evaluation is not required for the site.

6.0 SITE EVALUATION

Our recommendations for the proposed site development including new stormwater management areas, soil and rock slopes, retaining walls, new underground utilities, pavement for new driveways and parking areas, temporary construction excavations, and the suitability of the existing site soils for reuse as structural fill are provided below. A summary of the boring and test pit observations for the site are provided in Table 1 above.

6.1 Stormwater Management Areas

We understand that the planned construction will include new stormwater management areas. During this study, test pits were excavated to determine the subsurface conditions within the proposed stormwater management areas. The locations were determined by the project Site Engineer. The types of systems, planned locations, and invert elevations were not finalized at the time of this report.

Infiltration tests had been planned for select locations, but were eliminated due to shallow bedrock, existing fill, and/or shallow groundwater conditions. The results of the test pit observations are summarized in Table 1 above.

Stormwater management areas should be a minimum of 3 feet above confining layers, seasonal high groundwater, or the existing groundwater table. Should stormwater management areas be planned in other portions of the property, they should be evaluated on a case-by-case basis. The stormwater management systems must be designed in accordance with the applicable New York State Department of Environmental Conservation (NYSDEC) regulations and the New York State Stormwater Management Design Manual (January 2015). The testing requirements for infiltration systems are outlined in Appendix D of the manual.

6.2 Soil and Rock Slopes

Slopes will be constructed in portions of the site. Based on the grading plan, these slopes will extend up to approximately 27 feet in height. For this site, we anticipate that a slope of approximately 4 vertical to 1 horizontal (76 degrees) may be achieved in rock with proper landing zones, anchoring, and stabilization methods. Above the rock cut, the overburden soil must be graded to a stable slope, typically on a 2.5 horizontal to 1 vertical (2.5H:1V) or flatter.

In rock, the stability of slope is dependent upon the quality of the rock, the jointing and shear zones in the rock, the strike and dip of the rock, and groundwater seepage. We anticipate that unstable blocks of rock and/or highly weathered spalling rock may exist on the face of the new rock cut slope. Rock anchors may be required to stabilize the rock slope. This is discussed in more detail below.

General Rock Excavation Procedures

The excavation of the soil and rock slopes will be carefully advanced in stages. The general procedure for constructing the proposed slopes shall be as follows:

1. In the event that there is overburden soil in a proposed rock slope area, the soil slope shall be constructed first. The soil slope above the top of the rock slope shall be graded on a 2.5H:1V slope or flatter angle.

2. A pre-split line shall be drilled along the proposed rock slope face line. The spacing shall be determined by the blasting contractor and submitted to Carlin-Simpson & Associates for review.

3. The removal of rock can begin. The rock at the planned slope face shall be removed in stages of about 10 feet (maximum) vertically.

4. Carlin-Simpson & Associates will inspect the exposed face of each stage and a rock-anchoring plan will be prepared (if required). The plan will outline anchor locations inclinations and lengths.

5. The required rock anchors will be installed prior to removing the next stage of rock.

6. The process will continue in stages until the excavation is completed.

The blasting contractor must avoid over-blasting the rock in areas where exposed rock faces are planned. Any material that is over-blasted will have to be removed prior to anchoring and/or installation of other stabilization measures. Carlin-Simpson & Associates will be responsible for determining what material is to be removed and will direct the contractor during construction.

<u>Rock Anchors and Rock Face Protection</u>

Based on our experience and the available rock core data, we anticipate that unstable blocks of rock and/or highly weathered spalling rock may exist on the face of the new rock cut slope. Rock bolting or rock anchors with metal strips may be required to stabilize the rock blocks. We are unable to predict the extent of the rock anchors based on the available data. During the excavation of the new slope, Carlin-Simpson & Associates will evaluate the rock blocks as described above. A determination will then be made as to the location, type, and extent of rock anchors required for the rock slope. The rock bolts, anchors, and metal strips will be used to retain potentially unstable blocks of rock, resulting in a stable slope face.

Since portions of the exposed rock face will likely consist of highly weathered and/or highly fractured rock, spalling rock or slope raveling may occur during construction and throughout the life of the slope. Slope raveling is a condition described when small pieces of rock become detached from a rock mass and fall as individual pieces to the toe of the slope. The principal cause of this condition is due to the cyclic expansion and contraction associated with the freezing and thawing of water in the cracks and fissures of the rock mass. A secondary cause is related to the gradual deterioration (weathering) of the materials which hold individual blocks or layers of rock together.

The excavation of all rock slopes shall be carefully advanced in stages as described above. Depending upon the orientation of the joint plans with respect to each other and the face of the rock cut, unstable blocks of rock will likely be present. Rock anchors or bolts, metal strips and protective wire mesh netting will be required to secure the new slope. The extent and design of the rock bolts, rock anchors, etc. will be determined as the slope is excavated. The design of the rock anchors and bolts is performed on an ongoing basis during each stage of rock excavation. The purpose of the rock anchors will be to retain rock blocks that could slide from the new rock face. Once the excavation of each stage has been completed Carlin-Simpson & Associates will conduct an evaluation of the joint patterns and determine the strike and dip of the major planes of weakness. Rock blocks will be identified for anchoring or bolting.

The steel wire mesh on the new rock slope will be used to control loose falling rock in areas. The mesh will be twisted wire hexagonal mesh and shall be either galvanized or PVC coated for corrosion resistance. Draped mesh generally lies directly on the slope with anchors across the top and bottom of the slope. Additional anchors could be installed in the mesh to hold it down and provide additional resistance to sliding of rolling rocks and debris. The purpose of the mesh is to allow the rocks to move down the slope in a controlled fashion and land in a small catchment area at the base of the slope.

Water is expected to seep out of the joints and fracture zones on the new rock face. The water seepage will need to be evaluated by Carlin-Simpson & Associates during construction. Horizontal rock drains may be required to facilitate drainage and to prevent the buildup of water pressure behind the rock slope, which could destabilize the slope. The need for rock drains will be determined during construction. Conceptually, horizontal drains typically consist of drilling a 3-inch to 4-inch diameter hole approximately 10 to 15 feet into the rock slope on a slight incline. A small section of perforated PVC pipe is then inserted into the hole to keep it open at the rock face. The purpose of the drains is to intercept water flowing through the rock joints. Swales and drainage inlets should be provided along the base of the slope to collect the water seepage.

Rock Slope Stabilization Design and Additional Borings

Based on the available rock data, we preliminarily recommend that an anchored steel wire mesh system with an approximate 10-foot by 10-foot anchor spacing be used to stabilize the proposed rock slopes. The anchors would consist of Grade 75 threaded bars that are installed and grouted in 6-inch diameter drill holes. Preliminarily, anchors lengths of 10 to 15 feet are expected. A minimum 8-foot-wide landing zone (or buffer) is recommended at the base of the slopes to contain fallen rock debris. The landing zone should be pitched slightly towards the toe of the slope.

For the proposed rock cut off the southeast corner of the proposed building, the rock slope will be close to the property line and the finished rock face will be close to the new building (less than 5 feet at the toe). Preliminarily, we expect that an anchored steel wire mesh system can be designed for this location to stabilize the rock slope and control rock fall with a reduced landing zone. However, temporary and permanent construction easements will be required for this rock slope. The temporary easement is needed for construction access at the top of the slope and the permanent easement is needed since anchors (and possibly mesh) will extend beyond the property boundary. It is also possible that the top of the new rock slope will extend slightly beyond the property line in this area.

Based on the site conditions, an additional boring with rock coring is required for the southeast rock slope to determine the rock quality, degree of weathering, and consistency of fractures for the proposed rock cut and to confirm the rock slope stabilization requirements for this area. We also suggest that a few additional borings with rock coring be performed for the other rock slope areas since only limited bedrock core samples were obtained during this investigation. This information will be used to further evaluate the anticipated stability of the excavated rock slopes so that a rock slope stabilization plan can be developed and will also provide additional information to the blasting contractor.

Carlin-Simpson & Associates can prepare a rock slope stabilization plan for inclusion in the construction drawings as an additional service, upon request once the additional borings have been completed. This plan could then be used as a baseline for bidding purposes. Based on the available data, we preliminarily anticipate that the plan will include an anchored steel wire mesh system with a landing zone as discussed above. It should be noted that Carlin-Simpson & Associates will still have to evaluate the rock cuts as they are exposed during construction. Depending on the rock conditions, it may be feasible to reduce the number of rock anchors or to install a draped steel wire mesh system in areas at the site. It is also possible that additional rock anchors will be required to secure unstable rock blocks as described above.

6.3 New Site Retaining Walls

The grading plan indicates that retaining walls will be required to achieve the planned site grades in portions of the site. Upon review, however, we expect that most of the wall areas can be rock slopes as discussed in the previous section of this report. The only exception is the wall on the south side of the proposed building, which tees into the building. A retaining wall will be required near the building, but it can likely transition to a rock cut further away from the building.

The type of retaining walls for this project and the final wall heights were unknown at the time of this report. Design options for this site could include cast-in-place steel reinforced concrete walls or large segmental block gravity walls. Preliminary retaining wall design recommendations are provided below.

