

Central Polk Parkway
Project Development & Environment Study
Geotechnical Technical Memorandum

Florida Department of Transportation
Florida's Turnpike Enterprise

Central Polk Parkway from US 17 (SR 35) to SR 60
Project Development and Environment Study

Polk County, Florida
Financial Project ID: 440897-4-22-01



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1.0 PROJECT INFORMATION

1.1 Project Authorization

Authorization to proceed with this project was issued by KCA in accordance with the Subconsultant Agreement for the referenced project.

1.2 Project Description

The FDOT's FTE is conducting a PD&E study to evaluate a new tolled four-lane limited access expressway located in Polk County, Florida. The study will evaluate extending the Central Polk Parkway beginning at US 17 approximately a half mile west of 91 Mine Road and terminating at SR 60 west of 91 Mine Road. The project is located in Sections 22, 27 and 34 of Township 29 South Range 25 East, and Section 3 of Township 30 South Range 25 East. The results of the study will support determination of the type, preliminary design and location of the proposed improvements.

A majority of the PD&E study area traverses reclaimed mine lands where past phosphate mining operations occurred. Due to the potential for variable and unsuitable soil conditions that are typically associated with previously mined areas, a preliminary geotechnical exploration was authorized by FTE.

At the time of this report, four (4) roadway alignments are under evaluation – Alternatives 1, 2, 3, and 4. The portion of the Alternative 3 alignment from south of Peace Creek to SR 60 is within the limits of the TECO Peace Creek Solar facility and was not explored due to access constraints posed by the construction of the solar farm.

1.3 General Site Conditions

Approximately the first half of the project area for all four alignments from US 17 to just north of Peace Creek traverse reclaimed mine lands where past phosphate mining operations occurred. The reclaimed mined lands have been modified from their natural conditions. They are characterized by open fields, low-lying areas, and open water bodies.

South of Peace Creek to SR 60, Alternative 1 appears to traverse natural type soils, Alternatives 2 and 3 remained primarily in reclaimed mine lands and Alternative 4 appears to traverse both natural soils and mine lands.

2.0 PURPOSE AND SCOPE OF SERVICES

This preliminary study was performed to obtain information on the existing subsurface conditions along the limits of the proposed roadway alternatives to assist in evaluation of the preferred alignment. The following services were provided:

1. Reviewed published soil information obtained from the "Soil Survey of Polk County, Florida" published by the United States Department of Agriculture (USDA) National Resources Conservation Services (NRCS). Reviewed topographic data obtained from

the “Bartow, Florida” Quadrangle Map and potentiometric information from the “Potentiometric Surface of the Upper Floridan Aquifer, West-Central Florida” Maps published by the United States Geological Survey (USGS).

2. Reviewed historical aerials along the project corridor obtained from databases from the University of Florida (UF), USGS Earth Resources Observation and Science (EROS) Center, and FDOT Survey & Mapping.
3. Reviewed existing geotechnical information from studies previously performed along the alignments.
4. Conducted a visual reconnaissance of the project site and located and coordinated utility clearances via Sunshine State One Call.
5. Performed a preliminary geotechnical field study consisting of hand augers, hand probes, and Standard Penetration Test (SPT) borings to evaluate the existing subsurface conditions along the potential alternative project alignments.
6. Identified groundwater levels at the boring locations.
7. Visually classified and stratified recovered soil samples in the laboratory. Performed laboratory tests on selected representative samples to develop the soil legend for the project in accordance with the American Association of State Highway and Transportation Officials (AASHTO) soil classification system.
8. Prepared this Preliminary Roadway Soil Survey Report for the project.

3.0 REVIEW OF PUBLISHED DATA

3.1 Previous Geotechnical Explorations

Portions of the subject project had been explored previously by FDOT District 1 (D1) for the Central Polk Parkway (CPP) Segment 1 project (FPID 431641-1-32-01), by Polk County for the Northern Bartow Connector Phase 2 alignment study, and for the private landowner Clear Springs.

The FDOT CPP Segment 1 extended south of US 17 for approximately half a mile where it turned and headed east to connect to the CPP Segment 2 project. The District 1 CPP projects were put on hold and ultimately cancelled in 2016. Tierra was the geotechnical Engineer of Record for the D1 CPP projects. In 2017, FTE reinstated the CPP Segment 1 project and adjusted the project limits to extend from the existing Polk Parkway (SR 570) to US 17. South of US 17, FTE authorized the subject PD&E study. For the new FTE alternative alignments and limits, much of the geotechnical information gathered under the D1 project was still applicable and was re-used for the current study.

Polk County also performed a geotechnical study in portions of the PD&E study area for the Bartow Northern Connector Phase II project. The geotechnical exploration program for this

project was performed by KCI Technologies, Inc. (KCI). In addition, Ardaman and Associates (Ardaman) performed a geotechnical exploration for Clear Springs Land Company for a roadway and bridge in the project area. This information was provided to Tierra by Polk County. Soil boring information obtained by KCI and Ardaman is presented in the **Appendix A** of this report.

3.2 Project Area Background – Past Phosphate Mining Activities

A review of published data from the USDA Soil Survey of Polk County, historical aerials, and USGS topographic maps indicates that the soils for all four alternative alignments from US 17 to Peace Creek are not “natural” and have been disturbed, mixed, and modified from past phosphate mining operations. Mining operations appear to have occurred approximately between the 1930s and 1970s in this area.

Phosphate mining operations performed in the project area typically consisted of strip-mining. The mining process consisted of removing unconsolidated overburden soils from above the “matrix” layer containing the phosphate pebble. The matrix was typically excavated with draglines, slurried and pumped to a beneficiation processing plant. The phosphate pebble and grains were then separated from the coarse-grained materials (sand) and fine-grained tailings (silt and clay).

The separated sand portion from the matrix is often referred to as “tailing sand” and is characterized by relatively few fines (percent passing the #200 sieve) and having wider gradation spread than typical natural Florida fine sands. Waste phosphatic clays/slimes, another by-product of this process, are characterized by high fines content (percent passing the #200 sieve), high plasticity, and high moisture contents. The overburden soils can consist of various types of soils that were above the “matrix” (sand, clay or organic soils) and were often mixed during the excavation and subsequent reclamation operations.

The mine cut areas were then often backfilled with phosphate mining “waste”; the backfilling materials could be the previously removed overburden soils, tailings sands and/or hydraulically placed highly plastic waste phosphatic clays/slimes. These waste materials in the open mine cuts were generally hydraulically deposited, which tend to be very loose or very soft, and not controlled nor in any consistent order. Therefore, variable soil conditions are typical in previous mined areas. Waste phosphatic clays are highly moisture sensitive, highly plastic, have high shrink-swell potential, often are very soft (low strength) and are susceptible to very large settlements under increased stress.

Embankment construction on waste phosphatic clays without ground remediation can result in significant settlement due to the very soft, highly compressible nature of the waste phosphatic clays. Roadway embankment construction through areas of waste phosphatic clays typically includes ground improvement that may consist of one or more of the following: removal of the weak slime soils, surcharging, installation of a load transfer mechanism to transfer embankment loads to competent bearing materials below weak soils layers, or a combination thereof.

3.3 Review of Historical Aerials

Historical aerial photographs were reviewed to identify the areas where past mining activities occurred. Historical aerial photographs were reviewed for years 1941, 1959, 1968, 1971, 1980, and 1993. Tierra searched aerial photographs databases from the University of Florida (UF), USGS Earth Resources Observation and Science (EROS) Center, and FDOT Survey & Mapping. Copies of select aerial photographs are presented in **Appendix A**.

3.4 USDA Soil Survey

Based on a review of the "Soil Survey of Polk County, Florida" published by the USDA, it appears that there are 17 primary soil-mapping units noted along the alternative project alignments. A reproduction of the **USDA Soil Survey Map** is illustrated in **Appendix A** and the soil mapping units are summarized in **Appendix C**.

A review of published data from the USDA Soil Survey of Polk County indicates that the area from US 17 to just north of Peace Creek was previously mined for phosphate. The soil units associated with past mining include Hydraquents, clayey (Unit 8), Arens-Water Complex (Unit 11), Neilhurst Sand (Unit 12), Haplaquents, clayey (Unit 57), Arens (Unit 68) and water (Unit 99). These units are either part of the phosphate mining process and are not natural soils or indicate areas that had been modified/re-shaped from their natural condition. Also, Soil Unit 58 (Udorthents, excavated) are excavated areas, and have also have been modified but may not be specifically related to past phosphate mining operations.

Soil Unit 13 (Samsula Muck) is a natural soil unit that is noted for organic/muck soils in the top 2 to 3 feet. This soil unit is noted in the vicinity of SR 60 along/adjacent to Alternatives 1, 2 and 4.

It should be noted that information contained in the USDA Soil Survey may not be reflective of actual soil and groundwater conditions, particularly if development in the project vicinity has modified soil conditions or surface/subsurface drainage.

3.5 USGS Quadrangle Map

Based on a review of the "Bartow, Florida" Quadrangle Map, it appears that the ground surface elevations along the alternative project alignments range from approximately +100 to +130 feet National Geodetic Vertical Datum of 1929 (NGVD 29) as illustrated on the **USGS Quadrangle Map** in **Appendix A**.

Some areas within portions of the alternative alignments are hatched and designated as Strip Mines and modified lands from mining operations as shown on the **USGS Quadrangle Map** in **Appendix A**.

3.6 Potentiometric Surface Elevation

Based on a review of the "Potentiometric Surface of the Upper Floridan Aquifer, West-Central Florida" Maps published by the USGS, the potentiometric surface elevation of the Upper Floridan Aquifer in the project vicinity could potentially range from approximately +80 to +90

feet, NGVD 29. As indicated in **Section 3.3**, the ground surface elevation along the alternative project alignments ranges from approximately +100 to +130 feet, NAVD 88. Artesian flow conditions were not encountered during the field exploration.

4.0 SUBSURFACE EXPLORATION

The subsurface exploration performed for this preliminary study was more concentrated in areas of historic phosphate mining rather than “natural” soil areas. The soils within areas of historic phosphate mining are not “natural” and have been disturbed, mixed, and modified from past mining operations. The reason the explorations were more concentrated in the areas of past mining activity is because these soils can require ground improvement for roadway construction above what is typical for non-mined land. The portion of the Alternative 3 alignment from south of Peace Creek to SR 60 is within the limits of the TECO Peace Creek Solar facility and was not explored due to access constraints posed by the construction of the solar farm.

To evaluate the subsurface conditions and groundwater table levels along the alternative roadway alignments, hand auger borings were advanced to depths ranging from approximately 2 to 10 feet below the existing ground surface along the project corridor. The hand auger borings were performed by manually twisting and advancing a bucket auger into the ground, typically in 6 inch increments. As each soil type was revealed, representative samples were collected and returned to our office for confirmation of the field classification by a geotechnical engineer.

In addition, SPT borings were performed by Tierra to depths ranging from approximately 30 to 65 feet below existing grade. The SPT borings were performed using truck-mounted and track-mounted drilling equipment utilizing bentonite mud drilling procedures. The soil sampling was performed in general accordance with the American Society for Testing and Materials (ASTM) test designation D-1586. SPT resistance N-values were generally taken continuously in the initial 10 feet and at intervals of 5 feet thereafter. Representative portions of the soil samples were sealed in glass jars, labeled and transferred to our laboratory for classification and analysis.

To evaluate the subsurface conditions within the existing water features or very soft soil areas, hand probes were performed to depths of approximately 2 to 20 feet below existing grade/mudline. Probing was performed by pushing a probe rod into the ground until a firm layer was encountered. At some locations, the hand probe was stopped prior to firm bottom due to inability to retrieve the probe and/or instability of the safety boat when retrieving the probe rod.

The locations of the borings were estimated from hand-held, non-survey grade GPS devices with a manufacturer’s reported accuracy of ± 10 feet and therefore should be considered approximate. The locations of the borings performed for this preliminary study are shown on the **Boring Location Plan** sheets in **Appendix B**. The FL West State Plane Coordinates (NAD83) of each boring are labeled on the **Roadway Soil Profiles** sheets in **Appendix B**.

5.0 LABORATORY TESTING

5.1 General

Representative soil samples collected from the borings performed along the alternative project alignments were classified and stratified in general accordance with the American Association of State Highway and Transportation Officials (AASHTO) soil classification system. Our classification was based on visual observations, using the results from the laboratory testing as confirmation. These tests included grain-size analyses, fines content, organic content, Atterberg limits and natural moisture content determination.

5.2 Test Designation

The following list summarizes the laboratory tests performed by Tierra and the respective test methods utilized.

- Grain-Size Analyses/Fines Content - The grain-size analyses and fines content tests were conducted in general accordance with the AASHTO test designation T-088 (ASTM test designation D-422).
- Atterberg Limits - The liquid limit and the plastic limit tests ("Atterberg Limits") were conducted in general accordance with the AASHTO test designations T-089 and T-090, respectively (ASTM test designation D-4318).
- Organic Content - The organic content tests were conducted in general accordance with the AASHTO test designation T-267.
- Natural Moisture Content - The moisture content tests were conducted in general accordance with the AASHTO test designation T-265 (ASTM test designation D-2216).

A summary of the laboratory test results for each soil stratum encountered along the alternative project alignments is presented on the **Roadway Soil Survey** sheets in **Appendix B**. These sheets include ranges of laboratory test results for different stratum soil samples collected from borings performed along the alternative project alignments. A detailed summary of the laboratory test results performed for this report is presented in **Appendix D**.

6.0 RESULTS OF SUBSURFACE EXPLORATION

6.1 General Soil Conditions

The majority of the soils encountered within the borings performed were in areas of historic phosphate mining. These soils are not "natural" and have been disturbed, mixed, and modified from past mining operations.

Tierra utilized the same soil stratification legend as was used for the CPP Design project (FPN 440897-2-52-01) for the CPP from the Polk Parkway to US 17. Tierra has assigned Strata 1 through 8 to represent natural *insitu* soils. Strata 9 through 15 have been assigned to soils encountered in the historic phosphate mined portion of the alignment that appear to be the result of past mining activity. Strata 9 through 15 are discussed briefly below.

Stratum 9 is sand to sand with silt (A-3). It consists generally of either soils that can be considered “tailing sand” which was the coarse fraction of the by-product of the beneficiation process of the phosphate “matrix”, or may consist of over-burden sandy soils (the *insitu* over-burden soils that were removed to access the phosphate “matrix”) that were then cast and placed as part of the reclamation process of the land.

Stratum 10 consists of silty sand (A-2-4, non-plastic). This stratum generally consists of either soils that can be considered “tailing sand” with a higher percentage of fines than Stratum 9 or may consist of over-burden soils that were then cast and placed as part of the reclamation process of the land.

Stratum 11 consists of mixed plastic soils (silty-clayey sands to clayey sands to sandy clays). This stratum consists of what appears to be “cast plastic soils”. This stratum is highly disturbed, mixed, and has variable consistencies.

Strata 12 and 16 consists of clayey sand to sandy clay to clay including waste phosphatic clay, or “slime”. Waste phosphatic slime is the fine by-product of the beneficiation process. Waste phosphatic clays are characterized by high fines content (percent passing the #200 sieve), high plasticity, and high moisture contents. This stratum also contains what appears to be “cast highly plastic soils” with liquid limits above 50.

Stratum 13 is organic soil to muck/peat and is not in its natural state. It is likely organic overburden soil that was excavated during mining and moved as part of the reclamation process. The consistency of Stratum 13 is also highly variable.

Stratum 14 consists of silty sand to silty-clayey sand (A-2-4, plastic). This stratum generally consists of “cast lower plastic soils”. This stratum is highly disturbed, mixed, and has variable consistencies. This stratum was often found to be intermingled with Stratum 11.

Stratum 15 was encountered during manual probing of soils in open water features. This material was very soft and the probe rod easily penetrated into and through it. The material was silty sediment to waste phosphatic clay/slime.

In general, the subsurface conditions encountered within the limited borings performed in the “natural” portion of the alignment (consisted of sandy soils (A-3/A-2-4/A-2-6/A-2-7) underlain by clayey soils (A-4/A-6/A-7-5/A-7-6) within the boring depths.

The stratum number and soil types associated with this project are provided below.

Stratum Number	Typical Soil Description	AASHTO Classification
1	Light Gray to Gray to Pale Brown to Dark Brown SAND to SAND with Silt	A-3/A-2-4
2	Light Gray to Gray to Brown Silty SAND	A-2-4
3	Gray to Brown Silty-Clayey SAND to Clayey SAND	A-2-6/A-2-7
4	Light Gray to Gray to Brown Clayey SAND to Sandy CLAY to SILT to CLAY	A-4
5	Light Gray to Gray to Brown Clayey SAND to Sandy CLAY to SILT to CLAY	A-7-5/A-7-6/A-2-7
6	Dark Gray to Dark Grayish Brown Organic Soils to MUCK	A-8
7	Dark Reddish Brown to Brown Cemented SAND to Silty SAND (Hardpan)	A-3/A-2-4
8	Limestone	--- ⁽¹⁾
9	Light Gray to Pale Brown SAND to SAND with Silt, Trace Phosphate (Sand and Tailing Sand)	A-3
10	Light Gray To Dark Brown SAND with Silt to Silty SAND (Disturbed)	A-2-4
11	Gray to Brown Silty-Clayey SAND to Clayey SAND to CLAY (Disturbed)	A-2-6/A-4/A-6/ A-7-5/A-7-6/A-2-7
12	Sandy CLAY including Waste Phosphatic CLAY (Slime)	A-7-5/A-7-6
13	Dark Brown to Black Organic Soils to Muck/Peat (Disturbed)	A-8
14	Light Gray to Dark Brown Silty SAND to Silty-Clayey SAND (Disturbed)	A-2-4
15	Soft SEDIMENT to SEDIMENT and Waste Phosphatic Clay (Slime)	---
16	Gray to Brown Clayey SAND (Disturbed)	A-2-7
⁽¹⁾ USCS does not have a classification for limestone.		

A geotechnical engineer bases soil stratification on a visual review of the recovered samples, laboratory testing and interpretation of the field boring logs. The boring stratification lines represent the approximate boundaries between soil types of significantly different engineering properties; however, the actual transition may be gradual. In some cases, small variations in

properties within the same boring not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The boring profiles represent the conditions at each particular boring location and variations did occur among the borings.

The results of the borings and probes performed for this project are presented on the **Roadway Soil Profiles** sheets in **Appendix B** of this report.

6.2 Groundwater

The groundwater table was recorded, if encountered, at each of the boring locations during our field exploration. The depths to the groundwater table along the project alignments were found to range from approximately at or above the existing ground surface (or mudline) to depths of greater than 10 feet below the existing ground surface at the locations of the borings performed. The depth to the groundwater table, when encountered, is presented on the **Roadway Soil Profiles** sheets in **Appendix B**.

Where auger borings did not encounter the groundwater table within the boring depth, GNE (Groundwater Not Encountered) is indicated adjacent to the soil profiles. When SPT borings did not encounter the groundwater table before the introduction of drilling fluid, GNA (Groundwater Not Apparent) is indicated adjacent to the soil profiles.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences (i.e., existing water management canals, swales, drainage ponds, underdrains, and areas of covered soils, such as paved parking lots and sidewalks).

7.0 PRELIMINARY ENGINEERING EVALUATIONS

7.1 General – Unmined Land

The removal and utilization of plastic soils, top-soils and other surficial organic soils should be accomplished in accordance with the current FDOT Design Standard Indices 120-001 and 120-002. Site preparation should consist of normal clearing and grubbing followed by compaction of subgrade soils. Clearing and grubbing and compaction should be accomplished in accordance with FDOT Specifications.

In general, the existing subsurface soils encountered in the borings along the alternative project alignments in the unmined portions are suitable for supporting the proposed roadway after proper subgrade preparation. Organic soil removal will be required in areas in accordance with Standard Plans Index 120-002.

All earthwork activities including the site preparation, clearing and grubbing, removal and utilization/placement of soils, compaction of subgrade soils and selection of backfill materials should be accomplished in accordance with the current FDOT Standards and Specifications.

7.2 Mined Land

As previously discussed, the alternative alignments traverse areas that were previously disturbed by mining activity. The results of the borings indicate the soils are not in their natural state and have been shaped and modified. The mined areas can be grouped into three main categories.

One group of reclaimed mine soils consist of variable over-burden (cast) soils and sandy soils including tailing sands with the mixtures having varying degrees of plasticity (Strata 9 to 11 and Stratum 14 and 16). These soils do not appear to have been deposited in a controlled manner. The relative density and consistency (SPT N-values) of these soils are variable. Some form of remediation will likely be required because of the inherent variability of these soils. However, these soils do not pose significant limitations to roadway construction and long-term serviceability. For the CPP Segment 1 project from Polk Parkway to US 17, a remediation program consisting of temporary surcharges between 6 and 10 feet in height including installation of geo-synthetics at the base of the embankment in more problematic areas is currently proposed for the roadway in these types of soils.

Another group of mine soils are deposits of waste phosphatic clay (slime) (Stratum 12). Slimes are extremely soft and in a semi-solid state due to very high moisture contents. Slime areas were encountered along the existing Polk Parkway and remediation through staged construction with surcharging and wick-drains was employed. The surcharge remediation process on the existing Polk Parkway Section 5 was 11 months. Other forms of remediation are also available and are discussed below.

Another subsurface condition along several alignment alternatives are open water features. Open water bodies associated with past mining are located along the alignments. These features are a result of past mining activity and are known as "Mine Pits". The water depth within these mine pits ranging from 6 to 25 feet were recorded. Below the mudline, very loose/soft sediment to slime soils (Stratum 15) of thicknesses ranging from 5 to 15 feet were recorded. In the early stages of the CPP Segment 1 project, discussions were held to evaluate potential remediation measures to construct a roadway embankment over an existing mine pit. After discussion with KCA and FTE, it was determined that the more cost effective option would be to construct a bridge over the mine pit rather than an embankment. An embankment would have required significant fill (water depths were 30 feet and side slopes beneath the water would be 1V:4H or flatter), a temporary surcharge program with time-settlement monitoring and geo-synthetic layers within the embankment to increase stability and limit settlement.

Below is a brief outline of several remediation techniques that can be employed to improve the subsurface conditions in order to limit future roadway distress as a result of settlement.

1. Rigid-Inclusions (RIs) with Load Transfer Platform (LTP). In this technique, a Rigid Inclusion (RI) (driven pile, auger cast-pile or other cast in place element) is installed into and through the compressible soil layer into a firm bearing strata, typically in a grid pattern. Above the RIs, a Load Transfer Platform (LTP) is constructed utilizing geo-synthetic layers to transfer embankment loads to the RI grid. The LTP design is based on the RI spacing, embankment load/height, and performance criteria. This technique

has an advantage over surcharging with respect to construction time—once the RI-LTP is built, and after a short settlement monitoring period, the roadway construction can be completed.

This system was successfully employed for the City of Lakeland East-West Connector Project. The East-West Connector project involved extending Edgewood Boulevard to the west, from Harden Boulevard to South Florida Avenue and traversed an area of old slime pits. Some slime deposits were up to 30 feet in thickness. If surcharging with wick drains had been used on this project, the remediation period was estimated to have a surcharge duration time of more than a year plus additional construction time for the surcharge fill. The RIs utilized for the project were 16-inch concrete-cast piles that varied from 15 to 40 feet below grade and were spaced 6.5 feet-on-center. The LTP consisted of three layers of geosynthetic with crushed concrete fill between the layers. The East-West connector RI-LTP improvement zone was approximately 0.75 miles and 80 feet wide. This system can be viable if time savings are critical to the project.

2. Bridging. With this approach, the roadway embankment is replaced by a bridge structure. This approach is currently being designed for the CPP Segment 1 project across a mine pit filled with water and underlain by loose/soft sediment and waste phosphatic clay. The mine pit lake along the current CPP is up to 30 feet deep and underlain by 25 feet of soft sediment/slime. The amount of fill, surcharge, geo-synthetics, and time required for remediation made the bridge option faster to construct and slightly less expensive than other options. For this condition, bridging was a preferred option.
3. Excavation of poor soils. Excavation and replacement of poor soils is the most direct soil improvement technique when soils are shallow. In this method, the poor soil is completely removed and replaced with compacted suitable soil. The limitations to full removal include when the unsuitable material is too deep or thick to excavate or if the unsuitable material is present in varying and intermittent layers such that excessive suitable soil needs to be removed to get to the deleterious soil. Also, waste phosphatic clay (slime) is difficult to handle due to its high moisture content and semi-solid state. This technique was used on Polk Parkway Section 4 where 15 to 20 feet of soft waste phosphatic clay was removed. Because the semi-solid state of the slime, a staged “dam” was employed to push and contain the waste phosphatic clay as it was removed.
4. Pre-loading/Surcharging with Settlement Monitoring. This method has been used for many years and was used on the Polk Parkway over slime areas. This method is used to limit long-term settlement and also strengthen the soil layer being improved. Pre-loading consists of building the embankment to its design height and then allowing the embankment to settle. Surcharging consists of constructing an embankment that is higher than final grades coupled with monitoring of the settlement of the surcharge. Once settlement has reached an acceptable level, the additional surcharge is removed. The selection between pre-loading or surcharging depends on the material characteristics, desired time and results of the improvement. If the estimated consolidation settlement times are long, the installation of wick-drains can be employed to reduce the surcharge wait time. Wick-drains shorten the path for water to be expelled

from the consolidating layer thus decreasing the time for the pre-load/surcharge to remain in place. Wick-drains were successfully used previously on the existing Polk Parkway.

Based on the limited geotechnical data available at the time of this report, the following table provides approximate lineal distances of the different mine subsurface/conditions that appear to be present along each of the four alignment alternatives. These lengths were based on the results of the soil exploration program conducted by Tierra, a review of previous geotechnical data, and a review of published data (USDA, USGS, and historical aerals).

Approximate Distances Roadway Alternatives Traverse Different Types of Mine Soil Conditions			
Alignment	Tailing Sand to Mixed Cast or Overburden Soils; Typical of USDA Soil Units 11, 12 and 68	Open Mine Pits (Water Features); Typical of USDA Soil Unit 99	Waste Phosphatic Clay/Slime Deposits; Typical of USDA Soil Units 8 and 57
Alternative 1	5,200 Feet	800 feet	200 feet
Alternative 2	6,600 feet	600 feet	3,700 feet
Alternative 3	6,600 feet	300 feet	4,700 feet
Alternative 4	5,600 feet	800 feet	1,300 feet
Notes: Alternative 3 was not explored south of Peace Creek due to TECO Solar Farm. Above lengths are approximate and may not reflect actual limits or the degree of the remediation program until a full site specific geotechnical program is undertaken. Above lengths do not include Peace Creek and its flood plain nor natural organic soils.			

7.3 Temporary Slopes and Trenches

Temporary side slopes and excavations should comply with the Occupational Safety and Health Administration's (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, all subsequent revisions or updates of OSHA's referenced standard adopted by the Department of Labor and Employment Security and Florida's Trench Safety Act, Section 553.62, Florida Statutes. Excavated materials should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.

7.4 On-Site Soil Suitability

The general suitability and preliminary evaluations of the soils encountered during our geotechnical exploration is presented on the **Roadway Soil Survey** sheets in **Appendix B**. FDOT Standard Indices 120-001 and 120-002 of the Design Standards should be consulted to determine the specific use/suitability of the soil types present within the project limits.

8.0 REPORT LIMITATIONS

Our services have been performed, our findings obtained and our preliminary evaluations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. Tierra is not responsible for the conclusions, opinions or recommendations made by others based on this data.

The scope of the geotechnical portion of the PD&E study is to provide information on the existing subsurface conditions along the project alignment. Should subsoil variations become evident during the course of this project, a re-evaluation will be necessary after we have had an opportunity to observe the characteristics of the condition encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed roadway.

The scope of services, included herein, did not include any environmental assessment for the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on the site, below, and around the site. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items and conditions are strictly for the information of the KCA team and Florida's Turnpike Enterprise.

