Geotechnical Exploration Report
Latino Community Credit Union
Raleigh, North Carolina
S&ME Project No. 218619

PREPARED FOR:

Latino Community Credit Union
100 W. Morgan Street
Durham, North Carolina 27701

PREPARED BY:

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

November 11, 2021

November 11, 2021

Latino Community Credit Union
100 W. Morgan Street
Durham, North Carolina 27701

Attention: Ms. Etna Claro
Facilities Director

Reference: **Geotechnical Exploration Report**
Proposed New Latino Community Credit Union
Lot 2, New Bern Avenue
Raleigh, North Carolina
S&ME Project No. 218619
NC PE Firm License No. F-0176

Dear Ms. Claro:

S&ME, Inc. is pleased to submit this geotechnical engineering report for the proposed development of a new Latino Community Credit Union. Our services were performed in general accordance with our proposal 218619, dated September 15, 2021. The purpose of our subsurface exploration was to evaluate subsurface conditions as they relate to earthwork, foundation support, seismic site class and pavement design. This report presents a brief summary of our understanding of the project, descriptions of our field exploration and laboratory testing procedures, discussion of encountered subsurface conditions, and geotechnical recommendations related to design and construction.

We appreciate the opportunity to work with the Latino Community Credit Union on this project. Please contact us with any questions, or if you need additional information.

Sincerely,

S&ME, Inc.

Matthew Millette
Geotechnical Staff Professional

NORTH CAROLINA PROFESSIONAL SEAL 18819 ENGINEER WESLEY M. LOWDER

Wes Lowder
Nov 11 2021 1:25 PM

Wes Lowder, P.E.
Vice President
Registration No. 18819

DocuSign

Table of Contents

Appendices

1.0 Project Information

This proposal is based on the following information:

- Email from Mr. Bob Wilson, LaBella Associates, dated September 10, 2021.

We understand that the Latino Community Credit Union is considering the development of a new facility at lot 2 along New Bern Avenue. LaBella Associates is providing a feasibility study for the project. The site is located to the southeast of the intersection of Southall Road and New Bern Avenue, and consists of about one acre. The proposed plan indicates the building will be located in the center of the lot with paved parking and drives on all sides. We expect the building will be a one-story, steel-framed structure with slab-on-grade. We have assumed maximum column and floor slab loads of 100 kips and 150 pounds per square foot, respectively. Site grading plans have not been developed. We expect that site grading will require only shallow excavation and fill placement depths, on the order of 3 feet.

The site consists of an approximately 1-acre grassy lot that is currently undeveloped and has been cleared of major vegetation. Existing topography ranges from about 252 feet in the northern portion of the site to about 238 feet in the southeast portion of the site. The site is bound by New Bern Avenue to the north, a Dairy Queen to the west, parking lots to the south, and woods along its eastern property line. Rock outcroppings were noted at the ground surface across the site.

2.0 Site Geology

The site is located within the Raleigh Belt Region of the Piedmont Physiographic Province. Parent rock materials in the area of the site primarily consist of metamorphosed granite, gneiss, and schist. Within upland areas, natural soils within the Piedmont Province are the residual product of chemical and physical weathering of parent rock materials. The typical residual profile consists of finer grained silts and clays near the surface, which gradually transition to coarser and denser material with depth. In many locations, the transitional zone between soil and rock is not well defined. Locally, the transitional zone is termed partially weathered rock (PWR). For engineering purposes, partially weathered rock is considered as residual material in which standard penetration test N-values exceed 100 blows per foot.

Specifically, the site is underlain by a geologic formation known as the Rolesville Batholith which is a 50-mile long by 15-mile wide granitic pluton. The area is known for shallow granitic rock and large boulders. Overburden soils can consist of plastic silty clays, sandy clays, silty sands, and sandy silts. Perched water can sometimes exist where sandy soils overlie clayey soils or shallow rock.

3.0 Field Exploration Program

Our subsurface exploration included a visual site reconnaissance, performance of six soil test borings, and limited laboratory testing. Boring locations were established in the field by an S&ME representative using a handheld GPS device. Approximate boring locations are shown on the Boring Location Plan (Figure 1) in the Appendix.

Borings were advanced to depths ranging from approximately 3½ to 16 feet below the existing ground surface. Borings were advanced using hollow-stem auger procedures with a CME 550 drill rig mounted on an ATV carrier. Within each boring, samples of subsurface soils were taken at 2.5-foot intervals above a depth of 10 feet, and at

5-foot intervals below 10 feet using a split-spoon sampler and automatic hammer. Standard penetration testing was performed in conjunction with split-spoon sampling in general accordance with ASTM D 1586.

Water level measurements and hole cave depths were attempted immediately after completion of drilling. One bulk sample of auger cuttings was obtained at boring location P-2 from the upper 5 feet for standard Proctor and California Bearing Ratio Testing.