A reinforced concrete wall consists of cast-in-place concrete that can be designed as a gravity retaining wall or cantilevered retaining wall. In a gravity wall design, the weight of the concrete alone is used to prevent movement and overturning in the wall. In a cantilevered design, the stem wall is thinner and the base of the wall is wider than that of a gravity wall. However, the cantilevered design utilizes the weight of the soil above the base and steel reinforcing in the concrete to counteract the lateral forces of the retained soil wall.

A segmental block wall, such as Redi-Rock or equivalent, consists of large segmental concrete block units. The wall would be designed as a gravity retaining wall where the weight of the concrete blocks is used to prevent movement and overturning in the wall. Gravity Redi-Rock walls with backslope conditions are typically feasible for retained wall heights up to approximately 9 to 10 feet.

Preparation of Wall Area

In order to prepare the retaining wall area for construction, all surface materials including asphalt, topsoil, and surface vegetation must be completely removed from the new retaining wall area. The removal of the surface materials shall extend at least 5 feet beyond the proposed construction limits, where practical.

After the wall area has been excavated to the required subgrade elevation and prior to the installation of the leveling pad, the exposed subgrade soil must be graded level and proofrolled by several passes of a vibratory compactor. A representative from Carlin-Simpson & Associates shall observe the proofrolling operation. If any unsuitable existing fill or excessive movement is noted during the proofrolling, the unsuitable/soft soil shall be removed and replaced with new compacted fill. The Carlin-Simpson & Associates representative shall be responsible for determining what material, if any, is to be removed and will direct the contractor during this operation.

Drainage and Wall Backfill

A drain must be provided behind the retaining wall to prevent the buildup of hydrostatic pressure against the wall. The drain typically consists of a 4-inch diameter perforated PVC pipe, surrounded by 3/4-inch clean crushed stone and wrapped in a geotextile filter fabric, Mirafi 140N or equivalent. The drain is installed behind the base of the retaining wall to collect the water from behind the wall and is discharged to a suitable location determined by the site engineer. This could be connected into the site stormwater collection system or extended to daylight beyond the wall area.

Behind the wall, the backfill placed adjacent to the wall and above the footing drain shall consist of freely draining aggregate containing less than 10% material by weight passing a No. 4 sieve. This drainage fill shall extend horizontally a minimum of 12 inches from the back of the wall and shall extend vertically to at least 2 feet below final grade behind the wall. Where there is a backslope condition, a drainage swale is also required at the top of the wall to direct surface water away from the retaining wall.

Backfill Behind the Wall

Backfill material required beyond the drainage zone shall consist of engineer-approved on-site soil excavated from site cut areas or imported material as described previously in this report. Carlin Simpson & Associates and the wall design engineer must approve the fill material to be used behind the wall.

New fill that is placed behind the retaining wall shall be compacted with small hand guided vibratory compactors to a minimum density of 92% of its Maximum Modified Dry Density (ASTM D1557). Excessive compaction adjacent to the retaining wall must be avoided. Near the top of the wall and in the slope area above the wall, the fill shall be compacted to at least 95% of its Maximum Modified Dry Density. All fill layers shall be compacted, tested, and approved before placing subsequent layers. Large compaction equipment must not be used within ten (10) feet of the new wall to prevent potential damage to the wall.

Wall Design Recommendations

The base for the new retaining wall shall be placed on virgin soil, bedrock, or new compacted fill approved by Carlin-Simpson & Associates. The wall may also bear on densified existing fill that has been approved by Carlin-Simpson & Associates. Special construction procedures must be employed if the wall foundation bears on dissimilar material (i.e., soil and rock). For gravity segmental block retaining walls, the wall base or foundation must be adequately embedded for internal and global stability and depends on the proposed toe slope and back slope conditions. For reinforced concrete walls, the base or foundation must bear below the frost depth. The new retaining wall foundation shall be designed using parameters listed in Table 7 below.

The soil adjacent to the site retaining walls will exert a horizontal pressure against the walls. This pressure is based on the soil density and the Coefficient of Active Earth Pressure (k_a). The design values listed in Table 7 below shall be used for design of the new retaining walls.

Table 7 – Preliminary Retaining Wall Design Parameters

Description	**Value**
Foundation Bearing Material	Virgin Soil, Weathered Bedrock, or New Compacted Fill
Net Design Bearing Pressure	4,000 psf (2.0 TSF)
Backfill Moist Unit Weight	130 pcf
Backfill Friction Angle	30 degrees
Cohesion	0 psf
Active Earth Pressure Coefficient (k_a)	
Level Backslope Behind Wall	*0.33*
3H:1V Backslope Behind Wall	*0.39*

Description	Value
Equivalent Fluid Pressure (EFP) *Level Backslope Behind Wall* *3H:1V Backslope Behind Wall*	 *42.9 pcf* *51.3 pcf*
Friction Coefficient	0.45
Minimum Frost Depth	42 inches

The wall design engineer shall prepare a complete wall design (i.e. drawings, specifications, and calculations), which shall be designed and sealed by a Professional Engineer registered in the State of New York and submitted to Carlin-Simpson & Associates for review. Segmental block retaining walls shall be designed in accordance with the recommendations of the NCMA Design Manual for Segmental Retaining Walls (Current Edition) and in accordance with AASHTO standards. The design shall be completed in accordance with acceptable engineering practice, including the evaluation of sliding, overturning, and bearing, as well as global stability. Where applicable, surcharge loads, such as structures, backslopes, tiered retaining walls, vehicle loads, snow loads, construction equipment, temporary materials storage, etc. must also be incorporated into the wall design. Carlin-Simpson & Associates can prepare a large segmental block wall design as an additional service upon request.

6.4 Utilities

New utilities may bear in the densified existing fill, virgin site soils, new compacted fill, completely weathered rock, or bedrock. The bottom of all trenches should be excavated clean and shaped so a hard bottom is provided for the pipe support. If any soft or unsuitable soil conditions are encountered during construction, the unsuitable materials must be removed and replaced with new compacted fill.

Trench hammering or blasting may be required to install the new utilities in portions of the site where weathered rock is encountered above the planned utility invert elevation. Where rock is encountered in the utility excavations, it must be removed to at least 6 inches below planned pipe invert. The over-excavated 6 inches shall then be filled with new sandy fill and compacted to at least 92% of its Maximum Modified Dry Density (ASTM D1557) to act as a cushion on the rock.

For areas where existing fill is encountered within the utility excavations, the subgrade at bottom of the utility excavation shall be compacted in place with a vibratory drum trench compactor or “jumping jack” style tamper. Carlin-Simpson & Associates must evaluate these areas for the presence of soft or unsuitable material within the existing fill matrix. If instability is observed, portions of this fill may have to be removed and replaced with new compacted fill. Carlin-Simpson & Associates will determine this during construction.

In the event that the trench bottom becomes soft due to the inflow of surface or trapped water, the soft soil shall be removed and the excavation filled with a minimum of 6 inches of 3/4-inch clean crushed stone to provide a firm base for support of the pipe. Sump pits and pumps should be adequate to keep the excavations dry.

Any utility pipes below the pile-supported portion of the new building should be attached to the structural floor slab with hangers. This is required so that the utilities do not become damaged due to differential settlement. We also recommend that all of the utility pipes that connect to the new structure be designed with flexible connections.

After the utility is installed, the trench must be backfilled with compacted fill. The fill shall consist of suitable on-site soil or imported sand and gravel. Imported fill shall contain less than 20% by weight passing a No. 200 sieve. Large rock fragments and boulders must not be placed directly against the pipe. Controlled compacted fill shall be placed in 12 inch loose layers and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D1557). The backfill must be free of topsoil, debris, and large boulders or rock fragments.

6.5 Pavement

We understand that the proposed construction will also include new paved driveways and parking areas. Based on the preliminary site plan, we expect that cuts up to approximately 10 feet and fills up to approximately 4 feet will be required to achieve the planned subgrade elevations in the new pavement areas. The densified existing fill, virgin soil, completely weathered bedrock, bedrock, and new compacted fill may be used to support the pavement.

To prepare the new pavement areas, the existing surface materials (i.e. topsoil, vegetation, etc.) must be removed from the planned pavement areas. In the proposed pavement areas, the existing structures and debris resulting from the demolition of these structures must be completely removed from the new pavement area, extending at least 5 feet beyond the new paving limits, where practical. After all debris has been removed, the exposed subgrade soil that is either at or below the planned subgrade elevation shall be proofrolled with a large vibratory drum roller (i.e. Dynapac 250 or equivalent) to densify the underlying soils. The on-site representative from Carlin-Simpson & Associates shall witness the proofrolling operation. If any excessive movement is noted during the proofrolling, the soft or unsuitable soil shall be removed and replaced with new compacted fill.

Areas, where existing fill is encountered, it shall be compacted in place. Carlin-Simpson & Associates must evaluate these areas for the presence of soft or unsuitable material within the existing fill matrix. Portions of this fill may have to be removed and replaced with new compacted fill. Carlin-Simpson & Associates will determine this during construction.

