February 13, 2015

Kimley-Horn & Associates
2000 South Boulevard, Suite 440
Charlotte, North Carolina 28203

Attention: Mr. Rob Hume, P.E.

Reference: **Geotechnical Letter Report**
Proposed Potts-Sloan Roadway
Davidson, North Carolina
S&ME Project No. 1335-14-117
NC PE Firm License No. F-0176

Dear Mr. Hume:

S&ME, Inc. (S&ME) is pleased to present this geotechnical letter report for the proposed roadway in Davidson, North Carolina. This exploration was performed in general accordance with our proposal No. 13-1400486R dated September 3, 2014. Authorization to proceed with this study was provided by execution of an IPO referencing the "Standard Master Agreement for Continuing Professional Services between Kimley-Horn and Associates, Inc. and a Subconsultant" executed by Kimley-Horn and Associates, Inc. and S&ME, Inc. dated March 9, 2010.

The purpose of this study was to determine the general subsurface conditions at the site, evaluate the subsurface materials for potential asbestos-containing materials, and to evaluate those conditions with regard to the design and construction of the proposed roadway. This report presents our findings together with our conclusions, recommendations and construction considerations for the proposed roadway.

PROJECT INFORMATION

Project information is based on telephone and e-mail correspondence between Rob Hume and Chris Tinklenberg of Kimley-Horn and Associates, Inc. (KHA) and Duane Bents of S&ME from June 18 through August 28, 2014. It is also based on a meeting between Mr. Tinklenberg and Mr. Bents on August 22, 2014, telephone conversations between Mr. Tinklenberg and Mr. Bents on September 4, 2014, and a telephone conversation between Mr. Tinklenberg and Luis Campos of S&ME on November 18, 2014.

We understand that KHA is providing preliminary design and environmental consulting services to the Town of Davidson for a planned roadway connecting Sloan Street and Potts Street. The approximate site area is shown on the attached Site Vicinity Map (Figure 1). Currently, two roadway alignments are being pursued in order to assess the impact to residences. Both alignments are likely to require up to 15 feet of fill placement. In addition, streetscape improvements (e.g., sidewalks, etc.) are planned along the west site of Sloan Street north of the new connector roadway. Some limited grading (less than 2 feet) will be required for the streetscape improvements along Sloan Street.

We understand that the large parcel located north and east of the study area (Mecklenburg County Parcel ID No. 00325301) addressed 301 Depot Street houses an industrial building that previously operated as an asbestos manufacturing facility (Carolina Asbestos Company). A *Report of Phase I ESA – Metrolina Warehouses* prepared by MACTEC and dated December 20, 2007 was provided to us and indicates that buried asbestos had been discovered during previous warehouse construction activities. As such, this study also investigated the subject improvement areas for asbestos containing materials.

The area being considered for the alignments is currently vacant woodland or occupied by single-family residences. There is also a creek that runs under Sloan Street and will cross the proposed alignments. The site generally slopes upward from north to south.

PURPOSE AND SCOPE

The purpose of this study was to explore the subsurface conditions at the site, assess the presence of asbestos-containing materials, and develop geotechnical recommendations for the design and construction of the project.

S&ME has completed the following scope of services for this project:

- Reviewed the *Report of Phase I ESA* prepared by MACTEC.
- Contacted North Carolina 811 to mark the location of existing underground utilities.
- Coordinated with the Town of Davidson to for right of entry.
- Mobilized a power drilling rig mounted on an all-terrain vehicle and crew to the site.
- A Certified Industrial Hygienist (CIH) and geotechnical engineer marked test locations and provided drilling oversight.
- Drilled ten (10) soil test borings at the site.
- Visually observed each sample in the field for potential asbestos-containing materials, performed geotechnical classification of the soils, and collected representative samples of materials.
- Backfilled the boreholes with soil cuttings, installed a hole closure device near the ground surface in each borehole, and backfilled with soil cuttings to the ground surface.

- Submitted samples to our NVLAP accredited laboratory for analysis using polarized light microscopy (PLM) with dispersion staining in accordance with the EPA 600/R-93/116 Method.
- Prepared this geotechnical letter report.

EXPLORATION PROCEDURES

In order to explore the general subsurface conditions at the project site, S&ME crews and equipment drilled ten soil test borings (B-1 through B-10) to depths of 8.4 to 14 feet below existing grades. The borings were advanced at the approximate locations shown on the attached Boring Location Plan (Figure 2). The locations of the borings were selected by S&ME and located in the field by a staff professional from our office using a non-differential hand-held GPS unit.

A CME 550X drill rig mounted on an ATV carrier was used to advance the borings with hollow-stem, continuous flight augers. Standard Penetration Test (SPT) split spoon sampling was continuously performed in the soil test borings and in general accordance with ASTM D 1586 to provide an index for estimating soil strength and relative density or consistency. The drill rig used to drill the borings is equipped with a hydraulic automatic hammer for penetration testing. In conjunction with the SPT testing, samples are obtained for soil classification purposes. Representative portions of each soil sample were observed by oversight personnel, and select samples were placed in glass jars and taken to our laboratory. Water level measurements were attempted in the boreholes at the termination of drilling.

During drilling activities, Jereme Willis and Jimmy Gosnell visually examined each sample in the field to assess the potential for asbestos-containing materials. Mr. Willis and Mr. Gosnell are accredited by the State of North Carolina as Asbestos Inspectors, North Carolina accreditation numbers 12896 and 12808, respectively. Samples taken from an area that was likely to contain asbestos-containing materials were selected for laboratory analysis. Representative samples were also selected from other areas for laboratory analysis.

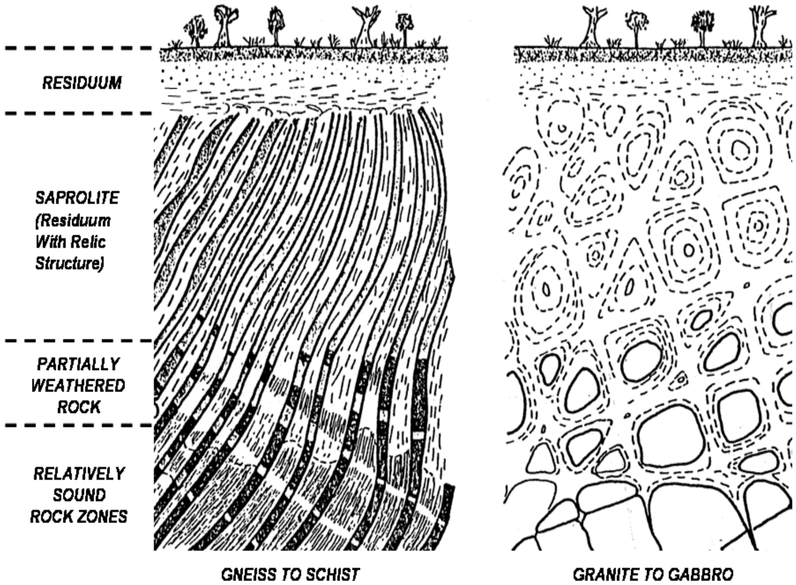
Also during drilling activities, a geotechnical staff professional visually examined each sample in the field to assess engineering properties of the soils. The geotechnical staff professional utilized the Unified Soil Classification System (USCS) to estimate the distribution of grain sizes, plasticity, organic content, moisture condition, color, presence of lenses and seams and apparent geological origin. The results of the classifications, as well as the field test results, are presented on the attached individual boring logs. Similar materials were grouped into strata on the logs. The strata contact lines represent approximate boundaries between the soil and rock types; the actual transition between the soil and rock types in the field may be gradual in both the horizontal and vertical directions.

GENERAL SITE GEOLOGY

The site is located within the Charlotte Belt section of the Piedmont Physiographic Province of North Carolina. The Piedmont Province generally consists of well-rounded hills and ridges, which are dissected by a well-developed system of draws and streams. The Piedmont Province is predominantly underlain by metamorphic rock (formed by heat, pressure and/or chemical action) and igneous rock (formed directly from molten material), which were initially formed during the Precambrian and Paleozoic eras. The volcanic and sedimentary rocks deposited in the Piedmont Province during the Precambrian eras were the host for the metamorphism and were changed to gneiss and schist. The more recent Paleozoic era had periods of igneous emplacement, with at least several episodes of regional metamorphism resulting in the majority of the rock types seen today.

The topography and relief of the Piedmont Province have developed from differential weathering of the igneous and metamorphic rock. Because of the continued chemical and physical weathering, the rocks in the Piedmont Province are now generally covered with a mantle of soil that has weathered in place from the parent bedrock. These soils have variable thicknesses and are referred to as residuum or residual soils. The residuum is typically finer grained and has higher clay content near the surface because of the advanced weathering. Similarly, the soils typically become coarser grained with increasing depth because of decreased weathering. As the degree of weathering decreases, the residual soils generally retain the overall appearance, texture, gradation and foliations of the parent rock.

The boundary between soil and rock in the Piedmont is not sharply defined. A transitional zone termed "weathered rock" is normally found overlying the parent bedrock. Weathered rock is defined for engineering purposes as residual material with Standard Penetration Resistances (N-values) exceeding 100 blows per foot. The transition between hard/dense residual soils and weathered rock occurs at irregular depths due to variations in degree of weathering. A depiction of typical weathering profiles in the Piedmont Province is presented in the following figure:



Typical Piedmont Weathering Profiles (After Sowers/Richardson, 1983)

Groundwater is typically present in the residual soils and within fractures in the weathered rock or underlying bedrock in the Piedmont. On upland ridges in the Piedmont, groundwater may or may not be present in the residual soils above the weathered rock and bedrock. Alluvial soils, which have been transported and deposited by water, are typically found in floodplains and are generally saturated to within a few feet of the ground surface. Fluctuations in groundwater levels are typical in residual soils and weathered rock in the Piedmont, depending on variations in precipitation, evaporation, and surface water runoff. Seasonal high groundwater levels are expected to occur during the typically wetter months of the year (November through April).

GEOTECHNICAL SUBSURFACE CONDITIONS

Subsurface conditions as indicated by the soil test borings generally consisted of surficial topsoil underlain by fill soils, alluvial soils, residual soils, and PWR to the boring termination depths. Generalized subsurface conditions are described below. For more detailed soil descriptions, stratifications and water levels at a particular test location, the respective boring log should be reviewed.

Streetscape Improvement Area

Borings B-1 through B-3 were drilled in the proposed streetscape improvement areas, north of the proposed alignment and west of Sloan Street.

Surface Materials: All of the soil test borings encountered surficial topsoil. The surficial topsoil thickness is measured approximately 1 to 2 inches.