Test Boring Records and Generalized Subsurface Profile, showing specific subsurface information from each boring, are included in the Appendices. Stratification lines shown on Test Boring Records and Subsurface Profiles are intended to represent approximate depths of changes in soil types. Transitional changes in soil types are often gradual and cannot be defined at a certain depth. Ground surface elevations shown on the Test Boring Records and profiles were estimated from the Wake County GIS site and should be considered approximate.

4.0 Laboratory Testing Program

Split-spoon samples and one bulk sample were returned to our laboratory for visual classification in general accordance with the Unified Soil Classification System (USCS). Select samples were submitted for laboratory testing including moisture content, plasticity indices, grain size distribution, and moisture-density (standard Proctor) relationships tests. Laboratory testing was performed in general accordance with applicable ASTM standards. Laboratory test results will be submitted under submitted separately.

5.0 Subsurface Conditions

General descriptions of encountered soils are presented below. More detailed information is available on individual Boring Logs.

5.1 Topsoil

A surficial layer of topsoil, approximately 4 inches in thickness, was encountered at all boring locations. Topsoil is typically a dark-colored soil material containing roots, fibrous matter, and/or other organic components, and is unsuitable for engineering purposes. Topsoil depths provided in this report are based on measurements made at boring locations and should be considered approximate. We note that the transition from topsoil to underlying residual soils may be gradual.

5.2 Residual Soils

Residual soils were encountered beneath topsoil at boring locations P-1, P-2, P-3, and P-4. Residual soils generally consisted of silty sands (SM) and lean clays (CL). Results of standard penetration tests varied from 7 to 34 blows per foot, with typical values of 10 to 20 blows per foot. Soils were classified as loose to dense relative density for sands and very stiff consistencies for clays.

5.3 Partially Weathered Rock

Partially weathered rock (PWR) was encountered below topsoil in borings B-1 and B-2 and below residual soils in borings P-1, P-3 and P-4. Partially weathered rock was encountered at essentially the ground surface in borings B-1 and B-2 and at depths of about 3 to 6 feet at P-1, P-3 and P-4. Partially weathered rock is defined as having

an SPT N-value in excess of 50 blows per 6 inches (100 blows per foot) of split-spoon penetration. The PWR encountered exhibited SPT N-values ranging from 50 blows per 5 inches (50/5") to 50 blows with no apparent penetration (50/0"). Partially weathered rock materials were generally sampled as silty sands. Auger refusal was encountered in borings B-1, B-2, P-3, and P-4 at depths of approximately 3½ feet (B-2) to 16 feet (B-1) below the existing ground surface. Note that auger refusal can represent the top of slightly weathered rock, massive rock, or boulders. Coring is required to evaluate auger refusal material.

Table 5.3– Approximate PWR Elevations

Boring	Approximate Ground Surface Elevation (feet)	Approximate Depth to PWR (feet)	Approximate Top of PWR Elevation (feet)	Approximate Depth to Auger Refusal (feet)
P-1	251	5½	246½	--
P-2	248	--	--	--
P-3**	246	3	243	6
P-4**	247	3	244	6
B-1**	247	½	246 ½	16
B-2**	249	½	248 ½	3½

** Indicates auger refusal

5.4 Groundwater

Groundwater level measurements were attempted in borings at completion of drilling operations. Groundwater levels were not observed immediately following drilling completion. Borings were found to be dry above their cave depths that varied from about 2 to 11½ feet. Boring cave-in can sometimes be indicative of the existing groundwater level.

6.0 Conclusions and Recommendations

The following sections provide geotechnical engineering recommendations regarding site development. The recommendations are based upon review of our test boring data, our understanding of proposed site development, engineering analyses, and experience with similar projects and subsurface conditions.

The primary geotechnical consideration will be excavation of rock. Rock will be encountered in both mass and local excavations. We expect that blasting will be necessary to remove rock. If blasting is not permitted, use of pneumatic tools, such as a hoe ram, will be required. Removal of rock will add significant costs to site development.

6.1.1 Excavations

A site grading plan had not been developed at the time of this report. Based on subsurface conditions encountered and our assumed grading depths, high consistency residual soils and partially weathered rock will be encountered.

Partially weathered rock (PWR) was encountered in five out of six borings at depths of approximately ½ to 5½ feet below ground surface (see *Table 5.3– Approximate PWR Elevations*). Auger refusal was encountered in 4 borings at approximate depths of 3½ to 16 feet below ground surface. Multiple rock outcroppings were also observed at the time of exploration.

While a small portion of the PWR can be removed by ripping, this method of excavation is slow and often incompatible with the construction schedule. It is our opinion that blasting will be required where PWR and auger refusal materials are encountered.

Prior to blasting being performed, we recommend that a pre-blast survey be performed of nearby structures and that blast vibrations be monitored. The depth of blasting should be carefully controlled. Over-blasted materials should be removed to expose sound materials prior to fill placement or foundation construction. This recommendation is made because over-blasted materials can settle significantly due to the weight of new fill or building loads. The contractor should control blasting to keep vibrations below acceptable levels.