Where new fill is required to achieve final grades, it shall consist of either suitable on-site soil or imported sand and gravel. Imported sand and gravel shall contain less than 20% by weight passing a No. 200 sieve. New fill shall be placed in layers not exceeding 12 inched in loose thickness and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D1557).

After the planned subgrade has been proofrolled and new compacted fill has been placed as required, the new pavement subbase may be placed on the existing site soils, bedrock, and new compacted fill. A layer of densely graded aggregate (DGA) is recommended as a subbase layer for drainage and additional pavement support. See the recommended thicknesses for the pavement sections below.

Where rock is encountered at the subgrade elevation in the cut areas, the subgrade stone should be increased to a depth of 12-inches. In addition, to provide additional drainage, finger drains extending from the catch basins, may be required. This must be evaluated by Carlin-Simpson & Associates at the time of construction. A typical finger drain section consists of an 18 to 24 inch wide trench excavated 12 to 18 inches below the subgrade surface. Each drain should extend 20 to 30 feet from the catch basin and should be sloped toward the catch basin. Geotextile non-woven filter fabric (i.e. Mirafi 140N or equivalent) is placed on the subgrade and up the sidewalls of the excavation, completely lining the excavation. After the trench has been lined with filter fabric, a 4-inch diameter, rigid wall perforated PVC drainpipe is installed and the trench is backfilled with 3/4-inch clean crushed stone. Once the trench is backfilled to the subgrade elevation, the filter fabric is wrapped over the clean crushed stone. The asphalt pavement section is then installed directly over the filter fabric.

We recommend that the following pavement sections be used for the parking lots and driveways. These pavement sections are subject to local government approval.

Light Duty Areas – Parking Areas

1 ½”	Asphalt Top Course	NYSDOT, Type 6F
2 ½”	Asphalt Base Course	NYSDOT, Type 3
6”	Stone Subbase (DGA)	NYSDOT, Type 1
	Approved Compacted Subgrade (Minimum CBR = 10)	

Heavy Duty Areas – Driveways

2”	Asphalt Top Course	NYSDOT, Type 6F
3”	Asphalt Base Course	NYSDOT, Type 3
8”	Stone Subbase (DGA)	NYSDOT, Type 1
	Approved Compacted Subgrade (Minimum CBR = 10)	

Based on the boring and test pit data, we anticipate that the densified existing site soils, weathered bedrock, and new compacted fill will provide a CBR value that is equal to or greater than 10, which can adequately support the above pavement sections.

6.6 Temporary Construction Excavations and Excavation Protection

Temporary construction excavations shall be conducted in accordance with the most recent OSHA guidelines or applicable federal, state or local codes. A qualified person should evaluate the excavations at the time of construction to determine the appropriate soil or rock type and the allowable slope configuration. Based on the boring data, we believe the site soil and bedrock would have the following classifications as defined by the OSHA guidelines.

Soil/ Rock Type	Possible Classification	Maximum Slope or Bench
Existing Fill	“C”	1½H:1V
Virgin Soil	“B” or “C”	1H:1V or 1½H:1V
Weathered Rock	“B”	1H:1V
Intact Bedrock	“A”	3/4H:1V

Temporary support (i.e. trench boxes, sheeting and shoring, etc.) should be used for any excavation that cannot be sloped or benched in accordance with the applicable regulations, where necessary to protect adjacent property, utilities, driveways, and/or structures, or where saturated soils or water seepage is encountered within the excavation. In the event that water is encountered within the excavation, an evaluation of the excavation’s stability must be performed. Perched water or groundwater encountered within the excavation will destabilize the sides of the excavation. Temporary support will be required to stabilize the excavation. Dewatering of the excavation will also be required.

A New York State licensed professional engineer must design all temporary and permanent support systems. The contractor will select the shoring type and submit design calculations for the proposed shoring method to Carlin-Simpson & Associates for review.

The soil adjacent to the temporary support system will exert a horizontal pressure against the system. This pressure is based on the soil unit weight, coefficient of active earth pressure, and depth of the excavation. In addition, the surcharge loads from adjacent driveways, construction equipment, or stored materials near the excavation must be incorporated into the design of the support system, as applicable. The design parameters for temporary excavation support systems are listed in Table 8 below.

Table 8 – Temporary Sheeting and Shoring Design Parameters

Description	Soil	Highly Weathered Rock
Moist Unit Weight (pcf)	130	140
Friction Angle (ϕ, deg)	30	36-38
Cohesion (c, psf)	0	0
Active Earth Pressure Coefficient (k_a)[1]	0.33	0.26-0.24
Equivalent Fluid Pressure (pcf)	42.9	36.4-33.6
Passive Earth Pressure Coefficient (k_p)[1]	3.0	3.9-4.2

6.7 Suitability of the In-Situ Soil and Rock for Use as Compacted Fill

The suitability of each stratum for use as compacted fill is discussed below.

Stratum 1A
Topsoil

Topsoil is not suitable for use as compacted fill. During construction, it shall be stripped from the construction areas. The topsoil may be reused in non-structural, non-sloped landscape areas or be hauled offsite.

Stratum 1B
Asphalt

Asphalt is not suitable for use as compacted fill in the proposed building area. However, the existing asphalt pavement may be reused as subgrade material and mixed with soil for use in the parking lot and driveway areas. The asphalt should be stripped from the work area and stockpiled if to be reused or hauled off site for disposal. Prior to using the asphalt for compacted fill, the material shall be crushed into pieces smaller than 4 inches and mixed with soil.

Stratum 2
Existing Fill

The existing fill generally consists of brown, gray, black coarse to fine Sand, trace (to some) Silt, trace (to some) coarse to fine Gravel, with varying amounts of cobbles, boulders, organic material, and debris. The organic material and debris consisted of roots, buried topsoil, plastic, wood, concrete, brick, and asphalt. The existing fill will only be suitable for reuse if it remains relatively dry for optimum compaction and all of the debris and organic material is removed prior to reuse as compacted fill.

Strata 3 & 5
Sand, Silty Sand, or

The virgin soil consists of brown, gray coarse to fine SAND, trace (to and) Silt, trace (to and) coarse to fine Gravel or coarse to fine GRAVEL some (to and), coarse to fine Sand, trace Silt. Many cobbles and boulders were encountered in

Sandy Gravel

this stratum. This stratum is generally suitable for reuse as compacted fill, provided that it remains relatively dry for optimum compaction. See below for requirements for reuse of cobbles and boulders.

Stratum 4
Clayey Silt
or Silty Clay

In select areas of the site, the virgin soil consists of brown, gray or mottled red brown, brown, gray Clayey SILT, trace coarse to fine Sand or Silty CLAY, trace fine Sand. This stratum has a high percentage of silt/clay and will be very moisture sensitive. If the soil becomes too wet, it will be difficult to achieve adequate compaction. In the event that this material is encountered within the site excavations, it will only be suitable for reuse as compacted fill if it remains relatively dry for optimum compaction prior to its use.

Stratum 6
Weathered
Bedrock

Excavated rock may be used as fill material on the site provided that the material is well graded and has been approved by Carlin-Simpson & Associates prior to its use.
All rock fill (including large cobbles and boulders) must be well blended with smaller rock fragments and/or soil. Gradation limits (i.e. maximum particle size for rock placed) will depend on the location of placement as shown in Table 7 below. Excavated rock (and boulders) that are too large for use as structural fill should be processed through a crusher to provide suitable fill material.

Rock fill shall be placed in maximum 12 inch thick layers and compacted with multiple passes of a large vibratory roller to a firm and non-yielding state as determined by the on-site representative from Carlin-Simpson & Associates. Rock fill should not be used where it will interfere with the installation of foundations, pile foundations, or utilities. Also, it shall not be used as backfill directly against concrete walls or utilities.

The boring and test pit data indicates that the on-site soils contain a varying percentage of silt (5% to more than 50%). The higher silt content soils will be moisture sensitive. If the soil becomes too wet, it will be difficult to achieve adequate compaction. In addition, the site soils that extend below the groundwater table are completely saturated and therefore, unsuitable for reuse.

Proper moisture conditioning of the soil will be required. New compacted fill should be within 2% (+/-) of its optimum moisture content at the time of placement. In the event that the on-site material is too wet at the time of placement and cannot be adequately compacted, the soil should be aerated and allowed to dry or the material removed and a drier cleaner fill material used. In the event that the on-site material is too dry at the time of placement and cannot be adequately compacted, water may be needed to increase the soil moisture content for proper compaction.

The in-situ soils which exist throughout the site may become soft and weave if exposed to excessive moisture and construction traffic. The instability will occur quickly when exposed to these elements and it will be difficult to stabilize the subgrade. We recommend that adequate site drainage be implemented early in the construction schedule and if the subgrade becomes wet, the contractor should limit construction activity until the soil has dried.

Excavated boulders, weathered rock, and rock may be used as fill material in designated areas, provided that the material conforms to the required gradation, is well graded, and has been approved prior to use by Carlin-Simpson & Associates. All rock fill must be well blended with smaller rock fragments and/or soil. The recommended maximum particle size for rock placed as fill is shown in

Table 9 below. Excavated rock, too large for use as structural fill, should be processed through a crusher to provide suitable fill material.