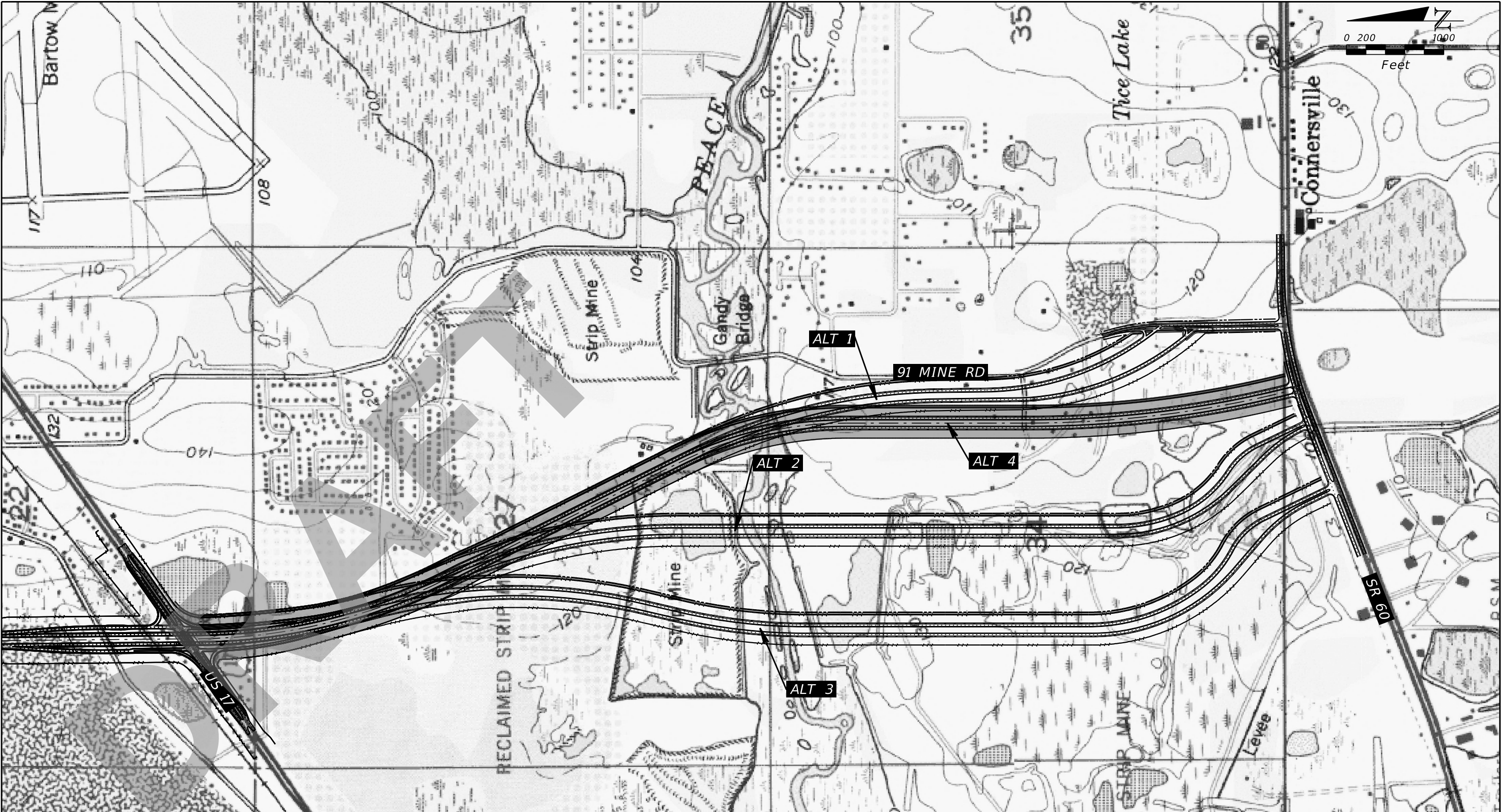
APPENDIX A

USDA Soil Survey Map

USGS Quadrangle Map

Historical Aerials

DRAFT



REFERENCE: USGS QUADRANGLE MAP OF "BARTOW, FLORIDA"

TOWNSHIP: 29S 30S
RANGE: 25E 25E
SECTION: 22, 27, 34 3

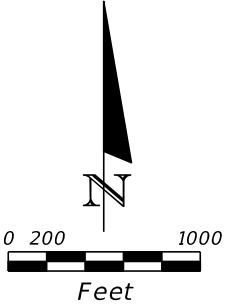
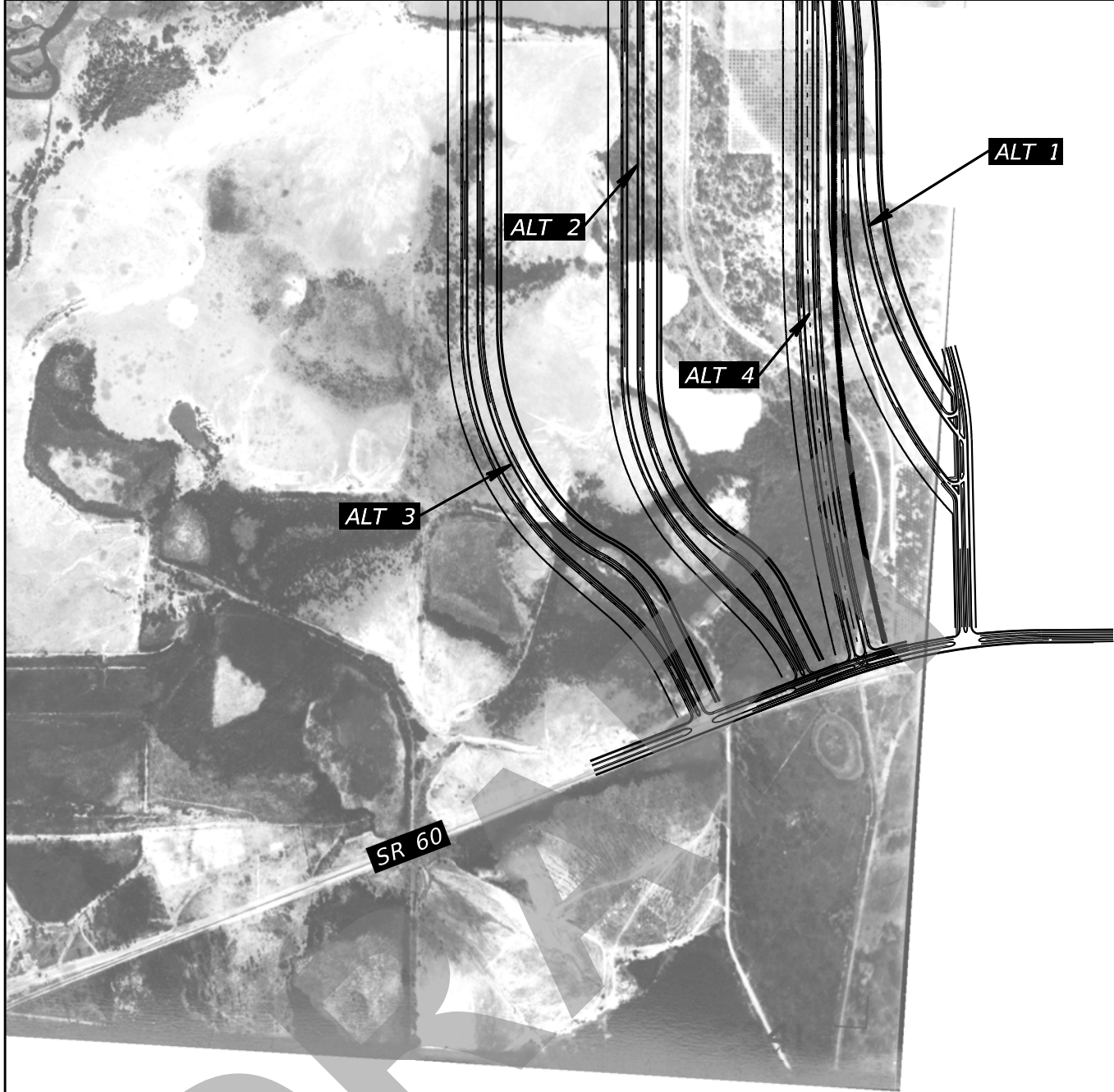
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			USGS QUADRANGLE MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



1941 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: UNIVERSITY OF FLORIDA

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



1959 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: EARTH RESOURCE OBSERVATION AND SCIENCE (EROS) CENTER

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



ALT 3

ALT 2

ALT 4

ALT 1

SR 60

DRAFT

SOURCE: EARTH RESOURCE OBSERVATION AND SCIENCE (EROS) CENTER

1959 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION						
					ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

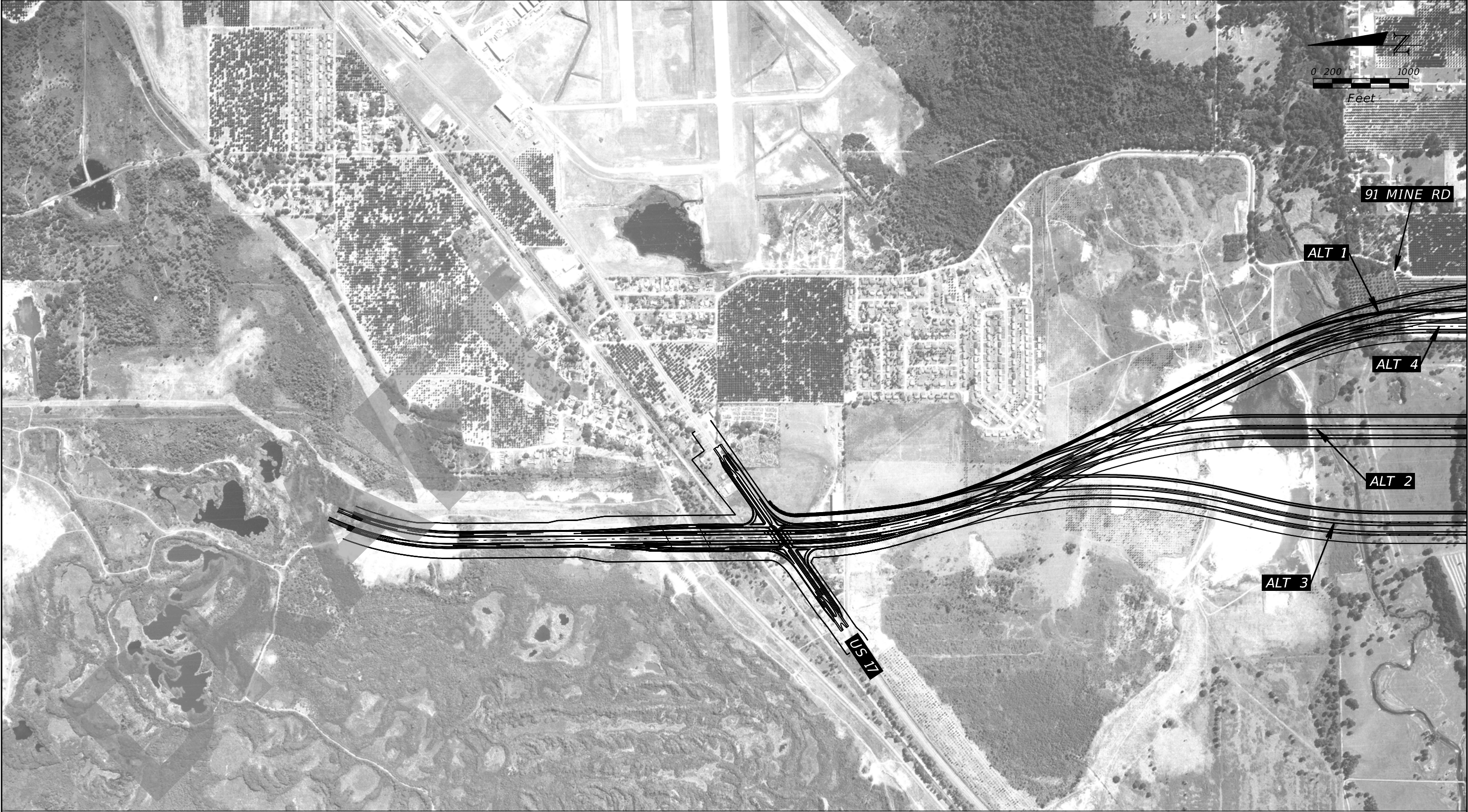
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION						
					ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

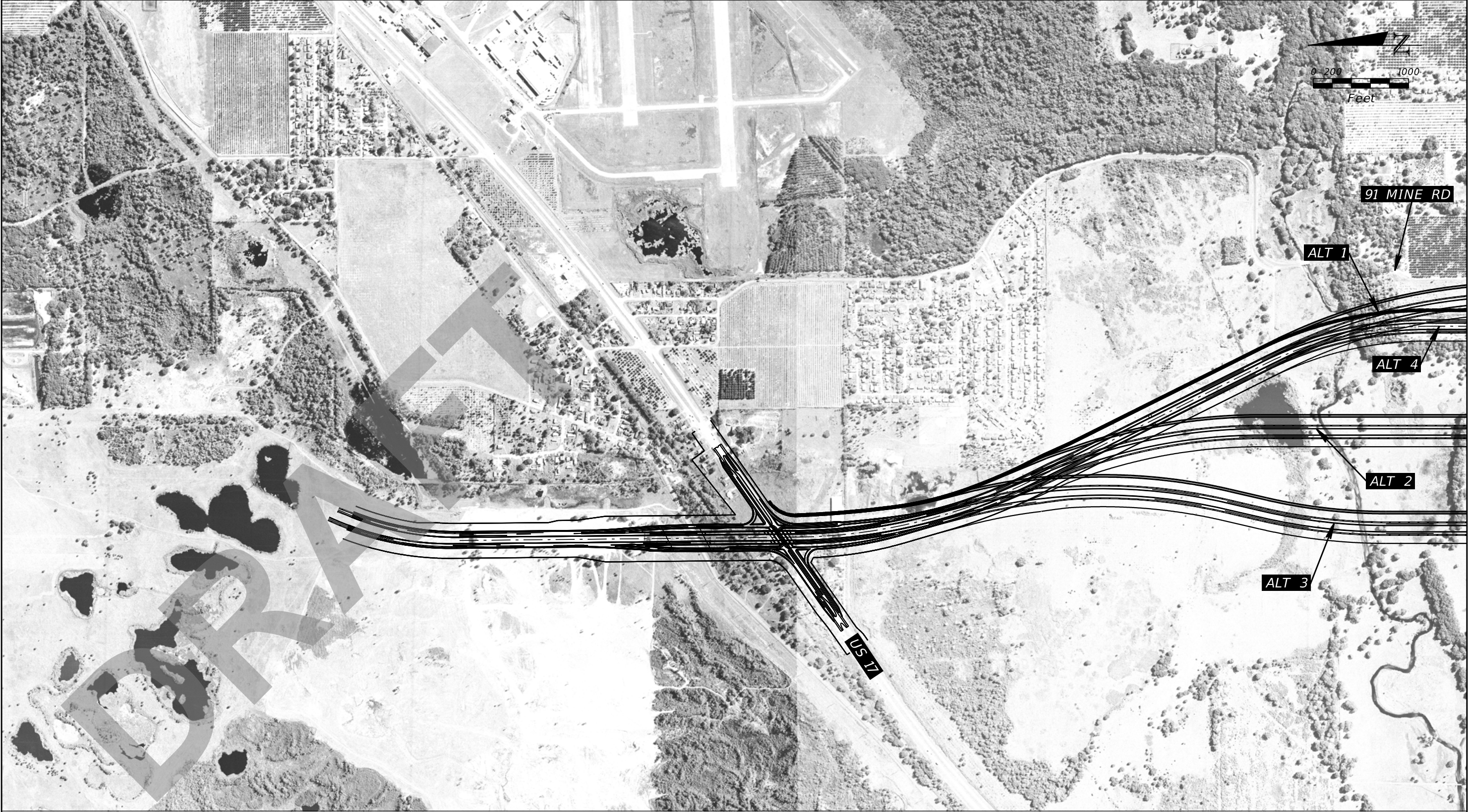
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

2017 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOURCE: FDOT SURVEY AND MAPPING

2017 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			HISTORICAL MAP	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

APPENDIX B

Roadway Soil Survey (2 Sheets)

Boring Location Plan Sheets – Alternative 1

Roadway Soil Profiles Sheets – Alternative 1

Boring Location Plan Sheets – Alternative 2

Roadway Soil Profiles Sheets – Alternative 2

Boring Location Plan Sheets – Alternative 3

Roadway Soil Profiles Sheets – Alternative 3

Boring Location Plan Sheets – Alternative 4

Roadway Soil Profiles Sheets – Alternative 4

Soil Boring Information by Others

DATE OF SURVEY: APRIL 2013 TO NOVEMBER 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: MARC E. NOVAK, Ph. D., P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: TURNPIKE
ROAD NO.: SR 570B
COUNTY: POLK

FINANCIAL PROJECT ID : 440897-4-24-01
PROJECT NAME: CENTRAL POLK PARKWAY (SR 570B) FROM US 17 (SR 35) TO SR 60

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

CENTRAL POLK PARKWAY MAINLINE SURVEY BEGINS STA. : N/A SURVEY ENDS STA. : N/A REFERENCE : N/A

STRATUM NO.	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENT PASS (%)					ATTERBERG LIMITS (%)				DESCRIPTION	CORROSION TEST RESULTS					
	NO. OF TESTS	% ORGANIC	NO. OF TESTS	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX		AASHTO GROUP	NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
1	--	--	--	--	2	--	--	--	--	1-9	--	--	--	A-3/A-2-4	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT	--	--	--	--	--
2	--	--	1	15	2	--	--	--	--	20-22	1	NP	NP	A-2-4	LIGHT GRAY TO GRAY TO BROWN SILTY SAND	--	--	--	--	--
3	--	--	5	13-47	5	--	--	--	--	26-34	5	26-44	11-15	A-2-6/A-2-7	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND	--	--	--	--	--
4	--	--	1	26	1	--	--	--	--	37	1	24	9	A-4	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	A-7-5/A-7-6/A-2-7	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY	--	--	--	--	--
6	2	34-50	2	53-120	2	--	--	--	--	20-31	--	--	--	A-8	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--	--	A-3/A-2-4	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN)	--	--	--	--	--
8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	LIMESTONE	--	--	--	--	--

- NOTES:

THE ROADWAY SOIL SURVEY SHEET FOR THE PD&E STUDY WAS BASED ON THE SOIL SURVEY DEVELOPED FOR THE CENTRAL POLK PARKWAY (SR 570B) DESIGN PROJECT 440897-2-52-01 WHICH TRAVERSED BOTH NATURAL AREAS AND AREAS OF HISTORIC PHOSPHATE MINING. SIMILAR SOILS TYPES ARE ANTICIPATED TO BE ENCOUNTERED ON THE ALTERNATIVE PROJECT ALIGNMENTS. STRATA 1 THROUGH 8 ARE SOILS THAT ARE IN THEIR NATURAL STATE. STRATA 9 THROUGH 15 ARE SOILS THAT WERE ENCOUNTERED IN THE PORTION OF THE ALIGNMENTS WHERE PHOSPHATE MINING ACTIVITY OCCURRED AND APPEAR TO HAVE BEEN DISTURBED AS A RESULT OF PAST MINING ACTIVITY AND ARE NOT IN THEIR NATURAL STATE. THESE SOILS ARE HIGHLY VARIABLE.

1. THE MATERIAL FROM STRATUM 1 (A-3/A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

2. THE MATERIAL FROM STRATUM 2 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.

3. THE MATERIAL FROM STRATA 3 AND 4 (A-2-6/A-4) IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

4. THE MATERIAL FROM STRATUM 5 (A-7-5/A-7-6/A-2-7) IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
- EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▼ - WATER TABLE ENCOUNTERED

▼⁺ - GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE

GNE - GROUNDWATER NOT ENCOUNTERED

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

NP - NON-PLASTIC
5. THE MATERIAL FROM STRATUM 6 (A-8) IS ORGANIC MATERIAL TO MUCK. THIS MATERIAL SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL SHALL NOT BE USED WITHIN THE SUBGRADE OR EMBANKMENT PORTION OF THE ROADBED.

6. THE MATERIAL FROM STRATUM 7 (HARDPAN) IS CEMENTED AND IS LOCATED IN SOME AREAS ALONG THE PROPOSED ALTERNATIVE ROADWAY ALIGNMENTS. EXCAVATIONS INTO AND THROUGH THIS MATERIAL MAY BE DIFFICULT AND MAY REQUIRE SPECIALIZED EQUIPMENT. VARIATIONS IN THE DEPTH AND RELATIVE DENSITY OF THIS MATERIAL SHALL BE ANTICIPATED. THE MATERIAL FROM STRATUM 7 (A-3/A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

7. THE MATERIAL FROM STRATUM 8 (LIMESTONE) IS ROCK AND WAS ENCOUNTERED AT DEPTHS GREATER THAN 40 FEET BELOW GRADE. EXCAVATION INTO AND THROUGH THIS MATERIAL MAY BE DIFFICULT. THE CONTRACTOR SHOULD BE PREPARED TO USE SPECIALIZED EQUIPMENT TO EXCAVATE INTO AND THROUGH LIMESTONE. LIMESTONE IS ALSO POROUS AND WILL BE DIFFICULT TO DEWATER.

8. THE MATERIALS FROM STRATA 9 THROUGH 15 CONSIST OF SOILS RELATED TO PAST MINING ACTIVITY AND ARE NOT IN A NATURAL STATE. THEY ARE DISTURBED AND CAN BE HIGHLY VARIABLE. THEIR ABILITY FOR UTILIZATION FOR EMBANKMENT MATERIAL SHOULD BE VERIFIED DURING CONSTRUCTION. THE UTILIZATION OF THESE MATERIALS INDICATED IN NOTES 9, 10, 11 AND 14 SHOULD BE CONSIDERED AS A GUIDELINE ONLY AND ARE SUBJECT TO THE REQUIREMENTS OF THE STANDARD PLANS, INDEX 120-001.

REVISIONS				MARC E. NOVAK, Ph. D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY SOIL SURVEY (1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

DATE OF SURVEY: APRIL 2013 TO NOVEMBER 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: MARC E. NOVAK, Ph. D., P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: TURNPIKE
ROAD NO.: SR 570B
COUNTY: POLK

FINANCIAL PROJECT ID : 440897-4-24-01
PROJECT NAME: CENTRAL POLK PARKWAY (SR 570B) FROM US 17 (SR 35) TO SR 60

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

CENTRAL POLK PARKWAY MAINLINE SURVEY BEGINS STA. : N/A SURVEY ENDS STA. : N/A REFERENCE : N/A

STRATUM NO.	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENT PASS (%)						ATTERBERG LIMITS (%)				DESCRIPTION	CORROSION TEST RESULTS				
	NO. OF TESTS	% ORGANIC	NO. OF TESTS	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP		NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
9	--	--	--	--	34	100	71-95	24-68	4-23	1-9	--	--	--	A-3	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND)	--	--	--	--	--
10	--	--	6	11-29	18	100	77-99	57-96	16-70	11-26	5	NP	NP	A-2-4	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED)	--	--	--	--	--
11	--	--	26	13-105	26	--	--	--	--	21-63	25	21-48	4-31	A-2-6/A-4/ A-6/A-7-5/ A-7-6/A-2-7	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO CLAY (DISTURBED)	--	--	--	--	--
12	--	--	23	37-136	23	--	--	--	--	36-99	23	54-189	19-130	A-7-5/A-7-6	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME)	--	--	--	--	--
13	3	8-11	2	42-47	3	--	--	--	--	9-19	--	--	--	A-8	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED)	--	--	--	--	--
14	1	1	8	15-38	8	--	--	--	--	13-34	8	16-34	1-7	A-2-4	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED)	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)	--	--	--	--	--
16	--	--	6	23-81	6	--	--	--	--	28-34	6	55-115	27-67	A-2-7	GRAY TO BROWN CLAYEY SAND (DISTURBED)	--	--	--	--	--

NOTES:

9. THE MATERIAL FROM STRATUM 9 (A-3) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.
10. THE MATERIAL FROM STRATUM 10 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.
11. THE MATERIAL FROM STRATUM 11 IS MIXED/DISTURBED AND VARIABLE DUE TO PAST MINING ACTIVITY IN THE PROJECT AREA. THIS MATERIAL IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.
12. THE MATERIAL FROM STRATUM 12 AND 16 (A-7-5/A-7-6/A-2-7) IS SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) AND IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL IS HIGHLY PLASTIC AND MOISTURE SENSITIVE AND MAY PRESENT DIFFICULTY IN HANDLING. THIS MATERIAL, WHEN REMOVED, SHALL NOT BE USED WITHIN THE PROJECT LIMITS. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

- ▼ - WATER TABLE ENCOUNTERED
- ▼⁺ - GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
- GNE - GROUNDWATER NOT ENCOUNTERED
- GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID
- NP - NON-PLASTIC

13. THE MATERIAL FROM STRATUM 13 (A-8) IS ORGANIC MATERIAL TO MUCK/PEAT. THIS MATERIAL SHALL BE REMOVED AS MUCK IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL, WHEN REMOVED, SHALL NOT BE USED WITHIN THE PROJECT LIMITS. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.
14. THE MATERIAL FROM STRATUM 14 IS PLASTIC A-2-4 SOIL. DUE TO ITS VARIABLE NATURE, ASSOCIATION WITH PAST MINING ACTIVITY AND OFTEN INTER-MINGLED WITH STRATUM 11, STRATUM 14 SHOULD BE CONSIDERED AS PLASTIC (P) MATERIAL IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. IT MAY BE UTILIZED IN THE EMBANKMENT IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.
15. THE MATERIAL FROM STRATUM 15 WAS ENCOUNTERED BELOW EXISTING WATER LEVELS OR LAKES LEVELS ALONG THE ALIGNMENTS. IT IS VERY SOFT AND CONSISTS OF SATURATED SEDIMENTS TO WASTE PHOSPHATIC CLAY. THIS MATERIAL IS SATURATED AND SOFT AND MAY PRESENT DIFFICULTY IN HANDLING. IF EXCAVATED, IT SHALL NOT BE USED WITHIN THE PROJECT LIMITS. IT MAY REMAIN IN PLACE PROVIDED THAT A REMEDIATION PLAN IS IMPLEMENTED. FURTHER CHARACTERIZATION OF THIS MATERIAL WILL BE REQUIRED DURING THE DESIGN PHASE.

REVISIONS				MARC E. NOVAK, Ph. D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY SOIL SURVEY (2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- | | | | |
|--|---|--|---------------------------------------|
| | APPROXIMATE SPT BORING LOCATION | | APPROXIMATE SEDIMENT PROBE LOCATION |
| | APPROXIMATE AUGER BORING LOCATION | | APPROXIMATE BORING LOCATION BY OTHERS |
| | APPROXIMATE BOUNDARY OF TECO SOLAR FARM | | |

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (1) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- APPROXIMATE SEDIMENT PROBE LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (2) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (3) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
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REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (4) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- APPROXIMATE SEDIMENT PROBE LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (5) (ALTERNATIVE 1)		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
					SR 570B	POLK	440897-4-24-01			

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

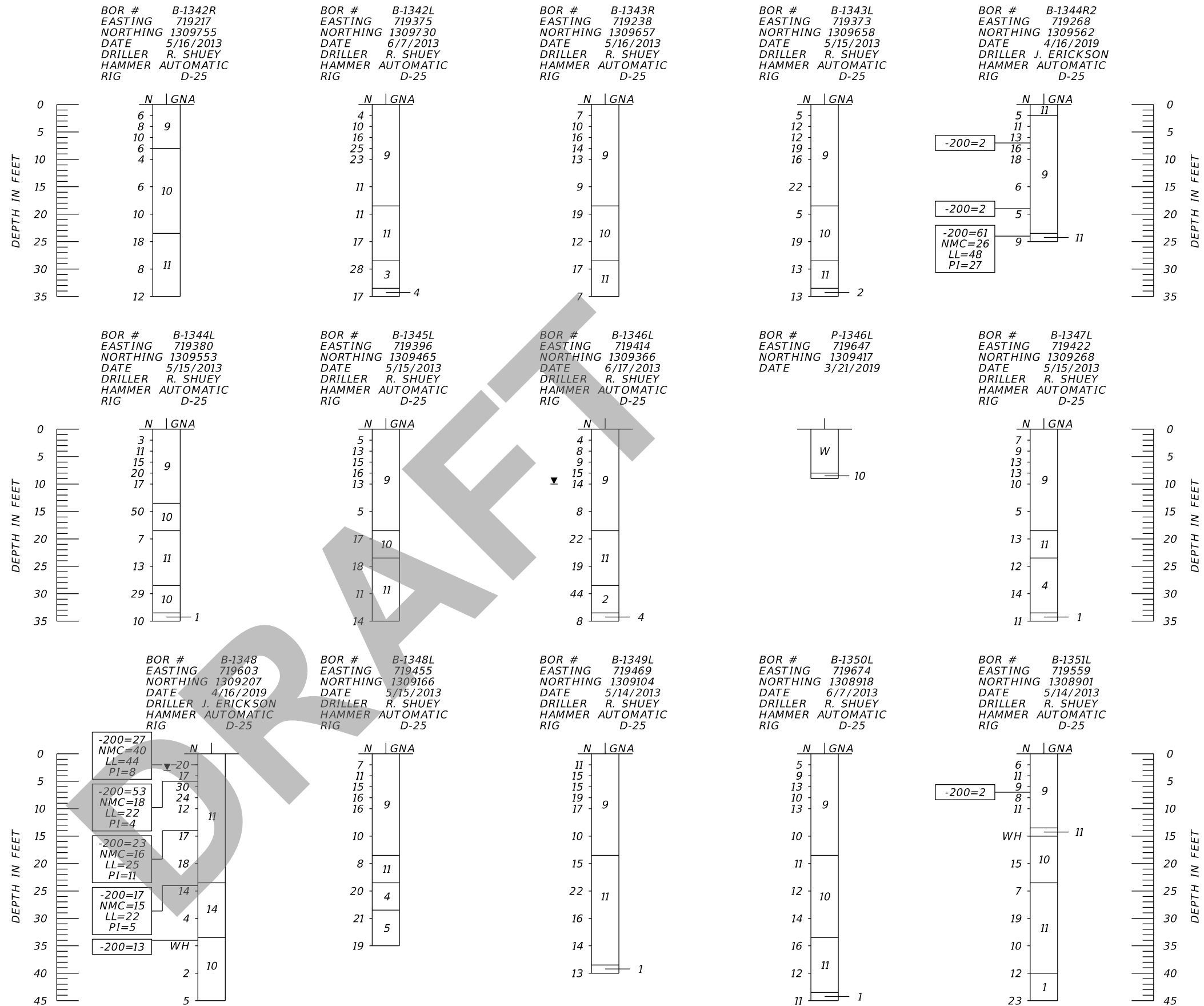
▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (2) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
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4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
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15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

CASING

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
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SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
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REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (3) (ALTERNATIVE 1)	SHEET NO.
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W WATER

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE
MM% ALATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

OC ORGANIC CONTENT (%)

▼ GROUNDWATER LEVEL RISE

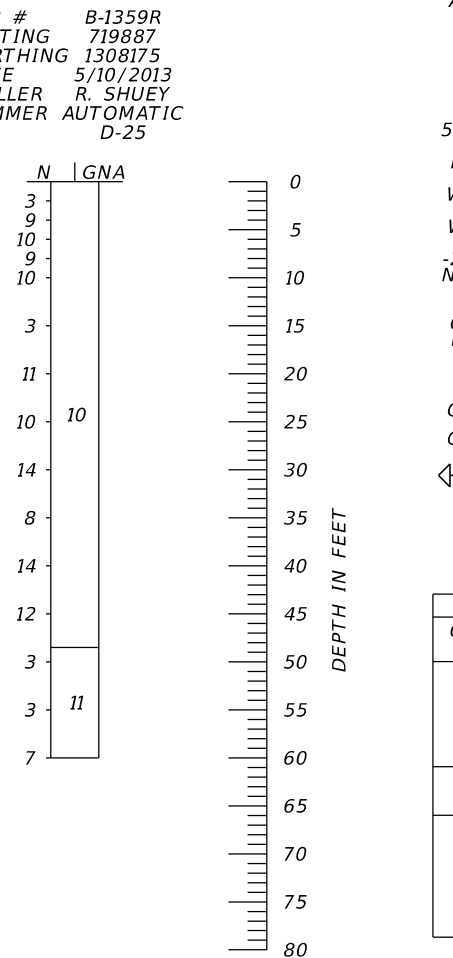
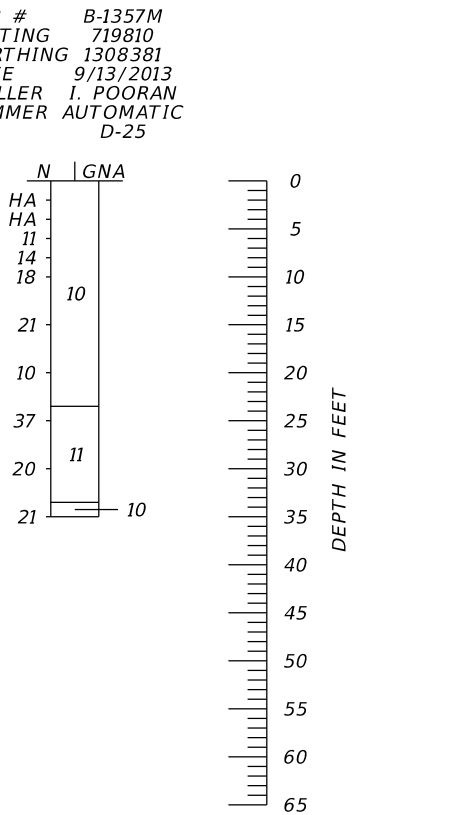
EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED
GN1 GROUNDWATER NOT APPARENT BUT