Fill Soils: Beneath the surficial materials, fill soils were encountered in all borings to depths of 3 to 6.5 feet below the existing ground surface. The fill soils generally consisted of soft silty clay (CH), soft clayey silt (MH), soft sandy clay (CL), and loose clayey sand (SC). SPT N-values ranged from 3 to 7 blows per foot (bpf) in the fill soils.

Alluvial Soils: Alluvial soils were encountered underlying the fill soils to depths ranging from approximately 8.5 to 10 feet below existing grades. The alluvial soil consisted of firm to very stiff clayey silt (MH), and very loose to dense clayey sand (SC). N-values ranged from 4 to 33 bpf in the alluvial soils.

Residual Soils: Beneath the alluvial materials, residual soils were encountered in all of the borings. The residual soils generally consisted of loose to medium dense silty sand (SM). N-values ranged from 8 to 30 bpf in the residual soils. Borings B-1, B-2, and B-3 were terminated in residual soils.

Groundwater: Groundwater level measurements were attempted in the borings at the completion of drilling. Water was not encountered when water level measurements were attempted at boring termination, with the exception of Boring B-2, which encountered groundwater at a depth of 10.6 feet below the existing ground surface. The borehole cave-in depths for the soil test borings, which are also included on the individual logs, may be an indication of groundwater at or near the cave-in depth when the borings are extended below the groundwater level. All borings were backfilled at termination.

Eastern Alignment

Borings B-4 through B-7 and B-10 were drilled in the proposed eastern alignment for the new roadway. A generalized subsurface profile (Figure 3) is attached for reference.

Surface Materials: All of the soil test borings encountered surficial topsoil. The surficial topsoil thickness is measured approximately 1 to 3 inches.

Fill Soils: Beneath the surficial materials, fill soils were encountered in all borings, except Boring B-6, to depths of 0.7 to 5.5 feet below the existing ground surface. The fill soils generally consisted of soft silty clay (CH), firm to hard sandy clay (CL), and loose clayey sand (SC). N-values ranged from 4 to 31 bpf in the fill soils.

Alluvial Soils: Alluvial soils were encountered underlying the fill soils in Borings B-4 and B-5 to depths ranging from approximately 6 to 9.5 feet below existing grades. The alluvial soil consisted of firm to very stiff silty clay (CH), loose clayey sand (SC), and medium dense silty sand (SM). N-values ranged from 9 to 23 bpf in the alluvial soils.

Residual Soils: Beneath the surficial materials, fill and/or alluvial materials, residual soils were encountered in all of the borings. The residual soils generally consisted of firm to very stiff silty clay (CH), very stiff clayey silt (MH), very stiff sandy clay (CL), loose to medium dense clayey sand (SC), firm to hard sandy silt (ML), and loose to very dense silty sand (SM). N-values ranged from 4 to 57 bpf in the residual soils. Borings B-4, B-5, B-6, and B-10 were terminated in residual soils.

Partially Weathered Rock: PWR was first encountered in Boring B-7 at a depth of 8 feet below the existing ground surface. The PWR generally broke down into silty sand (SM). Boring B-7 was terminated in PWR.

Groundwater: Groundwater level measurements were attempted in the borings at the completion of drilling. Water was not encountered when water level measurements were attempted at boring termination. All borings were backfilled at termination.

Western Alignment

Borings B-4 and B-8 through B-10 were drilled in the proposed western alignment for the new roadway. A generalized subsurface profile (Figure 4) is attached for reference.

Surface Materials: All of the soil test borings encountered surficial topsoil. The surficial topsoil thickness is measured approximately 2 to 6 inches.

Fill Soils: Beneath the surficial materials, fill soils were encountered in all borings, except Boring B-9, to depths of 2 to 5.5 feet below the existing ground surface. The fill soils generally consisted of soft to stiff silty clay (CH), stiff to hard sandy clay (CL), and loose clayey sand (SC). N-values ranged from 4 to 13 bpf in the fill soils.

Alluvial Soils: Alluvial soils were encountered underlying the fill soils in Borings B-4 and B-8 to depths ranging from approximately 9.5 to 12 feet below existing grades. The alluvial soil consisted of firm to very stiff silty clay (CH), medium dense silty sand (SM). N-values ranged from 8 to 23 bpf in the alluvial soils.

Residual Soils: Beneath the surficial materials, fill and/or alluvial materials, residual soils were encountered in all of the borings. The residual soils generally consisted of firm silty clay (CH), stiff to very stiff clayey silt (MH), soft to very stiff sandy clay (CL), stiff to hard sandy silt (ML), and loose to medium dense silty sand (SM). N-values ranged from 4 to 35 bpf in the residual soils. Borings B-4, B-8, B-9, and B-10 were terminated in residual soils.

Groundwater: Groundwater level measurements were attempted in the borings at the completion of drilling. Water was not encountered when water level measurements were attempted at boring termination. All borings were backfilled at termination.

ASBESTOS CONTAINING MATERIALS

During the field evaluation, the Asbestos Inspectors did not observe potential asbestos-containing materials within the soil samples obtained. A total of eighteen (18) samples were selected from those obtained for further laboratory analysis. The results of the laboratory testing are attached in the Asbestos Analysis Summary sheets.

No Asbestos Containing Materials (ACMs) were identified in the soil samples obtained during the evaluation.

In the event that suspect material not addressed in this report is discovered, contact S&ME to test the material before it is disturbed.

PRELIMINARY ROADWAY RECOMMENDATIONS

Earthwork

Site Preparation

All topsoil, rootmat, vegetation, trash, debris and other unsuitable materials should be stripped to a minimum of 10 feet outside the pavement areas. Based on the borings, we anticipate an average stripping depth of 6 inches to remove the surficial materials. Deeper stripping depths should be anticipated in the wooded areas in order to remove the rootmat and localized stumps.

Any existing underground utilities, structures, or obstructions in the proposed construction areas should be properly excavated, removed, abandoned, or re-routed to facilitate the proposed grading. The resulting excavations should be properly backfilled as described later in this report.

Existing Fill Soils

Results of the soil test borings performed at the site indicate that fill soils are present in all borings except Borings B-6 and B-9. The fill extended to depths ranging between approximately 0.7 and to 6.5 feet below the existing ground surface. Standard Penetration Resistances (N-values) in the fill ranged from 3 to 31 bpf but were typically in the range of 3 to 10 bpf. Based on our experience, properly compacted structural fill typically exhibits N-values in excess of 8 bpf with a more narrow range of N-values if the fill materials are consistent in nature. This extreme variability suggests that the materials were placed with variable compactive effort. There were also moderate to highly plastic soils in Borings B-1, B-2, B-4 and B-8 that will require separation from structural subgrades. This is discussed further in the "*Expansive Soil"* section.

Based on final plans, we anticipate that partial undercutting will be required in areas where low consistency and moderate to highly plastic soils were encountered. We recommend that the extent and consistency of fill materials be thoroughly evaluated during the final geotechnical exploration through additional soil test borings and /or test pits. If the fill contains wood fragments, trash, organics, voids or soft material, excessive settlement could result, causing distress. By founding the pavement structure on or above the existing fill, the owner is accepting some risk of excessive settlement and long-term maintenance.

Expansive Soils

Results of the soil test borings and our visual observations of the split-spoon samples recovered indicate highly plastic clay (CH) soils and moderately plastic clayey silt (MH) soils exist at the site. The area where these soils were encountered is shown on Figure 5. Plastic soils can undergo change in volume (shrink/swell) with changes in their moisture content. The presence of the moderate to high plasticity material can adversely affect the performance of the pavement systems. Therefore, the presence of these materials should be considered for design and budgeting purposes.

In order to reduce the risk of damage of the pavement systems, high plasticity (CH) materials should be completely undercut from pavement areas or adequate separation be provided. High plasticity clay (CH) residual and existing fill soils may remain in place provided they are stable under proofrolling and are separated from design pavement subgrades by a minimum of 3 feet. Separation material should consist of newly placed structural fill soils. Moderately plastic clayey silt (MH) soils may remain in place provided they are stable under proofrolling and are separated from design pavement subgrades by a minimum of 1 foot. Unstable plastic soils should be undercut and replaced with structural fill.

These materials should be carefully evaluated when encountered at/beneath pavement subgrade. An evaluation by the geotechnical engineer's representative should be performed during construction to help reduce the potential of plastic materials from underlying the pavements.

Alternative to undercutting to provide the required separation along the new alignment, lime stabilization could be considered. In addition to creating a stable subgrade and reducing the design pavement section, lime stabilization of the subgrade soils can reduce the plasticity characteristics of the subgrade soils, thereby eliminating the need for undercutting.

Alluvial Soils

Alluvial soils were encountered in Borings B-1, B-2, B-3, B-4, B-5, and B-8 to depths ranging from 6 to 12 feet. Based on our site reconnaissance, we anticipate that alluvial soils are present along and adjacent to the existing drainage feature which runs along the proposed roadway. The area where these soils were encountered is shown on Figure 6.

Typically, alluvial soils are low in consistency/relative density as they are water-deposited and have not been subjected to significant overburden pressures. They are also often high in moisture and organic content, and can be highly plastic. Because these materials are lower in consistency/relative density, additional site preparation (e.g., undercutting, stabilization, etc.) and/or reduced geotechnical strength parameters (e.g., bearing pressures, subgrade modulus values, etc.) would be required if foundations for culverts and pavement subgrades bear near these lower consistency materials.

It should also be anticipated that temporary dewatering may be required during development along the drainage features. This is discussed further in the "*Dewatering*" section.

Proofrolling of Subgrade Soils

After stripping of the surficial materials is completed, the exposed subgrade soils in areas to receive fill or at the subgrade elevation in cut areas should be proofrolled with a loaded dump truck or similar pneumatic tired vehicle (minimum loaded weight of 20 tons) to help identify unstable areas requiring surface repair. Proofrolling near the creeks should be performed at the discretion of the geotechnical engineer to minimize disturbance of already unstable soils. The proofrolling procedures should consist of four complete passes of the exposed areas, with two of the passes being in a direction perpendicular to the preceding ones. Any areas which deflect, rut or pump excessively during proofrolling or fail to "tighten up" after successive passes should be undercut to suitable soils and replaced with compacted fill.

Based on the borings, undercutting prior to fill placement should be anticipated in the vicinity of Borings B-1, B-2, B-3, B-4, B-5, B-6, B-8 and B-9 due to soft fill/ alluvial soils and in the vicinity of Borings B-7, B-9, and B-10 to create separation from plastic soils. The amount of undercut is dependent upon final grades and whether chemical stabilization will be used. These areas are shown on the attached Figures 5 and 6.