Table 9 – Rock Fill Gradation Limitations

Location		Maximum Particle Size
Building Area	Within 2 feet of Finished Floor	3 inches
	More than 2 feet below Finished Floor	6 inches
	More than 6 feet below Finished Floor	12 inches
Outside Building Area (i.e. Pavement and Sidewalk Areas)	Within 18 inches of Finished Grade	3 inches
	More than 18 inches below Finished Grade	6 inches
	More than 3 feet below Finished Grade	12 inches

The minimum compaction requirements for the various areas of the site are summarized in Table 10 below.

Table 10 – Minimum Compaction Requirements

Area	Maximum Modified Dry Density (ASTM D1557)
Below Foundations	95%
Below Floor Slabs	92%
Retaining Wall Subgrade	95%
Retaining Wall Backfill	92%
Pavement Areas	92%
Exterior Slabs and Sidewalks	92%
Utility Trenches	92%
Landscape Areas (Non-Sloped Areas)	90%

Debris Fill and Potential Environmental Concerns

Debris was encountered within the existing fill stratum during this subsurface investigation. In the event that the debris fill is encountered in any of the site excavations, the excavated material will generally not be suitable for reuse as compacted fill unless the debris can be sufficiently separated and removed from the soil fill. The possibility of not being able to reuse all of the excavated existing fill material should be taken into consideration by the project team. This should also be included in the project specifications.

In the event that the debris fill material needs to be hauled off site, environmental testing will likely be required to export the debris fill material. An environmental evaluation of the site was beyond the scope of this study. Proper disposal of all soil must be performed in accordance with applicable federal and state regulations. An environmental engineering firm should be retained by the owner to address these potential issues. The possibility of having to haul off materials should be taken into consideration by the project team.

7.0 GENERAL

The findings, conclusions and recommendations presented in this report represent our professional opinions concerning subsurface conditions at the site. The opinions presented are relative to the dates of our site work and should not be relied on to represent conditions at later dates or at locations not explored. The opinions included herein are based on information provided to us, the data obtained at specific locations during the study and our past experience. If additional information becomes available that might impact our geotechnical opinions, it will be necessary for Carlin-Simpson & Associates to review the information, reassess the potential concerns, and re-evaluate our conclusions and recommendations.

Regardless of the thoroughness of a geotechnical exploration, there is the possibility that conditions between borings and test pits will differ from those encountered at specific boring or test pit locations, that conditions are not as anticipated by the designers and/or the contractors, or that either natural events or the construction process have altered the subsurface conditions. These variations are an inherent risk associated with subsurface conditions in this region and the approximate methods used to obtain the data. These variations may not be apparent until construction.

The professional opinions presented in this geotechnical report are not final. Field observations and foundation installation monitoring by the geotechnical engineer, as well as soil density testing and other quality assurance functions associated with site earthwork and foundation construction, are an extension of this report. Therefore, Carlin-Simpson & Associates should be retained by the owner to observe all earthwork and foundation construction, to document that the conditions anticipated in this study actually exist, and to finalize or amend our conclusions and recommendations Carlin-Simpson & Associates is not responsible or liable for the conclusions and recommendations presented in this report if Carlin-Simpson & Associates does not perform the observation and testing services.

Therefore, in order to preserve continuity in this project, the owner shall retain the services of Carlin-Simpson & Associates to provide full time geotechnical related monitoring and testing during construction. At a minimum, this shall include the observation and testing of the following: 1) the removal of existing fill and unsuitable soil, where required; 2) the proofrolling of the subgrade soil prior to the placement of new compacted fill; 3) the placement and compaction of controlled fill; 4) the installation of pile foundations; 5) the excavation for new foundations bearing on rock; 6) the construction of retaining walls, soil slopes, and rock slopes; and 7) the preparation of the subgrade for the floor slab and pavement areas.

This report has been prepared in accordance with generally accepted geotechnical engineering practice. No other warranty is expressed or implied. The evaluations and recommendations presented in this report are based on the available project information, as well as on the results of the exploration. Carlin-Simpson & Associates should be given the opportunity to review the final drawings and site plans for this project to determine if changes to the recommendations outlined in this report are needed. Should the nature of the project change, these recommendations should be re-evaluated.

This report is provided for the exclusive use of AMS Acquisitions and the project specific design team and may not be used or relied upon in connection with other projects or by other third parties. Carlin-Simpson & Associates disclaims liability for any such third-party use or reliance without express written permission. Use of this report or the findings, conclusions or recommendations by others will be at the sole risk of the user. Carlin-Simpson & Associates is not responsible or liable for the interpretation by others of the data in this report, nor their conclusions, recommendations or opinions.

If the conditions encountered during construction vary significantly from those stated in this report, this office should be notified immediately so that additional recommendations can be made.

Thank you for allowing us to assist you with this project. Should you have any questions or comments, please contact this office.

Very truly yours,

CARLIN-SIMPSON & ASSOCIATES, LLC

M. Anke

MEREDITH R. ANKE, P.E.
Senior Project Engineer

ROBERT B. SIMPSON, P.E.
Principal

File No. 23-34

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-1

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	SHEET NO.:	1 of 1
Client:	AMS Acquisitions	JOB NUMBER:	23-34
Drilling Contractor:	Environmental Technical Drilling	ELEVATION:	+70.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	5/Jul/23
No groundwater encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE:	5/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			3		**Dark brown topsoil** 0'3"	
1		**S-1**	4		FILL (Br cf S, l $, t mf G)	Rec = 16"
			5			moist
2			4		**FILL (Brown coarse to fine SAND,**	
			6		**little Silt, trace medium to fine Gravel)**	
3		**S-2**	17		FILL (same, l mf G, w/ fine roots)	Rec = 8"
			26			moist
4			50/1"		4'0"	
					End of Boring @ 4'0"	
5						Auger refusal 4'0"
						Moved hole 5' east
6						Auger refusal 3'9"
						on probable bedrock
7						
8						
9						
10						
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12						
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22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-2

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	SHEET NO.:	1 of 1
Client:	AMS Acquisitions	JOB NUMBER:	23-34
Drilling Contractor:	Environmental Technical Drilling	ELEVATION:	+78.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	5/Jul/23
5/Jul/23		7'0"	Open	DIA.	3 1/4"	1 3/8"			FINISH DATE:	5/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			6		**Black topsoil** 0'3"	
1		S-1	9		FILL (Br cf S, l (-) $, a cf G, w/many cobbles, boulders)	Rec = 11"
			24			moist
2			17			Boulder @ 1'0"
						Auger refusal 2'0", moved hole
3						2' north
			5		FILL (same, s $, w/roots, topsoil)	Concrete @ 4'0"
4		S-2	10			Rec = 12"
			29		**FILL (Brown coarse to fine SAND, little Silt,**	moist
5			26		**and coarse to fine Gravel, with cobbles,**	
			5		**boulders, debris, roots, topsoil)**	
6		S-3	4		FILL (same, br, g w/concrete, plastic, fine roots,	Rec = 9"
			4		mixed topsoil)	moist
7			11			
			11			
8		S-4	12		FILL (Dk gr, br $ s (+), cf S, t f G, w/concrete, wood,	Rec = 8"
			25		fine roots)	moist to wet
9			13		9'0"	
					End of Boring @ 9'0"	Auger refusal 8'0" on boulder
10						move hole 5' north. Start mud
						rotary, lost water in existing
11						fill. Could not continue mud
						rotary. Abandoned boring.
12						
13						
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CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-3
Project: Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY		SHEET NO.: 1 of 1
Client: AMS Acquisitions		JOB NUMBER: 23-34
Drilling Contractor: Environmental Technical Drilling		ELEVATION: +81.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			DATUM: Topo
No groundwater encountered				DIA.	3 1/4"	1 3/8"			START DATE: 5/Jul/23
				WGHT		140#			FINISH DATE: 5/Jul/23
				FALL		30"			DRILLER: Collin
									INSPECTOR: Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			2		**Black topsoil** 0'5"	
1		S-1	6		**FILL (Gray coarse to fine GRAVEL and,**	Rec = 7"
			12		**coarse to fine Sand, little (-) Silt)** 1'6"	moist
2			9		Gr cf G a, cf S, t $, w/many cobbles, boulders	
			12			
3		S-2	32			Rec = 7"
			43		**Gray coarse to fine GRAVEL and, coarse**	moist
4			14/3"		**to fine Sand, trace Silt, with many**	Auger refusal 5'0" possible
			18		**cobbles, boulders**	boulder, moved hole 5' north
5		S-3	27		same, highly fractured bedrock	Rec = 8"
			30/3"		5'3"	moist
6					**End of Boring @5'3"**	Spoon bouncing on possible
						bedrock 5'3"
7						Auger refusal 5'3"
						on probable bedrock
8						
9						
10						
11						
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CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-4

Project:	**Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY**	**SHEET NO.:**	1 of 1
Client:	**AMS Acquisitions**	**JOB NUMBER:**	23-34
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+79.0

GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**		
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**HSA**	**SS**			**DATUM:**	Topo
No groundwater encountered				**DIA.**	**3 1/4"**	**1 3/8"**			**START DATE:**	6/Jul/23
				WGHT		**140#**			**FINISH DATE:**	6/Jul/23
				FALL		**30"**			**DRILLER:**	Collin
									INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			4		**Black Asphalt** 0'3"	
1		**S-1**	12		FILL (Lt br gr cf S, t $, l (-) mf G, shattered boulder)	Rec = 8"
			20		**FILL (Light brown, gray coarse to fine**	moist
2			8		**SAND, trace Silt, little (-) medium to fine**	
			10		**Gravel, shattered boulder)**	
3		**S-2**	7		FILL (Br cf S, l (-) $, a cf G)	Rec = 3"
			10			moist
4			15/1"		3'7"	Auger refusal 4'0", moved 3' N
					End of Boring @ 3'7"	Auger refusal 2'0", moved 8' S
5						Auger refusal 2'6"
						on possible bedrock
6						
7						
8						
9						
10						
11						
12						
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16						
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18						
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20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-5

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	SHEET NO.:	1 of 1
Client:	AMS Acquisitions	JOB NUMBER:	23-34
Drilling Contractor:	Environmental Technical Drilling	ELEVATION:	+79.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	6/Jul/23
No groundwater encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE:	6/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION		REMARKS
			5		**Black Asphalt**	0'2"	
1		**S-1**	15		FILL (Lt br cf S, l (+) $, a cf G, boulder)		Rec = 6"
			15				moist
2			9				Boulders @ 2'0"
			7				
3		**S-2**	4		FILL (Dk br cf S, s (-) $, l mf G, w/some roots)		Rec = 7"
			4		**FILL (Brown coarse to fine SAND,**		moist
4			3		**little (+) Silt, and coarse to fine Gravel,**		Auger breakthrough 4'
					boulder, roots)		
5							
			1		FILL (same, s $, t (+) mf G, w/some roots)	5'6"	
6		**S-3**	1		Lt br cf S, a $, t (-) mf G		Rec = 18"
			15		**Light brown coarse to fine SAND, and Silt,**		moist
7			10/0"		**trace (-) medium to fine Gravel**	6'8"	
					End of Boring @ 6'8"		Auger refusal 6'8"
8							on probable bedrock
9							
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22							

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-6

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	SHEET NO.:	1 of 1
Client:	AMS Acquisitions	JOB NUMBER:	23-34
Drilling Contractor:	Environmental Technical Drilling	ELEVATION:	+78.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	6/Jul/23
No groundwater encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE:	6/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION		REMARKS
			27		**Black topsoil**	0'4"	
1		S-1	15		**Light brown, gray coarse to fine SAND,**		Rec = 12"
			25/1"		**little Silt, a coarse to fine Gravel, with**		Refusal 0'7", moved hole
2					**rock fragments**		3' west
		S-2	23/5"10/0"		same	2'5"	Auger refusal 2'2"
3					**End of Boring @ 2'5"**		Auger refusal 2'5"
							on probable bedrock
4							
5							
6							
7							
8							
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CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-7

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	SHEET NO.:	1 of 2
Client:	AMS Acquisitions	JOB NUMBER:	23-34
Drilling Contractor:	Environmental Technical Drilling	ELEVATION:	+80.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	6/Jul/23
No groundwater encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE:	6/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION		REMARKS
			9		Black topsoil	0'3"	
1		S-1	7		Gray coarse to fine SAND, trace Silt, some (+) coarse to fine Gravel, with rock fragments	1'2"	Rec = 7" moist
			8/0"				
2					End of Boring @ 1'2"		Auger refusal 1'0", moved 3' south, auger refusal 0'10", moved 3' west, Auger refusal 1'2" on probable bedrock
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-8

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	SHEET NO.:	1 of 2
Client:	AMS Acquisitions	JOB NUMBER:	23-34
Drilling Contractor:	Environmental Technical Drilling	ELEVATION:	+79.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	6/Jul/23
6/Jul/23		14'0"		DIA.	3 1/4"	1 3/8"			FINISH DATE:	7/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			5			Layer of rip rap
1			4		**Black asphalt** 0'8"	
		S-1	6		FILL (Dk br cf S, l $, s cf G)	Rec = 10"
2			4			moist
			4			
3		S-2	7		FILL (same, l (+) $)	Rec = 2"
			8		**FILL (Dark brown coarse to fine SAND,**	moist
4			6		**little Silt, some coarse to fine Gravel)**	
			5			
5		S-3	5			Rec = 6"
			6		5'6"	moist
6			9		Lt br cf S, s (+) $, s cf G	
			9			
7		S-4	10		same **Light brown coarse to fine SAND,**	Rec = 2"
			9		**some (+) Silt, some coarse to fine Gravel**	moist
8			10		8'0"	
			12			
9		S-5	14		Lt br, gr Cy $	Rec = 24"
			13			moist
10			13			
			7			
11		S-6	11		same	Rec = 10"
			12			moist
12			11			
			8			
13		S-7	10		same	Rec = 24"
			12			moist
14			13		**Light brown, gray Clayey SILT**	
			12			
15		S-8	11		same	Rec = 24"
			11			wet
16			20			
			7			
17		S-9	9		same, gr	Rec = 24"
			10			wet
18			10			
			4			
19		S-10	5		same	Rec = 24"
			6			wet
20			6			
			3			
21		S-11	2		same	Rec = 7"
			3			wet
22			3			

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-8
Project: Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY		SHEET NO.: 2 of 2
Client: AMS Acquisitions		JOB NUMBER: 23-34

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			4			
23		S-12	5		Lt br, gr Cy $	Rec = 24"
			6			wet
24			5			
			3		**Light brown, gray Clayey SILT**	
25		S-13	4		same	Rec = 20"
			4			wet
26			5			
			4			
27		S-14	5		same	Rec = 24"
			5			wet
28			5			
29					29'0"	
					End of Boring @ 29'0"	
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
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44						
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CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-9
Project: Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY		SHEET NO.: 1 of 1
Client: AMS Acquisitions		JOB NUMBER: 23-34
Drilling Contractor: Environmental Technical Drilling		ELEVATION: +88.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	7/Jul/23
No Water Reading				DIA.	3 1/4"	1 3/8"			FINISH DATE:	7/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			3		Black asphalt 0'2"	Rec = 4"
1		S-1	4		Orange brown coarse to fine SAND, 1'0"	moist
			10/2"		and Silt, little medium to fine Gravel	Run #1
2		Run #1				1'0"-2'6"
						Run = 18"
3						Rec = 18" = 100%
					Gray Gneiss or Norite, massive moderately	RQD = 39%
4		Run #2			jointed, slightly to moderately weathered	Run #2
						2'6"-6'0"
5						Run = 42"
						Rec = 40" = 95%
6					6'0"	RQD = 70%
					End of Boring @ 6'0"	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-10

Project:	**Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY**	**SHEET NO.:**	1 of 2
Client:	**AMS Acquisitions**	**JOB NUMBER:**	23-34
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+78.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	10/Jul/23
11/Jul/23		3'0"		DIA.	3 1/4"	1 3/4"			FINISH DATE:	11/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	SYM	IDENTIFICATION	REMARKS
			8		**Black topsoil** 0'3"	
1		S-1	11		FILL (Br cf S, t (+) $, s cf G, w/rk frg)	Rec = 9"
			10			moist
2			5			
			6			
3		S-2	8		FILL (same, l $, a cf G)	Rec = 8"
			15			wet
4			20		**FILL (Brown coarse to fine SAND, little Silt, some coarse to fine Gravel, with rock fragments, asphalt)**	
5						
			19			
6		S-3	22		FILL (same, bk cf S, l (-) $, a cf G, w/asphalt)	Rec = 13"
			13			wet
7			8			
			7			
8		S-4	3		FILL (Gr, br cf S, a $, l cf G)	Rec = 20"
			6			wet
9			45/4"			
10					10'0"	
11						
12		Run #1				
13					**FILL (Boulders)**	
14						
15					15'0"	
			45			
16		S-5	38/4"		FILL (Dk br, gr cf S, a $, l mf G)	Rec = 8"
						wet
17					**FILL (Dark brown, gray coarse to fine SAND, and Silt, little medium to fine Gravel)**	Pea gravel in tip of spoon
18						Refusal on boulders
19					19'0"	
		S-6	5/0"			Rec = 5"
20						bouncing refusal
21		Run #2			**FILL (Boulders)**	
22						

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-10
Project: Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY		SHEET NO.: 2 of 2
Client: AMS Acquisitions		JOB NUMBER: 23-34

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23						
24						
25		Run #3			FILL (Boulders)	
26						
27					27'0"	Rollerbit to 27'0" encountered additional boulders. Abandonded boring.
28					End of Boring @ 27'0"	
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-11