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

CASING

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

$$\sqrt{100} \text{ LOSS OF CIRCULATION OF DRILLING FLUID (\%)}$$

CASING

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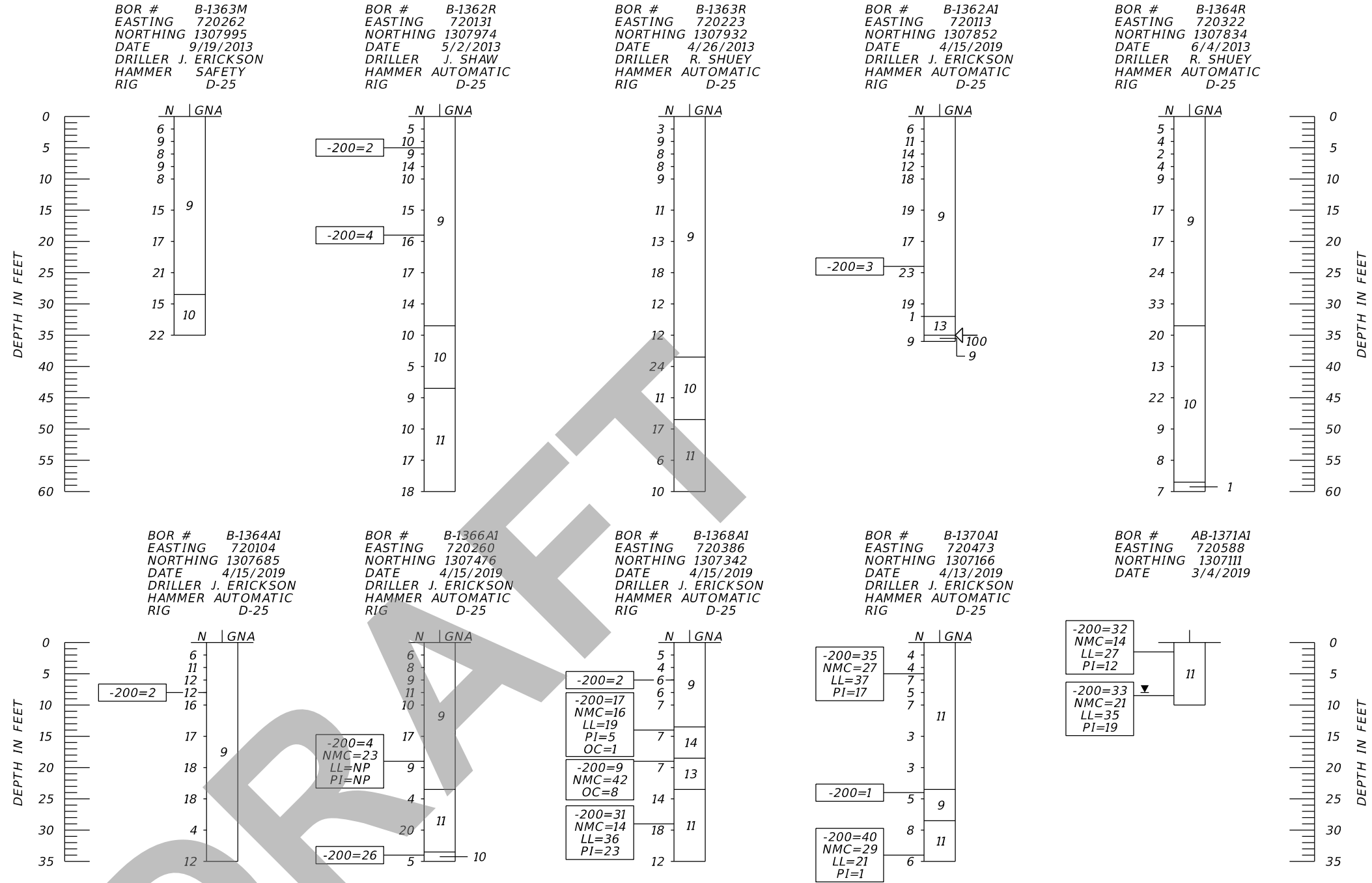
W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

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50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
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-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
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REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (6) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

BOR # P-1374RA1
EASTING 720603
NORTHING 1306816
DATE 3/25/2019

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
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11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCE
- WH FELL UNDER WEIGHT OF ROD AND HAMMER
- WR FELL UNDER WEIGHT OF ROD
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON-PLASTIC
- ▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
- GNE GROUNDWATER NOT ENCOUNTERED
- GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
- ↳ 100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (7) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCE
- WH FELL UNDER WEIGHT OF ROD AND HAMMER
- WR FELL UNDER WEIGHT OF ROD
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON-PLASTIC
- ▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
- GNE GROUNDWATER NOT ENCOUNTERED
- GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
- 100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (8) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
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15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCE
- WH FELL UNDER WEIGHT OF ROD AND HAMMER
- WR FELL UNDER WEIGHT OF ROD
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON-PLASTIC
- ▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
- GNE GROUNDWATER NOT ENCOUNTERED
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	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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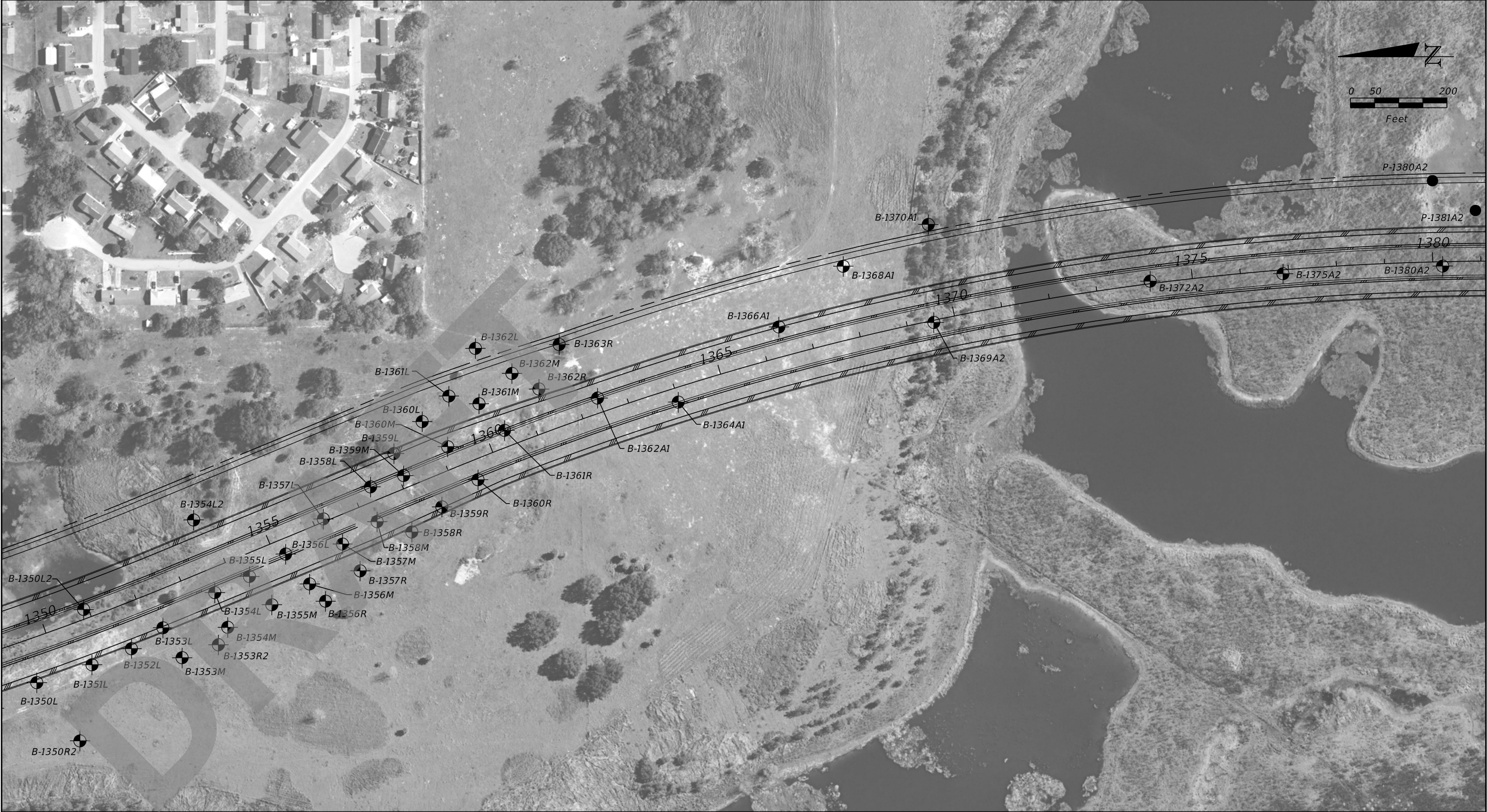
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (9) (ALTERNATIVE 1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- APPROXIMATE SEDIMENT PROBE LOCATION

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (1) (ALTERNATIVE (2))	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



APPROXIMATE SPT BORING LOCATION

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE BOUNDARY OF TECO SOLAR FARM

APPROXIMATE SEDIMENT PROBE LOCATION

APPROXIMATE BORING LOCATION BY OTHERS

LEGEND

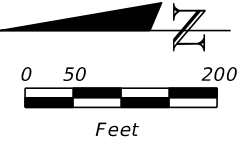
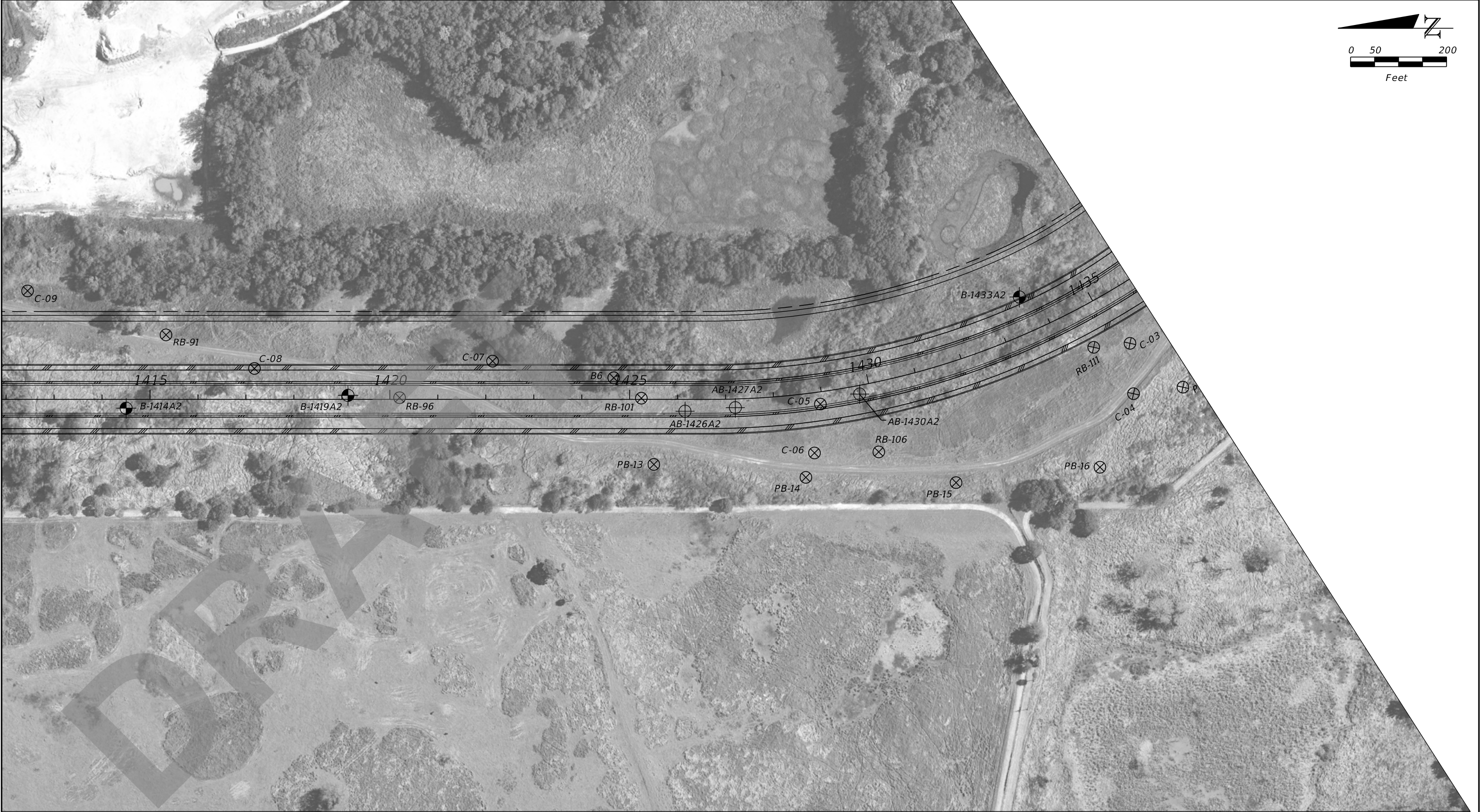
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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE SEDIMENT PROBE LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (3) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND


-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (4) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- 

APPROXIMATE SPT BORING LOCATION
- 

APPROXIMATE AUGER BORING LOCATION
- 

APPROXIMATE BORING LOCATION BY OTHERS
- 

APPROXIMATE SEDIMENT PROBE LOCATION
- 

APPROXIMATE BOUNDARY OF TECO SOLAR FARM

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (5) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

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50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

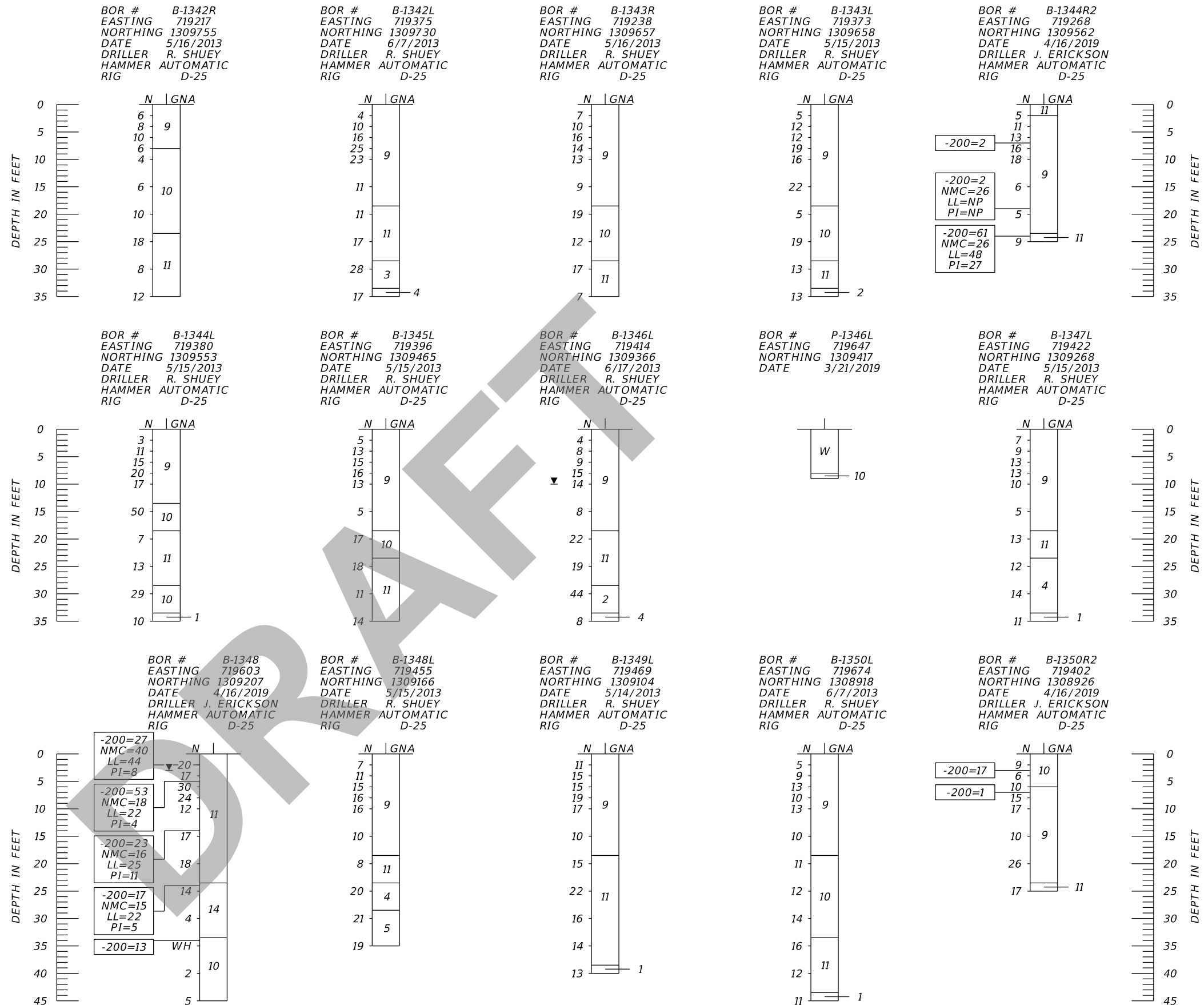
▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

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	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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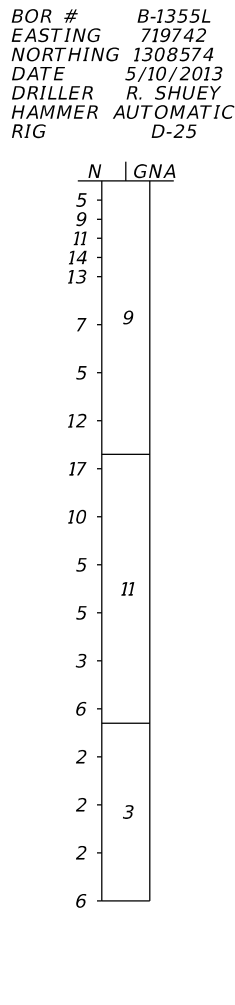
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (11) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
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W WATER

CASING

	SAFETY HAMMER	AUTOMATIC HAMMER
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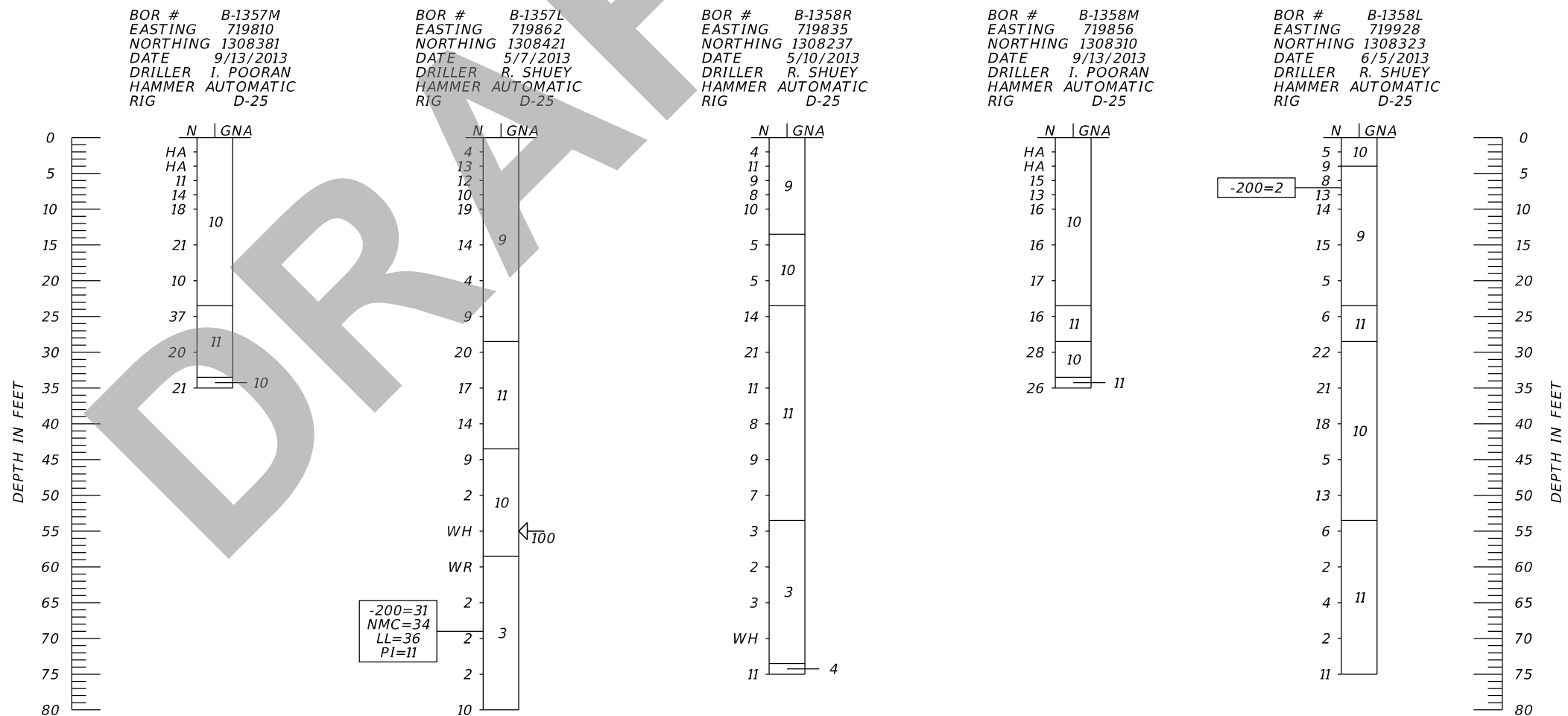
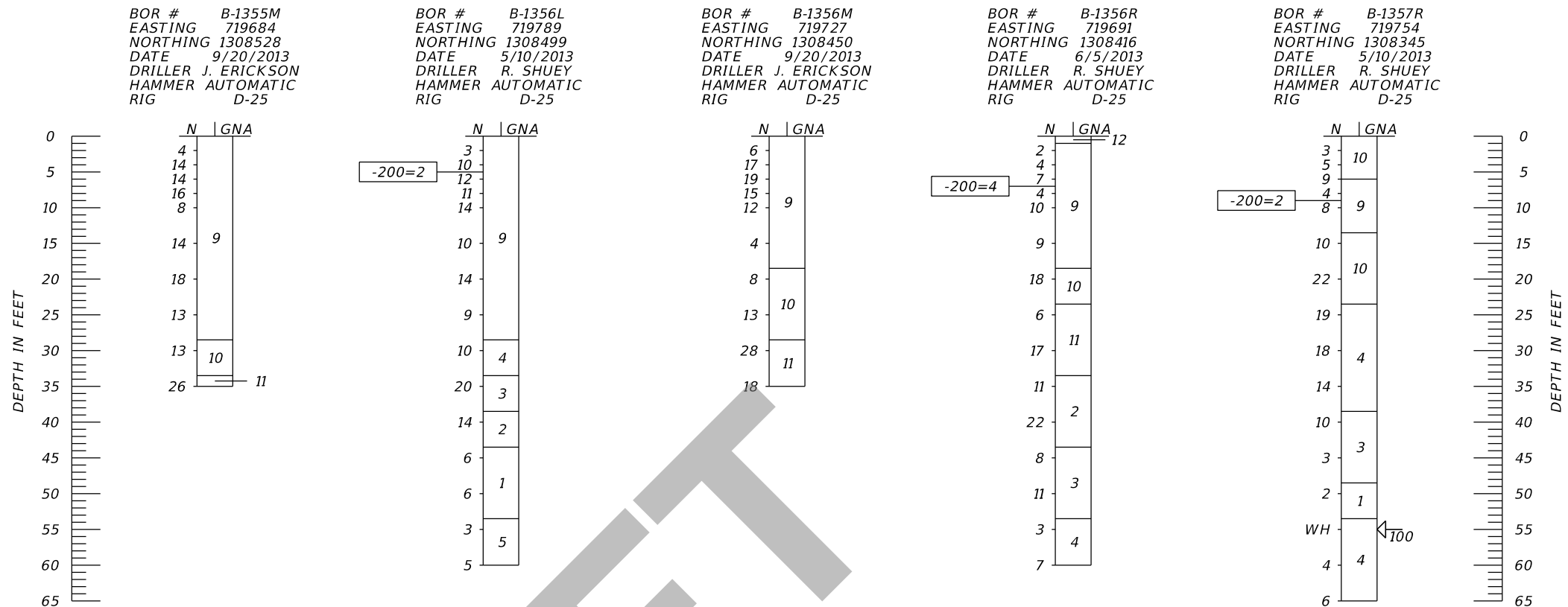


REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (12) (ALTERNATIVE 2)	SHEET NO.
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8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	FELL UNDER WEIGHT OF ROD AND HAMMER
WR	FELL UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
↳ 100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
	CASING

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



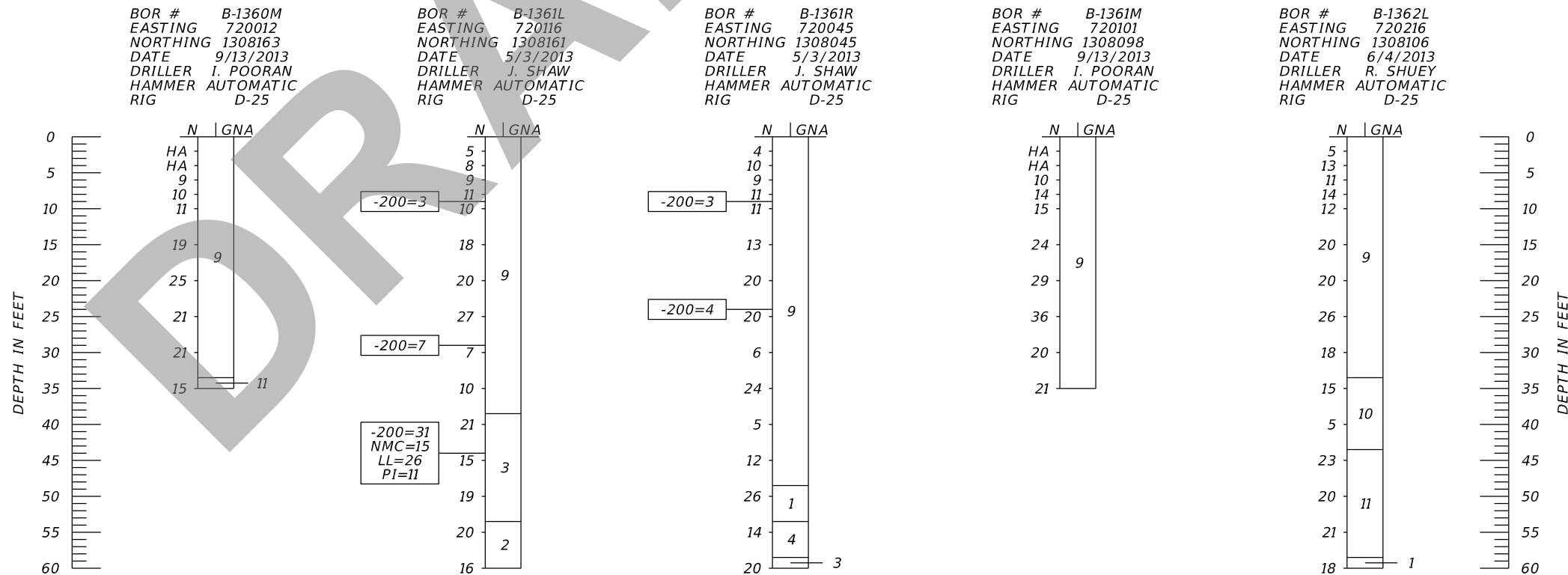
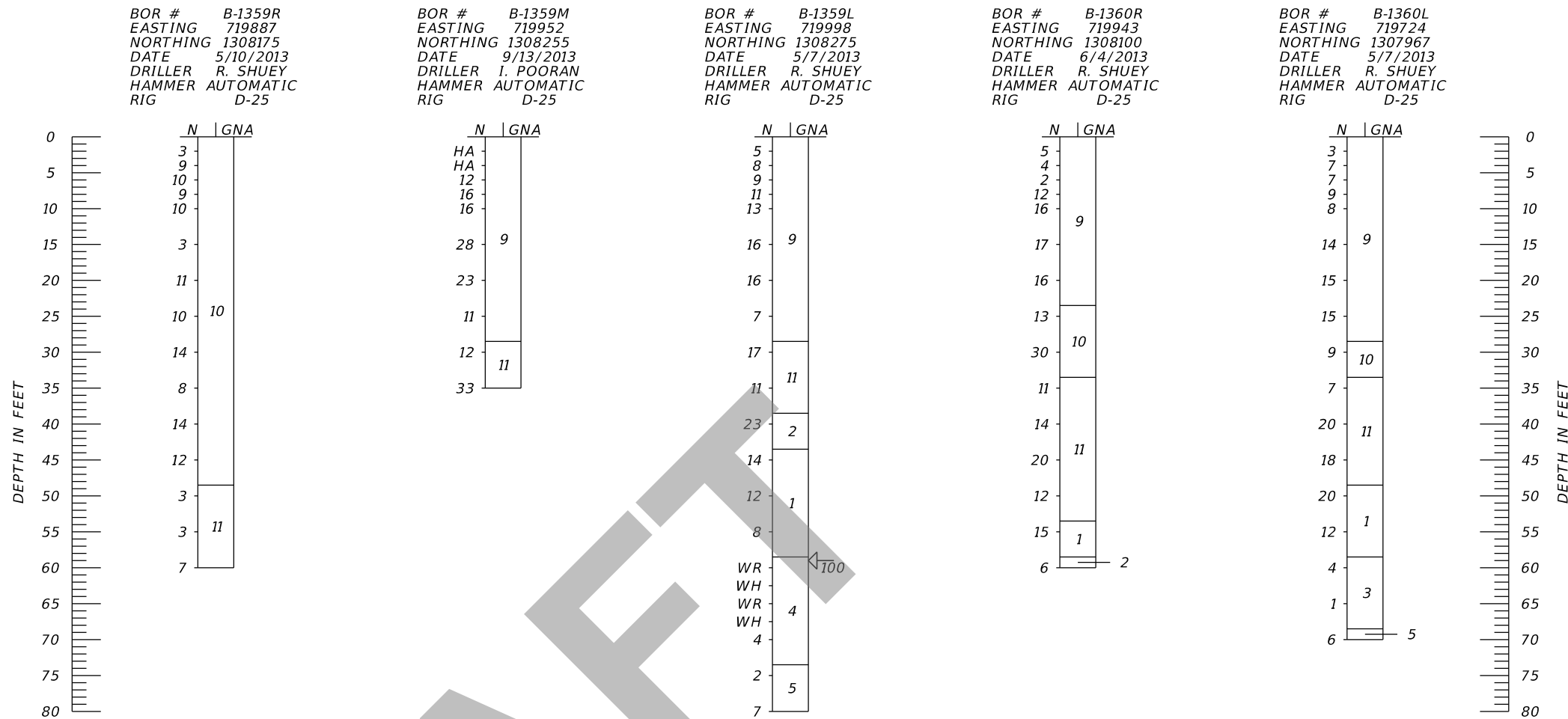
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (13) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

	<i>SAFETY HAMMER</i>	<i>AUTOMATIC HAMMER</i>
<i>GRANULAR MATERIALS- RELATIVE DENSITY</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>
<i>VERY LOOSE</i>	<i>LESS THAN 4</i>	<i>LESS THAN 3</i>
<i>LOOSE</i>	<i>4 to 10</i>	<i>3 to 8</i>
<i>MEDIUM DENSE</i>	<i>10 to 30</i>	<i>8 to 24</i>
<i>DENSE</i>	<i>30 to 50</i>	<i>24 to 40</i>
<i>VERY DENSE</i>	<i>GREATER THAN 50</i>	<i>GREATER THAN 40</i>
<i>SILTS AND CLAYS CONSISTENCY</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>
<i>VERY SOFT</i>	<i>LESS THAN 2</i>	<i>LESS THAN 1</i>
<i>SOFT</i>	<i>2 to 4</i>	<i>1 to 3</i>
<i>FIRM</i>	<i>4 to 8</i>	<i>3 to 6</i>
<i>STIFF</i>	<i>8 to 15</i>	<i>6 to 12</i>
<i>VERY STIFF</i>	<i>16 to 30</i>	<i>12 to 24</i>
<i>HARD</i>	<i>GREATER THAN 30</i>	<i>GREATER THAN 24</i>