Past experience indicates that it is typically more efficient and economical to remove difficult excavation materials in mass form as opposed to local excavation. Therefore, we suggest that consideration be given to mass excavating rock materials to a specified depth below finish floor elevation during the mass grading process. On past projects it has been effective to mass excavate PWR materials to depths of approximately 3 to 4 feet beneath the finish floor elevation (or the depth of expected utility line or footing installation) and then backfill to design subgrade elevation using soil as structural fill. Utility line and footing excavation can then be performed through soil.

Excavations should be sloped or shored in accordance with local, state and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The maximum allowable slope depends on the soil type and as such, trench and pit excavation safety must be evaluated on a case-by-case basis. The contractor is usually responsible for site safety. This information is provided only as a service and under no circumstances should we be assumed responsible for construction site safety.

6.1.2 Site Preparation

Site preparation should begin with the removal topsoil, roots, organics, and other deleterious materials. Topsoil thickness encountered in the borings was approximately 4 inches. However, stripping depths will be greater than topsoil thicknesses noted in borings.

After initial site preparation is complete, the exposed subgrade of areas to receive fill and areas near final grades should be evaluated by the geotechnical engineer or his representative. This evaluation should include proofrolling with a fully loaded tandem-axle dump truck or similar rubber-tired construction equipment. Any areas that deflect excessively and cannot be densified by further rolling should be undercut to suitable soils and replaced with compacted structural fill.

Site grading will be difficult during periods of extended rainfall that generally occur during the winter and early spring months. To reduce potential earthwork problems, site preparation and grading should be scheduled during the typically drier months of May through November, if possible. If winter grading is attempted, repair of near-surface soils and possible use of select off-site borrow will be necessary to adequately prepare subgrades for new construction. Heavy rubber-tired construction equipment should not be allowed to operate on exposed subgrades

during wet conditions. Even during drier periods of the year, we recommend that exposed subgrades be sloped and sealed at the end of each day to promote runoff and reduce infiltration from rainfall.

6.1.3 Groundwater Control

Groundwater was not encountered in borings. Perched water conditions may exist during the typically wetter winter months above less permeable fine-grained soils and at the interface between overburden soils and partially weathered rock. This geologic formation is known to have perched water conditions and may be encountered in other areas not indicated by the borings. The contractor should be prepared to control water where encountered in excavations through the use of sump pits and pumping. The actual water control measures should be determined by the contractor during site grading.

6.1.4 Reuse of On-Site Soils as Structural Fill

Soils at this site having Unified Soil Classifications of ML, CL, SC, and SM should be suitable for reuse as structural fill, provided that the moisture content is properly controlled during placement and compaction. Based on observed groundwater levels and moisture contents of sampled soils, some moisture conditioning may be required prior to their use as structural fill. We recommend structural fill be free of trash and debris and contain less than 3 percent organics.

Structural fill should be compacted to at least 95 percent of the standard Proctor maximum dry density. Within the upper 18 inches below subgrade, soils should be compacted to at least 98 percent. Structural fill should be compacted within 2 percent of its optimum moisture content.

6.1.5 Particle Size Control

Blasted partially weathered rock and rock should be broken down to acceptable particle sizes before being used as structural fill. We recommend that the maximum particle size of fill not exceed 2 inches within the upper 5 feet of structural (building) areas and within 3 feet of pavement subgrades. Below these depths, the maximum particle size should not exceed 4 inches. When placing blasted rock materials in fill areas, soil must be used to fill any voids, especially where larger particle materials are used. Rock pieces should not be stacked on top of each other, which could create void spaces and lead to raveling of the soil fill.

6.1.6 Subgrade Repair and Improvement Methods

The exposed subgrade can deteriorate and lose support when exposed to construction traffic and adverse weather conditions. Deterioration can occur in the form or rutting, pumping, freezing, or erosion. We recommend that during construction, exposed subgrade surfaces be sealed at the end of each day or when wet weather is forecast. Water should not be allowed to pond on exposed subgrades. Heavy rubber-tired construction equipment should not be allowed to operate on exposed subgrades during wet conditions.

Immediately prior to floor slab or pavement construction, exposed subgrade soils should be evaluated by proof-rolling to determine their stability. Soils which rut, pump, or deflect under proof-rolling should be repaired prior to ABC stone placement. Repair measures may include scarifying/drying/recompacting, undercutting, placement of geotextiles, use of chemical additives, or some combination of these. Actual repair measures will be influenced by project schedule and weather conditions and can only be determined in the field by the geotechnical engineer.

6.2 Foundation Recommendations

We assume the building will be a one story steel-framed structure with slab-on-grade. We have assumed maximum column and floor slab loads of 100 kips and 150 pounds per square foot, respectively. Building foundations can be supported on shallow spread footings designed for an allowable net bearing pressure of 3,000 pounds per square foot (psf). This bearing pressure assumes that footings will bear in natural soils or compacted structural fill, and that the site is prepared as recommended herein. Continuous wall footings should be at least 18 inches wide, and isolated column footing should be at least 24 inches wide.

We expect that total settlement beneath column footings will be 1 inch or less. Differential settlement is expected to be about one-half of total settlement.