Project:	Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY	**SHEET NO.:**	1 of 1
Client:	AMS Acquisitions	**JOB NUMBER:**	23-34
Drilling Contractor:	Environmental Technical Drilling	**ELEVATION:**	+79.0

GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**		
									DATUM:	Topo
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**HSA**	**SS**			**START DATE:**	12/Jul/23
No groundwater encountered				**DIA.**	**3 1/4"**	**1 3/8"**			**FINISH DATE:**	12/Jul/23
				WGHT		**140#**			**DRILLER:**	Collin
				FALL		**30"**			**INSPECTOR:**	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION		REMARKS
			4		Black topsoil	0'2"	
1		S-1	13		Gray, brown coarse to fine SAND,		Rec = 12"
			20		little Silt, some coarse to fine Gravel,		moist
2			25/3"		with rock fragments	1'9"	Spoon refusal 1'9"
					End of Boring @ 1'9"		moved NW 3'
3							Auger refusal 1'7"
							moved NW 5'
4							Auger refusal 1'3"
							on probable bedrock
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-12
Project: Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY		SHEET NO.: 1 of 1
Client: AMS Acquisitions		JOB NUMBER: 23-34
Drilling Contractor: Environmental Technical Drilling		ELEVATION: +79.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE		
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			DATUM:	Topo
12/Jul/23		4'7"		DIA.	3 1/4"	1 3/8"			START DATE:	12/Jul/23
									FINISH DATE:	12/Jul/23
				WGHT		140#			DRILLER:	Collin
				FALL		30"			INSPECTOR:	Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	IDENTIFICATION	REMARKS
			7	**Black topsoil** 0'3"	
1		S-1	14	FILL (Gr, br cf S, t $, s cf G, w/boulder)	Rec = 16"
			19		moist
2			16		
			9		
3		S-2	26	FILL (same)	Rec = 4"
			11	**FILL (Gray, brown coarse to fine SAND,**	moist
4			8	**trace Silt, some coarse to fine Gravel,**	
			18	**with boulder)**	
5		S-3	18	FILL (same, s $)	Rec = 1"
			10		wet
6			5		
			3		
7		S-4	5	FILL (Br cf S, a $, s cf G, w/Cy $ pockets)	Rec = 4"
			9		wet
8			5	8'0"	
			13		
9		S-5	8	Br, gr Cy $, w/t cf S	Rec = 14"
			5	**Brown, gray Clayey SILT, with trace**	wet
10			4	**coarse to fine Sand**	
		S-6	13/2"	same 10'2"	Rec = 3"
11				**End of Boring @ 10'2"**	wet
12					Spoon refusal 10'2"
					on possible bedrock
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-13
Project: Proposed 4 Story Building, Albany Post Rd & Craft Ln, Buchanan NY		SHEET NO.: 1 of 1
Client: AMS Acquisitions		JOB NUMBER: 23-34
Drilling Contractor: Environmental Technical Drilling		ELEVATION: +79.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			DATUM: Topo
No groundwater encountered				DIA.	3 1/4"	1 3/8"			START DATE: 12/Jul/23
				WGHT		140#			FINISH DATE: 12/Jul/23
				FALL		30"			DRILLER: Collin
									INSPECTOR: Mike C

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			4		**Black topsoil** 0'3"	
1		S-1	14		**Gray brown coarse to fine SAND,**	Rec = 11"
			18/4"		**little (+) Silt, and coarse to fine Gravel** 1'4"	moist
2					**End of Boring @ 1'6"**	
						Auger refusal 1'4"
3						moved 3' west
						Auger refusal 1'2"
4						moved 3' west
						Auger refusal 0'8"
5						on probable bedrock
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-101
Project: Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY		**SHEET NO.:** 1 of 1
Client: AMS Acquisitions		**JOB NUMBER:** 23-34
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +79.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE		
DATE	TIME	DEPTH	CASING	TYPE	Cas	SS	DBL		DATUM:	Topo
Not Encountered				DIA.	4"	1 3/8"	2"		START DATE:	15 Nov 23
				WGHT	RB	140#			FINISH DATE:	15 Nov 23
				FALL	3"	30"			DRILLER:	Vinny
									INSPECTOR:	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			5		**Topsoil** 0'2"	
1		S-1	11		FILL (Br cf G s, cf S, l $	Rec = 9"
			15			moist
2			29			
						Boulder
3						
4						
5						
			2			
6		S-2	5		FILL (same, s $)	Rec = 5"
			7			moist
7			3		**FILL (Brown coarse to fine GRAVEL some, coarse to fine Sand, little Silt**	
8						
9						Boulders
10						
11						
12		S-3	50/6"		FILL (No Rec)	Rec = 0
13						
14						
15					15'0"	
16						
17						
18		Run #1			**Dark gray Hornblende Diorite fresh, intact rock**	Run # 1 15'0"-20'0"
19						Run = 60" Rec = 60" = 100% RQD = 57" = 95%
20					20'0"	
					End of Boring 20'0"	
21						
22						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-102

Project:	**Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY**	**SHEET NO.:**	1 of 1
Client:	**AMS Acquisitions**	**JOB NUMBER:**	23-34
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+78.0

GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**	**DATUM:**	Topo
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**HSA**	**SS**			**START DATE:**	16 Nov 23
Not Encountered				**DIA.**	**3 1/4"**	**1 3/8"**			**FINISH DATE:**	16 Nov 23
				WGHT		**140#**			**DRILLER:**	Vimmy
				FALL		**30"**			**INSPECTOR:**	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			8		**Topsoil** 0'2"	
1		**S-1**	17		FILL (Br, rd br cf S, s $, a (-) cf G)	Rec = 7"
			17			moist
2			10			
3						Boulders
4						
5					**FILL (Brown, red brown coarse to fine SAND, some Silt, and (-) coarse to fine Gravel**	
6						
7						
			4			
8		**S-2**	3		FILL (No Rec)	Rec = 0
			2			
9			2			
10					10'0"	
11						
12						
13		**Run #1**			**FILL (Boulders)**	Run #1 10'0"-15'0" Run = 60" Rec = 22" = 37%
14						
15						
16					16'0"	
17						
18						
19		**Run #2**			**Dark gray Hornblende Diorite shattered very blocky, seamy, weathered rock**	Run #2 16'0"-21'0" Run = 60" Rec = 60" = 100% RQD = 15" = 25%
20						
21					21'0"	
22					**End of Boring @ 21'0"**	

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-103
Project: Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY		**SHEET NO.:** 1 of 2
Client: AMS Acquisitions		**JOB NUMBER:** 23-34
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +79.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE		
									DATUM:	Topo
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	Cas	SS	DBL		**START DATE:**	16/Nov/23
				DIA.	4"	1 3/4"	2"		**FINISH DATE:**	16/Nov/23
				WGHT	RB	140#			**DRILLER:**	Vinny
				FALL	3"	30"			**INSPECTOR:**	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	IDENTIFICATION	REMARKS
			5	**Topsoil** 0'2"	
1		S-1	12	FILL (Br cf S, t $, s cf G)	Rec = 6" moist
			50/6"		
2					
3					
4					Boulder fill
5					
6				**FILL (Brown coarse to fine SAND, trace Silt, some coarse to fine Gravel, with boulders)**	
7					
8					
9					
10					
11				Boulder	
12				12'0"	
			6		
13		S-2	13	Br, gr C&$ t, f S	Rec = 24" wet
			12		
14			10		
15					
16					
17				**Brown, gray Clay and SILT trace, medium to fine Sand**	
18					
			3		
19		S-3	3	same, $y C, l (-) mf S	Rec = 18" moist
			4		
20			6		
21					
22					

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-103
Project: Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY		SHEET NO.: 2 of 2
Client: AMS Acquisitions		JOB NUMBER: 23-34

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23					**Brown, gray Clay and SILT trace,**	
			10		**fine Sand** 23'6"	
24		S-4	25		Gr, bk cf S, t (+) $, s cf G	Rec = 9"
			44			wet
25			22			Boulders and cobbles
						(Decomposed rock)
26					**Gray, black coarse to fine SAND,**	
					trace (+) Silt, some coarse to fine Gravel	
27						
28						
					28'6"	
29						
30						
31		Run			**Dark gray Hornblende Diorite**	Run #1
		#1			**blocky and seamy moderately weathered**	28'6"-33'6"
32						Run = 60"
						Rec = 60" = 100%
33						RQD + 42" = 70%
					33'6"	
34						
35						
36		Run			**Shale massive moderately jointed,**	Run #2
		#2			**hard rock**	33'6"-38'6"
37						Run = 60"
						Rec = 60" = 100%
38						RQD = 53" = 88%
					38'6"	
39					**End of Boring @ 38'6"**	
40						
41						
42						
43						
44						
45						
46						
47						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-104
Project: Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY		**SHEET NO.:** 1 of 4
Client: AMS Acquisitions		**JOB NUMBER:** 23-34
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +79.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE		
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**		SS			**DATUM:**	Topo
				DIA.		1 3/8"			**START DATE:**	20/Nov/23
				WGHT		140#			**FINISH DATE:**	20/Nov/23
				FALL		30"			**DRILLER:**	Vinny
									INSPECTOR:	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	IDENTIFICATION	REMARKS
1					Vinny excavated to 4'0" set casing
				FILL (Boulders)	
2					
3					
4					
			4		
5		S-1	4	FILL (Br cf S, s $, s cf G, w/boulders)	Rec = 7"
			5		moist
6			7	**FILL (Brown coarse to fine SAND, some Silt, some coarse to fine Gravel, with boulders)**	
7					
8					
9					
10				10'0"	
			3		
11		S-2	5	Lt br, gr C&$ t, cf S	Rec = 22"
			7		wet
12			8		
13					
14					
15				**Light brown, gray Clay and SILT trace, coarse to fine Sand**	
			3		
16		S-3	5	same	Rec = 24"
			8		wet
17			8		
18					
19					
20				20'0"	
			2		
21		S-4	1	Gr $y C	Rec = 24"
			.WOH	**Gray Silty CLAY**	wet
22			2		