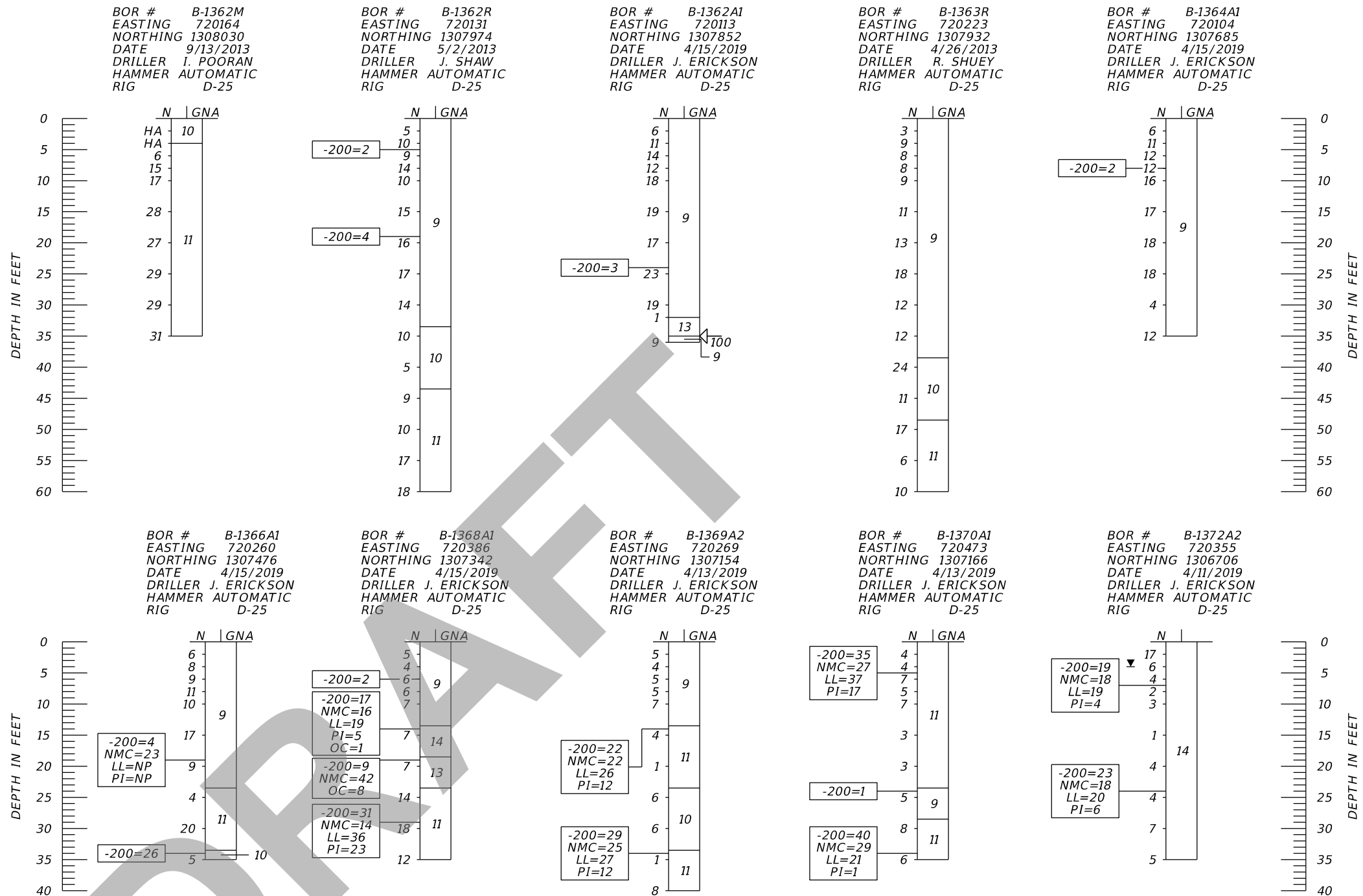


REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (14) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	FELL UNDER WEIGHT OF ROD AND HAMMER
WR	FELL UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LI	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
↳ 100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
	CASING

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (15) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
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- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCE
- WH FELL UNDER WEIGHT OF ROD AND HAMMER
- WR FELL UNDER WEIGHT OF ROD
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON-PLASTIC
- ▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
- GNE GROUNDWATER NOT ENCOUNTERED
- GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
- 100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
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HARD	GREATER THAN 30	GREATER THAN 24

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					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
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4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
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12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
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	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

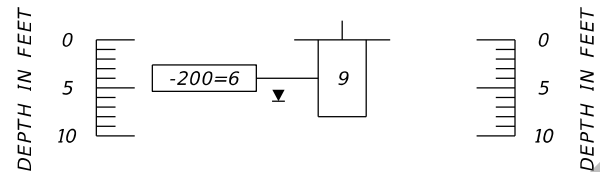
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (17) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
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16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER

CASING

	<i>SAFETY HAMMER</i>	<i>AUTOMATIC HAMMER</i>
<i>GRANULAR MATERIALS- RELATIVE DENSITY</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>
<i>VERY LOOSE</i>	<i>LESS THAN 4</i>	<i>LESS THAN 3</i>
<i>LOOSE</i>	<i>4 to 10</i>	<i>3 to 8</i>
<i>MEDIUM DENSE</i>	<i>10 to 30</i>	<i>8 to 24</i>
<i>DENSE</i>	<i>30 to 50</i>	<i>24 to 40</i>
<i>VERY DENSE</i>	<i>GREATER THAN 50</i>	<i>GREATER THAN 40</i>
<i>SILTS AND CLAYS CONSISTENCY</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>	<i>SPT N-VALUE (BLOWS/FT.)</i>
<i>VERY SOFT</i>	<i>LESS THAN 2</i>	<i>LESS THAN 1</i>
<i>SOFT</i>	<i>2 to 4</i>	<i>1 to 3</i>
<i>FIRM</i>	<i>4 to 8</i>	<i>3 to 6</i>
<i>STIFF</i>	<i>8 to 15</i>	<i>6 to 12</i>
<i>VERY STIFF</i>	<i>16 to 30</i>	<i>12 to 24</i>
<i>HARD</i>	<i>GREATER THAN 30</i>	<i>GREATER THAN 24</i>

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (18) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



- | | <i>SAFETY HAMMER</i> | <i>AUTOMATIC HAMMER</i> |
|---|------------------------------------|------------------------------------|
| <i>GRANULAR MATERIALS-
RELATIVE DENSITY</i> | <i>SPT N-VALUE
(BLOWS/FT.)</i> | <i>SPT N-VALUE
(BLOWS/FT.)</i> |
| <i>VERY LOOSE</i> | <i>LESS THAN 4</i> | <i>LESS THAN 3</i> |
| <i>LOOSE</i> | <i>4 to 10</i> | <i>3 to 8</i> |
| <i>MEDIUM DENSE</i> | <i>10 to 30</i> | <i>8 to 24</i> |
| <i>DENSE</i> | <i>30 to 50</i> | <i>24 to 40</i> |
| <i>VERY DENSE</i> | <i>GREATER THAN 50</i> | <i>GREATER THAN 40</i> |
| <i>SILTS AND CLAYS
CONSISTENCY</i> | <i>SPT N-VALUE
(BLOWS/FT.)</i> | <i>SPT N-VALUE
(BLOWS/FT.)</i> |
| <i>VERY SOFT</i> | <i>LESS THAN 2</i> | <i>LESS THAN 1</i> |
| <i>SOFT</i> | <i>2 to 4</i> | <i>1 to 3</i> |
| <i>FIRM</i> | <i>4 to 8</i> | <i>3 to 6</i> |
| <i>STIFF</i> | <i>8 to 15</i> | <i>6 to 12</i> |
| <i>VERY STIFF</i> | <i>16 to 30</i> | <i>12 to 24</i> |
| <i>HARD</i> | <i>GREATER THAN 30</i> | <i>GREATER THAN 24</i> |

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (19) (ALTERNATIVE 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (1) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS

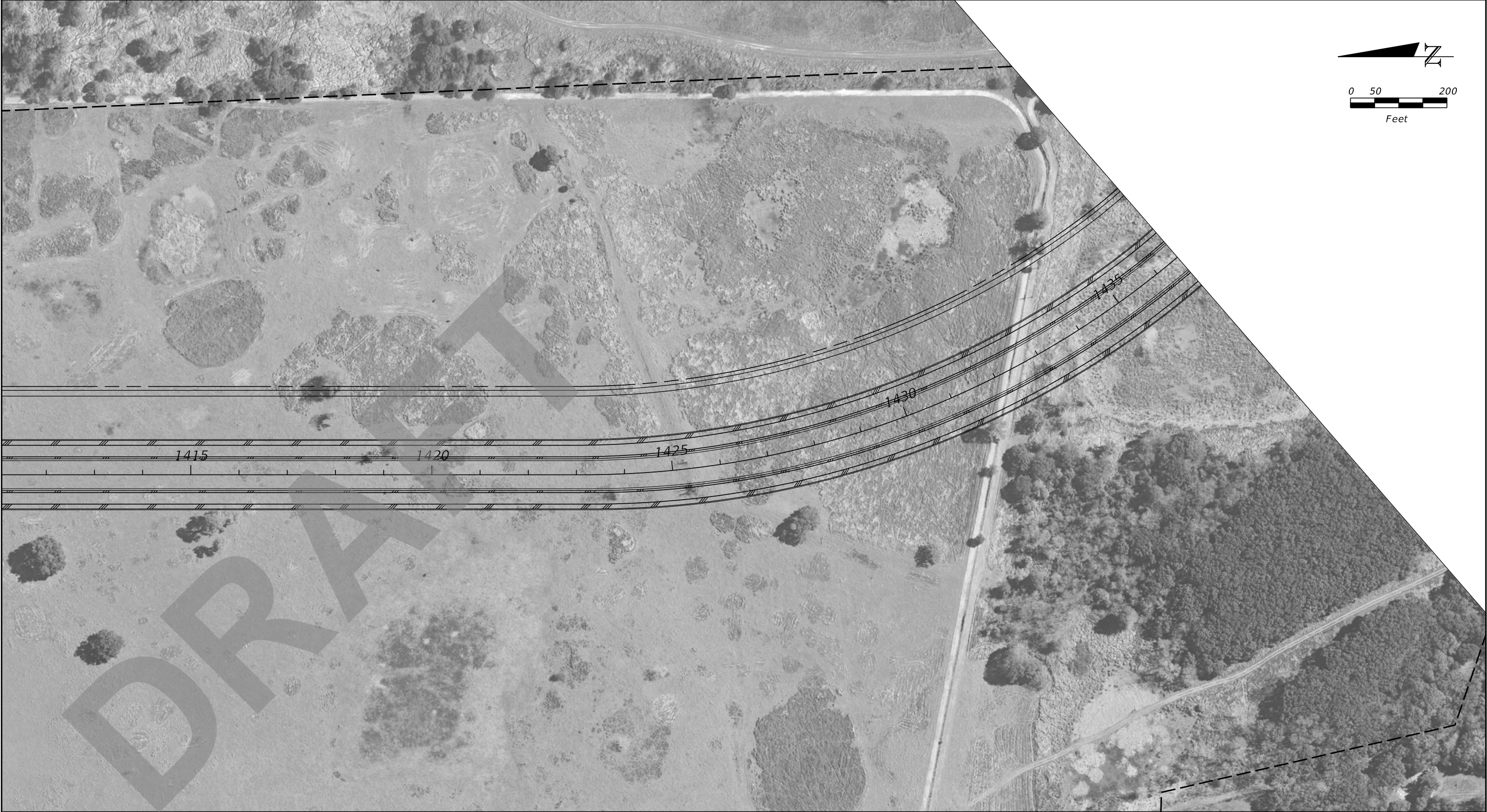
REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (2) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- APPROXIMATE SEDIMENT PROBE LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (3) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- APPROXIMATE SEDIMENT PROBE LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (4) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- 

APPROXIMATE SPT BORING LOCATION
- 

APPROXIMATE AUGER BORING LOCATION
- 

APPROXIMATE BORING LOCATION BY OTHERS
- 

APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- 

APPROXIMATE SEDIMENT PROBE LOCATION

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (5) (ALTERNATIVE 3)		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
					SR 570B	POLK	440897-4-24-01			

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

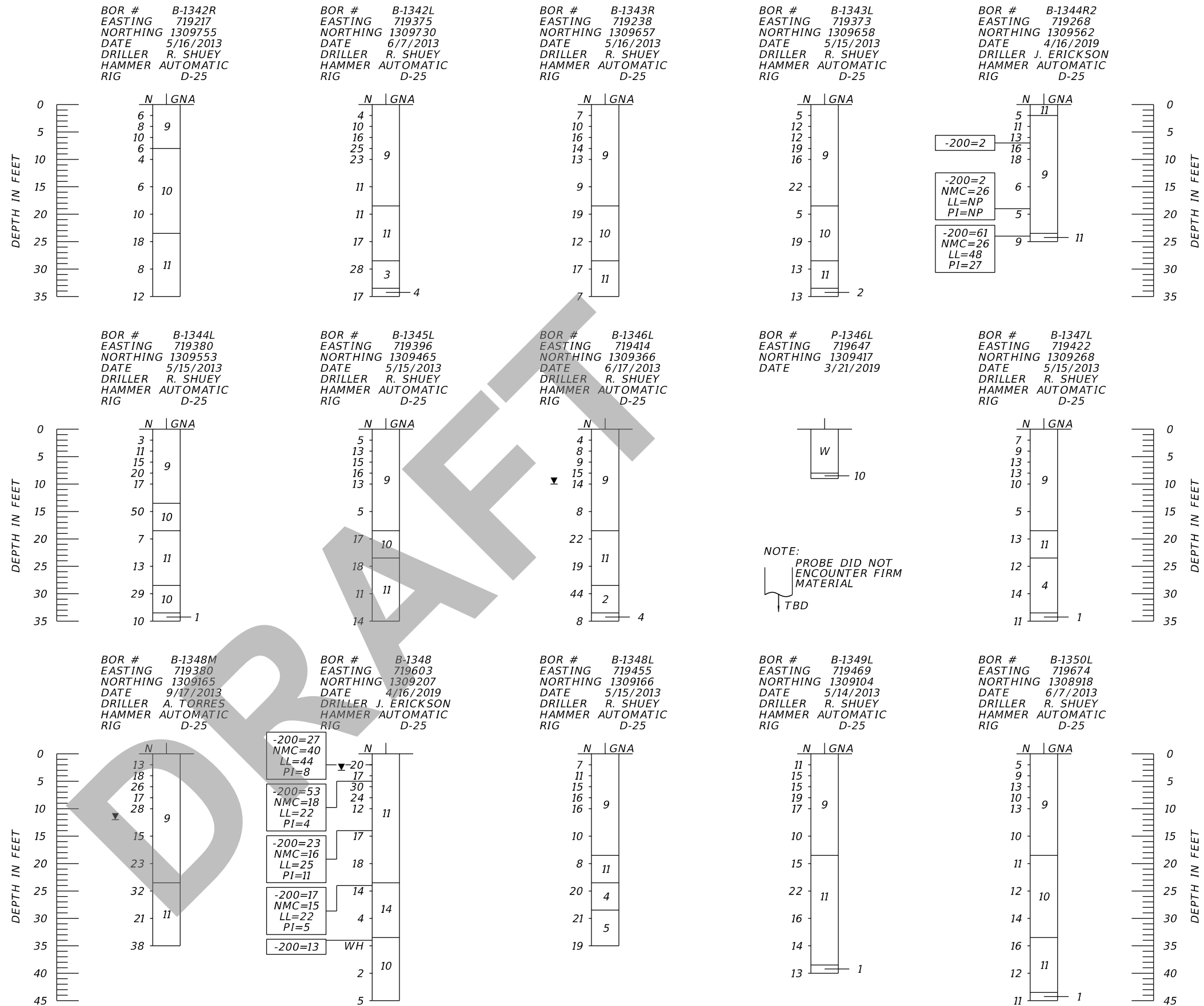
▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (21) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (22) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

BOR # B-1354L2
EASTING 719860
NORTHING 1308690
DATE 4/15/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25

1. LIGHT GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
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VERY SOFT	LESS THAN 2	LESS THAN 1
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FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (23) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
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DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (24) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

BOR # B-1358R
EASTING 719835
NORTHING 1308237
DATE 5/10/2013
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

1. LIGHT GRAY TO GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	FELL UNDER WEIGHT OF ROD AND HAMMER
WR	FELL UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
⚡	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⚡ 100	LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (25) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

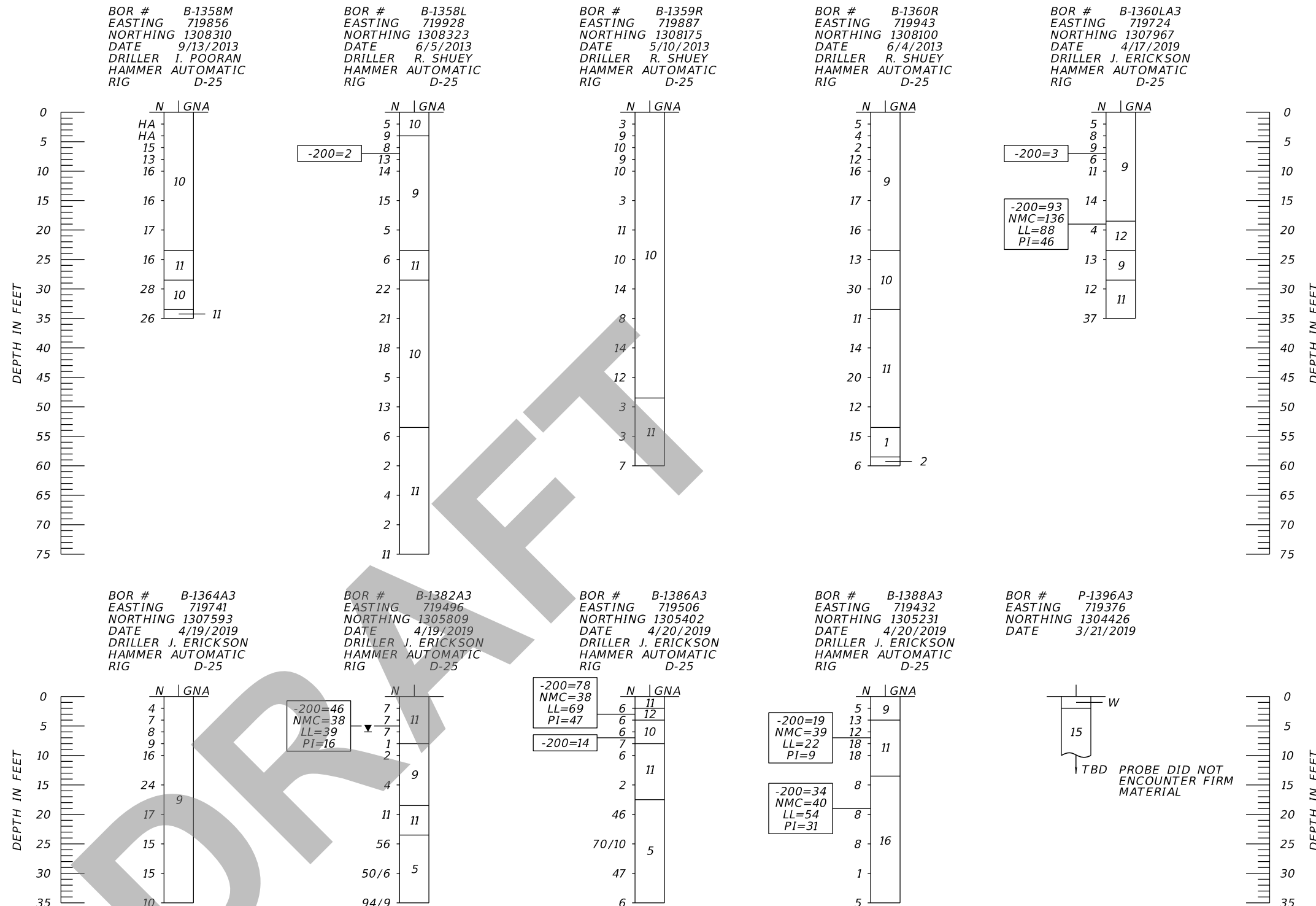
▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (26) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
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SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
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FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (27) (ALTERNATIVE 3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (1) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (2) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (3) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

-  APPROXIMATE SPT BORING LOCATION
-  APPROXIMATE AUGER BORING LOCATION
-  APPROXIMATE BOUNDARY OF TECO SOLAR FARM
-  APPROXIMATE SEDIMENT PROBE LOCATION
-  APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (4) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE BOUNDARY OF TECO SOLAR FARM
- APPROXIMATE SEDIMENT PROBE LOCATION
- APPROXIMATE BORING LOCATION BY OTHERS

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BORING LOCATION PLAN (5) (ALTERNATIVE 4)		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
					SR 570B	POLK	440897-4-24-01			

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

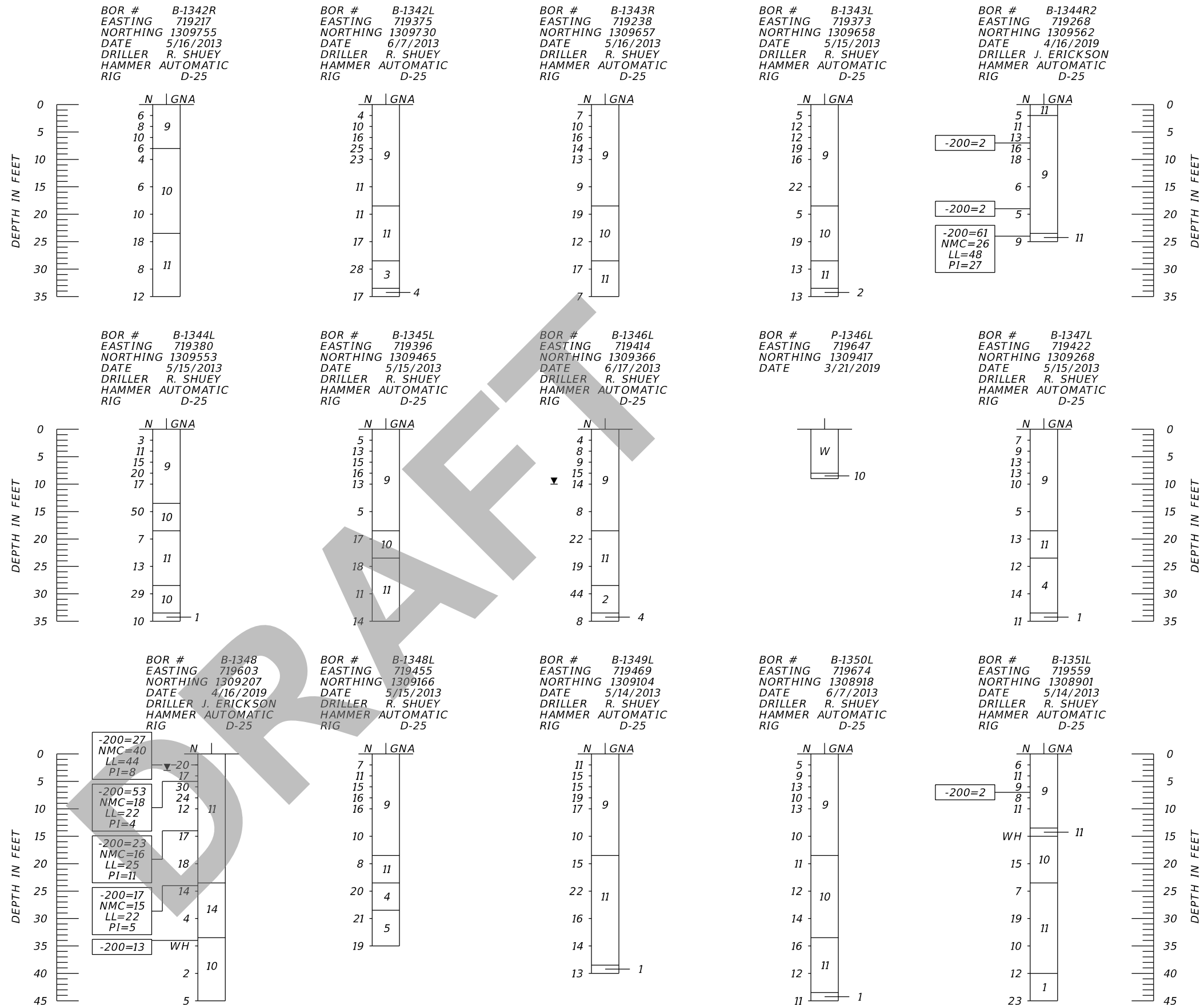
▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

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100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
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SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (29) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
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9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
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11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

CASING

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
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SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
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HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (30) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

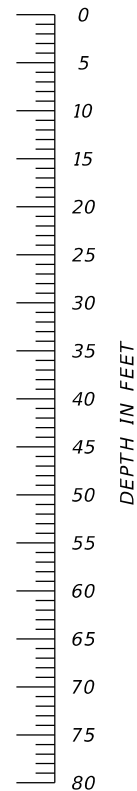
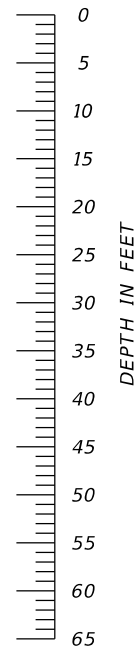
1. LIGHT GRAY TO GRAY TO PALE BROWN SAND TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
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4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
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W WATER

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

11. Give

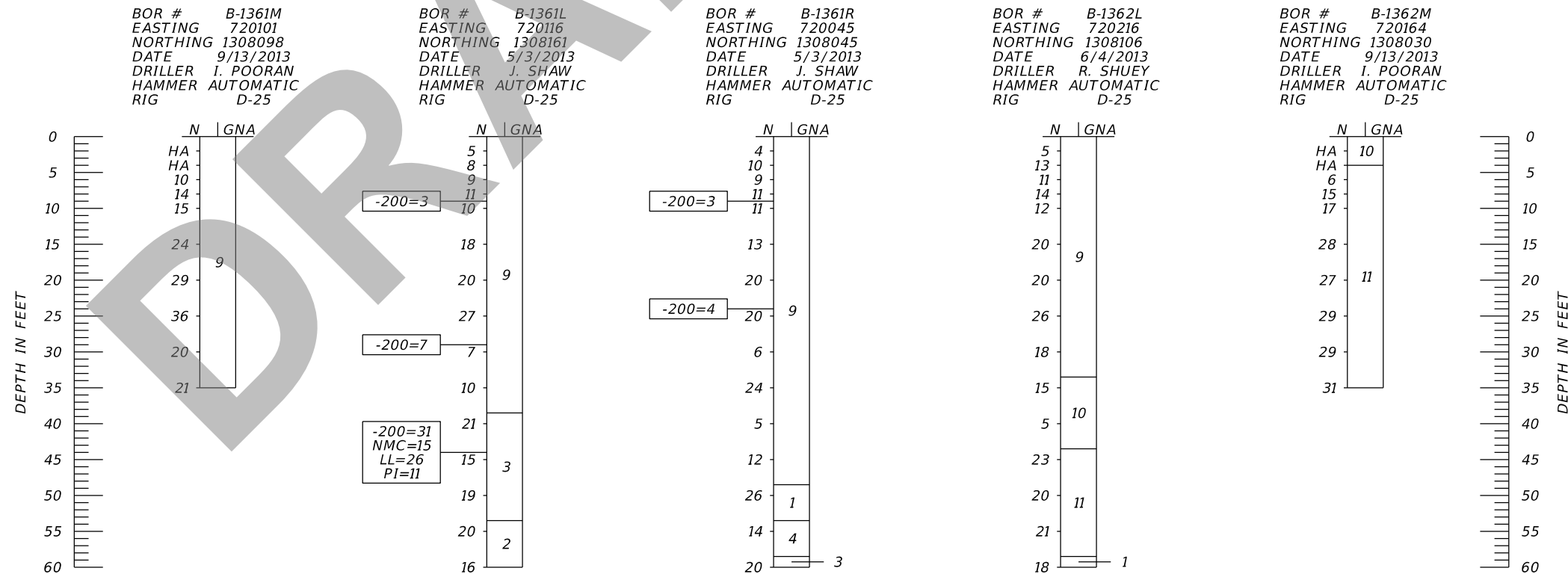
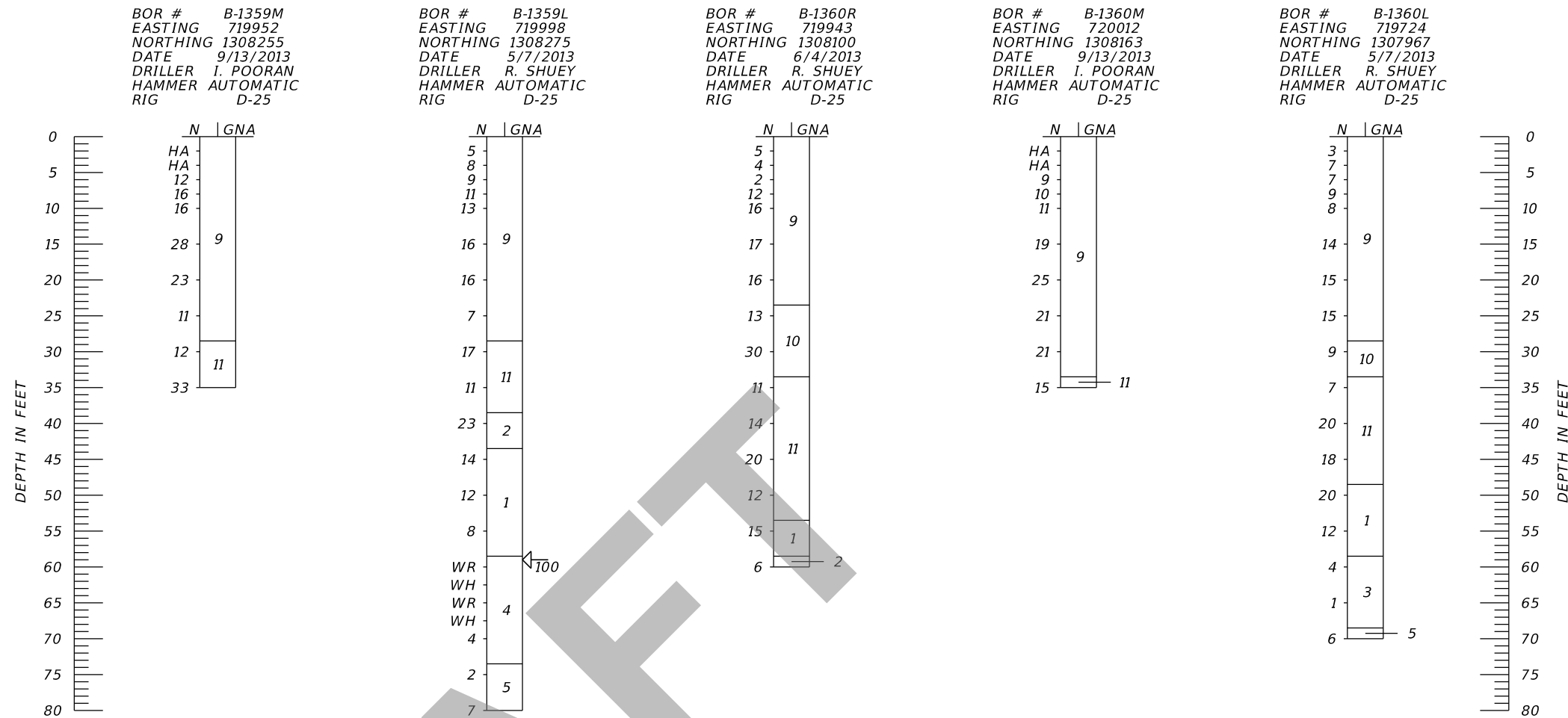
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
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VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (31) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)
- W WATER
- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (32) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