6.2.1 Floor Slabs

A slab-on-grade floor system can be adequately supported on approved natural soils or properly placed and compacted fill, provided the site preparation and fill placement procedures outlined in this report are implemented. Slabs should be separated from wall and column footings to allow for relative displacement. A design modulus of subgrade reaction (k) of 125 pci can be used provided the floor slabs are directly supported on a 6 inch thick layer of crushed stone (NCDOT ABC). The crushed stone should be compacted to at least 95 percent of its modified Proctor maximum dry density. This layer of ABC stone will also provide a construction working surface.

6.3 Seismic Site Classification

The proposed structures should be designed to resist possible earthquake effects as determined in accordance with the current applicable building code. Based on our test borings, Section 1613 of the North Carolina Building Code 2018 Edition (2015 International Building Code with North Carolina Amendments) and our experience in the project area, this site classifies as a Seismic Site Class D.

6.4 Pavements

We are not aware of detailed traffic volumes for this facility. Once more detailed information is available, it should be forwarded to us so that detailed pavement thickness recommendations can be provided. Based on past experience with similar projects, we expect that pavement thicknesses in light duty areas will be 2 to 3 inches of asphalt underlain by 8 inches of crushed stone. For heavy duty areas, 4 to 6 inches of asphalt underlain by 8 inches of crushed stone will likely be required. These values can be determined once traffic information is available.

7.0 Qualifications of Report

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The preliminary conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty either express or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be

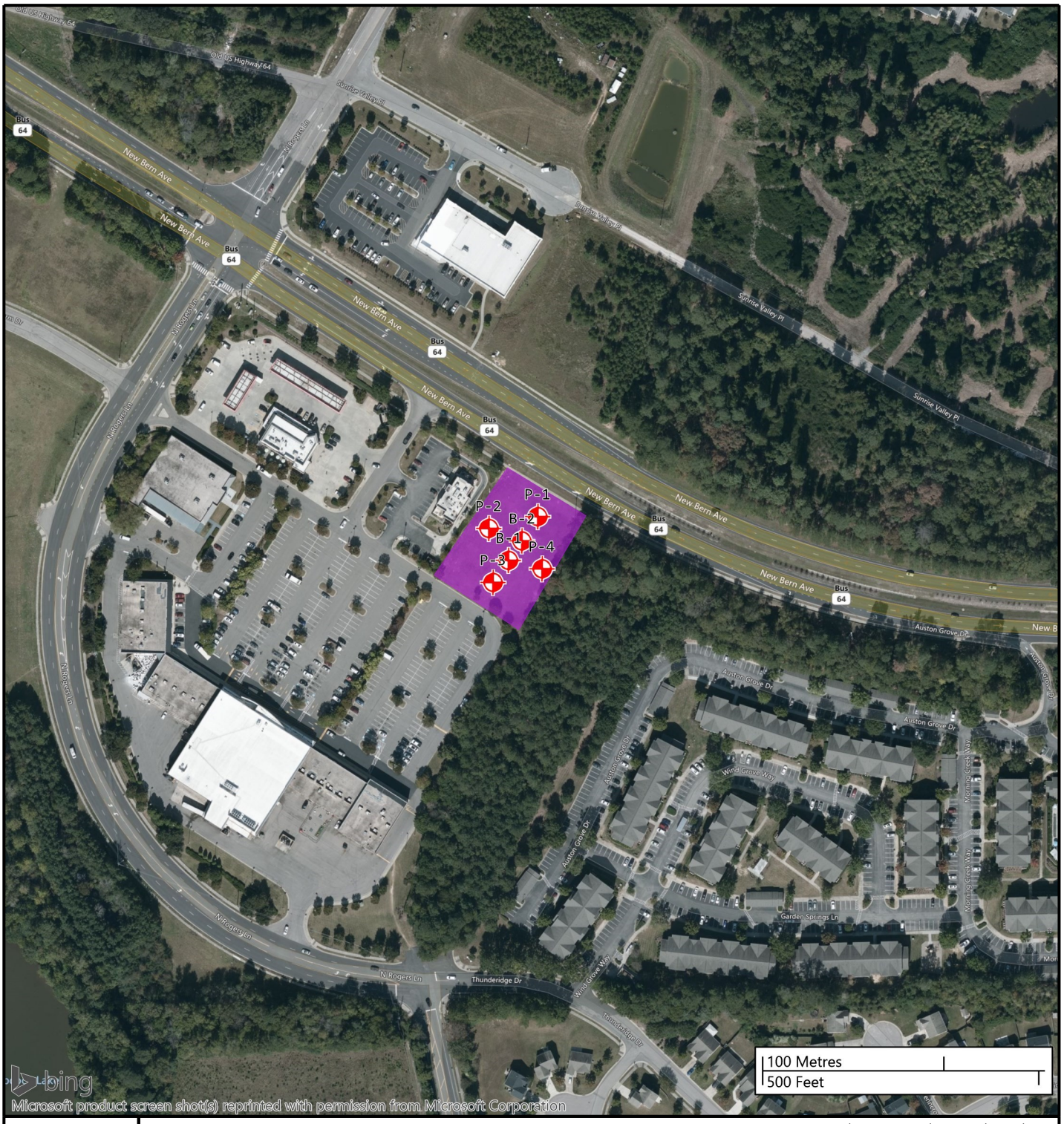
notified of the changes so that we can modify our recommendations based on this additional information if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