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
23						
24						
25						
26		S-5	WOH24		Gr $y C	Rec = 24" wet
27						
28					**Gray Silty CLAY**	
29						
30						
31		S-6	1 2		same, $&C	Rec = 24" wet
32			1 4			
33					33'0"	
34						
35						
36		S-7	30 38		Dk gr cf S, l $, s cf G	
37			32 30		**Dark gray coarse to fine SAND, little Silt, some coarse to fine Gravel**	
38						
39					39'0"	
40						
41		S-8	16 30		Br cf S, t (+) $, l cf G	
42			38 50			
43					**Brown coarse to fine SAND, trace (+) Silt, little coarse to fine Gravel**	
44						
45					45'0"	Run #1 45'0"-49'0"
46		Run #1			**Dark gray, green Hornblende Diorite**	Run = 48" Rec = 48" = 100%
47						RQD = 26" = 54%

Client:	AMS Acquisitions					JOB NUMBER: 23-34
Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
48		Run #1			Dark gray, green Hornblende Diorite	
49					49'0"	
					End of Boring @ 49'0"	
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-105

Project:	**Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY**	**SHEET NO.:**	1 of 1
Client:	**AMS Acquisitions**	**JOB NUMBER:**	23-34
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+78.5

GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**		
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**Cas**	**SS**	**DBL**		**DATUM:**	Topo
									START DATE:	21 Nov 23
				DIA.	**4"**	**1 3/8"**	**2"**		**FINISH DATE:**	21 Nov 23
				WGHT	**RB**	**140#**			**DRILLER:**	Vinny
				FALL	**3"**	**30"**			**INSPECTOR:**	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1						
2					FILL (Boulders)	Boulders
3						
4						
5					**FILL (Brown coarse to fine SAND, little (+) Silt, some coarse to fine Gravel, with boulders)**	
6						
7			1			
8		**S-1**	6 5		FILL (Br, or cf S, l (+) $, a cf G)	Rec = 6" moist
9			8			
10						Boulders
11						
12						
13			40			
14		**S-2**	50/6"		FILL (same, a (-) $, l cf G)	Rec = 4" wet
15						
16					16'0"	
17						
18						
19		**Run #1**			**Dark gray Hornblende Diorite, blocky and seamy, weathered rock**	Run #1 16'0"-21'0" Run = 60" Rec = 55" = 92% RQD = 30" = 50%
20						
21					21'0"	
22					**End of boring @ 21'0"**	

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER B-106

Project:	**Proposed 4 Story Building, 3119 Albany Post Rd, Buchanan NY**	**SHEET NO.:**	1 of 1
Client:	**AMS Acquisitions**	**JOB NUMBER:**	23-34
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+78.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	Topo
DATE	TIME	DEPTH	CASING	TYPE	Cas	SS	DBL		START DATE:	27 Nov 23
				DIA.	4"	1 3/8"	2"		FINISH DATE:	27 Nov 23
				WGHT	RB	140#			DRILLER:	Vinny
				FALL	3"	30"			INSPECTOR:	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1						
2						
3						
					FILL (Boulders)	Boulders
4						
5						
			6			
6		S-1	5		FILL (Gr, br cf S, s $, s (+) cf G)	Rec = 9" wet
			6			
7			10		**FILL (Gray, brown coarse to fine SAND, some Silt, some (+) coarse to fine Gravel, with boulders)**	
8						
9						
					FILL (Boulders)	
10						
11					11'0"	
12						Drilled smooth
13					**Brown coarse to fine SAND, little Silt, little coarse to fine Gravel**	
14					14'0"	
15						
16					**Gray, brown coarse to fine SAND, trace Silt, some (+) coarse to fine Gravel, with boulders**	Dense drilling Boulders
17						
18					18'6"	Rollerbit refusal 18'6"
19					**End of boring @ 18'6"**	probable bedrock
20						
21						
22						

Proposed 4-Story Building
Albany Post Rd. & Craft Ln.
Buchanan, NY
23-34

28 June 2023

TP-1 (Elev. +68.0)

0'0"-0’4"	Black topsoil	
0’4"-0’10"	FILL (Gravel, 1” road base)	dense, moist
0’10"-5’3”	FILL (Gray, brown coarse to fine SAND, little Silt, and (-) coarse to fine Gravel, with many cobbles and boulders	medium dense, dense, moist
5’3”-7’9”	FILL (Dark gray coarse to fine SAND, some (+) Silt, trace (-) fine Gravel, with wood)	loose, moist to wet
7’9”-8’3”	Light gray coarse to fine SAND, and (+) Silt, little (-) medium to fine Gravel)	medium dense, wet

Groundwater encountered @ 5’3”

TP-2 (Elev. +71.0)

0’0”-1’0”	Black topsoil	
1’0”-4’9”	FILL (Light brown coarse to fine SAND, little (+) Silt, some (+) coarse to fine Gravel, with many large cobbles boulders, many fine roots)	medium dense, moist
4’9”-5’9”	FILL (Dark gray coarse to fine SAND, little (+) Silt, with trace organics, old topsoil layer)	loose, moist
5’9”-6’9”	Brown coarse to fine SAND, little Silt, some (-) coarse to fine Gravel, with cobbles	medium dense, moist
6’9”-8’6”	Stacked packed boulders. Bucket refusal on large boulder.	dense, moist to wet

Groundwater encountered @ 8’3”

Proposed 4-Story Building
Albany Post Rd. & Craft Ln.
Buchanan, NY
23-34

28 June 2023

TP-3 (Elev. +80.0)

0’0”-0’4”	Black topsoil	
0’4”-1’0”	Boulders with seams of soil	rippable, moist
1’0”	Refusal on Bedrock	unrippable
	No groundwater encountered	

TP-4 (Elev. +78.5)

0’0”-0’3”	Black topsoil	
0’3”-1’0”	Boulders with seams of soil	rippable
1’0”	Refusal on Bedrock	unrippable
	No groundwater encountered	

TP-5 (Elev. +77.0)

0’0”-0’6”	Black topsoil	
0’6”-2’6”	FILL (Brown coarse to fine SAND, little Silt, some coarse to fine Gravel, with many cobbles, boulders)	loose-med dense, moist
2’6”-4’0”	FILL (Gray, brown coarse to fine SAND, little (+) Silt, little medium to fine Gravel)	dense, moist
4’0”-5’6”	Asphalt	
5’6”-7’6”	FILL (Brown, gray coarse to fine SAND, little (+) Silt, some (+) coarse to fine Gravel, with many cobbles, boulders, with brick)	dense, moist to wet
7’6”	Refusal on boulders (probable fill)	
	Groundwater encountered @ 6’9”	

Proposed 4-Story Building
Albany Post Rd. & Craft Ln.
Buchanan, NY
23-34

28 June 2023

TP-6 (Elev. +95.0)

0’0”-0’4”	Black topsoil	
0’4”-1’3”	Brown coarse to fine SAND, little (-) Silt, little (+) coarse to fine Gravel, with many boulders	medium dense, moist
1’3”-5’0”	Brown coarse to fine GRAVEL some (-), coarse to fine Sand, trace (+) Silt, with many cobbles, boulders	dense, moist
5’0”	Refusal on Bedrock, highly fractured and weathered, with soil seams	rippable
	No groundwater encountered	

TP-7 (Elev. +70.0)

0’0”-0’6”	Black topsoil	
0’6”-3’0”	FILL (Brown coarse to fine SAND, little Silt, some (-) coarse to fine Gravel, with a few boulders	dense, moist
3’0”	Refusal on Bedrock	
	No groundwater encountered	

TP-8 (Elev. +68.0)

0’0”-0’10”	Black topsoil	
0’10”-4’6”	FILL (Dark brown coarse to fine SAND, little (+) Silt, some (-) coarse to fine Gravel, with boulders)	loose, moist
4’6”	Refusal on Bedrock	
	No groundwater encountered	

28 June 2023

TP-9 (Elev. +82.0)

0’0”-0’3”	Black topsoil	
0’3”-1’3”	Rippable rock with soil seams (Brown coarse to fine SAND, some (+) Silt, little (-) coarse to fine Gravel)	dense, moist
1’3”	Refusal on Bedrock	
	No groundwater encountered	