Subgrade Repair after Exposure

The on-site silts and clays in the project area are fairly low-strength, sensitive to moisture, and can degrade quickly if exposed to water. Because of this, the exposed subgrade soil may deteriorate when exposed to construction activity and environmental changes such as freezing, erosion, softening from ponded rainwater, and rutting from construction traffic.

We recommend that exposed subgrade surfaces in the pavement areas that have deteriorated be properly repaired by scarifying and recompacting immediately prior to additional construction. It should be noted that the level of difficulty and cost of developing a stable subgrade will depend upon the weather conditions before and during construction as well as the time available to stabilize the subgrade. If subgrade preparation operations must be performed during wet weather conditions, undercutting the deteriorated soil and replacing it with compacted crushed stone, rather than soil fill, may be preferable.

We recommend that the grading subcontractor smooth-roll exposed subgrades at the end of each work day, limit construction traffic to defined areas, and protect exposed subgrade soils during construction. This is essential for construction during the typically wetter, cooler months of November through April. If subgrades are rough-graded and not immediately covered by pavement base course materials, the grading subcontractor should cover the exposed subgrades with a sacrificial layer of crushed stone, leave the subgrades approximately 1 foot high, or be prepared to repair/stabilize the subgrades at a later date as a part of the original scope of work.

Dewatering

As previously discussed, grading information has not been provided. Based on the groundwater levels encountered, and the amount of anticipated fill to be placed at the site, we anticipate that dewatering will not be required. However, if grades dictate that excavations/earthwork approach the groundwater table, temporary dewatering may be required. Temporary dewatering can be accomplished with temporary excavations and sump pumps. Pumping from the sumps should be maintained until fill placement is a minimum of 3 feet above the water level. At no time should pumping be performed directly beneath the exposed subgrade elevation, since this could result in disturbance of the bearing materials and a loss of soil strength and poor pavement performance. Other means of improving drainage at the site may be accomplished with ditches located at select areas. Once detailed grading information becomes available, we would be happy to provide additional recommendations.

Excavations

Based on the results of the soil test borings, we anticipate that the majority of the general excavation for this site will be in existing fill, alluvial, and residual soils. Generally, these soils can be excavated using backhoes, trackhoes, front-end loaders, bull dozers and other types of typical earthmoving equipment.

Results from the soil test borings indicate that PWR is present in Boring B-7 at a depth of 8 feet below the existing ground surface. Although grading information has not been provided, we do not anticipate that PWR will be encountered during general site grading and excavation. However, the depth to, and thickness of, PWR and rock lenses or seams, can vary dramatically in short distances and between boring locations; therefore, PWR or bedrock may be encountered during construction at locations or depths, between boring locations, not encountered during this exploration.

If grades dictate that excavation into PWR is required, it has been our experience in this geological area that materials having Standard Penetration Resistances of less than 50 blows per 0.4 foot can generally be excavated using pans and scrapers by first loosening with a single tooth ripper attached to a suitable sized dozer, such as a Caterpillar D-8 or D-9. Excavation of the PWR is typically much more difficult in confined excavations. Jackhammering is anticipated to be required for materials having Standard Penetration Resistances in excess of 50 blows per 0.2 foot, or at or near the level that auger refusal is encountered.

Temporary Excavation Stability

For temporary excavations, shoring and bracing or flattening (laying back) of the slopes should be performed to obtain a safe working environment. 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 contractor is solely 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.

Cut and Fill Slopes

Final project slopes should be designed at 3 horizontal to 1 vertical or flatter. The tops and bases of all slopes should be located a minimum of 5 feet from pavement limits. The fill slopes should be adequately compacted, as outlined below, and all slopes should be seeded and maintained after construction.

If roadway embankment fill slopes are 10 feet in height or greater, they may require additional preparation of the subgrade soils to provide an adequate factor of safety against global instability. We request the opportunity to review grading plans, once available, to determine if detailed slope stability analysis is required.

Fill Placement

Structural fill placed within the pavement areas at the site should consist of a low plasticity soil that is free of organic material or debris. Structural fill soils should generally classify as CL, ML, SC, SM, SW or GW in accordance with the USCS. Moderately plastic (MH) and also highly plastic (CH) materials were also encountered at the site. These materials can be used as structural fill, however, should not be placed within 1 to 3 feet of pavement subgrades. It should be noted that mixing with low plasticity soils may be required to achieve the required compaction criteria, however, it should be noted that proper mixing and moisture control can be difficult to achieve. In areas to be treated with lime stabilization, plastic soils can be placed up to subgrades. Structural fill should be placed in 8- to 10-inch thick loose lifts at moisture contents within three percent of the optimum moisture content of the material as determined by AASHTO T-99 (Standard Proctor). Each lift of fill should be uniformly compacted to a dry density of at least 95 percent of the maximum dry density of the material determined according to AASHTO T-99 (Standard Proctor), with the upper 8 inches of fill compacted to at least 100 percent.

The geotechnical engineer's representative should perform in-place field density tests to evaluate the compaction of the structural fill and backfill placed at the site. We recommend a testing frequency of one test per lift per 5,000 square feet of fill in pavement areas. Also, at least one field density test should be performed for each lift of backfill per every 100 linear feet of utility trench in structural areas.

Post-Earthwork Settlement

The proposed roadway construction may require up to 15 feet of fill placement. Because the natural soils, especially those along the existing drainage features (alluvial soils), have not been subjected to the weight of the proposed fill, compression of the natural soils is anticipated. In addition, the mass weight of the new fill will cause the lower parts of the new fill to compress. It is anticipated that the majority of settlement of these materials will occur during placement of the new embankment fill. It is our opinion that good design and construction practice requires that a waiting period be observed to allow for this compression/settlement of newly-placed fill soils. Based on our experience with deep fills, we recommend that 15 to 30 days be allowed between the completion of the fill placement in the deep fill areas and subsequent construction, depending on the type of borrow materials selected and amount of fill actually placed.

Pavements

Traffic design information has not been provided and the recommendations presented in this section are preliminary in nature. Once detailed grading and traffic information becomes available, we would be happy to provide additional recommendations.

The fine-grained soils typically available for use as structural fill/backfill in the project area are generally poor to marginal for pavement support since they are subject to softening and loss of strength with gradual exposure to moisture. Experience with similar soils indicates typical soaked CBR values of 3 to 5. Plastic clayey or silty soils (CH and

MH) are not suitable for direct support of the pavement subgrade due to excessive swell and shrink potential. Typical pavement sections for similar subgrade soil conditions including properly compacted fill, low plasticity residual soils, or suitable existing fill soils (excluding CH & MH) are presented in the following table:

Material	Thickness (inches)
Asphalt Concrete	3 to 5
Crushed Stone (ABC)	8 to 12

The early placement of the aggregate base course will minimize the deterioration of the prepared soil subgrades. However, some loss of graded aggregate due to rutting and surface contamination may occur prior to final asphalt paving. Some infilling and re-grading of the graded aggregate in conjunction with sweeping with a wire broom may be required.

We recommend that special care be given to providing adequate drainage away from pavement areas to reduce infiltration of surface water to the base course and subgrade materials in these areas. If the subgrade soils are allowed to become saturated during the life of the pavement section, there may be a strength reduction of the materials that could result in a reduced life of the pavement section. All water should be routed away from the pavements via ditches to maintain drainage. Pavement areas should be proofrolled prior to placing structural fill and/or base course. Proofrolling procedures are outlined in previous sections of this report.

LIMITATIONS OF REPORT

The boring locations given in this report should be considered accurate only to the degree implied by the methods used to determine them.

The recommendations provided in this report are based on our understanding of the project information given in this report and on our interpretation of the surface and subsurface data collected. We have made our recommendations based on our experience with similar subsurface conditions and similar projects. The recommendations apply to the specific project discussed in this report; therefore, any changes in the project information should be provided to us so we may review our conclusions and recommendations and make any appropriate modifications.

Regardless of the thoroughness of a geotechnical study, there is always a possibility that subsurface conditions will be different from those at boring locations, that conditions will not be as anticipated by the designers or contractors, or that the construction process will alter soil conditions. Therefore, qualified geotechnical personnel should observe construction to confirm that the conditions indicated by the geotechnical borings actually exist. We recommend the owner retain S&ME for this service since we are already familiar with the project, the subsurface conditions at the site, and the intent of the recommendations and design.

This report has been prepared for the exclusive use of the client for specific application to the subject project and project site. It has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The 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 warranty, expressed or implied, is made.

CLOSURE

S&ME appreciates the opportunity to assist you during this phase of the project. If you should have any questions concerning this report or if we may be of further assistance, please contact us.

Very truly yours,

S&ME, Inc.

Nicholas J. Page, E.I.
Staff Professional

NORTH CAROLINA PROFESSIONAL SEAL 037845 2/13/2015 ENGINEER LUIS A. CAMPOS

Luis Campos, P.E.
Project Engineer
N.C. Registration No. 37845

Senior Reviewed by: Kristen H. Hill, P.E., P.G.