Appendices

Appendix I – Figures



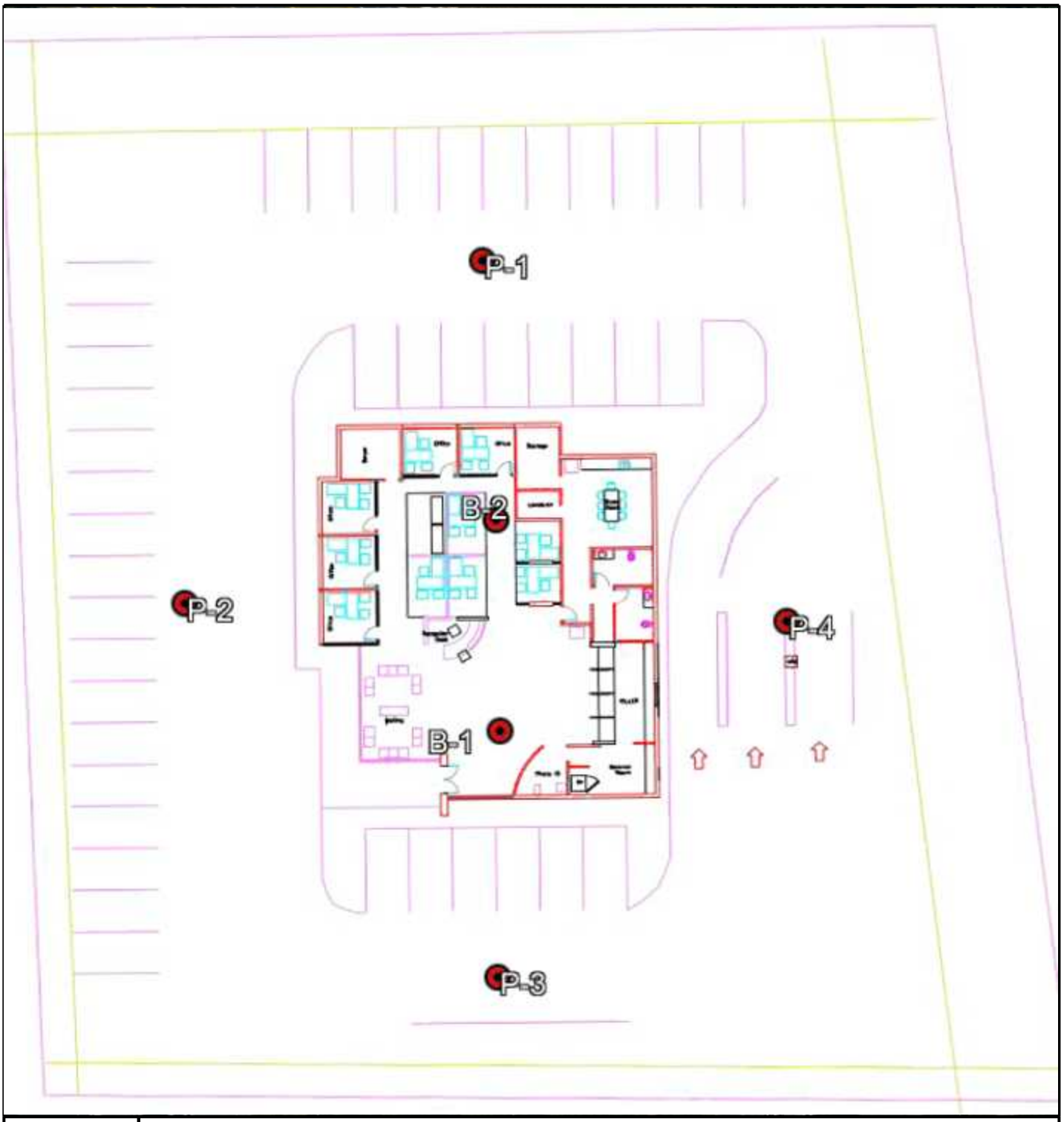
Legend

- Locations By Type - BH
- Project Bounds - Project Bounds

Notes: Boring locations and Project bounds should be considered approximate

N

	Site Vicinity Map	SCALE: 1:3100	FIGURE NO. 1
		DATE: Oct 15 2021	
	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina	PROJECT NUMBER: 218619	