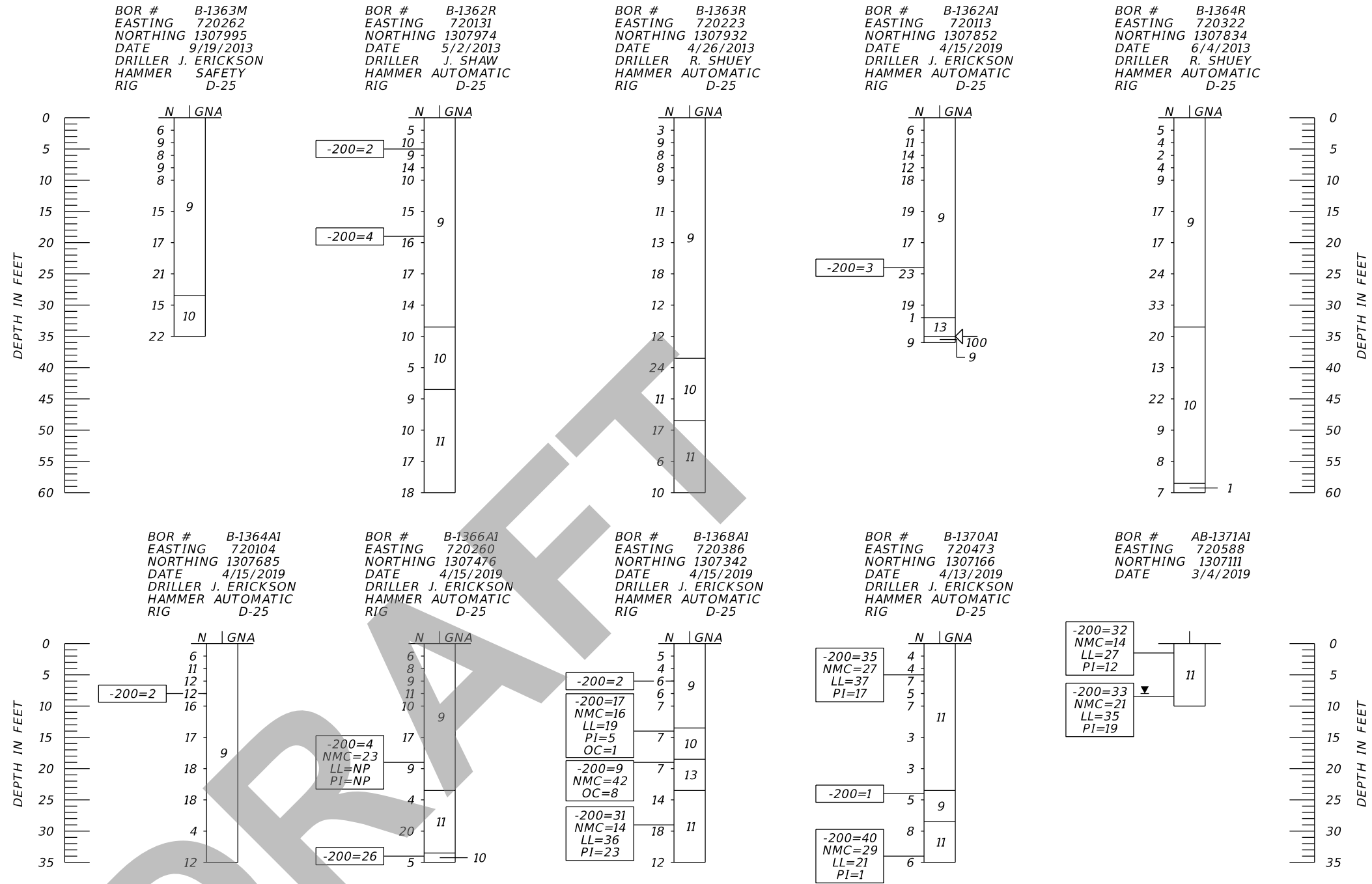
W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

-50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	FELL UNDER WEIGHT OF ROD AND HAMMER
WR	FELL UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
◀ 100	LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (33) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
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4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
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9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
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11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
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15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

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50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION

HA HAND AUGERED TO VERIFY UTILITY CLEARANCE

WH FELL UNDER WEIGHT OF ROD AND HAMMER

WR FELL UNDER WEIGHT OF ROD

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

GNE GROUNDWATER NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

DEPTH	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
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DENSE	30 to 50	24 to 40
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SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (34) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
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10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
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- A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
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- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCE
- WH FELL UNDER WEIGHT OF ROD AND HAMMER
- WR FELL UNDER WEIGHT OF ROD
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON-PLASTIC
- ▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
- GNE GROUNDWATER NOT ENCOUNTERED
- GNA GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
- 100 LOSS OF CIRCULATION OF DRILLING FLUID (%)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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VERY SOFT	LESS THAN 2	LESS THAN 1
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FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
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HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (35) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
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15. SOFT SEDIMENT TO SEDIMENT AND WASTE PHOSPHATIC CLAY (SLIME)
16. GRAY TO BROWN CLAYEY SAND (A-2-7)

W WATER

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).

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WH FELL UNDER WEIGHT OF ROD AND HAMMER

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-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

OC ORGANIC CONTENT (%)

NP NON-PLASTIC

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	SAFETY HAMMER	AUTOMATIC HAMMER
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REVISIONS				MARC E. NOVAK, Ph.D., P.E. P.E. LICENSE NUMBER 67431 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PROFILES (36) (ALTERNATIVE 4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 570B	POLK	440897-4-24-01		



SOIL PROPERTIES		
GRANULAR SOILS (COHESIONLESS)		
DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)	
very loose	0 – 4	
loose	5 – 10	
medium dense	11 – 30	
dense	31 – 50	
very dense	over 50	

MOISTURE DESCRIPTION	
dry	– absence of moisture, dusty, dry to the touch
moist	– damp, but no visible water
wet	– visible free water, usually soil is below water table
GNE	GROUND WATER NOT ENCOUNTERED
GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
–200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WOH	WEIGHT OF HAMMER
PH	POST HOLE
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON – ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
GSE	GROUND SURFACE ELEVATION
	CASING USED
	USCS SOIL CLASSIFICATION
	LOSS OF DRILLING FLUID CIRCULATION
	NO RECOVERY

GWT or GROUND WATER TABLE LEVEL (OBSERVED)

SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)

TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)

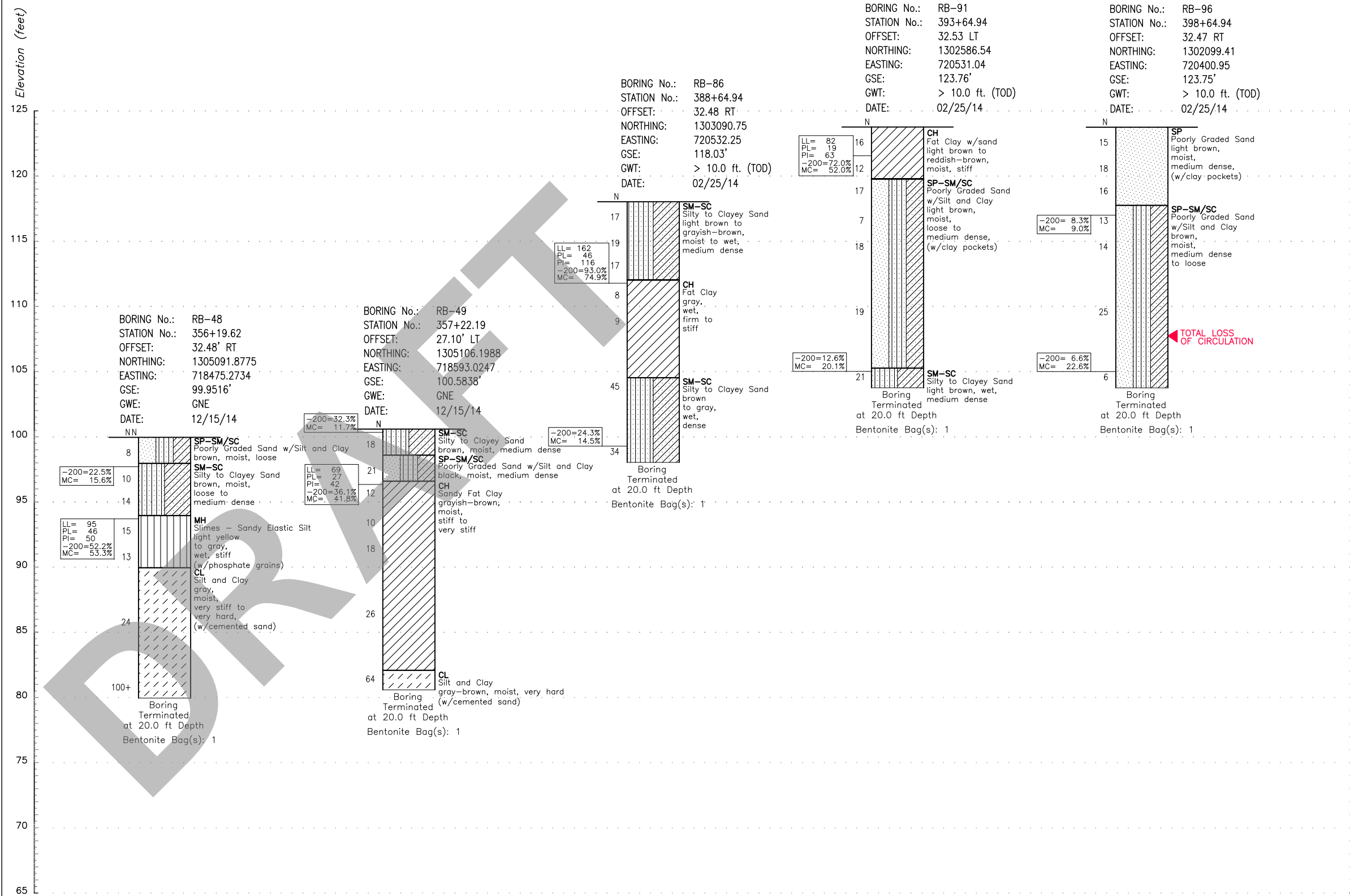
ST SHELBY TUBE

NOTES:

1. THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.
2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

NO.	REVISIONS	DATE	BY		NAME	DATE	 KCI TECHNOLOGIES <small>ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS</small>	PROJECT NAME Geotechnical Roadway Report <i>Bartow Northern Connector 2</i> Bartow, Polk County, Florida	CLIENT Mr. Thomas J. Montgomery, P.E. NV5 Tampa, Florida	SHEET TITLE		Figure No.
				DESIGNED						Boring Log Profiles	4B	
				DRAWN	JBC	4/14						
				CHECKED	PV	1/15						
				APPROVED	PV	1/15						
										SOURCE KCI's Field Exploration program	PROJECT NO. 12134599	

C:\KCI\2013\12\12134599 Bartow Northern Connector Phase II\Drawing Files\KCI_DWGS\12134599 - Borings 01-2015.dwg, Fig 4C RBs (11-2014), 3/13/2015 10:57:17 AM, 8-V



LEGEND

SP SAND	ML SILT	MH ELASTIC SILT
SM SILTY SAND	CL LEAN CLAY	CH FAT CLAY
SC CLAYEY SAND	SH SHELL	PT MUCK/PEAT
LS HARD LIMESTONE	--- SHELLY-GRAVEL	--- CONCRETE
WLS WEATHERED OR SOFT LIMESTONE	--- SHELLY-SAND	AS ASPHALT
TS TOP SOIL	--- SHELLY-CLAY	LB LIMESTONE BASE
SP-SM	--- SOIL/CEMENT	--- DEBRIS
--- CAVITY	OL ORGANIC SILTS	OH ORGANIC CLAY
GM SILTY-GRAVEL	GC GRAVELLY-CLAY	GP GRAVEL

SOIL PROPERTIES
GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)

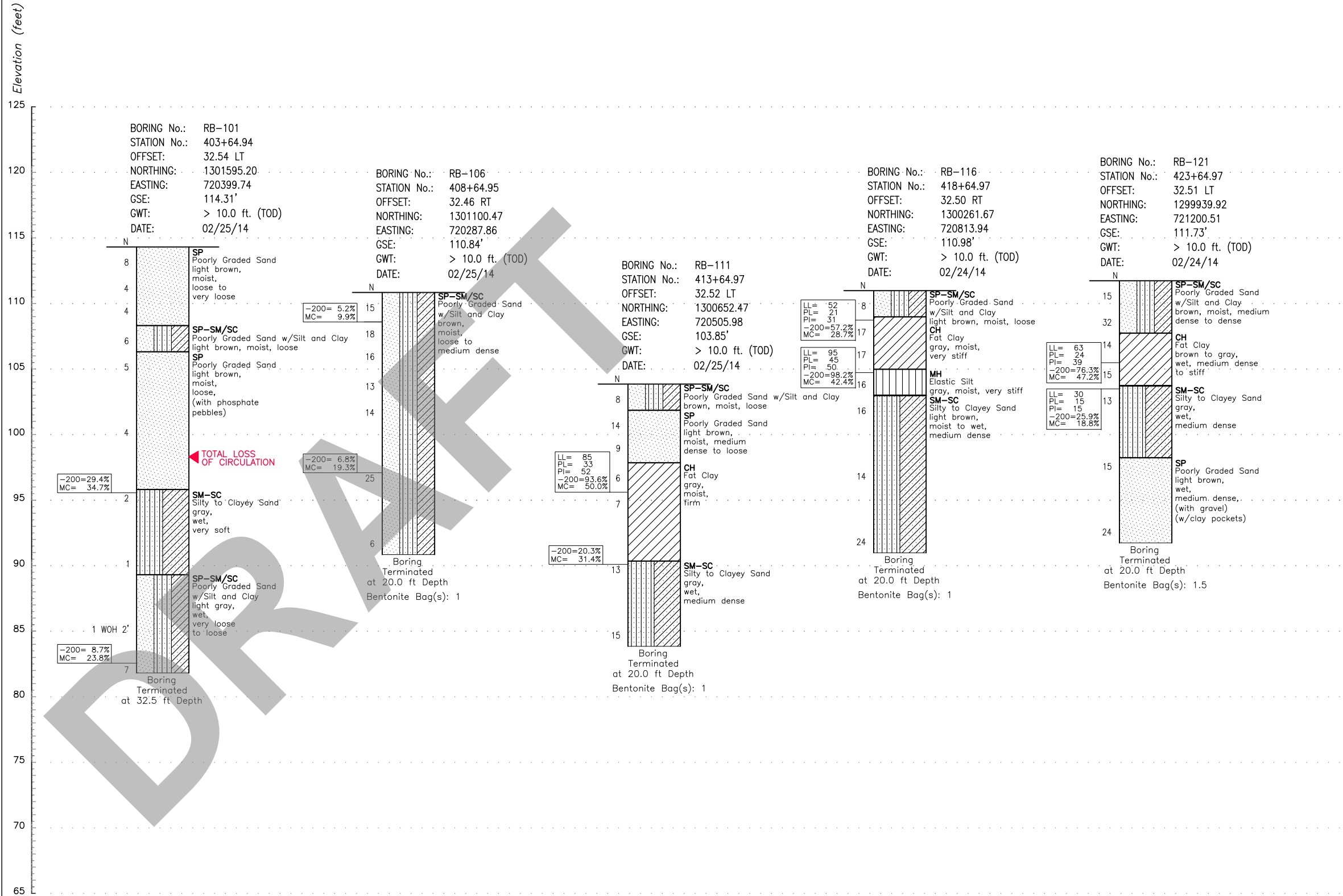
DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

dry	- absence of moisture, dusty, dry to the touch
moist	- damp, but no visible water
wet	- visible free water, usually soil is below water table

NOTES:

- THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.
- REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.



LEGEND					
	SP SAND		ML SILT		MH ELASTIC SILT
	SM SILTY SAND		CL LEAN CLAY		CH FAT CLAY
	SC CLAYEY SAND		SH SHELL		PT MUCK/PEAT
	LS HARD LIMESTONE		SHELLY-GRAVEL		CONCRETE
	WLS WEATHERED OR SOFT LIMESTONE		SHELLY-SAND		AS ASPHALT
	TS TOP SOIL		SHELLY-CLAY		LB LIMESTONE BASE
	SP-SM		SOIL/CEMENT		DEBRIS
	CAVITY		OL ORGANIC SILTS		OH ORGANIC CLAY
	GM SILTY-GRAVEL		GC GRAVELLY-CLAY		GP GRAVEL

SOIL PROPERTIES		
GRANULAR SOILS (COHESIONLESS)		
DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)	
very loose	0 - 4	
loose	5 - 10	
medium dense	11 - 30	
dense	31 - 50	
very dense	over 50	

FINE GRAINED SOILS (COHESIVE)		
DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

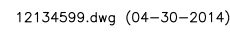
MOISTURE DESCRIPTION	
dry	absence of moisture, dusty, dry to the touch
moist	damp, but no visible water
wet	visible free water, usually soil is below water table
GNE	GROUND WATER NOT ENCOUNTERED
GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
-200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WOH	WEIGHT OF HAMMER
PH	POST HOLE
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
GSE	GROUND SURFACE ELEVATION
CASING USED	CASING USED
USCS	SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION	LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY	NO RECOVERY

NOTES:

1. THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.

2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

12134599.dwg (04-30-2014)														
NO.	REVISIONS	DATE	BY		NAME	DATE		PROJECT NAME	Geotechnical Roadway Report Bartow Northern Connector 2 Bartow, Polk County, Florida	CLIENT	Mr. Thomas J. Montgomery, P.E. NV5 Tampa, Florida	SHEET TITLE		Figure No. 4D
				DESIGNED								Boring Log Profiles		
				DRAWN	JBC	4/14								
				CHECKED	PV	1/15								
				APPROVED	PV	1/15								
											SOURCE		PROJECT NO.	
											KCI's Field Exploration program		12134599	






























KCI TECHNOLOGIES
ENGINEERS | PLANNERS | SCIENTISTS | CONSTRUCTION MANAGERS

CLIENT	Mr. Thomas J. Montgomery, P.E. NV5 Tampa, Florida
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SHEET TITLE		Figure No.
Boring Log Profiles		5A
SOURCE	PROJECT NO.	
KCI's Field Exploration program	12134599	

LEGEND

	SP SAND		ML SILT		MH ELASTIC SILT
	SM SILTY SAND		CL LEAN CLAY		CH FAT CLAY
	SC CLAYEY SAND		SH SHELL		PT MUCK/PEAT
	LS HARD LIMESTONE		-- SHELLY-GRAVEL		-- CONCRETE
	WLS WEATHERED OR SOFT LIMESTONE		-- SHELLY-SAND		AS ASPHALT
	TS TOP SOIL		-- SHELLY-CLAY		LB LIMEROCK BASE
	SP-SM		-- SOIL/CEMENT		-- DEBRIS
	-- CAVITY		OL ORGANIC SILTS		OH ORGANIC CLAY
	GM SILTY-GRAVEL		GC GRAVELLY-CLAY		GP GRAVEL

SOIL PROPERTIES	
GRANULAR SOILS (COHESIONLESS)	
DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)		
DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION




























dry	— absence of moisture, dusty, dry to the touch
moist	— damp, dry to visible water
wet	— visible free water, usually soil is below water table
GNF	GROUND WATER NOT ENCOUNTERED
GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
—200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WOH	WEIGHT OF HAMMER
PH	POST HOLED
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON — ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
— GSE	GROUND SURFACE ELEVATION
	CASING USED
SP	USCS SOIL CLASSIFICATION
NR	LOSS OF DRILLING FLUID CIRCULATION
	NO RECOVERY

GWT or GROUND WATER TABLE LEVEL (OBSERVED)
SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)
TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL)
ST SHELBY TUBE

NOTES:

1. THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.
2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

LEGEND

	SP SAND		ML SILT		MH ELASTIC SILT
	SM SILTY SAND		CL LEAN CLAY		CH FAT CLAY
	SC CLAYEY SAND		SH SHELL		PT MUCK/PEAT
	LS HARD LIMESTONE		-- SHELLY-GRAVEL		-- CONCRETE
	WLS WEATHERED OR SOFT LIMESTONE		-- SHELLY-SAND		AS ASPHALT
	TS TOP SOIL		-- SHELLY-CLAY		LB LIMESTONE BASE
	SP-SM		-- SOIL/CEMENT		-- DEBRIS
	-- CAVITY		OL ORGANIC SILTS		OH ORGANIC CLAY
	GM SILTY-GRAVEL		GC GRAVELLY-CLAY		GP GRAVEL

SOIL PROPERTIES	
GRANULAR SOILS (COHESIONLESS)	
DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 — 4
loose	5 — 10
medium dense	11 — 30
dense	31 — 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)		
DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

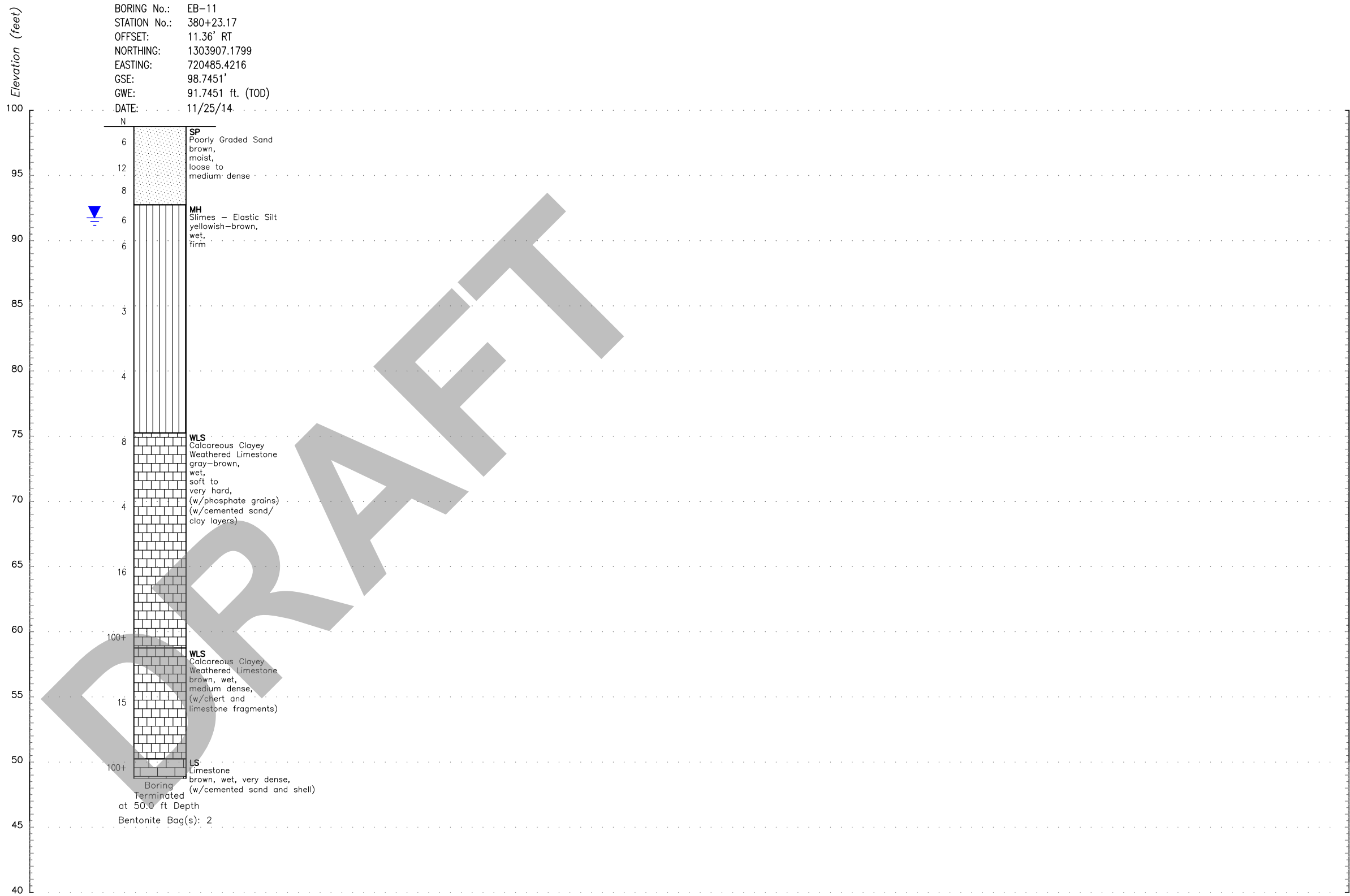
dry	- absence of moisture, dusty, dry to the touch
moist	- damp, but no visible water
wet	- visible free water, usually soil is below water table
GNE	GROUND WATER NOT ENCOUNTERED
GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
-200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WH	WEIGHT OF HAMMER
PH	POST HOLE
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
GSE	GROUND SURFACE ELEVATION
	CASING USED
	USCS SOIL CLASSIFICATION
	LOSS OF DRILLING FLUID CIRCULATION
	NO RECOVERY

GWT or GROUND WATER TABLE LEVEL (OBSERVED)
 SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)
 TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)
 ST SHELBY TUBE

NOTES:

1. THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.
2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

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LEGEND

SP SAND	ML SILT	MH ELASTIC SILT
SM SILTY SAND	CL LEAN CLAY	CH FAT CLAY
SC CLAYEY SAND	SH SHELL	PT MUCK/PEAT
LS HARD LIMESTONE	SHelly-GRAVEL	CC CONCRETE
WLS WEATHERED OR SOFT LIMESTONE	SHelly-SAND	AS ASPHALT
TS TOP SOIL	SHelly-CLAY	LB LIMESTONE BASE
SP-SM	SOIL/CEMENT	DB DEBRIS
CA CAVITY	OL ORGANIC SILTS	OC ORGANIC CLAY
GM SILTY-GRAVEL	GC GRAVELLY-CLAY	GP GRAVEL

SOIL PROPERTIES
GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)

DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

dry - absence of moisture, dusty, dry to the touch
moist - damp, but no visible water
wet - visible free water, usually soil is below water table

GNE GROUND WATER NOT ENCOUNTERED
GNM GROUND WATER NOT MEASURED
LL LIQUID LIMIT
PL PLASTIC LIMIT
PI PLASTICITY INDEX
-200 PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC NATURAL MOISTURE CONTENT (%)
WR WEIGHT OF ROD
WOH WEIGHT OF HAMMER
PH POST HOLE
N STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG ORGANIC CONTENT
TOD TIME OF DRILLING
GSE GROUND SURFACE ELEVATION
CASING USED
USCS SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY

SP SP
NR NR

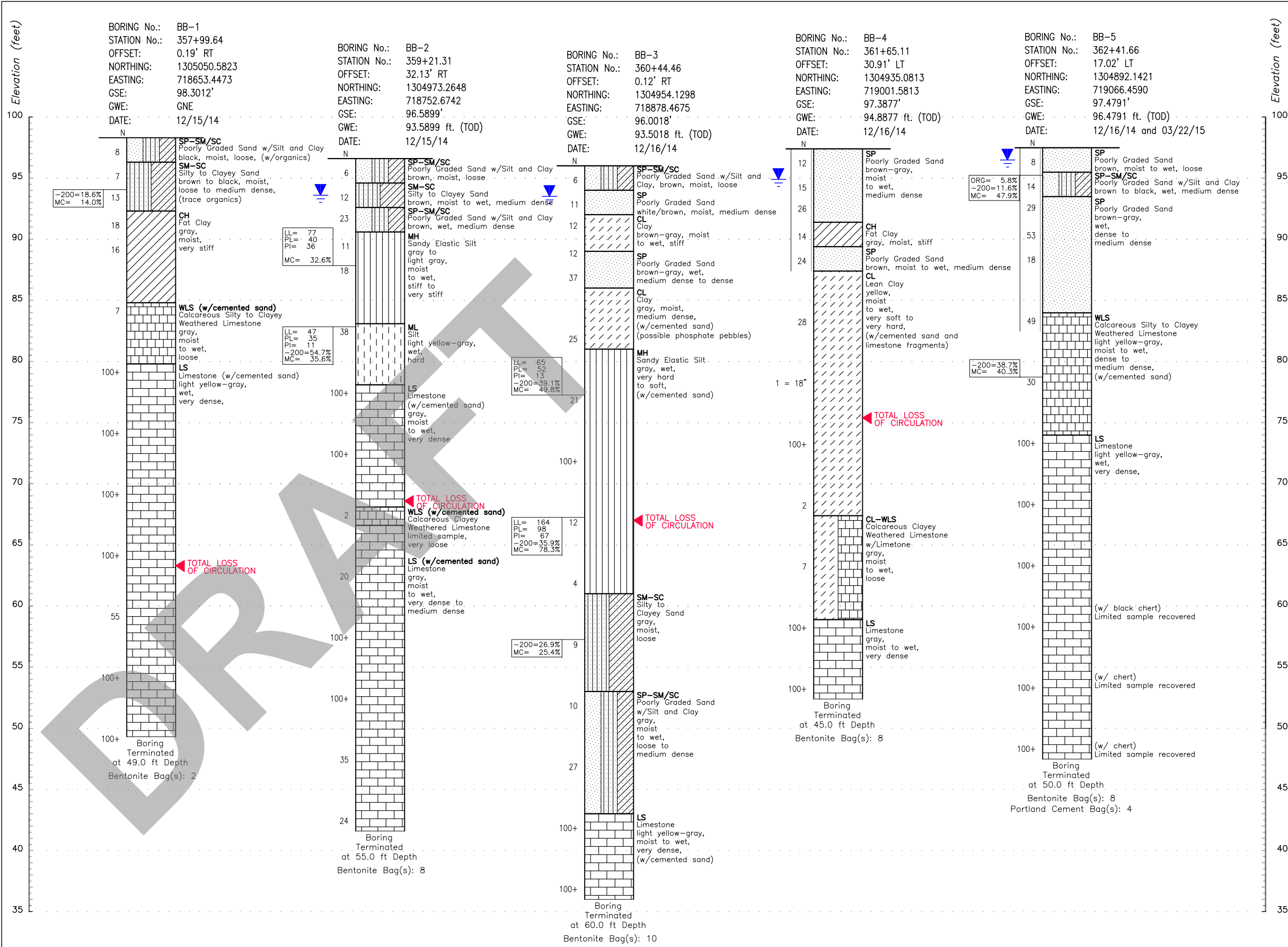
GWT or GROUND WATER TABLE LEVEL (OBSERVED)
SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)
TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)
ST SHELBY TUBE

NOTES:

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- REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

12134599.dwg (04-30-2014)														
NO.	REVISIONS	DATE	BY		NAME	DATE	 KCI TECHNOLOGIES ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS	PROJECT NAME	Geotechnical Roadway Report Bartow Northern Connector 2 Bartow, Polk County, Florida	CLIENT	Mr. Thomas J. Montgomery, P.E. NV5 Tampa, Florida	SHEET TITLE		Figure No.
				DESIGNED								Boring Log Profiles	5C	
				DRAWN	JBC	4/14								
				CHECKED	PV	1/15								
				APPROVED	PV	1/15								
										SOURCE		PROJECT NO.		
										KCI's Field Exploration program		12134599		

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LEGEND

SP SAND	ML SILT	MH ELASTIC SILT
SM SILTY SAND	CL LEAN CLAY	CH FAT CLAY
SC CLAYEY SAND	SH SHELL	PT MUCK/PEAT
LS HARD LESTONE	--- SHELLY-GRAVEL	--- CONCRETE
WLS WEATHERED OR SOFT LESTONE	--- SHELLY-SAND	AS ASPHALT
TS TOP SOIL	--- SHELLY-CLAY	LB LIMEROCK BASE
SP-SM	--- SOIL/CEMENT	--- DEBRIS
--- CAVITY	OL ORGANIC SILTS	OH ORGANIC CLAY
GM SILTY-GRAVEL	GC GRAVELLY-CLAY	GP GRAVEL