NJP/LAC/KHH/kmr

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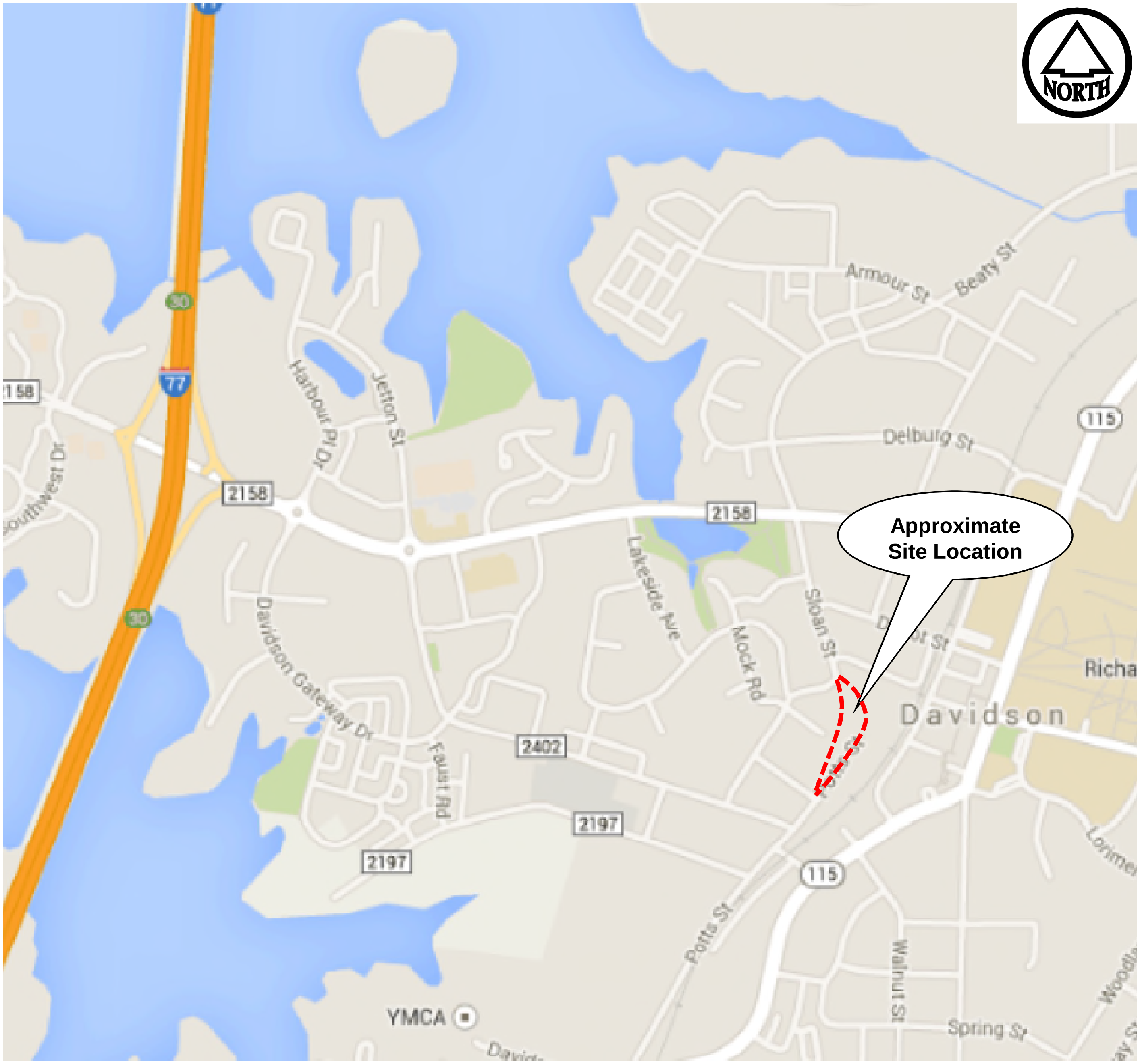
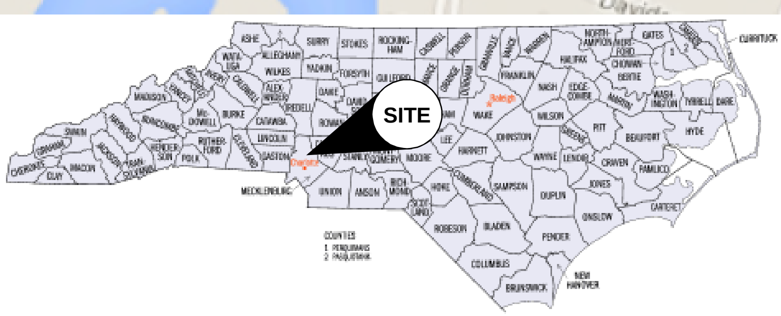
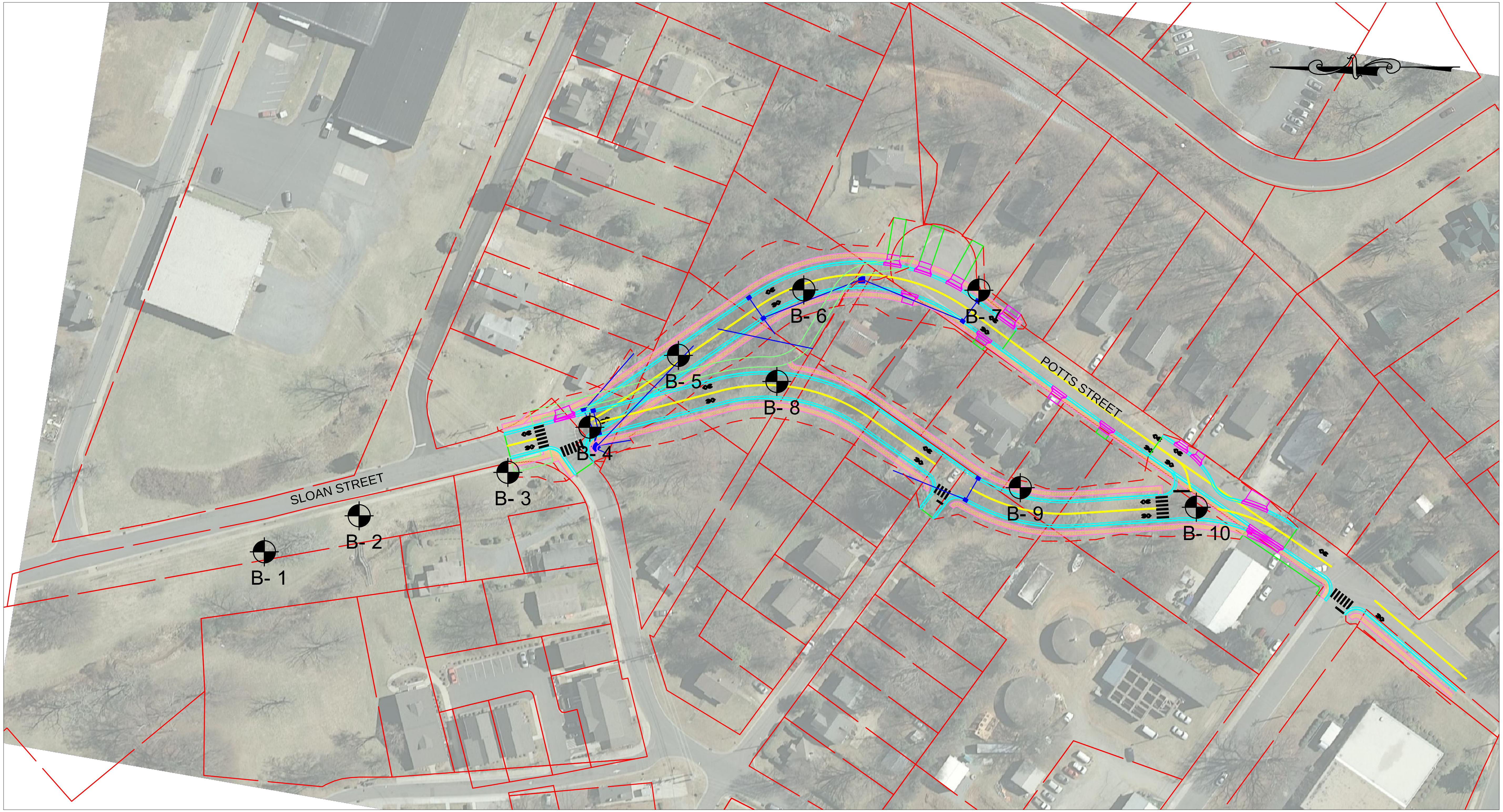
Attachments: Site Vicinity Map, Figure 1
Boring Location Plan, Figure 2
General Subsurface Profile – Eastern Alignment, Figure 3
General Subsurface Profile – Western Alignment, Figure 4
Moderate to Highly Plastic Soils Exhibit, Figure 5
Low Consistency/ Alluvial Soils Exhibit, Figure 6
Legend to Soil Classification and Symbols
Boring Logs (B-1 through B-10)
Asbestos Analysis Summary





SCALE: NTS	**S&ME** ENGINEERING • TESTING ENVIRONMENTAL SERVICES	**SITE VICINITY MAP** **PROPOSED POTTS-SLOAN ROADWAY** DAVIDSON, NORTH CAROLINA	FIGURE NO.
DRAWN BY: NJP			1
CHECKED BY: KHH			
DATE: 2/13/2015		PROJECT NO.: 1335-14-117	



LEGEND

⌖ APPROXIMATE BORING LOCATION

0 50 100 200

(IN FEET)

NOTE: DRAWING MODIFIED BY S&ME TO SHOW APPROXIMATE BORING LOCATIONS. DO NOT USE DRAWING TO DETERMINE DISTANCES OR QUANTITIES.

DATE: 2/13/2015

DRAWN BY: NJP

CHECKED BY: KHH

SCALE: 1" = 100'

PROJECT NO. 1351-14-117

ENGINEERING LICENSE No. F-0176

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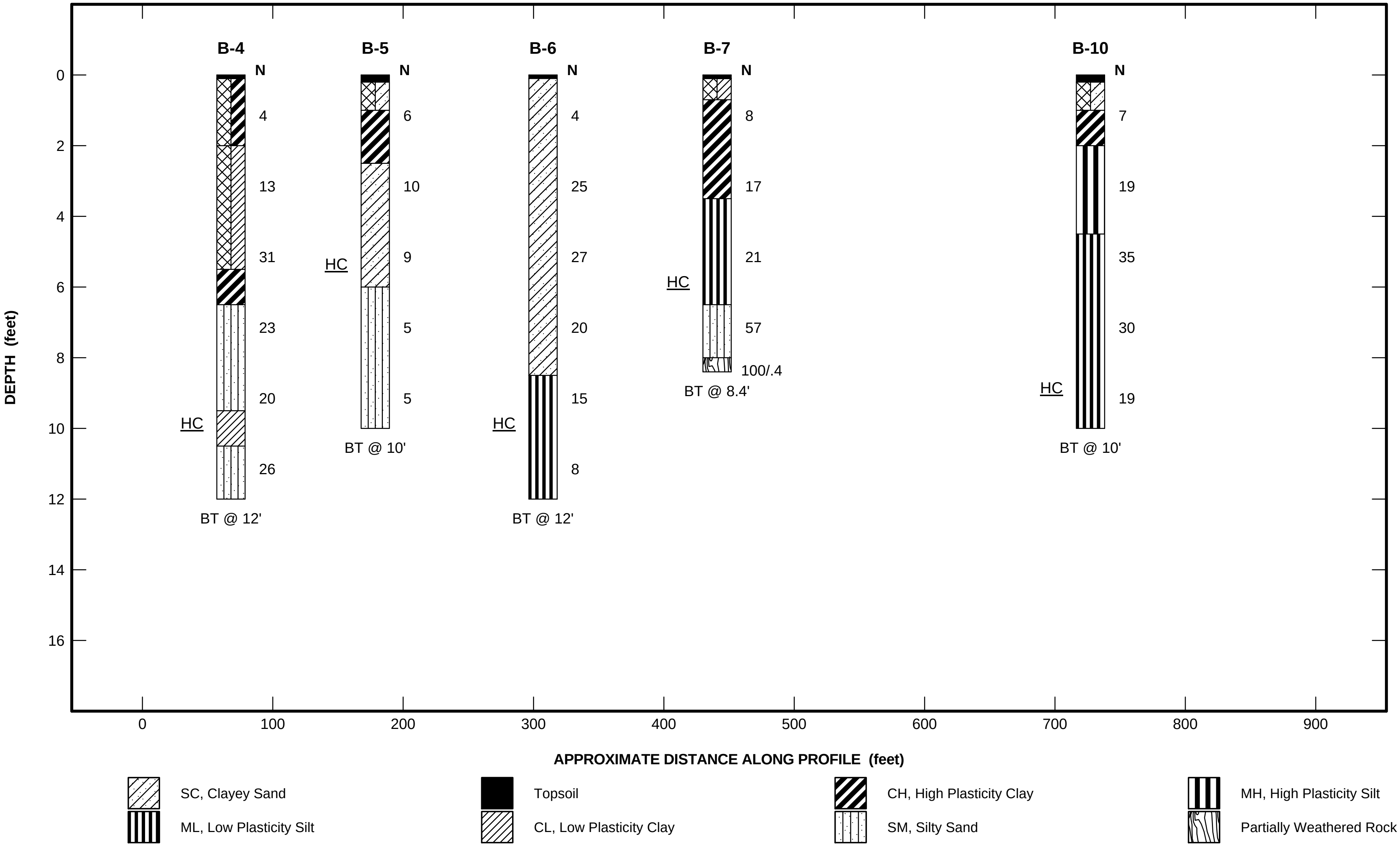
BORING LOCATION PLAN