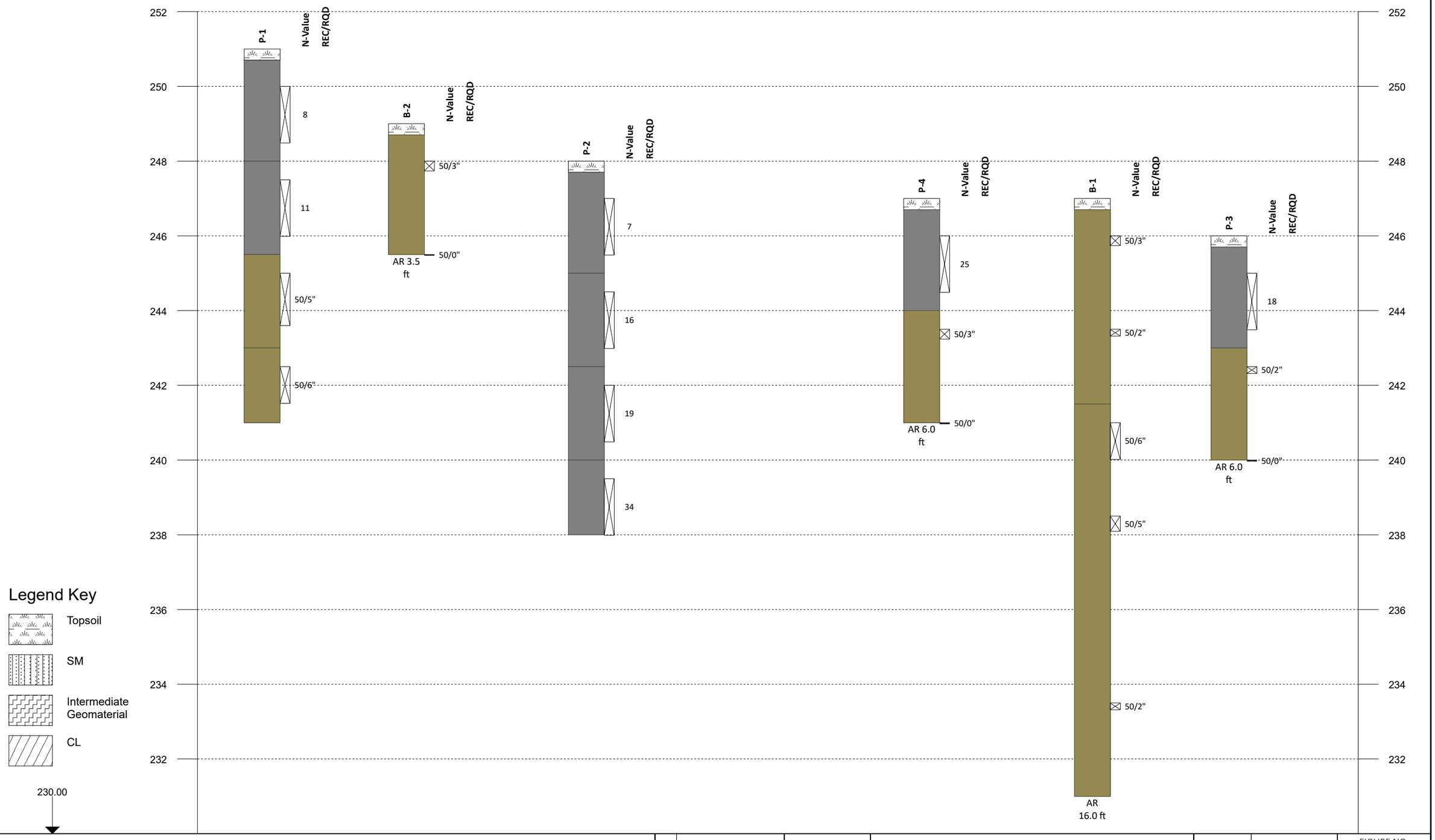
Legend

Locations By Type - BH

Notes: Boring locations should be considered approximate

N

	Boring Location Plan	SCALE: 1:1100	FIGURE NO. 2
	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina	DATE: Oct 15 2021 PROJECT NUMBER: 218619	



The depicted stratigraphy is shown for illustrative purposes only and is not warranted. Separations between different strata may be gradual and likely vary considerably from those shown. Profiles between nearby borings have been estimated using reasonable engineering care and judgement. The actual subsurface conditions will vary between boring locations.

▽	AT TIME OF DRILLING
▼	END OF DRILLING
▼	AFTER DRILLING

Generalized Subsurface Profile

Latino Community Credit Union
Lot 2, New Bern Ave. Raleigh, North Carolina

SCALE:	1:1340
DATE:	Nov 01, 2021
PROJECT NUMBER:	218619

FIGURE NO.
3

Appendix II – Boring and Hand Auger Logs

PROJECT:	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina S&ME Project No. 218619	BORING LOG: B-1 *Sheet 1 of 1*