SOIL PROPERTIES

GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)

DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

dry	absence of moisture, dusty, dry to the touch
moist	damp, but no visible water
wet	visible free water, usually soil is below water table

GNE GROUND WATER NOT ENCOUNTERED
GNM GROUND WATER NOT MEASURED
LL LIQUID LIMIT
PL PLASTIC LIMIT
PI PLASTICITY INDEX
-200 PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC NATURAL MOISTURE CONTENT (%)
WR WEIGHT OF ROD
WOH WEIGHT OF HAMMER
PH POST HOLE
N STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG ORGANIC CONTENT
TOD TIME OF DRILLING
GSE GROUND SURFACE ELEVATION
CASING USED
USCS SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY

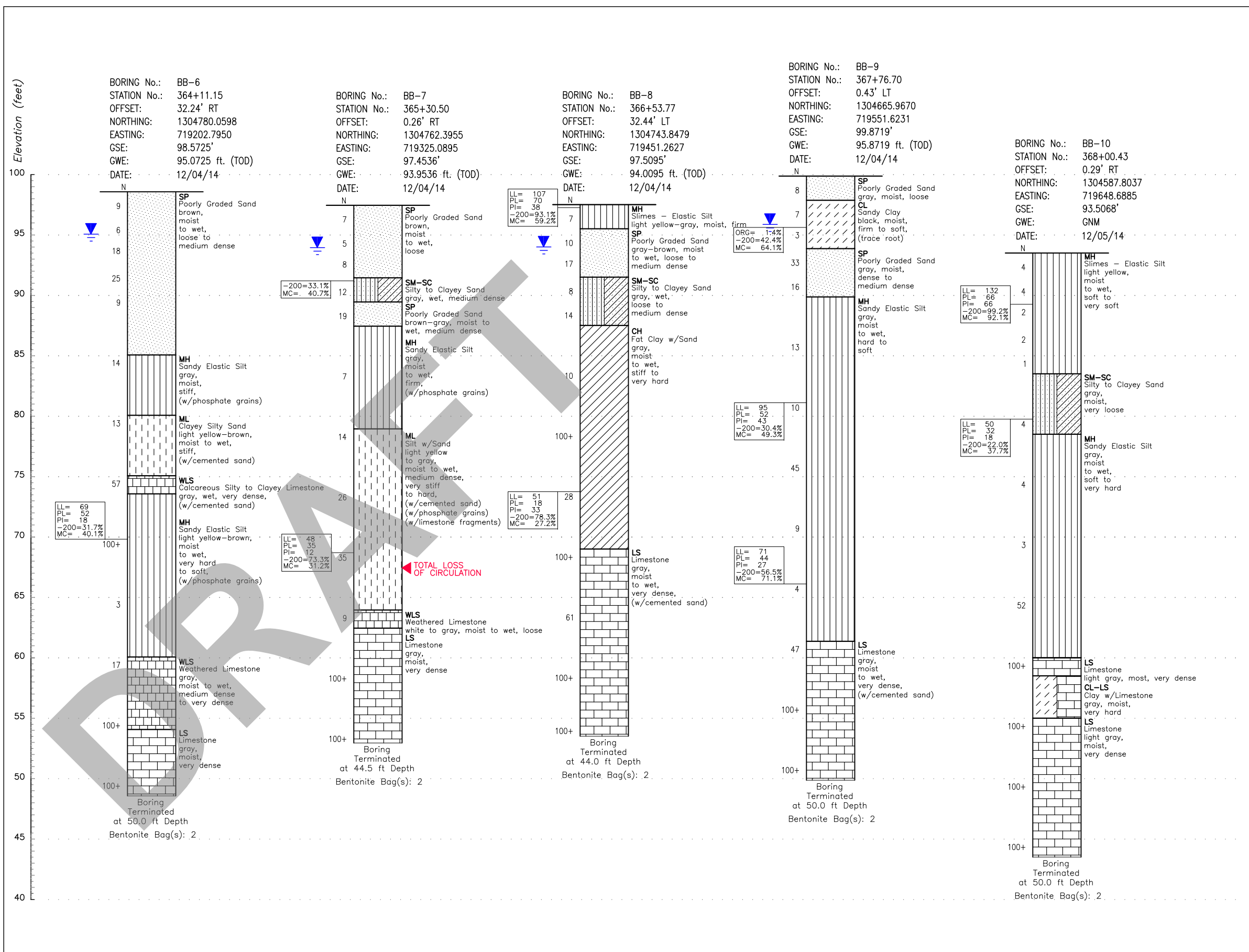
▼ GWT or GROUND WATER TABLE LEVEL (OBSERVED)
▼ SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)
TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)
ST SHELBY TUBE

NOTES:

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- REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

12134599.dwg (04-30-2014)						PROJECT NAME		CLIENT		SHEET TITLE		Figure No.
						Geotechnical Roadway Report		Mr. Thomas J. Montgomery, P.E.		Boring Log Profiles		6A
						Bartow Northern Connector 2		NV5				
						Bartow, Polk County, Florida		Tampa, Florida				
										SOURCE		PROJECT NO.
										KCI's Field Exploration program		12134599

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LEGEND

SP SAND	ML SILT	MH ELASTIC SILT
SM SILTY SAND	CL LEAN CLAY	CH FAT CLAY
SC CLAYEY SAND	SH SHELL	PT MUCK/PEAT
LS HARD LESTONE	--- SHELLY-GRAVEL	--- CONCRETE
WLS WEATHERED OR SOFT LESTONE	--- SHELLY-SAND	AS ASPHALT
TS TOP SOIL	--- SHELLY-CLAY	LB LIMEROCK BASE
SP-SM	--- SOIL/CEMENT	--- DEBRIS
--- CAVITY	OL ORGANIC SILTS	OH ORGANIC CLAY
GM SILTY-GRAVEL	GC GRAVELLY-CLAY	GP GRAVEL

SOIL PROPERTIES

GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)

DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

dry	absence of moisture, dusty, dry to the touch
moist	damp, but no visible water
wet	visible free water, usually soil is below water table

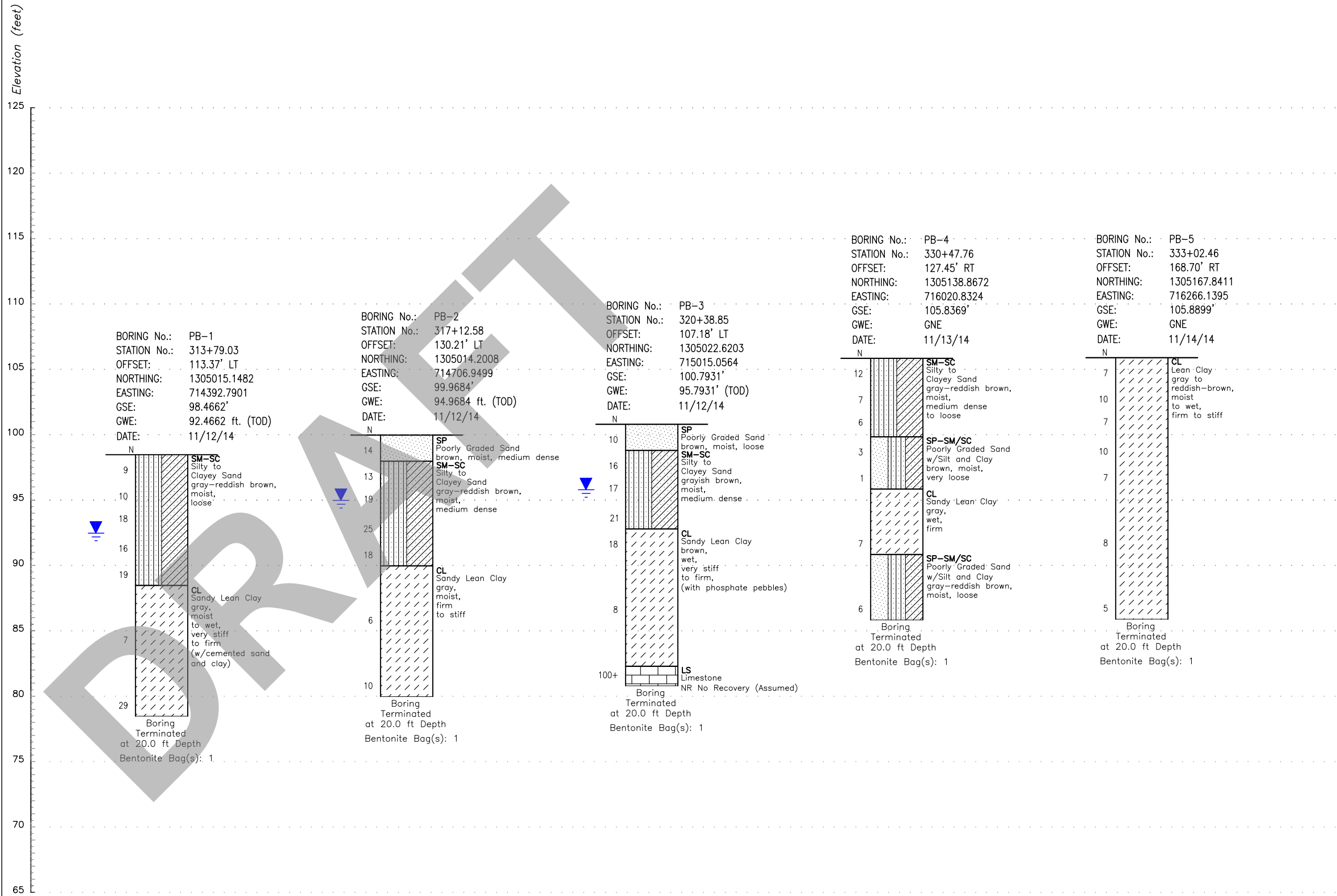
GNE GROUND WATER NOT ENCOUNTERED
GNM GROUND WATER NOT MEASURED
LL LIQUID LIMIT
PL PLASTIC LIMIT
PI PLASTICITY INDEX
-200 PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC NATURAL MOISTURE CONTENT (%)
WR WEIGHT OF ROD
WOH WEIGHT OF HAMMER
PH POST HOLE
N STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG ORGANIC CONTENT
TOD TIME OF DRILLING
GSE GROUND SURFACE ELEVATION
CASI CASING USED
USCS SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY

▼ GWT or GROUND WATER TABLE LEVEL (OBSERVED)
▼ SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)
□ TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)
ST SHELBY TUBE

NOTES:

- THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.
- REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

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LEGEND					
	SP SAND		ML SILT		MH ELASTIC SILT
	SM SILTY SAND		CL LEAN CLAY		CH FAT CLAY
	SC CLAYEY SAND		SH SHELL		PT MUCK/PEAT
	LS HARD LIMESTONE		SHELLY-GRAVEL		CONCRETE
	WLS WEATHERED OR SOFT LIMESTONE		SHELLY-SAND		AS ASPHALT
	TS TOP SOIL		SHELLY-CLAY		LB LIMESTONE BASE
	SP-SM		SOIL/CEMENT		DEBRIS
	CAVITY		OL ORGANIC SILTS		OH ORGANIC CLAY
	GM SILTY-GRAVEL		GC GRAVELLY-CLAY		GP GRAVEL

SOIL PROPERTIES

GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)

DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

dry	absence of moisture, dusty, dry to the touch
moist	damp, but no visible water
wet	visible free water, usually soil is below water table

GNE	GROUND WATER NOT ENCOUNTERED
GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
-200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WOH	WEIGHT OF HAMMER
PH	POST HOLE
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
GSE	GROUND SURFACE ELEVATION
CASING USED	CASING USED
USCS SOIL CLASSIFICATION	USCS SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION	LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY	NO RECOVERY

	GWT or GROUND WATER TABLE LEVEL (OBSERVED)
	SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)
	TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)
	ST SHELBY TUBE

- NOTES:
- THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.
 - REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

12134599.dwg (04-30-2014)

NO.	REVISIONS	DATE	BY	NAME	DATE
	DESIGNED				
	DRAWN			JBC	4/14
	CHECKED			PV	1/15
	APPROVED			PV	1/15



PROJECT NAME

Geotechnical Roadway Report
Bartow Northern Connector 2
Bartow, Polk County, Florida

CLIENT

Mr. Thomas J. Montgomery, P.E.
NV5
Tampa, Florida

SHEET TITLE

Boring Log Profiles

Figure No.

7A

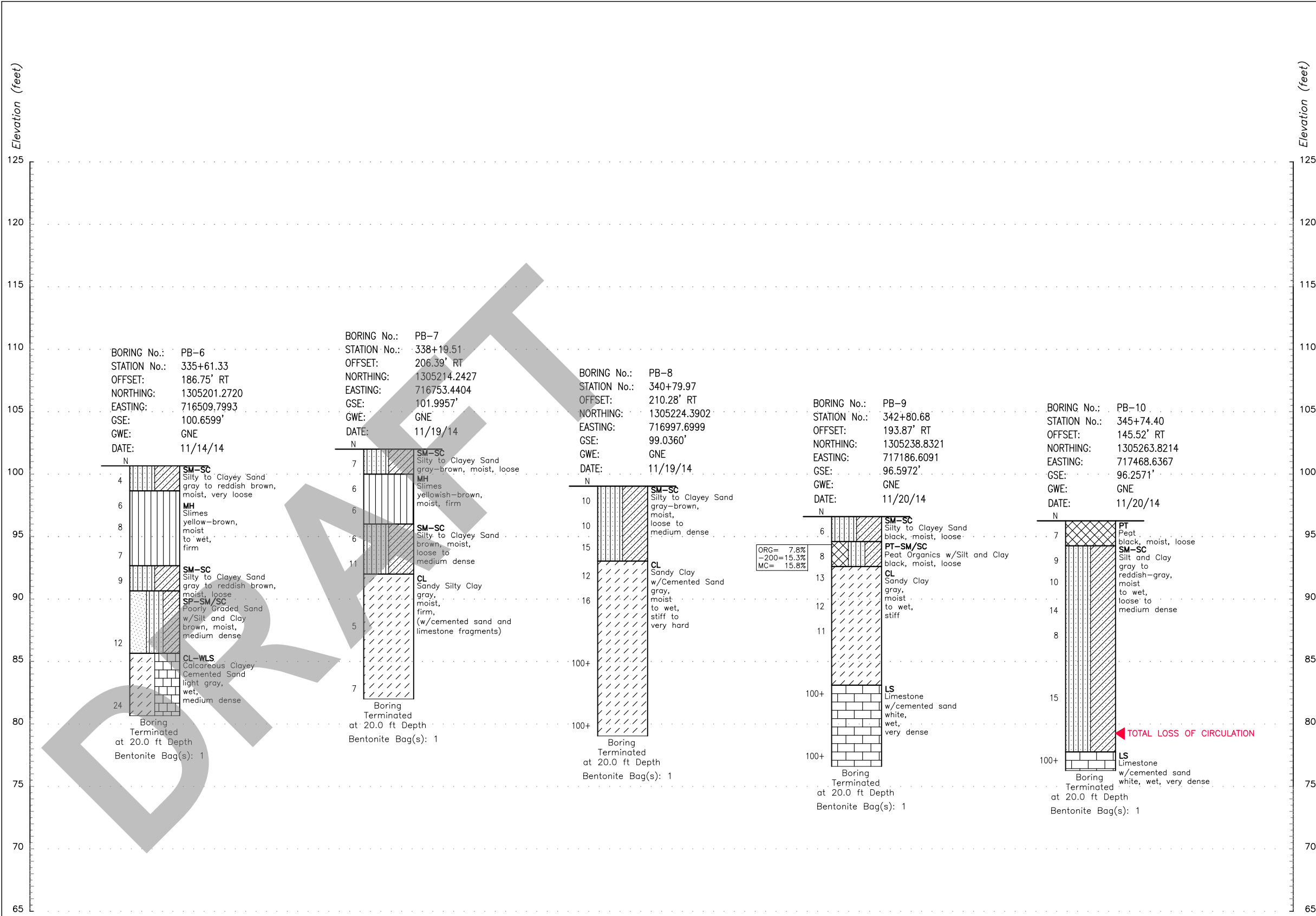
SOURCE

KCI's Field Exploration program

PROJECT NO.

12134599

C:\KCI\2013\12\12134599 Bartow Northern Connector Phase II\Drawing Files\KCI_DWGS\12134599 - Borings 01-2015.dwg, Fig 7B PBs (11-2014), 3/13/2015 10:50:37 AM, 8-V



LEGEND

SP SAND	ML SILT	MH ELASTIC SILT
SM SILTY SAND	CL LEAN CLAY	CH FAT CLAY
SC CLAYEY SAND	SH SHELL	PT MUCK/PEAT
LS HARD LIMESTONE	--- SHELLY-GRAVEL	--- CONCRETE
WLS WEATHERED OR SOFT LIMESTONE	--- SHELLY-SAND	AS ASPHALT
TS TOP SOIL	--- SHELLY-CLAY	LB LIMESTONE BASE
SP-SM	--- SOIL/CEMENT	--- DEBRIS
--- CAVITY	OL ORGANIC SILTS	OH ORGANIC CLAY
GM SILTY-GRAVEL	GC GRAVELLY-CLAY	GP GRAVEL

SOIL PROPERTIES

GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
very loose	0 - 4
loose	5 - 10
medium dense	11 - 30
dense	31 - 50
very dense	over 50

FINE GRAINED SOILS (COHESIVE)

DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION

dry	absence of moisture, dusty, dry to the touch
moist	damp, but no visible water
wet	visible free water, usually soil is below water table

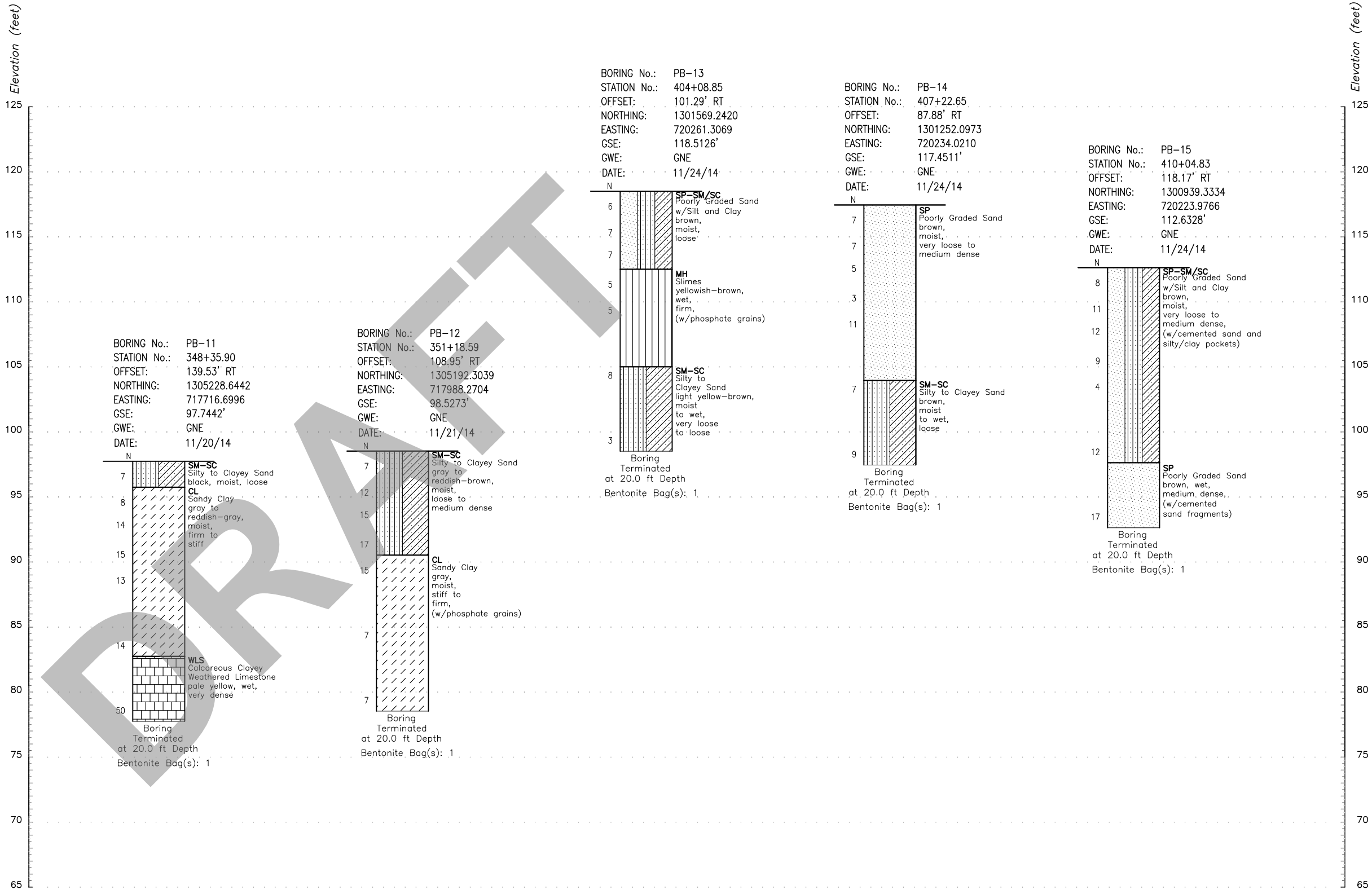
GNE GROUND WATER NOT ENCOUNTERED
GNM GROUND WATER NOT MEASURED
LL LIQUID LIMIT
PL PLASTIC LIMIT
PI PLASTICITY INDEX
-200 PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC NATURAL MOISTURE CONTENT (%)
WR WEIGHT OF ROD
WOH WEIGHT OF HAMMER
PH POST HOLE
N STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG ORGANIC CONTENT
TOD TIME OF DRILLING
GSE GROUND SURFACE ELEVATION
CASING USED
USCS SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY

NOTES:

1. THE BORINGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING, NO WARRANTY AS TO THE SUBSURFACE CONDITIONS, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE THE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. DO NOT ASSUME THIS DATA IS A GUARANTEE OF THE DEPTH, EXTENT, OR CHARACTER OF THE MATERIAL PRESENT.

2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

C:\KCI\2013\12\12134599 Bartow Northern Connector Phase II\Drawing Files\KCI_DWGS\12134599 - Borings 01-2015.dwg, Fig 7C PBs (11-2014), 3/13/2015 10:49:45 AM, 8-V



LEGEND					
	SP SAND		ML SILT		MH ELASTIC SILT
	SM SILTY SAND		CL LEAN CLAY		CH FAT CLAY
	SC CLAYEY SAND		SH SHELL		PT MUCK/PEAT
	LS HARD LIMESTONE		-- SHELLY-GRAVEL		-- CONCRETE
	WLS WEATHERED OR SOFT LIMESTONE		-- SHELLY-SAND		AS ASPHALT
	TS TOP SOIL		-- SHELLY-CLAY		LB LIMESTONE BASE
	SP-SM		-- SOIL/CEMENT		-- DEBRIS
	-- CAVITY		OL ORGANIC SILTS		OH ORGANIC CLAY
	GM SILTY-GRAVEL		GC GRAVELLY-CLAY		GP GRAVEL

SOIL PROPERTIES		
GRANULAR SOILS (COHESIONLESS)		
DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)	
very loose	0 - 4	
loose	5 - 10	
medium dense	11 - 30	
dense	31 - 50	
very dense	over 50	

FINE GRAINED SOILS (COHESIVE)		
DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
very soft	0.5	0 - 2
soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

MOISTURE DESCRIPTION	
dry	absence of moisture, dusty, dry to the touch
moist	damp, but no visible water
wet	visible free water, usually soil is below water table
GNE	GROUND WATER NOT ENCOUNTERED
GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
-200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WOH	WEIGHT OF HAMMER
PH	POST HOLE
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
GSE	GROUND SURFACE ELEVATION
CASING USED	CASING USED
USCS SOIL CLASSIFICATION	USCS SOIL CLASSIFICATION
LOSS OF DRILLING FLUID CIRCULATION	LOSS OF DRILLING FLUID CIRCULATION
NO RECOVERY	NO RECOVERY

NOTES:

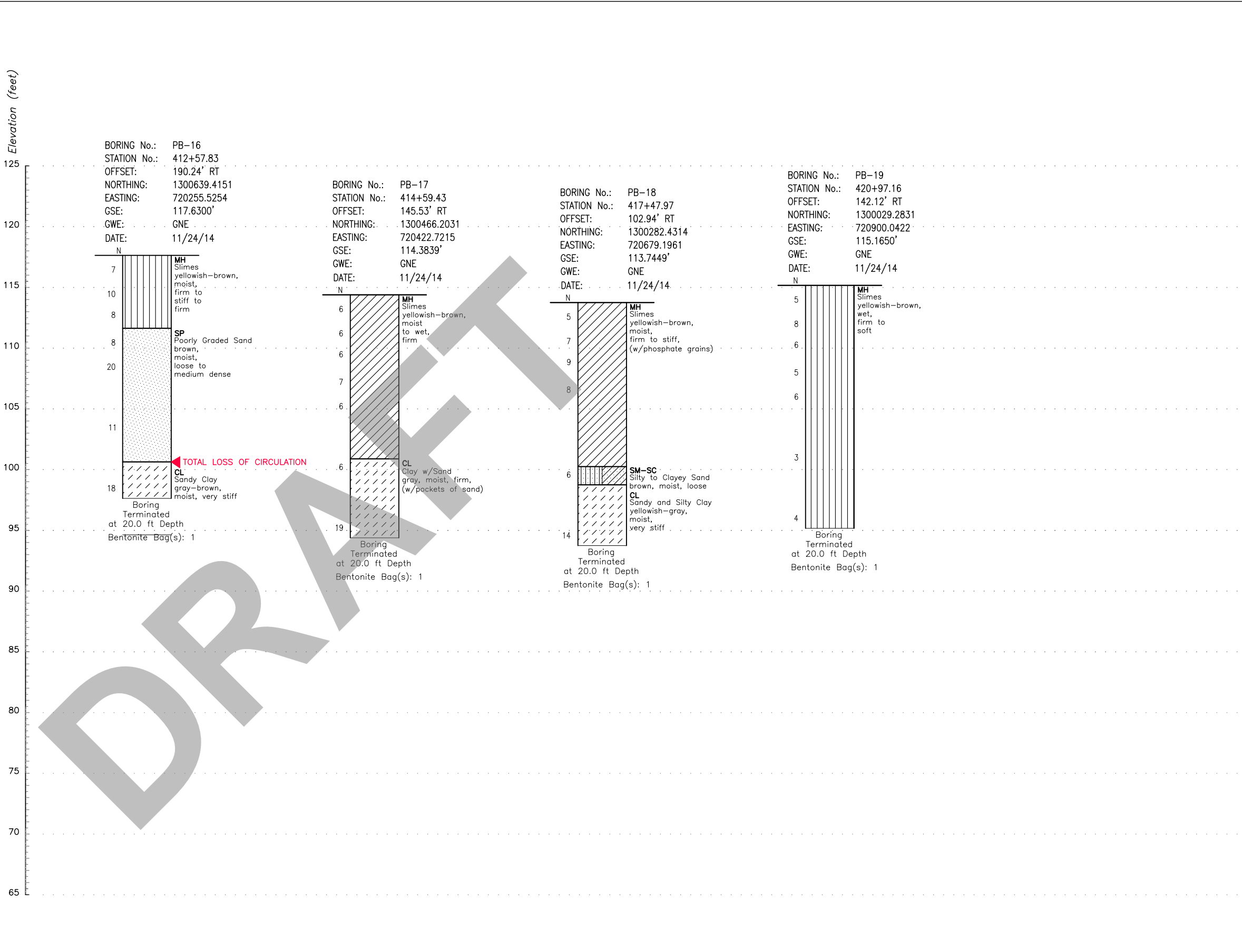
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2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

12134599.dwg (04-30-2014)													
NO.	REVISIONS		DATE	BY	NAME	DATE	 <div>KCI TECHNOLOGIES ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS</div>	PROJECT NAME Geotechnical Roadway Report Bartow Northern Connector 2 Bartow, Polk County, Florida	CLIENT Mr. Thomas J. Montgomery, P.E. NV5 Tampa, Florida	SHEET TITLE		Figure No.	
				DESIGNED		Boring Log Profiles				7C			
				DRAWN	JBC	4/14							
				CHECKED	PV	1/15							
				APPROVED	PV	1/15							
										SOURCE		PROJECT NO.	
										KCI's Field Exploration program		12134599	



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LEGEND

SP SAND	ML SILT	MH ELASTIC SILT
SM SILTY SAND	CL LEAN CLAY	CH FAT CLAY
SC CLAYEY SAND	SH SHELL	PT MUCK/PEAT
LS HARD LESTONE	--- SHELLY-GRAVEL	--- CONCRETE
WLS WEATHERED OR SOFT LESTONE	--- SHELLY-SAND	AS ASPHALT
TS TOP SOIL	--- SHELLY-CLAY	LB LIMEROCK BASE
SP-SM	--- SOIL/CEMENT	--- DEBRIS
--- CAVITY	OL ORGANIC SILTS	OH ORGANIC CLAY
GM SILTY-GRAVEL	GC GRAVELLY-CLAY	GP GRAVEL

SOIL PROPERTIES

GRANULAR SOILS (COHESIONLESS)

DESCRIPTIVE TERM FOR RELATIVE DENSITY	SPT N-VALUE (blows per ft)
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medium dense	11 - 30
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very dense	over 50

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DESCRIPTIVE TERM FOR CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (ksf)	SPT N-VALUE (blows per ft)
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soft	0.5 - 1.0	3 - 4
firm	1.0 - 2.0	5 - 8
stiff	2.0 - 4.0	9 - 15
very stiff	4.0 - 8.0	16 - 30
hard	8.0-10.0	31-50
very hard	10.0+	over 50

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GNM	GROUND WATER NOT MEASURED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
-200	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%)
MC	NATURAL MOISTURE CONTENT (%)
WR	WEIGHT OF ROD
WOH	WEIGHT OF HAMMER
PH	POST HOLED
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586)
ORG	ORGANIC CONTENT
TOD	TIME OF DRILLING
GSE	GROUND SURFACE ELEVATION
SP	CASING USED
USCS	USCS SOIL CLASSIFICATION
NR	LOSS OF DRILLING FLUID CIRCULATION NO RECOVERY

▼ GWT or GROUND WATER TABLE LEVEL (OBSERVED)

▼ SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED)

TYPE OF RIG: TRACK MOUNTED DRILL RIG (MANUAL HAMMER)

ST SHELBY TUBE

NOTES:

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- REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN (FIGURE 3) FOR TEST LOCATIONS.