PROPOSED POTTS-SLOAN ROADWAY

DAVIDSON, NORTH CAROLINA

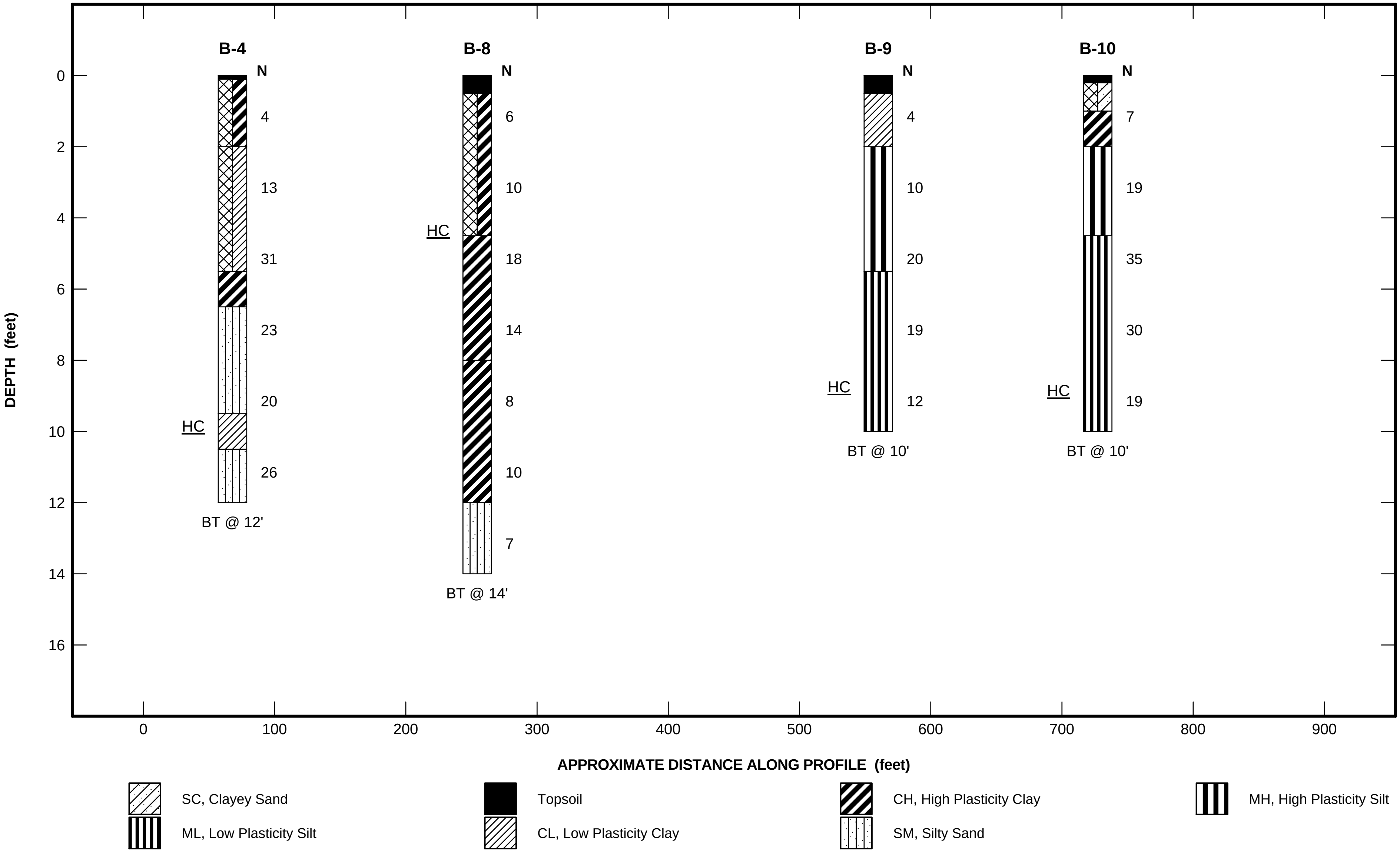
FIGURE NO. 2

Drawing path: T:\Projects\2014\GEO\1335-14-117 Potts Sloan Roadway\Graphics\Potts-Sloan-Beaty\NickBLP.dwg



N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.

JOB NO:	1335-14-117	S&ME	9751 SOUTHERN PINE BOULEVARD CHARLOTTE, NORTH CAROLINA P: (704) 523-4726 F: (704) 525-3953	Diagram: Gen. Subsurface Profile - Eastern Alignment Project: Proposed Potts-Sloan Roadway Location: Davidson, North Carolina
DATE:	2/13/2015			Figure 3



N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.

JOB NO:	1335-14-117
DATE:	2/13/2015

S&ME

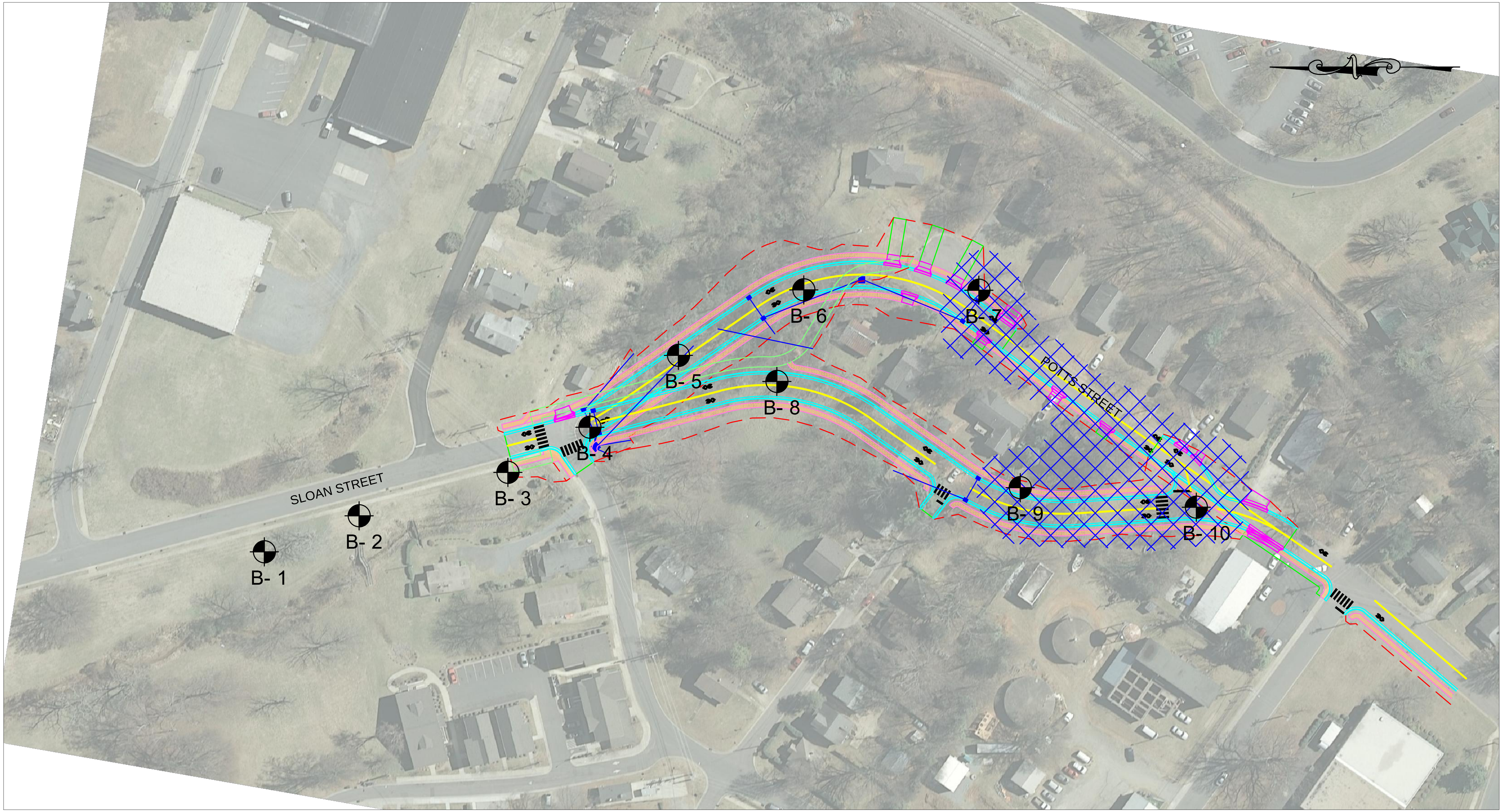
9751 SOUTHERN PINE BOULEVARD
CHARLOTTE, NORTH CAROLINA
P: (704) 523-4726
F: (704) 525-3953

Diagram: Gen. Subsurface Profile - Western Alignment

Project: Proposed Potts-Sloan Roadway

Location: Davidson, North Carolina

Figure 4



LEGEND

APPROXIMATE BORING LOCATION

APPROXIMATE LOCATION WHERE NON-ALLUVIAL PLASTIC NEAR SURFACE SOILS MAY BE ENCOUNTERED DURING INITIAL SITE GRADING.