DATE DRILLED: 10/13/2021	**ELEVATION:** 247 ft	**NOTES:** Boring location and elevation should be considered approximate.
DRILL RIG: CME 550	**DATUM:** NAVD88	
DRILLER: S. Hardee	**BORING DEPTH:** 16.0 ft	
HAMMER TYPE: Automatic hammer	**CLOSURE:** Cuttings with Hole Closure Device	
DRILLING METHOD: 3-1/4" HSA	**LOGGED BY:** Matthew Millette	**LATITUDE:** 35.792307 **LONGITUDE:** -78.54699
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane North Carolina FIPS 3200 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (△ % Fines, ○ NMC, ⊢ PL---LL; 20, 40, 60, 80)	ELEVATION
0					TOPSOIL, 4 inches			247
		IGM		SS-1 (3 in)	PWR, sampled as POORLY GRADED SAND WITH SILT (SP-SM), very dense, gray, fine to medium grained, slightly moist	50/3" N= 100		
				SS-2 (2 in)		50/2" N= 100		
5								242
				SS-3 (11 in)	PWR, sampled as SILTY SAND (SM), very dense, gray tan, fine to medium grained, slightly moist	23-50/6" N= 100		
				SS-4 (5 in)		50/5" N= 100		
10								237
		HC						
				SS-5 (2 in)		50/2" N= 100		
15								232
	Auger refusal at 16.0 feet				Borehole terminated at 16.0 feet			
20								227

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
ATD	▽	10/13/2021		not encountered
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING

LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), HC = Hole Cave

PROJECT:	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina S&ME Project No. 218619	BORING LOG: B-2 *Sheet 1 of 1*

DATE DRILLED: 10/14/2021	**ELEVATION:** 249 ft	**NOTES:** Boring location and elevation should be considered approximate.
DRILL RIG: CME 550	**DATUM:** NAVD88	
DRILLER: S. Hardee	**BORING DEPTH:** 3.5 ft	
HAMMER TYPE: Automatic hammer	**CLOSURE:** Cuttings with Hole Closure Device	
DRILLING METHOD: 3-1/4" HSA	**LOGGED BY:** Matthew Millette	**LATITUDE:** 35.792404 **LONGITUDE:** -78.54691
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane North Carolina FIPS 3200 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (△ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80)	ELEVATION
0					TOPSOIL, 4 inches			249
		IGM		SS-1	PWR, sampled as SILTY SAND (SM), very dense, gray brown with black, fine to medium grained, slightly moist	50/3" N= 100		
	HC							
				SS-2	Borehole terminated at 3.5 feet	50/0" N= 100		
	Auger refusal at 3.5 feet							
5								244
10								239
15								234
20								229

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
ATD	▽	10/14/2021		not encountered
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING

LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), HC = Hole Cave

PROJECT:	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina S&ME Project No. 218619	BORING LOG: P-1 *Sheet 1 of 1*

DATE DRILLED: 10/14/2021	**ELEVATION:** 251 ft	**NOTES:** Boring location and elevation should be considered approximate.
DRILL RIG: CME 550	**DATUM:** NAVD88	
DRILLER: S. Hardee	**BORING DEPTH:** 10.0 ft	
HAMMER TYPE: Automatic hammer	**CLOSURE:** Cuttings with Hole Closure Device	
DRILLING METHOD: 3-1/4" HSA	**LOGGED BY:** Matthew Millette	**LATITUDE:** 35.792525 **LONGITUDE:** -78.54682
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane North Carolina FIPS 3200 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	ELEVATION
0					TOPSOIL, 4 inches		251
		Residuum		SS-1 (18 in)	SILTY SAND (SM), trace manganese, loose, very dark brown with orange, fine grained, moist	3-4-4 N= 8	
				SS-2 (18 in)	SILTY SAND (SM), few manganese, medium dense, orange brown, fine grained, moist	4-5-6 N= 11	
5							246
	HC	IGM		SS-3 (17 in)	PWR, sampled as SILTY SAND (SM), trace manganese, very dense, gray tan, fine grained, moist	38-48-50/5" N= 100	
				SS-4 (11 in)	PWR, sampled as SILTY SAND (SM), trace manganese, very dense, tan orange, fine to medium grained, moist	34-50/6" N= 100	
10					Borehole terminated at 10.0 feet		241
15							236
20							231

STANDARD PENETRATION TEST DATA

△ % Fines
○ NMC
⊢ PL---LL

20 40 60 80

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
ATD	▽	10/14/2021		not encountered
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING

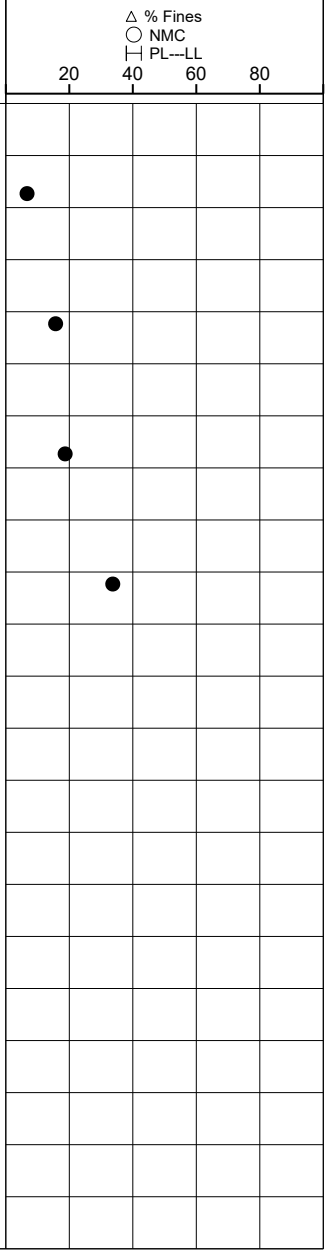
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), HC = Hole Cave