TP-10 (Elev. +88.0)

0’0”-0’2”	Black topsoil	
0’2”-1’1”	Rippable rock with soil seams (Brown coarse to fine SAND, some (-) Silt, little coarse to fine Gravel)	dense, moist
1’1”	Refusal on Bedrock	
	No groundwater encountered	

TP-11 (Elev. +87.0)

0’0”-0’5”	Black topsoil	
0’5”-2’8”	Rippable rock with soil seams (Brown coarse to fine SAND, some (-) Silt, little (+) coarse to fine Gravel)	dense, moist
2’8”	Refusal on Bedrock	
	No groundwater encountered	

Proposed 4-Story Building
Albany Post Rd. & Craft Ln.
Buchanan, NY
23-34

28 June 2023

TP-12 (Elev. +72.0)

0'0"-1'4"	Black topsoil	
1'4"-4'0"	FILL (Dark brown coarse to fine SAND, and Silt, some coarse to fine Gravel, with boulders, clay pockets, and construction debris)	loose, moist
4'0"-8'2"	FILL (Gray Clayey SILT)	moist-wet, organic odor
8'2"-9'6"	Mottled red brown, brown, gray Clayey SILT	very dense, moist
	Groundwater encountered @ 7'6"	

Proposed 4 Story Building
3119 Albany Post Rd.
Buchanan, NY
23-34

6 November 2023

TP-101 (Elev. +79.0)

0'0"-5’6"	FILL (Dark brown coarse to fine SAND, little (+) Silt, and coarse to fine Gravel, with many cobbles and boulders)
5'6"	Refusal on probable bedrock
	No groundwater encountered

TP-102 (Elev. +79.0)

0’0”-3’0”	FILL (Boulder and soil fill)
3’0”	Refusal on probable bedrock
	Trapped water @ 2’6”

TP-103 (Elev. +84.0)

0’0”-7’0”	FILL (Boulder and soil fill)
	Trapped water @ 4’0”

TP-104 (Elev. +86.0)

No Access

TP-105 (Elev. +80.0)

No Access

6 November 2023

TP-106 (Elev. +78.0)

0'0"-5'0"	FILL (Boulder and soil fill)	
5'0"-6'3"	Brown coarse to fine SAND, and Silt, trace medium to fine Gravel	medium dense, moist
	No groundwater encountered	

TP-107 (Elev. +79.0)

0'0"-4'0"	FILL (Boulder and soil fill)	
4'0"-5'0"	Light brown SILT and, coarse to fine Sand	medium dense, moist
	No groundwater encountered	

TP-108 (Elev. +79.0)

0'0"-3'0"	FILL (Boulder and soil fill)	
3'0"-4'0"	Light brown SILT and, coarse to fine Sand	
	Trapped water @ 3'0"	

TP-109 (Elev. +78.5)

0'0"-3'6"	FILL (Boulder and soil fill)	
3'6"-4'0"	Brown topsoil	
4'0"-7'0"	Brown coarse to fine SAND, some (+) Silt	medium dense, moist
	No groundwater encountered	

Proposed 4 Story Building
3119 Albany Post Rd.
Buchanan, NY
23-34

7 November 2023

TP-110 (Elev. +78.5)

0’0”-6’0”	FILL (Boulder and soil fill)	
6’0”-6’6”	Brown coarse to fine SAND, some Silt, some coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

TP-111 (Elev. +79.5)

0’0”-6’0”	FILL (Brown coarse to fine SAND, some Silt, some coarse to fine Gravel, with cobbles and boulders, topsoil)	
6’0”	Intact bedrock	
	Groundwater encountered @ 6’0” (slow inflow)	

TP-112 (Elev. +79.5)

0’0”-0’4”	Dark brown topsoil	
0’4”-3’0”	Brown coarse to fine SAND, some (-) Silt, some (+) coarse to fine Gravel, with many cobbles and boulders	medium dense, moist
3’0”	Intact bedrock (varies/sloping)	
	No groundwater encountered	

TP-113 (Elev. +79.0)

0’0”-6’3”	Fractured bedrock	
6’3”	Refusal on probable bedrock	
	No groundwater encountered	

Proposed 4 Story Building
3119 Albany Post Rd.
Buchanan, NY
23-34

7 November 2023

TP-114 (Elev. +79.0)

0’0”-0’3”	Brown topsoil	
0’3”-1’0”	Brown coarse to fine SAND, some (-) Silt, some coarse to fine Gravel, with cobbles	medium dense, moist
1’0”-4’6”	Gray fractured bedrock	
4’6”	Intact bedrock	
	No groundwater encountered	

TP-114A (Elev. +79.0)

0’0”-0’8”	Brown coarse to fine SAND, some (-) Silt, some coarse to fine Gravel	medium dense, moist
0’8”	Bedrock	
	No groundwater encountered	

TP-115 (Elev. +79.0)

0’0”-0’4”	Dark brown topsoil	
0’4”-2’0”	Brown coarse to fine SAND, some (-) Silt, some coarse to fine Gravel, with cobbles and boulders	medium dense, moist
2’0”	Intact bedrock	
	No groundwater encountered	

7 November 2023

TP-116 (Elev. +78.5)

0'0"-0'5"	Brown topsoil	
0'5"-5'0"	Brown coarse to fine SAND, some (-) Silt, some coarse to fine Gravel, with cobbles and boulders	medium dense, moist
	No groundwater encountered	

TP-117 (Elev. +80)

0'0"-4'0"	FILL (Boulder and soil fill)
4'0"-4'6"	Refusal on Asphalt
	Trapped water @ 4'0"

GENERAL NOTES:

1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING PREPARED BY JMC PLLC, ENTITLED "SITE GRADING PLAN" DATED 10/17/2023, LAST REVISED 12/15/2023, DWG. NO C-200.
2. BORING AND TEST PIT LOCATIONS WERE LAID OUT IN THE FIELD BY CARLIN-SIMPSON & ASSOCIATES (CSA).
3. BORINGS B-1 THRU B-13 WERE PERFORMED BY ENVIRONMENTAL TECHNICAL DRILLING INC. IN JULY 2023 UNDER THE FULL TIME INSPECTION OF CSA.
4. BORINGS B-101 THRU B-106 WERE PERFORMED BY ENVIRONMENTAL TECHNICAL DRILLING INC. IN NOVEMBER 2023 UNDER THE FULL TIME INSPECTION OF CSA.
5. TEST PITS TP-1 THRU TP-12 WERE PERFORMED BY AMERICAN TREE AND LANDSCAPE CORP. IN JUNE 2023 UNDER THE FULL TIME INSPECTION OF CSA.
6. TEST PITS TP-101 THRU TP-117 WERE PERFORMED BY TRAFICANTE CONTRACTING INC. IN NOVEMBER 2023 UNDER THE FULL TIME INSPECTION OF CSA.
7. ALL LOCATIONS ARE APPROXIMATE.

LEGEND:

- BORING LOCATION
- TEST PIT LOCATION

B-101 - BORING/TEST PIT NUMBER
R+64.0 - BEDROCK ELEVATION

ROBERT B. SIMPSON, P.E.
PROFESSIONAL ENGINEER

BORING & TEST PIT LOCATION PLAN

PROPOSED 4-STORY BUILDING
ALBANY POST ROAD & CRAFT LANE
BUCHANAN, NEW YORK

DRAWN	SCALE
MRA	1" = 30'
CHECKED	DATE
RBS	12-15-2023
PROJECT NO.	DWG. NO.
23-34	FIG-1
APPROVED	

CARLIN-SIMPSON & ASSOCIATES, LLC
61 Main Street
Sayreville, NJ 08872

Consulting Geotechnical and Environmental Engineers

GENERAL NOTES:

1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING PREPARED BY JMC PLLC, ENTITLED "SITE GRADING PLAN" DATED 10/17/2023, LAST REVISED 12/15/2023, DWG. NO C-200.
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6. TEST PITS TP-101 THRU TP-117 WERE PERFORMED BY TRAFICANTE CONTRACTING INC. IN NOVEMBER 2023 UNDER THE FULL TIME INSPECTION OF CSA.
7. ALL LOCATIONS ARE APPROXIMATE.

LEGEND:

- BORING LOCATION
- TEST PIT LOCATION
- APPROXIMATE LIMITS OF WHERE PILES ARE EXPECTED
- APPROXIMATE LIMITS OF WHERE FOOTINGS ON ROCK ARE EXPECTED

ROBERT B. SIMPSON, P.E.
PROFESSIONAL ENGINEER

BUILDING FOUNDATION AREA PLAN

PROPOSED 4-STORY BUILDING
ALBANY POST ROAD & CRAFT LANE
BUCHANAN, NEW YORK

DRAWN MRA	SCALE 1" = 30'	CARLIN-SIMPSON & ASSOCIATES, LLC 61 Main Street Sayreville, NJ 08872
CHECKED RBS	DATE 12-15-2023	
PROJECT NO. 23-34	DWG. NO. FIG-2	Consulting Geotechnical and Environmental Engineers
APPROVED		