0 50 100 200

(IN FEET)

NOTE: DRAWING MODIFIED BY S&ME TO SHOW APPROXIMATE BORING LOCATIONS. DO NOT USE DRAWING TO DETERMINE DISTANCES OR QUANTITIES.

DATE:	2/13/2015
DRAWN BY:	NJP
CHECKED BY:	KHH
SCALE:	1" = 100'
PROJECT NO.	1351-14-117
ENGINEERING LICENSE No.	F-0176

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MODERATE TO HILGHLY PLASTIC SOILS

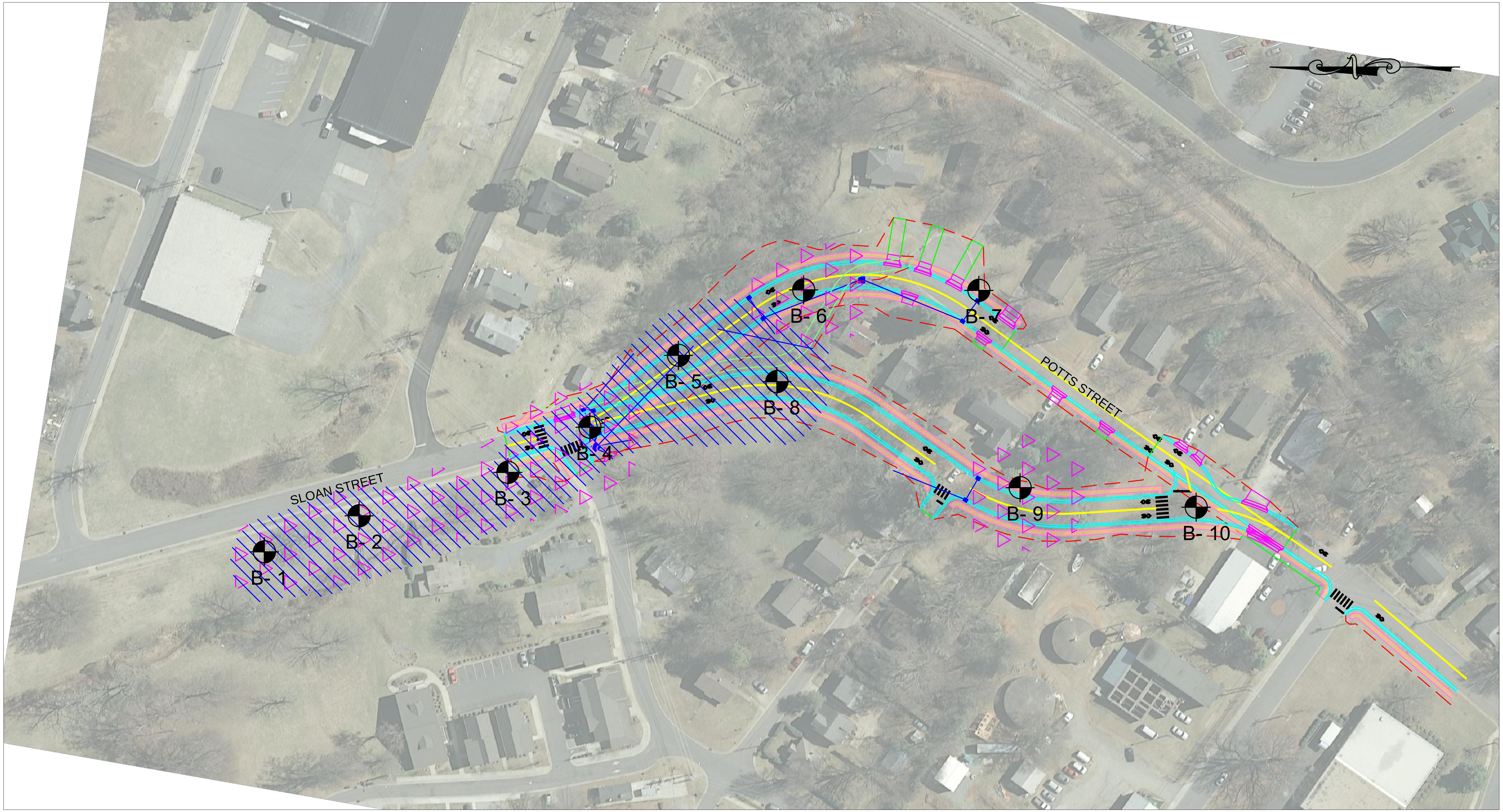
PROPOSED POTTS-SLOAN ROADWAY

DAVIDSON, NORTH CAROLINA

FIGURE NO.

5

Drawing path: T:\Projects\2014\GEO\1335-14-117 Potts Sloan Roadway\Graphics\Potts-Sloan-Beaty\NickBLP.dwg



0 50 100 200

(IN FEET)

NOTE: DRAWING MODIFIED BY S&ME TO SHOW APPROXIMATE BORING LOCATIONS. DO NOT USE DRAWING TO DETERMINE DISTANCES OR QUANTITIES.

LEGEND

- APPROXIMATE BORING LOCATION
- APPROXIMATE LOCATION WHERE ALLUVIAL SOILS MAY BE ENCOUNTERED
- APPROXIMATE LOCATION WHERE LOW CONSISTENCY NEAR SURFACE SOILS MAY BE ENCOUNTERED DURING INITIAL SITE GRADING

SCALE: 1" = 100'
DATE: 2/13/2015
PROJECT NO. 1351-14-117
DRAWN BY: NJP
ENGINEERING LICENSE No. F-0176
CHECKED BY: KHH

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LOW CONSISTENCY/ ALLUVIAL SOILS
PROPOSED POTTS-SLOAN ROADWAY

DAVIDSON, NORTH CAROLINA

FIGURE NO.
6

Drawing path: T:\Projects\2014\GEO\1335-14-117 Potts Sloan Roadway\Graphics\Potts-Sloan-Beaty\NickBLP.dwg

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS

SOIL TYPES

(Shown in Graphic Log)

	Fill
	Asphalt
	Concrete
	Topsoil
	Partially Weathered Rock
	Cored Rock
GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SM	SILTY SANDS, SAND - SILT MIXTURES
SC	CLAYEY SANDS, SAND - CLAY MIXTURES
ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY
MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS, ELASTIC SILTS
CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
OH	ORGANIC SILTS AND ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY

WATER LEVELS

(Shown in Water Level Column)

- ▽ = Water Level At Termination of Boring
- ▼ = Water Level Taken After 24 Hours
- ◄ = Loss of Drilling Water
- HC = Hole Cave

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	STD. PENETRATION RESISTANCE BLOWS/FOOT
Very Soft	0 to 2
Soft	3 to 4
Firm	5 to 8
Stiff	9 to 15
Very Stiff	16 to 30
Hard	31 to 50
Very Hard	Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

RELATIVE DENSITY	STD. PENETRATION RESISTANCE BLOWS/FOOT
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	Over 50

SAMPLER TYPES

(Shown in Samples Column)

- Shelby Tube
- Split Spoon
- Rock Core
- No Recovery

TERMS

Standard Penetration Resistance – The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D 1586.

REC – Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

RQD – Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks excluded) Divided by the Total Length of the Core Run Times 100%.

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ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

PROJECT: Proposed Potts-Sloan Roadway Davidson, North Carolina S&ME Project No. 1335-14-117	BORING LOG B-1

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**	NOTES:
DRILL RIG: **CME 550**	BORING DEPTH: **10.0 ft**	
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**	
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**	
SAMPLING METHOD: **Split spoon**		NORTHING: **642301** EASTING: **1448735**
DRILLING METHOD: **3¼" H.S.A.**		

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	BLOW COUNT 1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (2 inches)			SS-1	2	2	2	4
	FILL: SILTY CLAY (CH) - soft to firm, brown, moist			SS-2	3	5	6	11
5	**ALLUVIUM: CLAYEY SILT (MH)** - stiff to very stiff, orange gray, moist		95.0	SS-3	10	10	13	23
	ALLUVIUM: CLAYEY SAND (SC) - dense, gray, moist			SS-4	15	17	16	33
	RESIDUUM: SILTY SAND (SM) - medium dense, gray red white, moist, fine to coarse	HC		SS-5	12	12	12	24
10	Boring terminated at 10 feet		90.0					

REMARKS / STANDARD PENETRATION TEST DATA (blows/ft)

NOTES:

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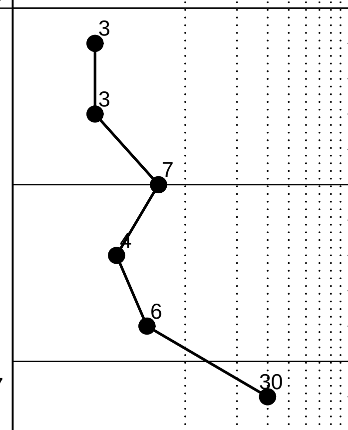
2. *BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

PROJECT: Proposed Potts-Sloan Roadway Davidson, North Carolina S&ME Project No. 1335-14-117		BORING LOG B-2
DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**	NOTES:
DRILL RIG: **CME 550**	BORING DEPTH: **12.0 ft**	
DRILLER: **C. Odom**	WATER LEVEL: **10.6 feet on 12/18/2014**	
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**	
SAMPLING METHOD: **Split spoon**		NORTHING: **642207** / EASTING: **1448771**
DRILLING METHOD: **3¼" H.S.A.**		

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (1 inch)							
	FILL: CLAYEY SILT (MH) - soft, red brown, moist			SS-1	2	1	2	3
				SS-2	WOH	1	2	3
5	**FILL: CLAYEY SAND (SC)** - loose, brown, moist		95.0	SS-3	3	3	4	7
	ALLUVIUM: CLAYEY SAND (SC) - very loose to loose, gray orange, wet			SS-4	2	2	2	4
				SS-5	3	3	3	6
10	**RESIDUUM: SILTY SAND (SM)** - medium dense, brown gray white, moist, fine to coarse	∇ HC	90.0	SS-6	7	13	17	30
	Boring terminated at 12 feet							



S&ME BORING LOG 14-117 POTTS SLOAN.GPJ S&ME.GDT 2/13/15

NOTES:

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3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

PROJECT: **Proposed Potts-Sloan Roadway**
Davidson, North Carolina
S&ME Project No. 1335-14-117

BORING LOG B-3

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**
DRILL RIG: **CME 550**	BORING DEPTH: **10.0 ft**
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**
SAMPLING METHOD: **Split spoon**	
DRILLING METHOD: **3¼" H.S.A.**	

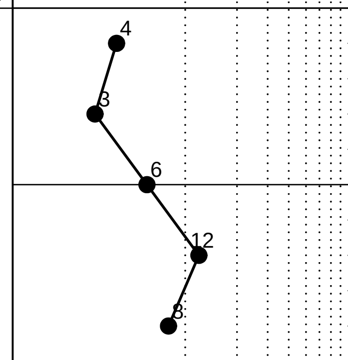
NOTES:

NORTHING: **642060** EASTING: **1448814**

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (1 inch)			SS-1	2	2	2	4
	FILL: SANDY CLAY (CL) - soft, red brown, moist			SS-2	2	1	2	3
5	**ALLUVIUM: CLAYEY SILT (MH)** - firm to stiff, brown gray, moist		95.0	SS-3	3	3	3	6
	ALLUVIUM: CLAYEY SAND (SC) - medium dense to loose, gray, wet, fine			SS-4	4	6	6	12
				SS-5	5	4	4	8
10	**RESIDUUM: SILTY SAND (SM)** - loose, gray red white, wet, fine to coarse Boring terminated at 10 feet	HC	90.0					

REMARKS

STANDARD PENETRATION TEST DATA (blows/ft)



NOTES:

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2. *BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

S&ME

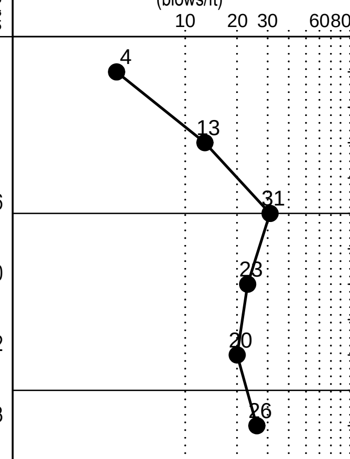
PROJECT: Proposed Potts-Sloan Roadway, Davidson, North Carolina, S&ME Project No. 1335-14-117	BORING LOG B-4

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**	NOTES:
DRILL RIG: **CME 550**	BORING DEPTH: **12.0 ft**	
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/17/2014**	
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**	
SAMPLING METHOD: **Split spoon**		NORTHING: **641979** / EASTING: **1448858**
DRILLING METHOD: **3¼" H.S.A.**		

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	BLOW COUNT 1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (2 inches)			SS-1	2	2	2	4
	FILL: SILTY CLAY (CH) - soft, brown orange, moist			SS-2	4	5	8	13
5	**FILL: SANDY CLAY (CL)** - stiff to hard, orange brown, moist		95.0	SS-3	13	15	16	31
	ALLUVIUM: SILTY CLAY (CH) - very stiff, gray orange, moist			SS-4	9	13	10	23
	ALLUVIUM: SILTY SAND (SM) - medium dense, gray, moist, fine to coarse			SS-5	8	8	12	20
10	**RESIDUUM: SANDY CLAY (CL)** - very stiff, red brown, moist	HC	90.0	SS-6	10	13	13	26
	SILTY SAND (SM) - medium dense, gray white, moist, fine to coarse							
	Boring terminated at 12 feet							

REMARKS

STANDARD PENETRATION TEST DATA (blows/ft)



S&ME BORING LOG 14-117 POTTS SLOAN.GPJ S&ME.GDT 2/13/15

NOTES:

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3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

S&ME

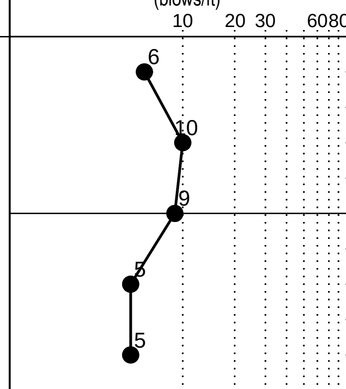
PROJECT: **Proposed Potts-Sloan Roadway** **Davidson, North Carolina** **S&ME Project No. 1335-14-117**	**BORING LOG B-5**

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**	NOTES:
DRILL RIG: **CME 550**	BORING DEPTH: **10.0 ft**	
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**	
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**	
SAMPLING METHOD: **Split spoon**	NORTHING: **641891**	EASTING: **1448930**
DRILLING METHOD: **3¼" H.S.A.**		

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	BLOW COUNT 1st 6in / RUN	BLOW COUNT 2nd 6in / REC	BLOW COUNT 3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (3 inches)			SS-1	2	3	3	6
	FILL: CLAYEY SAND (SC) - loose, brown red, moist, fine			SS-2	2	4	6	10
5	**ALLUVIUM: SILTY CLAY (CH)** - firm, gray orange, moist	HC	95.0	SS-3	6	4	5	9
	ALLUVIUM: CLAYEY SAND (SC) - loose, gray, moist, fine to coarse			SS-4	3	2	3	5
	RESIDUUM: SILTY SAND (SM) - loose, white brown gray, saturated, fine to coarse			SS-5	3	2	3	5
10	Boring terminated at 10 feet		90.0					

REMARKS

STANDARD PENETRATION TEST DATA (blows/ft)



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3. ***STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.***
4. ***WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.***

S&ME

PROJECT: **Proposed Potts-Sloan Roadway**
Davidson, North Carolina
S&ME Project No. 1335-14-117

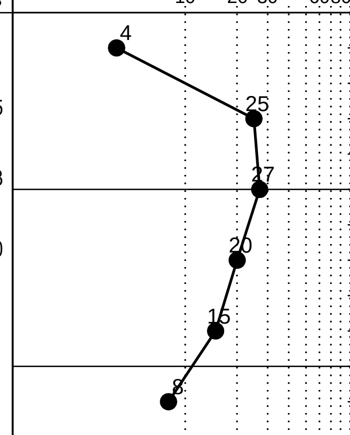
BORING LOG B-6

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**
DRILL RIG: **CME 550**	BORING DEPTH: **12.0 ft**
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**
SAMPLING METHOD: **Split spoon**	NORTHING: **641767**
DRILLING METHOD: **3¼" H.S.A.**	EASTING: **1448994**

NOTES:

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	BLOW COUNT 1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (2 inches)			SS-1	2	2	2	4
	RESIDUUM: CLAYEY SAND (SC) - loose to medium dense, orange white gray, dry, fine to coarse			SS-2	9	10	15	25
5			95.0	SS-3	16	14	13	27
				SS-4	10	10	10	20
	SANDY SILT (ML) - stiff to firm, gray white, moist			SS-5	8	8	7	15
10		HC	90.0	SS-6	5	4	4	8
	Boring terminated at 12 feet							

REMARKS
STANDARD PENETRATION TEST DATA (blows/ft)



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3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

S&ME

PROJECT: **Proposed Potts-Sloan Roadway**
Davidson, North Carolina
S&ME Project No. 1335-14-117

BORING LOG B-7

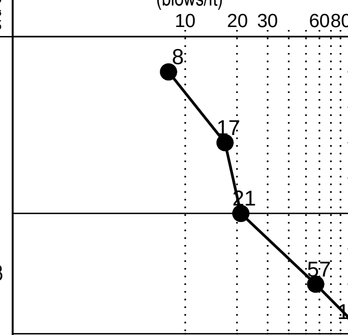
DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**
DRILL RIG: **CME 550**	BORING DEPTH: **8.4 ft**
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**
SAMPLING METHOD: **Split spoon**	NORTHING: **641594** EASTING: **1448994**
DRILLING METHOD: **3¼" H.S.A.**	

NOTES:

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	BLOW COUNT / CORE DATA 1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (1 inch)			SS-1	3	3	5	8
	FILL: SANDY CLAY (CL) - firm, brown, moist			SS-2	8	8	9	17
	RESIDUUM: SILTY CLAY (CH) - firm to very stiff, red brown, moist							
5	**SANDY SILT (ML)** - very stiff, red orange, moist	HC	95.0	SS-3	11	10	11	21
	SILTY SAND (SM) - very dense, white gray, dry, fine to coarse			SS-4	12	34	23	57
	PARTIALLY WEATHERED ROCK: SILTY SAND (SM) - white gray, dry, fine to coarse			SS-5	100/.4			100/.4
	Boring terminated at 8.4 feet							

REMARKS

STANDARD PENETRATION TEST DATA (blows/ft)



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4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

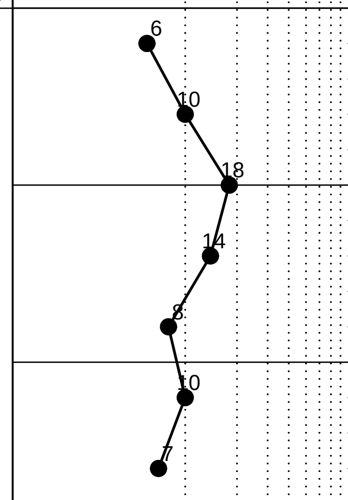
S&ME

PROJECT: **Proposed Potts-Sloan Roadway** **Davidson, North Carolina** **S&ME Project No. 1335-14-117**	**BORING LOG B-8**

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**	NOTES:
DRILL RIG: **CME 550**	BORING DEPTH: **14.0 ft**	
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/17/2014**	
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**	
SAMPLING METHOD: **Split spoon**		NORTHING: **641794** / EASTING: **1448904**
DRILLING METHOD: **3¼" H.S.A.**		

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
	Topsoil/ Rootmat (6 inches)			SS-1	2	3	3	6
	FILL: SILTY CLAY (CH) - firm to stiff, tan brown, some topsoil mixture, trace brick fragments, moist			SS-2	3	4	6	10
5	**ALLUVIUM: SILTY CLAY (CH)** - very stiff to stiff, white orange, moist	HC	95.0	SS-3	5	7	11	18
				SS-4	6	8	6	14
	ALLUVIUM: SILTY CLAY (CH) - firm to stiff, white orange, moist			SS-5	3	3	5	8
10			90.0	SS-6	3	5	5	10
	RESIDUUM: SILTY SAND (SM) - loose, brown white, moist			SS-7	2	2	5	7
	Boring terminated at 14 feet							

REMARKS — STANDARD PENETRATION TEST DATA (blows/ft)



NOTES:

1. ***THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.***
2. ***BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.***
3. ***STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.***
4. ***WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.***

S&ME

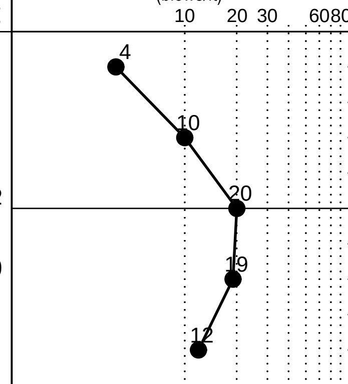
PROJECT: **Proposed Potts-Sloan Roadway**
Davidson, North Carolina
S&ME Project No. 1335-14-117