PROJECT:	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina S&ME Project No. 218619	BORING LOG: P-2 *Sheet 1 of 1*

DATE DRILLED: 10/14/2021	**ELEVATION:** 248 ft	**NOTES:** Boring location and elevation should be considered approximate.
DRILL RIG: CME 550	**DATUM:** NAVD88	
DRILLER: S. Hardee	**BORING DEPTH:** 10.0 ft	
HAMMER TYPE: Automatic hammer	**CLOSURE:** Cuttings with Hole Closure Device	
DRILLING METHOD: 3-1/4" HSA	**LOGGED BY:** Matthew Millette	**LATITUDE:** 35.792466 **LONGITUDE:** -78.54712
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane North Carolina FIPS 3200 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	ELEVATION
0					TOPSOIL, 4 inches		248
		Residuum		SS-1 (18 in)	SILTY SAND (SM), trace manganese, loose, red brown, fine grained, moist	2-3-4 N= 7	
				SS-2 (18 in)	LEAN CLAY (CL) with silt, some sand, few gravel, trace mica, very stiff, red orange and brown, moist	8-8-8 N= 16	
5							243
	HC			SS-3 (18 in)	SILTY SAND (SM), trace manganese, medium dense, brown and pink tan, fine to medium grained, moist	8-9-10 N= 19	
				SS-4 (18 in)	SILTY SAND (SM), trace manganese, trace gravel, dense, tan and gray brown, fine to medium grained, moist	11-11-23 N= 34	
10					Borehole terminated at 10.0 feet		238
15							233
20							228

STANDARD PENETRATION TEST DATA



GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
ATD	▽	10/14/2021		not encountered
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING

LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), HC = Hole Cave

PROJECT:	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina S&ME Project No. 218619	BORING LOG: P-3 *Sheet 1 of 1*

DATE DRILLED: 10/13/2021	**ELEVATION:** 246 ft	**NOTES:** Boring location and elevation should be considered approximate.
DRILL RIG: CME 550	**DATUM:** NAVD88	
DRILLER: S. Hardee	**BORING DEPTH:** 6.0 ft	
HAMMER TYPE: Automatic hammer	**CLOSURE:** Cuttings with Hole Closure Device	
DRILLING METHOD: 3-1/4" HSA	**LOGGED BY:** Matthew Millette	**LATITUDE:** 35.792197 **LONGITUDE:** -78.54709
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane North Carolina FIPS 3200 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (△ % Fines, ○ NMC, ⊢ PL---LL; 20, 40, 60, 80)	ELEVATION
0					TOPSOIL, 4 inches			246
		Residuum		SS-1 (18 in)	SILTY SAND (SM), trace gravel, medium dense, brown, fine to medium grained	6-8-10 N= 18		
		IGM		SS-2 (2 in)	PWR, sampled as SILTY SAND (SM), trace manganese, and gravel, very dense, orange brown, fine to coarse grained, moist	50/2" N= 100		
5	HC							241
	Auger refusal at 6.0 feet			SS-3	Borehole terminated at 6.0 feet	50/0" N= 100		
10								236
15								231
20								226

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
ATD	▽	10/13/2021		not encountered
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING

LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), HC = Hole Cave

PROJECT:	Latino Community Credit Union Lot 2, New Bern Ave. Raleigh, North Carolina S&ME Project No. 218619	BORING LOG: P-4 *Sheet 1 of 1*

DATE DRILLED: 10/13/2021	**ELEVATION:** 247 ft	**NOTES:** Boring location and elevation should be considered approximate.
DRILL RIG: CME 550	**DATUM:** NAVD88	
DRILLER: S. Hardee	**BORING DEPTH:** 6.0 ft	
HAMMER TYPE: Automatic hammer	**CLOSURE:** Cuttings with Hole Closure Device	
DRILLING METHOD: 3-1/4" HSA	**LOGGED BY:** Matthew Millette	**LATITUDE:** 35.792265 **LONGITUDE:** -78.54679
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane North Carolina FIPS 3200 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (△ % Fines, ○ NMC, ⊢ PL---LL; 20, 40, 60, 80)	ELEVATION
0					TOPSOIL, 4 inches			247
		Residuum		SS-1 (18 in)	SILTY SAND (SM), few gravel, medium dense, brown, fine grained, slightly moist	8-12-13 N= 25		
		IGM		SS-2 (3 in)	PWR, sampled as POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, and manganese, very dense, tan white, fine to medium grained, moist	50/3" N= 100		
5		HC						242
	Auger refusal at 6.0 feet			SS-3 (0 in)	Borehole terminated at 6.0 feet	50/0" N= 100		
10								237
15								232
20								227

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
ATD	▽	10/13/2021		not encountered
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING

LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), HC = Hole Cave