BORING LOG B-9

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**
DRILL RIG: **CME 550**	BORING DEPTH: **10.0 ft**
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**
SAMPLING METHOD: **Split spoon**	NORTHING: **641553** EASTING: **1448799**
DRILLING METHOD: **3¼" H.S.A.**	NOTES:

DEPTH (feet)	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	N VALUE
0	Topsoil/ Rootmat (6 inches)			SS-1	2	1	3	4
	RESIDUUM: SANDY CLAY (CL) - soft, brown red, moist			SS-2	3	4	6	10
	CLAYEY SILT (MH) - stiff to very stiff, red brown, moist							
5			95.0	SS-3	7	8	12	20
	SANDY SILT (ML) - very stiff to stiff, red orange, moist			SS-4	9	9	10	19
		HC		SS-5	6	6	6	12
10	Boring terminated at 10 feet		90.0					

REMARKS / STANDARD PENETRATION TEST DATA (blows/ft)



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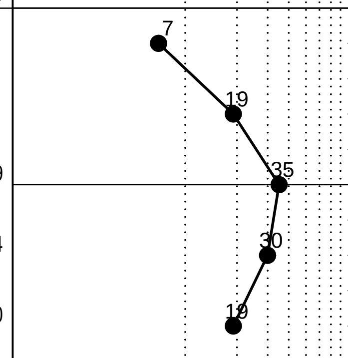
2. *BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

S&ME

PROJECT: Proposed Potts-Sloan Roadway Davidson, North Carolina S&ME Project No. 1335-14-117	BORING LOG B-10

DATE DRILLED: **12/18/14**	ELEVATION: **100.0 ft**	NOTES:
DRILL RIG: **CME 550**	BORING DEPTH: **10.0 ft**	
DRILLER: **C. Odom**	WATER LEVEL: **Dry on 12/18/2014**	
HAMMER TYPE: **Automatic**	LOGGED BY: **N. Page**	
SAMPLING METHOD: **Split spoon**		NORTHING: **641378** EASTING: **1448779**
DRILLING METHOD: **3¼" H.S.A.**		

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SPT REC. (in.) SAMPLE TYPE	1st 6in / RUN	2nd 6in / REC	3rd 6in / RQD	REMARKS / STANDARD PENETRATION TEST DATA (blows/ft)	N VALUE
		Topsoil/ Rootmat (3 inches)			SS-1		3	3	4		7
		FILL: CLAYEY SAND (SC) - loose, brown red, moist			SS-2		4	8	11		19
		RESIDUUM: SILTY CLAY (CH) - firm, red, moist									
5		**CLAYEY SILT (MH)** - very stiff, red, moist		95.0	SS-3		11	16	19		35
		SANDY SILT (ML) - hard to very stiff, red orange, trace mica, moist			SS-4		12	16	14		30
			HC		SS-5		9	9	10		19
10		Boring terminated at 10 feet		90.0							



S&ME BORING LOG 14-117 POTTS SLOAN.GPJ S&ME.GDT 2/13/15

NOTES:

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3. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
4. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

S&ME

S&ME
9771D Southern Pine Boulevard
Charlotte, NC 28273
704-940-1830 Fax 704-565-4929
NVLAP Lab Code 102075-0

POLARIZED LIGHT MICROSCOPY
Performed by EPA 600/R-93/116 Method

Asbestos Analysis Summary

Client Name Charlotte Branch
9751 Southern Pine Blvd.
Charlotte NC 28273
Client Job Potts Sloan Roadway Soil Samples

Date Received 12/19/2015
Date Analyzed 1/5/2015

Job Number 1335-14-117

Lab ID:	Sample #:	Appearance	Comments	Asbestos %/Type	Non-Asbestos Fibrous %/Type	Non-Fibrous %/Type
14-11239	B-1-1	TAN GRANULAR		ND		100 OTHER
14-11240	B-1-2	BLACK NONFIBROUS		ND		100 OTHER
14-11241	B-2-1	TAN/BLACK GRANULAR		ND		100 OTHER
14-11242	B-2-2	TAN GRANULAR		ND		100 OTHER

Analyzed by: Jane Wasilewski

Jane Wasilewski
Laboratory Manager

Additional Comments:

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample). RCF= (Refractory Ceramic Fiber) The results relate only to the items tested.
The sample may not be fully representative of the larger material in question. This sheet may not be reproduced except with permission from SME, Inc. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Although Polarized Light Microscopy (PLM/Dispersion Staining) (Method EPA 600/R-93/116) is the specified method for analysis of bulk material samples for asbestos under the EPA Asbestos Hazard Emergency Response Act, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. Such materials include floor tile, mastic and asphaltic roofing. Currently, reanalysis by Transmission Electron Microscopy (TEM) to verify results of <1% or "None Detected" for these materials is recommended.

Job Number 1335-14-117

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
14-11243	B-3-1	TAN/BLACK GRANULAR		ND		100 OTHER
14-11244	B-3-2	GREY GRANULAR		ND		100 OTHER
14-11245	B-4-1	TAN GRANULAR		ND		100 OTHER
14-11246	B-5-1	BROWN GRANULAR		ND		100 OTHER
14-11247	B-5-2	GREY GRANULAR		ND		100 OTHER
14-11248	B-6-1	TAN GRANULAR		ND		100 OTHER

Analyzed by: Jane Wasilewski

Jane Wasilewski
Laboratory Manager

Additional Comments:

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Job Number 1335-14-117

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
14-11249	B-6-2	GREY GRANULAR		ND		100 OTHER
14-11250	B-7-1	BROWN GRANULAR		ND	<1 CELLULOSE	100 OTHER
14-11251	B-7-2	TAN GRANULAR		ND		100 OTHER
14-11252	B-8-1	BROWN/GRY GRANULAR		ND		100 OTHER
14-11253	B-9-1	BROWN GRANULAR		ND	<1 CELLULOSE	100 OTHER
14-11254	B-9-2	TAN GRANULAR		ND	<1 CELLULOSE	100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments:

Jane Wasilewski
Laboratory Manager

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Job Number 1335-14-117

Lab ID:	***Sample #:***	***Appearance***	***Comments***	***Asbestos %/Type***	***Non-Asbestos Fibrous %/Type***	***Non-Fibrous %/Type***
14-11255	B-10-1	BROWN GRANULAR		ND	<1 CELLULOSE	100 OTHER
14-11256	B-10-2	RED/BROWN GRANULAR		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments:

Jane Wasilewski
Laboratory Manager

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BULK SAMPLE
CHAIN OF CUSTODY RECORD

S&ME

POLARIZED LIGHT MICROSCOPY
PERFORMED BY EPA 600/R-93/116 METHOD

PROJECT NO.	PROJECT NAME	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
1335-14-117 (PHASE 01)	POTTS SLOAN ROADWAY	[signature]	12/19/14	10:02	[signature] 12/19/14
FACILITY: N/A – EXPLORATORY SOIL SAMPLES		RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
SAMPLER(S): JEREME H. WILLIS/JIMMY GOSNELL	DATE TAKEN: 12/17/14 & 12/18/14	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

SAMPLE #	LAB NUMBER	DATE ANALYZED	ANALYSTS INITIALS	ASBESTOS +	ASBESTOS N/D	ARCHIVE NUMBER	DATE ARCH	ARCHIVER INITIALS	SPECIAL INSTRUCTIONS
B-1-1	14-11239								
B-1-2	40								
B-2-1	41								
B-2-2	42								
B-3-1	43								
B-3-2	44								
B-4-1	45								
B-5-1	46								
B-5-2	47								
B-6-1	112 48								

☐ Same Day ☐ 24 Hour ☐ 48 Hour ☐ 3-5 Day ☒ 6-10 Day

ALL SAMPLES WILL BE DISPOSED OF AFTER ANALYSIS UNLESS OTHERWISE REQUESTED

By signing below, I warrant that I am authorized to enter into this agreement for the client named below, and that I authorize the above analysis subject to the terms and conditions on the reverse hereof.

AUTHORIZED BY ______________________ (DATE & TITLE)

This agreement is governed by the terms and conditions on the reverse side hereof.

PRINT NAME ______________________

Analysis charges shall be as included in S&ME, Inc.'s fee schedule in effect at the time of the analysis.

CLIENT INVOICE INFORMATION		SEND COPIES OF RESULTS TO	
Client Name	ATTN:	Name, Dept.	
Client PO#		Co.	
Address		Address	
City, State, Zip		City, State, Zip	
Phone:	FAX:	Phone:	FAX:

WHITE COPY-LABORATORY YELLOW COPY-ACCOUNTING PINK COPY-CLIENT

BULK SAMPLE
CHAIN OF CUSTODY RECORD

S&ME

POLARIZED LIGHT MICROSCOPY
PERFORMED BY EPA 600/R-93/116 METHOD

PROJECT NO.	PROJECT NAME	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
1335-14-117 (PHASE 01)	POTTS SLOAN ROADWAY	[signature]	12/19/14	10:02	[signature] 12/19/14
FACILITY: N/A – EXPLORATORY SOIL SAMPLES		RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
SAMPLER(S): JEREME H. WILLIS/JIMMY GOSNELL	DATE TAKEN: 12/17/14 & 12/18/14	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

SAMPLE #	LAB NUMBER	DATE ANALYZED	ANALYSTS INITIALS	ASBESTOS +	ASBESTOS N/D	ARCHIVE NUMBER	DATE ARCH	ARCHIVER INITIALS	SPECIAL INSTRUCTIONS
B-6-2	14-11249								
B-7-1	50								
B-7-2	51								
B-8-1	52								
B-9-1	53								
B-9-2	54								
B-10-1	55								
B-10-2	11256								

☐ Same Day ☐ 24 Hour ☐ 48 Hour ☐ 3-5 Day ☒ 6-10 Day

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By signing below, I warrant that I am authorized to enter into this agreement for the client named below, and that I authorize the above analysis subject to the terms and conditions on the reverse hereof.

AUTHORIZED BY ______________________ (DATE & TITLE)

This agreement is governed by the terms and conditions on the reverse side hereof.

PRINT NAME ______________________

Analysis charges shall be as included in S&ME, Inc.'s fee schedule in effect at the time of the analysis.

CLIENT INVOICE INFORMATION		SEND COPIES OF RESULTS TO	
	Client Name / ATTN:		Name, Dept.
	Client PO#		Co.
	Address		Address
	City, State, Zip		City, State, Zip
	Phone: / FAX:		Phone: / FAX:

WHITE COPY-LABORATORY YELLOW COPY-ACCOUNTING PINK COPY-CLIENT

 This document was prepared pursuant to a specific agreement to address the unique requirements of an S&ME client. Prior to further use, an S&ME professional should be contacted for a complete explanation of its preparation and contents.