12134599.dwg (04-30-2014)

NO.	REVISIONS	DATE	BY	NAME	DATE
				DESIGNED	
				DRAWN	JBC 4/14
				CHECKED	PV 1/15
				APPROVED	PV 1/15



KCI TECHNOLOGIES
ENGINEERS | PLANNERS | SCIENTISTS | CONSTRUCTION MANAGERS

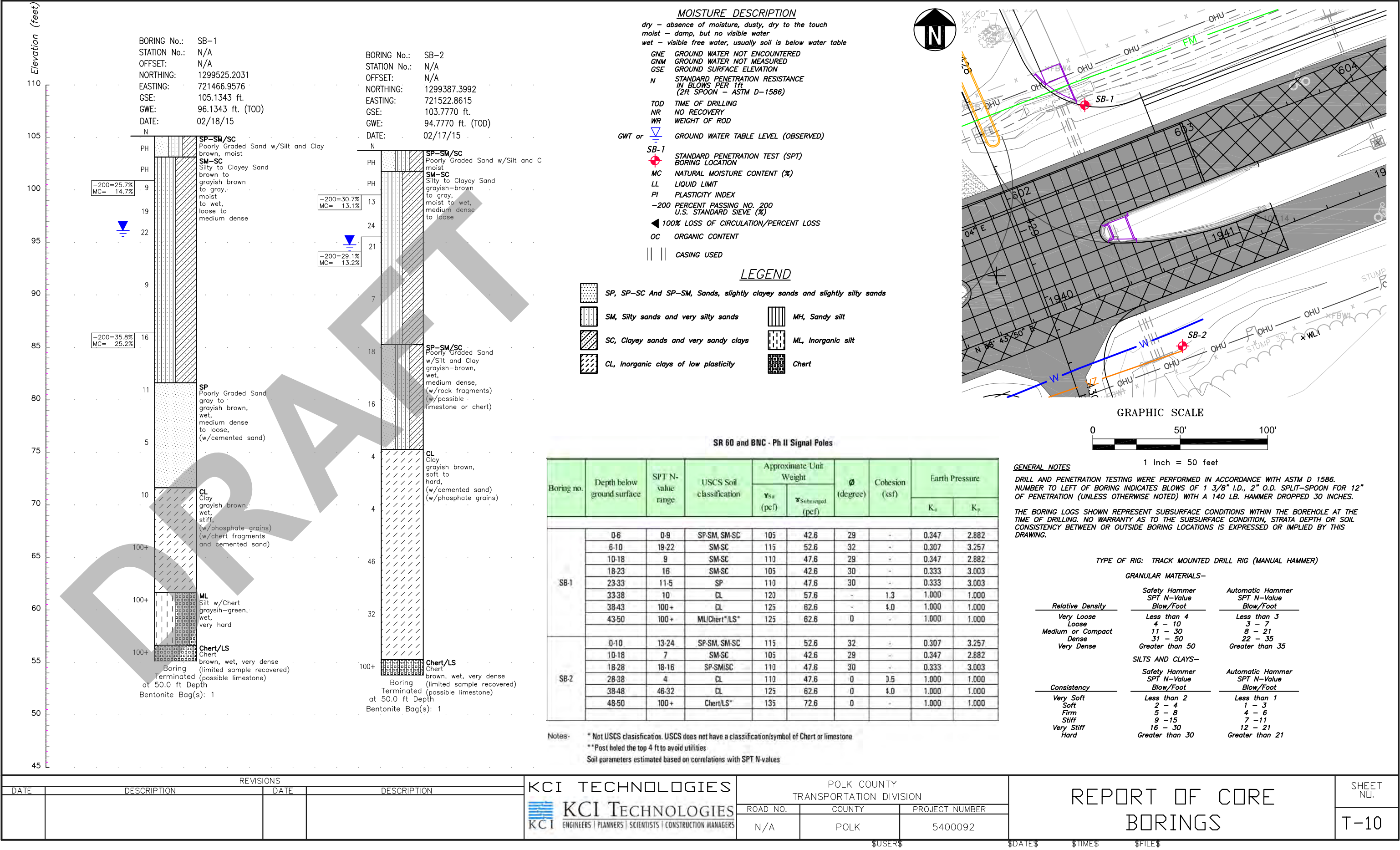
PROJECT NAME

Geotechnical Roadway Report
Bartow Northern Connector 2
Bartow, Polk County, Florida

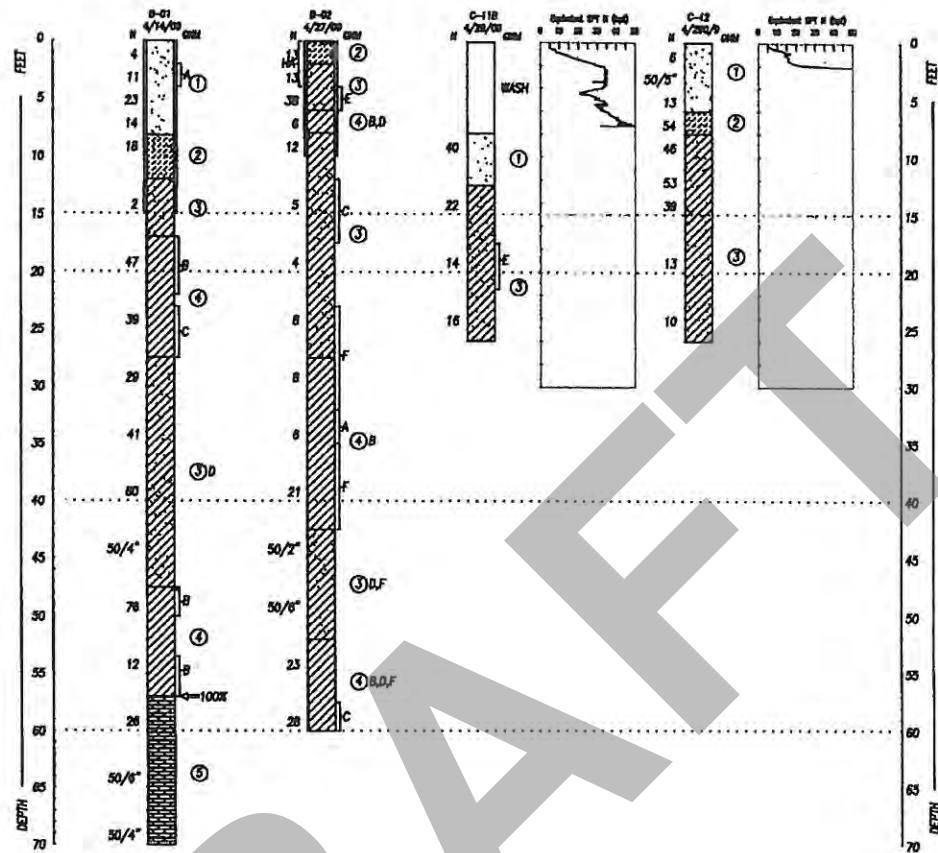
CLIENT

Mr. Thomas J. Montgomery, P.E.
NV5
Tampa, Florida

SHEET TITLE		Figure No.
Boring Log Profiles		7D
SOURCE	PROJECT NO.	
KCI's Field Exploration program	12134599	







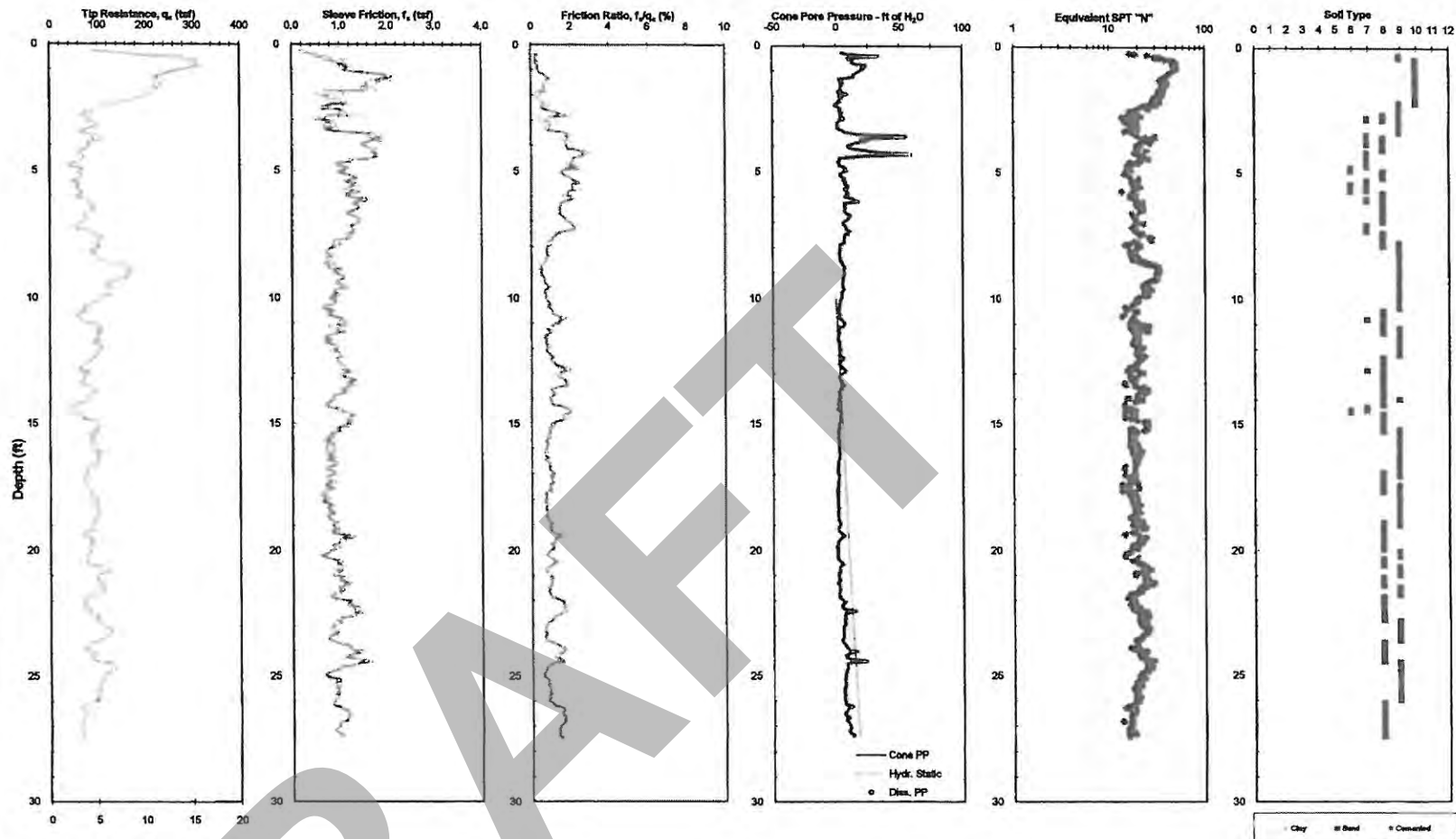
- LEGEND**
- ① BROWN SILT TO BROWN FINE SAND (SP)
 - ② BROWN SILT TO SLIGHTLY CLAYEY FINE SAND (SP-SC)
 - ③ BROWN SILT TO CLAYEY SAND (SC)
 - ④ BROWN SILT TO SILT CLAY (CL/SC)
 - ⑤ SILT TO LIGHT CLAY HEAVILY BEDDED LAMINATE
 - A SILT CLAY
 - B TRACE FINE SAND
 - C SILT BEDDED CLAY
 - D TRACE LAMINATE FINE SAND
 - E TRACE BEDDED SAND
 - F SILT FINE SAND
 - NUMBER TYPE SILENT
 - SEE TYPE ONE-03
 - DRILLED BY S. BERRY/C. GILES
 - (SP) UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM) SYMBOL
 - ▽ CORROSION LEVEL, REQUIRED ON BORE DILLES
 - # SPT N-VALUE IN BLows PER FOOT
 - OM OILCRAKING LEVEL, NOT REQUIRED

SOIL BORING PROFILES

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

NE ROAD EXTENSION
POLK COUNTY, FLORIDA

PROJECT NO. 09-0521	DESIGNED BY JHH	DATE 5/26/09
APPROVED BY		REVISION 5



Soil ID #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH
2	Organic Material	OH
3	Clay	CH
4	Silty Clay to Clay	CL/MH
5	Clayey Silt to Silty Clay	MH/CL
6	Silty Sand to Sandy Silt	SC

Soil ID #	Soil Description	UCS
7	Sand to Sandy Silt	SP/SC
8	Sand to Silty Sand	SP
9	Sand	SP/SW
10	Gravelly Sand to Sand	SP/GW
11	Very Stiff Fined Grained	OC Clay
12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-01

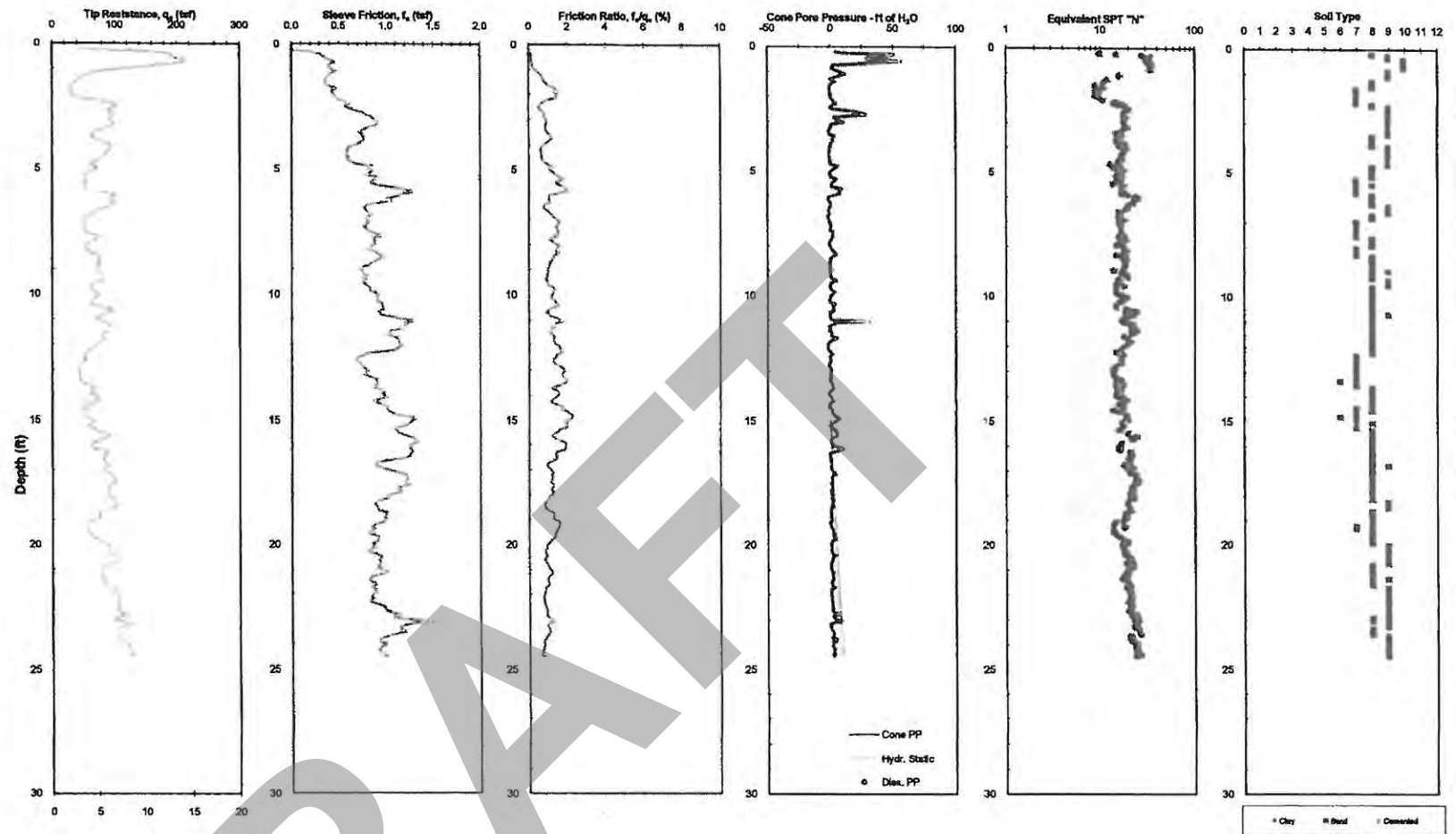
Soil Classification by Robertson et al., 1996

ID #s 11 and 12 are Over Consolidated or Cemented

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Marine Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 Test Date: 4/28/2009



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/MH	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-02

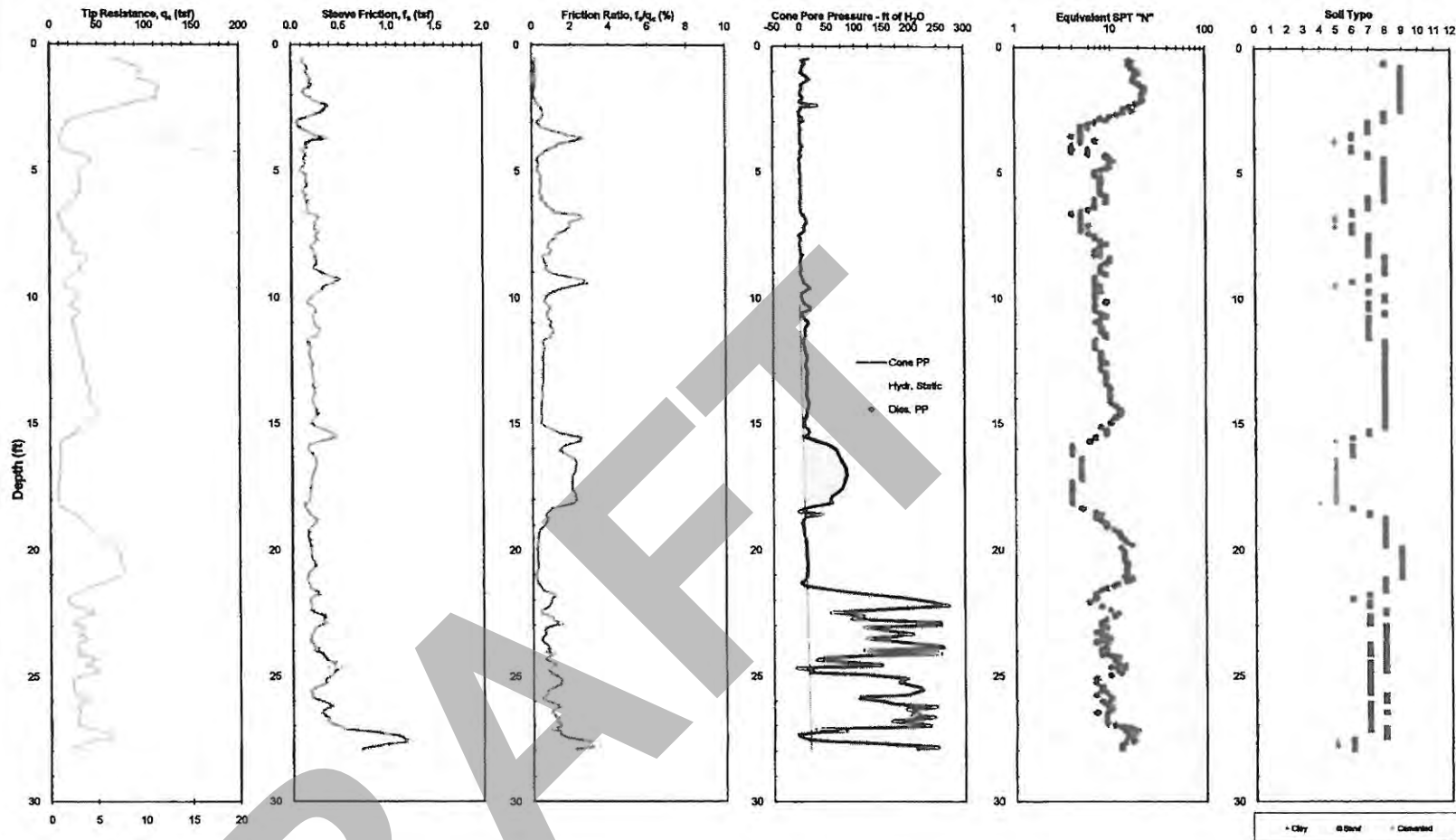
Ardaman & Associates, Inc.
Geotechnical, Environmental and
Marine Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 | Test Date: 4/28/2009

Soil Classification by Robertson et al, 1986

I.D. #s 11 and 12 are Over Consolidated or Cemented



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/MH	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-03

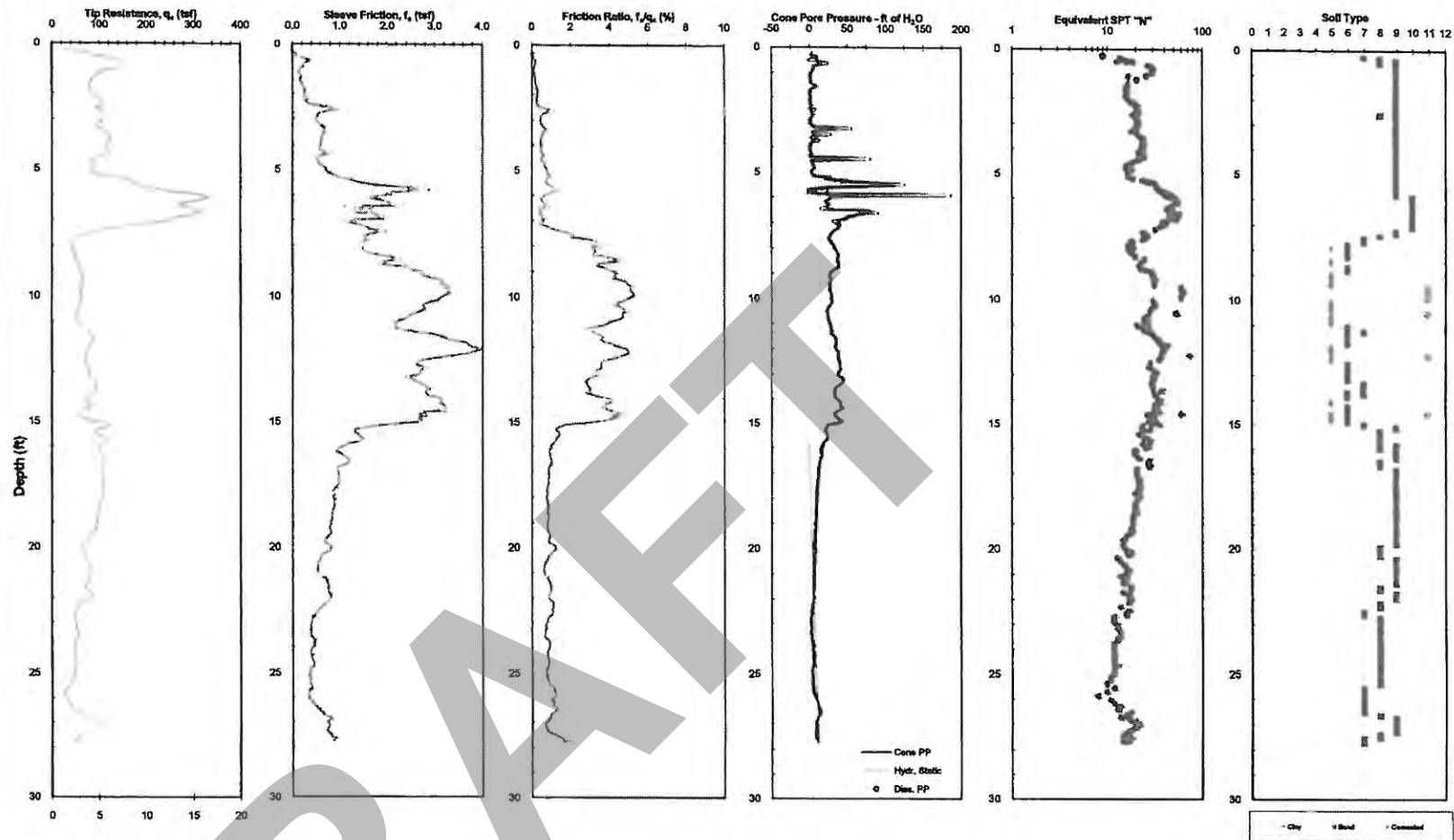
Soil Classification by Robertson et al, 1985

I.D. #'s 11 and 12 are Over Consolidated or Cemented

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Infrastructure Consulting

NE Road Extension
Bartow, Florida

Job No. 09-9521 Test Date: 4/28/2009



Soil ID #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH
2	Organic Material	OH
3	Clay	CH
4	Silty Clay to Clay	CL/MH
5	Clayey Silt to Silty Clay	MH/CL
6	Silty Sand to Sandy Silt	SC

Soil ID #	Soil Description	UCS
7	Sand to Sandy Silt	SP/SC
8	Sand to Silty Sand	SP
9	Sand	SP/SW
10	Gravelly Sand to Sand	SP/GW
11	Very Stiff Fined Grained	OC Clay
12	Sand to Clayey Sand	Cemented

Notes:

- Verlek Cone, Pore Pressure at U2

C-04

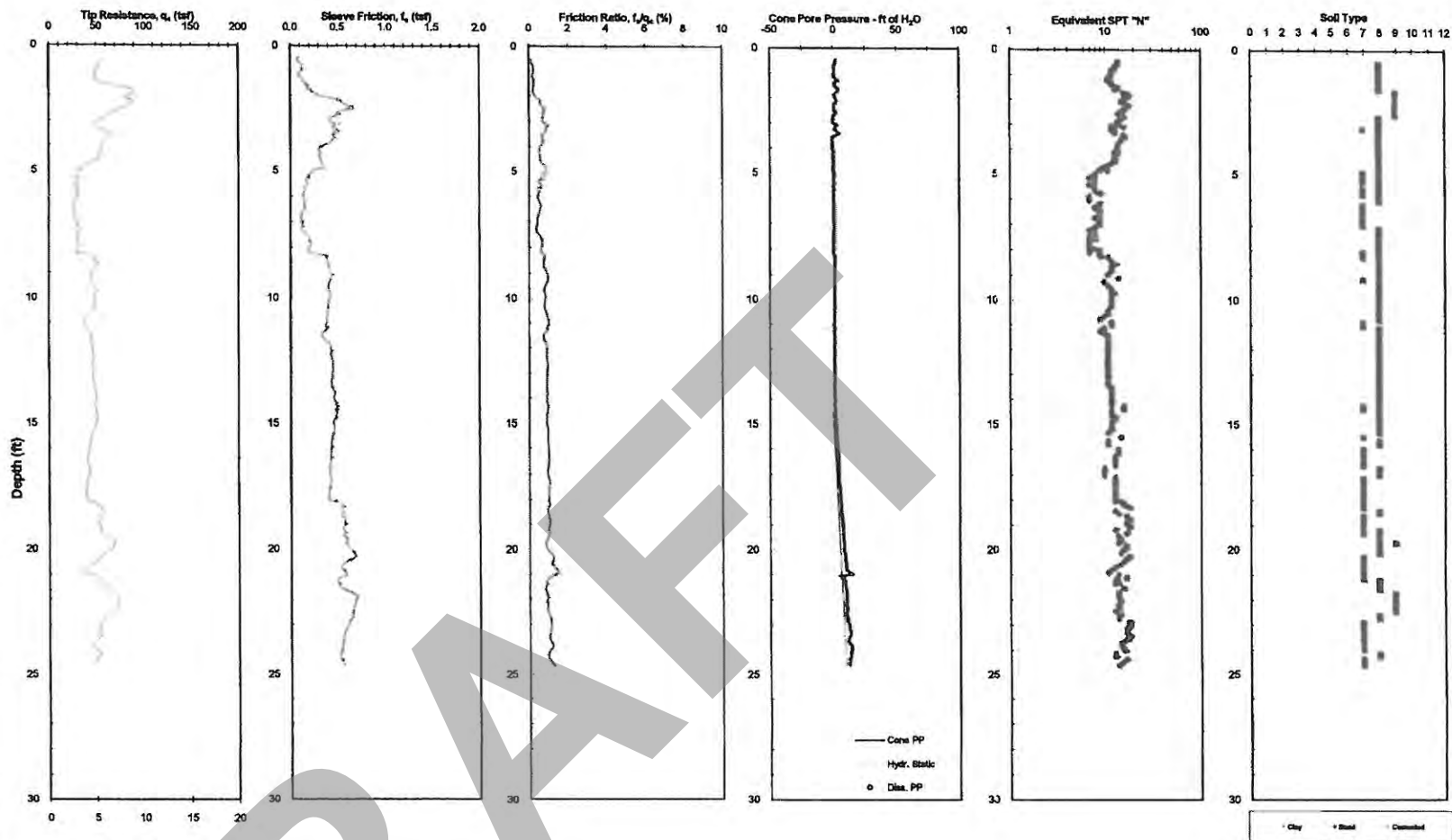
Andaman & Associates, Inc.
Geotechnical, Environmental and
Minerals Consultants

NE Road Extension
Bartow, Florida

Job No. 09-9521 Test Date: 4/28/2009

Soil Classification by Robertson et al, 1986

LD #s 11 and 12 are Over Consolidated or Cemented



Soil ID #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH
2	Organic Material	OH
3	Clay	CH
4	Silty Clay to Clay	CL/MH
5	Clayey Silt to Silty Clay	MH/CL
6	Silty Sand to Sandy Silt	SC

Soil ID #	Soil Description	UCS
7	Sand to Sandy Silt	SP/SC
8	Sand to Silty Sand	SP
9	Sand	SP/SW
10	Gravelly Sand to Sand	SP/GW
11	Very Stiff Fined Grained	OC Clay
12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-05

Soil Classification by Robertson et al, 1986

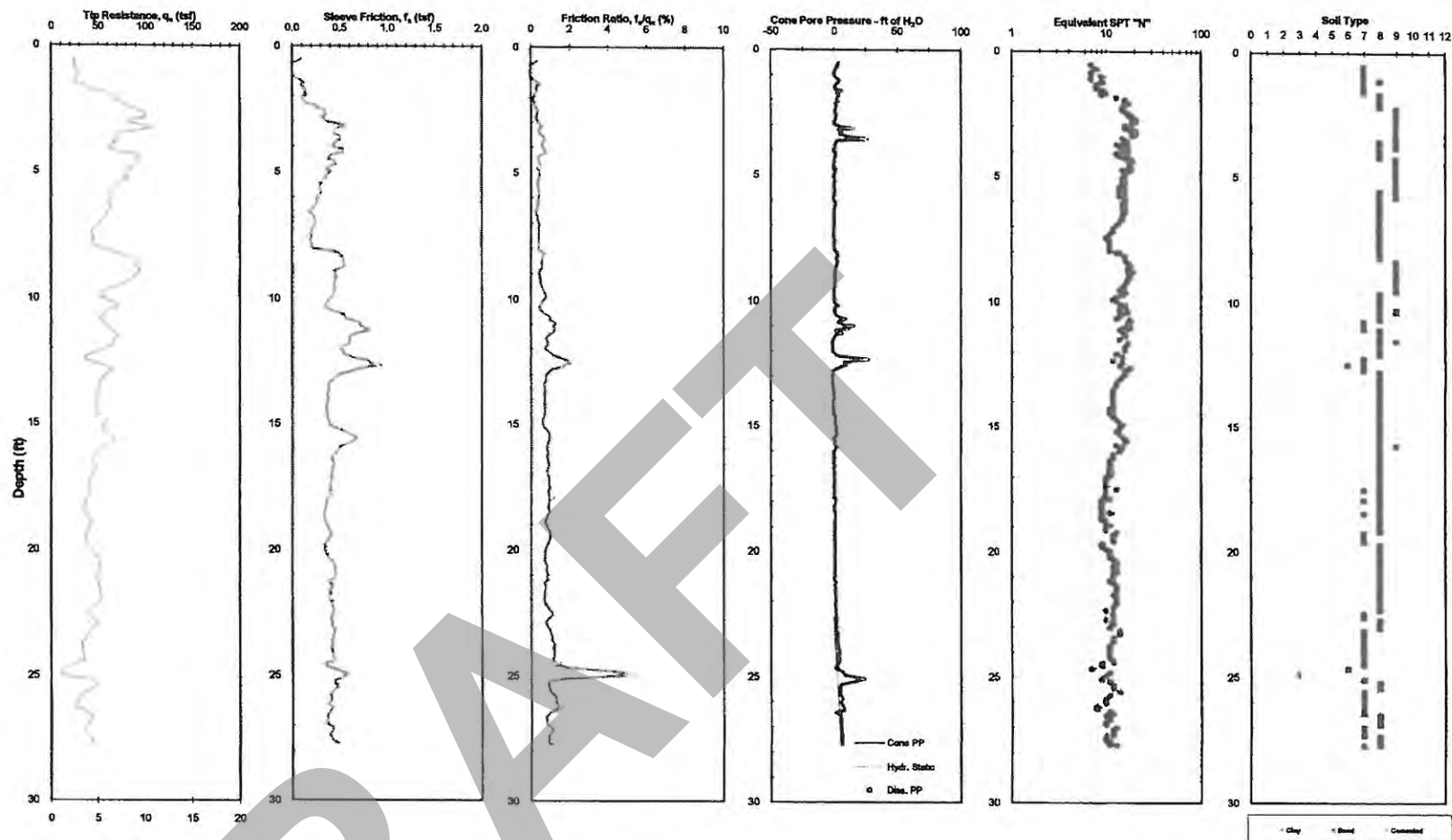
ID #s 11 and 12 are Over Consolidated or Cemented



Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 Test Date: 4/28/2009



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/MH	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-06

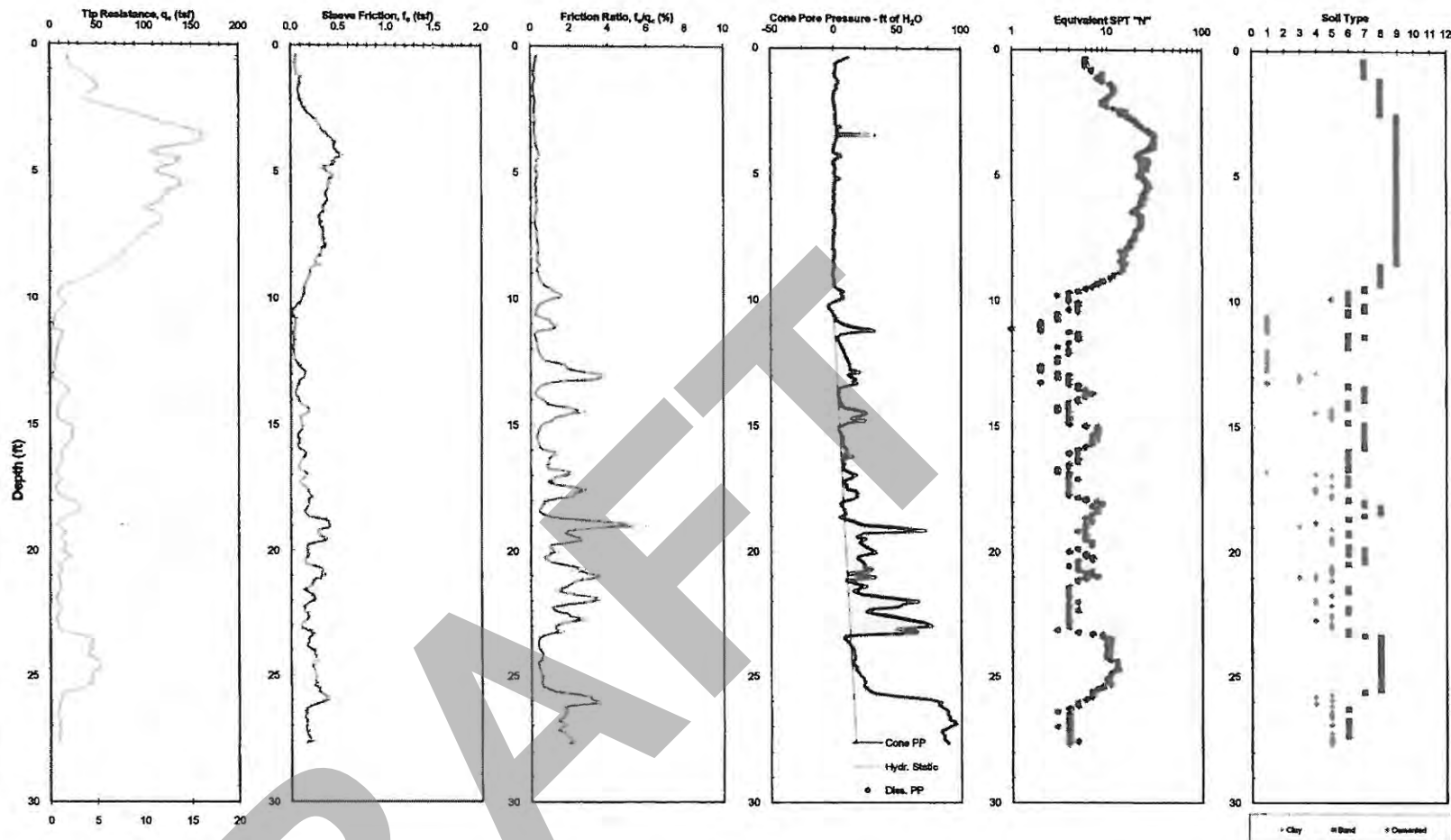
Soil Classification by Robertson et al, 1996

I.D. #'s 11 and 12 are Over Consolidated or Cemented

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 Test Date: 4/28/2009



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/MH	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:
- Vertek Cone, Pore Pressure at u2

C-07

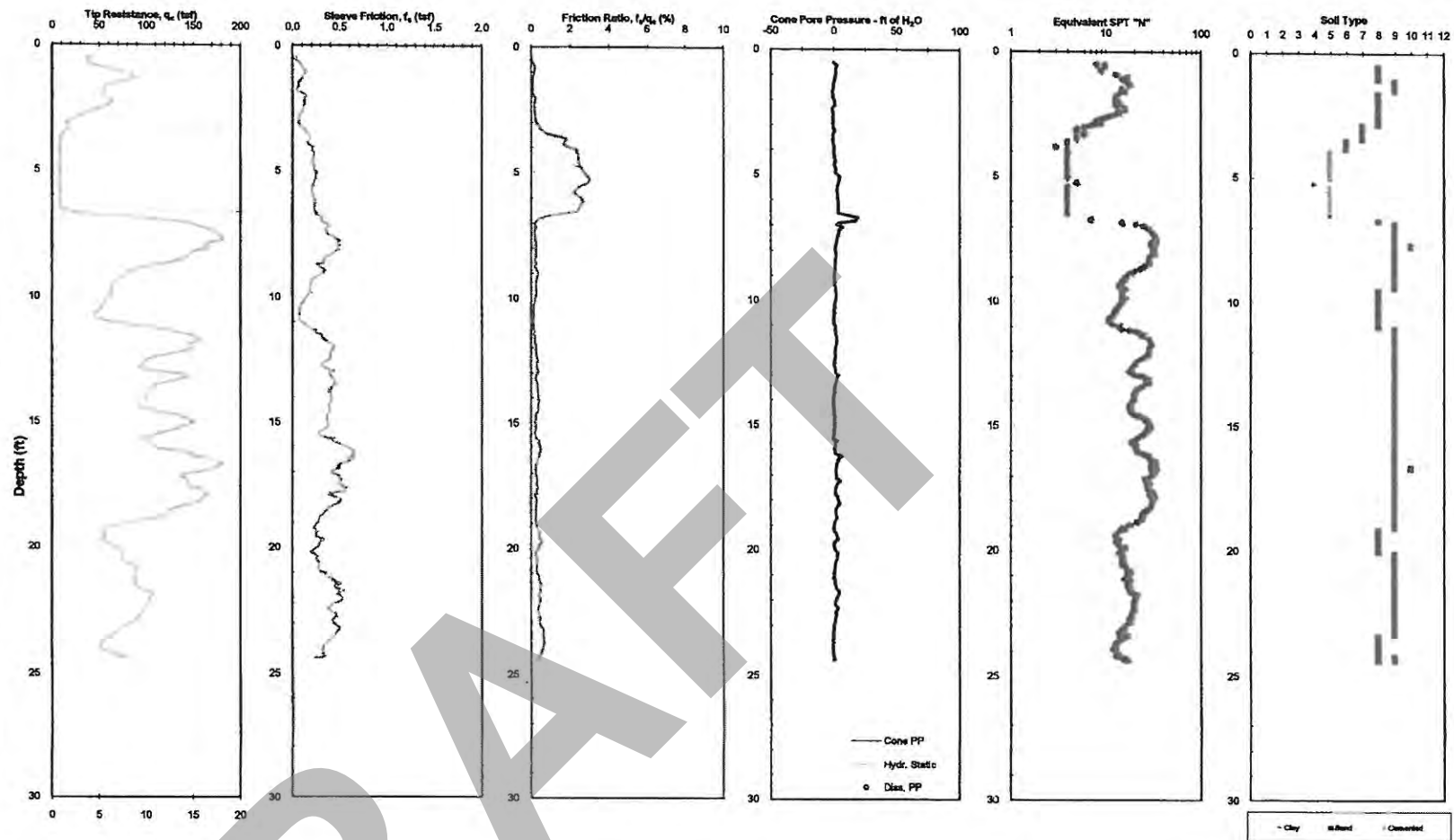
Soil Classification by Robertson et al, 1986

I.D. #'s 11 and 12 are Over Consolidated or Cemented

Arndman & Associates, Inc.
Geotechnical, Environmental and
Material Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 Test Date: 4/28/2009



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/ML	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-08

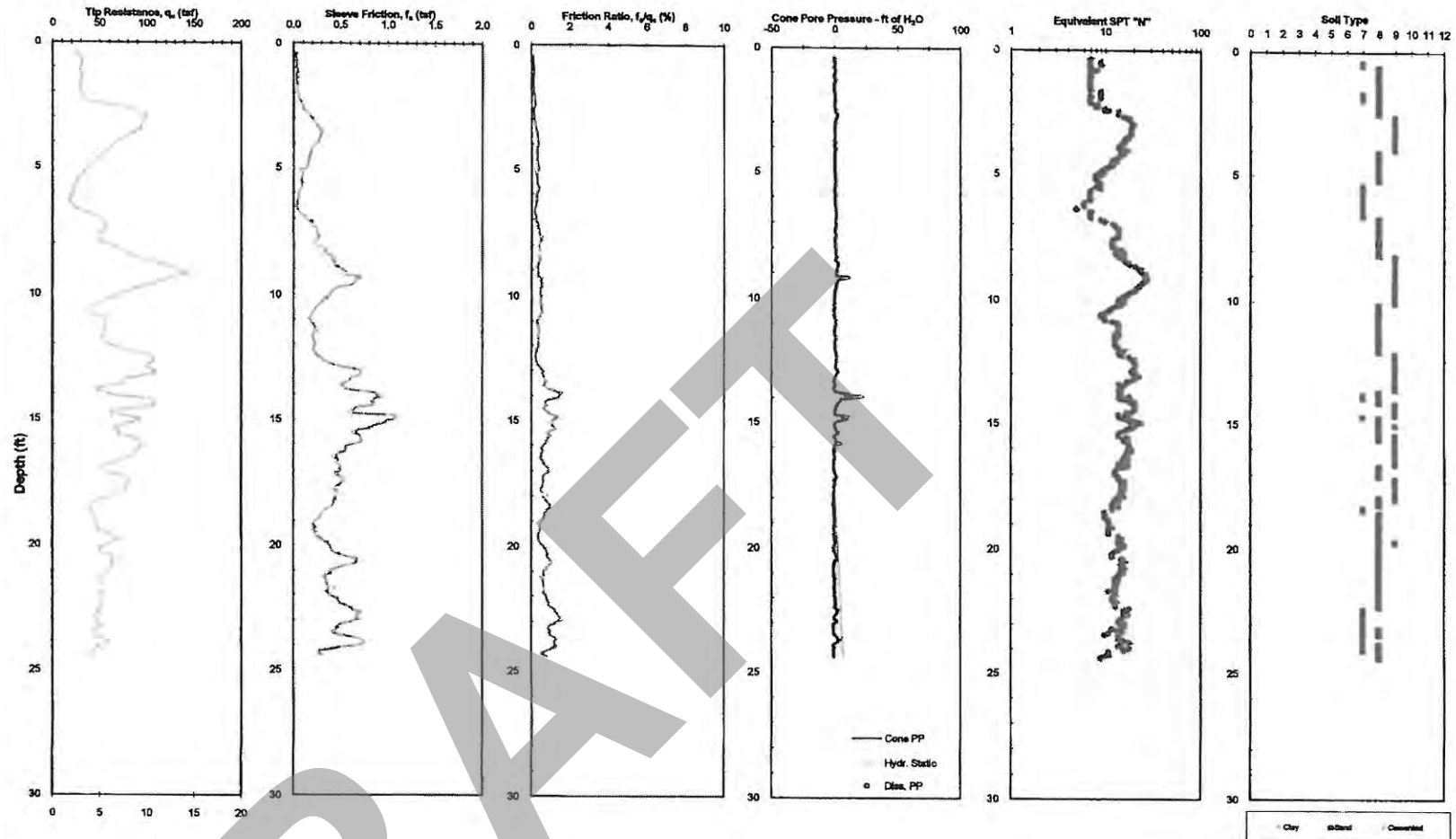
Soil Classification by Robertson et al, 1986

I.D. #'s 11 and 12 are Over Consolidated or Cemented

Anderson & Associates, Inc.
Geotechnical, Environmental and
Infrastructure Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 | Test Date: 4/28/2009



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/ML	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	ML/CL	11	Very Silty Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-09

Soil Classification by Robertson et al, 1986

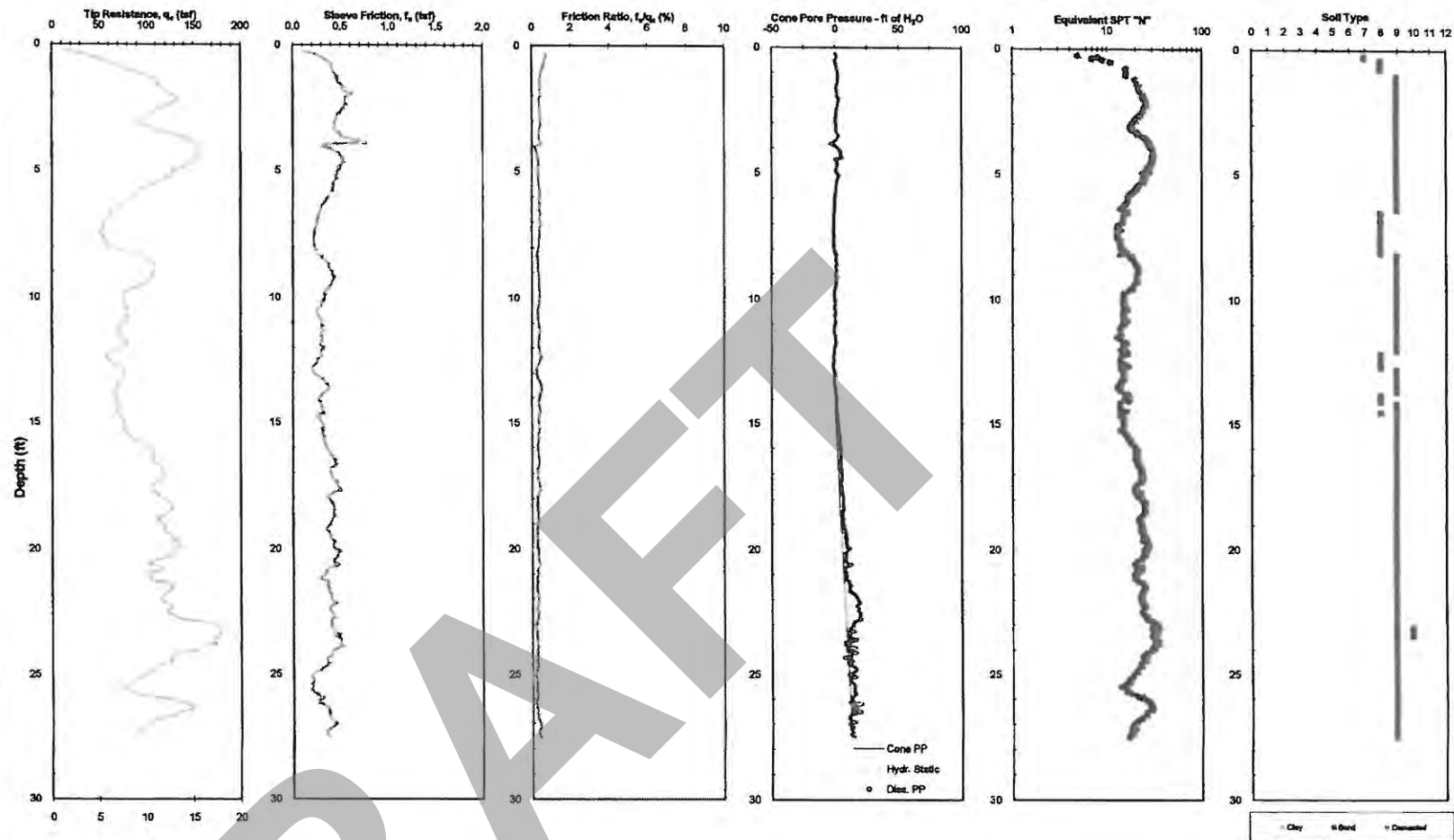
I.D. #'s 11 and 12 are Over Consolidated or Cemented



Ardaman & Associates, Inc.
Geotechnical, Environmental and
Marine Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 Test Date: 4/28/2009



Soil ID. #	Soil Description	UCS
1	Sensitive Fine Grained Organic Material	OH/CH
2	Clay	OH
3	Silty Clay to Clay	CH
4	Clayey Silt to Silty Clay	CL/ML
5	Silty Sand to Sandy Silt	ML/CL
6		SC

Soil ID. #	Soil Description	UCS
7	Sand to Sandy Silt	SP/SC
8	Sand to Silty Sand	SP
9	Sand	SP/SW
10	Gravelly Sand to Sand	SP/GW
11	Very Stiff Fined Grained Sand to Clayey Sand	OC Clay
12		Cemented

Notes:

- Vertek Cone, Pore Pressure at u2

C-10

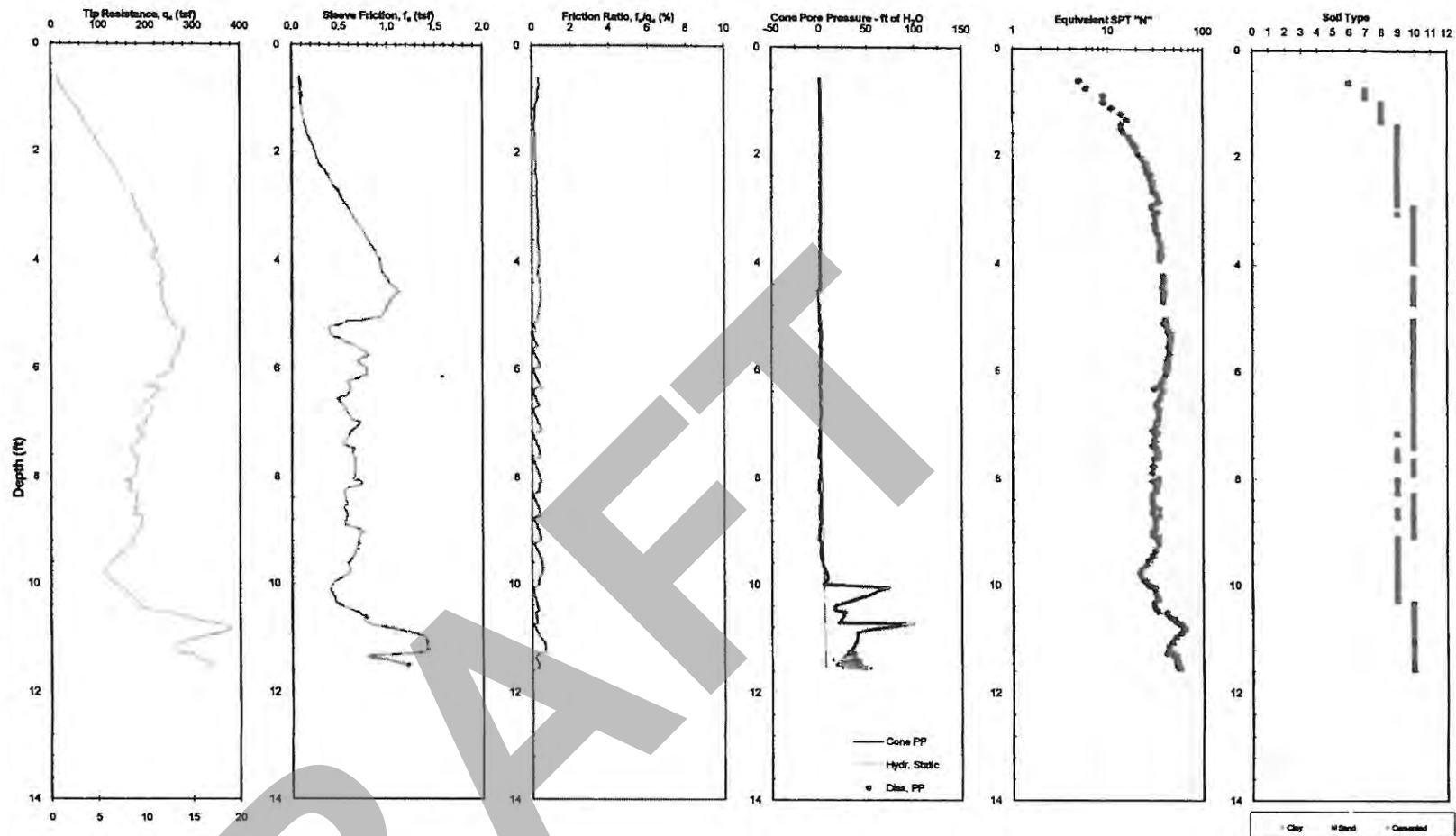
Soil Classification by Robertson et al, 1986

LD. #s 11 and 12 are Over Consolidated or Cemented



NE Road Extension
Bartow, Florida

Job No. 09-9521 Test Date: 4/29/2009



Soil ID #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH
2	Organic Material	OH
3	Clay	CH
4	Silty Clay to Clay	CL/MH
5	Clayey Silt to Silty Clay	MH/CL
6	Silty Sand to Sandy Silt	SC

Soil ID #	Soil Description	UCS
7	Sand to Sandy Silt	SP/SC
8	Sand to Silty Sand	SP
9	Sand	SP/SW
10	Gravelly Sand to Sand	SP/GW
11	Very Stiff Fined Grained	OC Clay
12	Sand to Clayey Sand	Cemented

Notes:
- Verlet Cone, Pore Pressure at u2

C-11-A

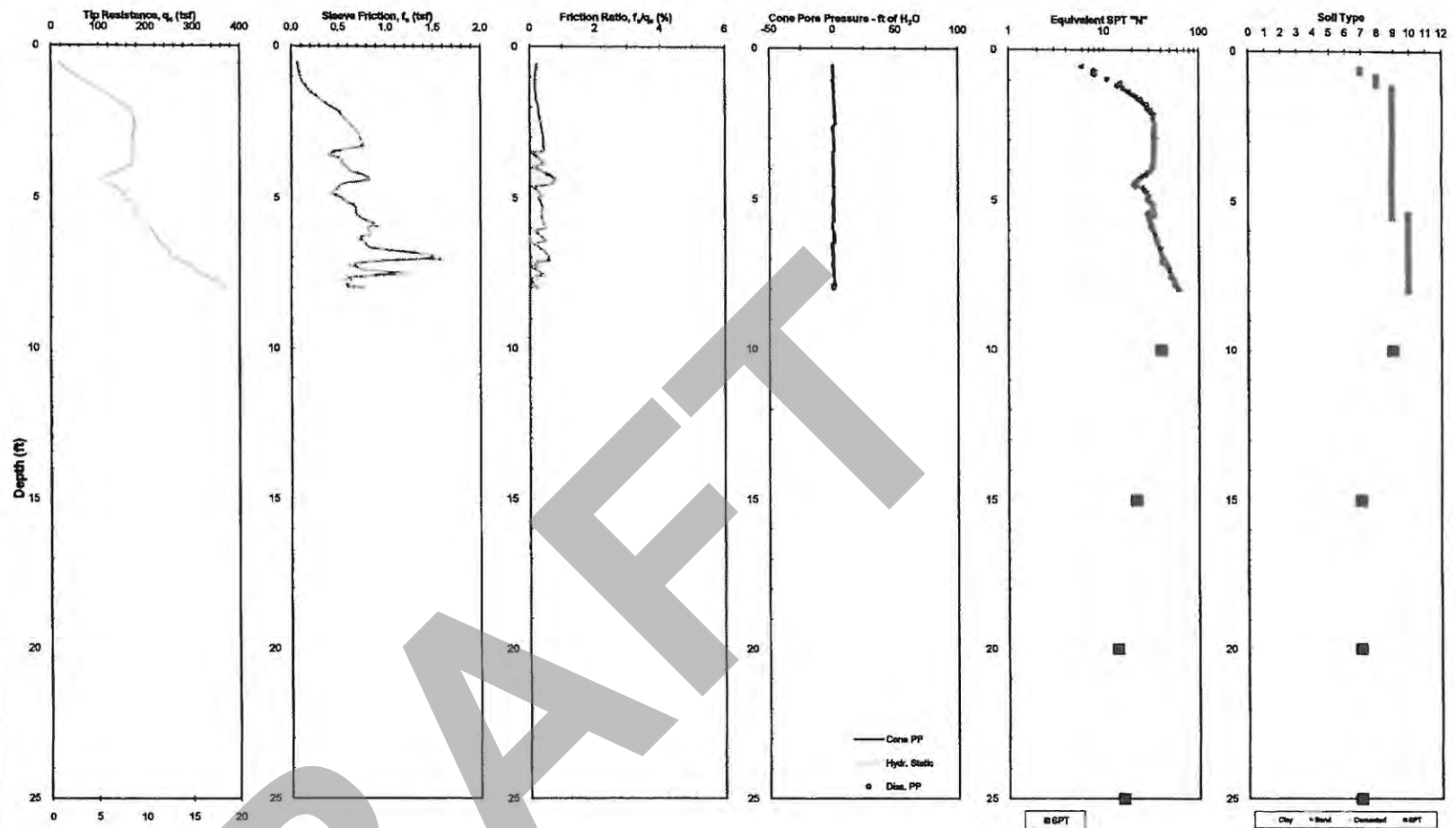
Soil Classification by Robertson et al, 1986

Soil IDs 11 and 12 are Over Consolidated or Cemented

Ardayan & Associates, Inc.
Geotechnical, Environmental and
Material Consultants

NE Road Extension
Bartow, Florida

Job No. 09-9521 Test Date: 4/29/2009



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/MH	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone Pore Pressure at u2

C-11-B

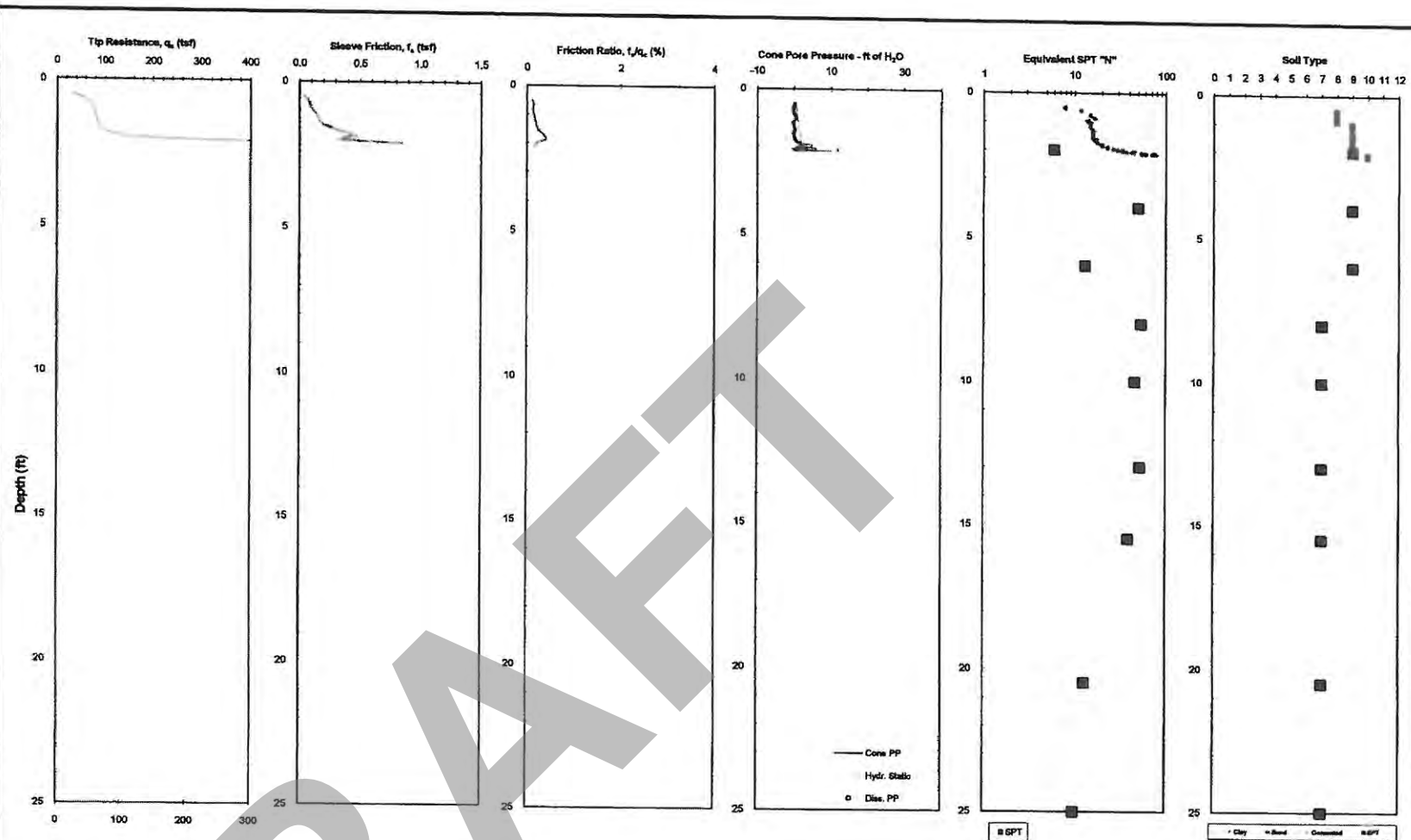
Andaman & Associates, Inc.
Geotechnical, Environmental and
Marine Consultants

**NE Road Extension
Bartow, Florida**

Job No. 09-9521 Test Date: 4/29/2009

Soil Classification by Robertson et al., 1996

I.D. #s 11 and 12 are Over Consolidated or Cemented



Soil I.D. #	Soil Description	UCS	Soil I.D. #	Soil Description	UCS
1	Sensitive Fine Grained	OH/CH	7	Sand to Sandy Silt	SP/SC
2	Organic Material	OH	8	Sand to Silty Sand	SP
3	Clay	CH	9	Sand	SP/SW
4	Silty Clay to Clay	CL/MH	10	Gravelly Sand to Sand	SP/GW
5	Clayey Silt to Silty Clay	MH/CL	11	Very Stiff Fined Grained	OC Clay
6	Silty Sand to Sandy Silt	SC	12	Sand to Clayey Sand	Cemented

Notes:

- Vertek Cone, Pore Pressure at u_2

C-12

Andaman & Associates, Inc.
Geotechnical, Environmental and
Marine Consultants

NE Road Extension
Bartow, Florida

Job No. 09-9521 Test Date: 4/29/2009

Soil Classification by Robertson et al, 1986

I.D. #s 11 and 12 are Over Consolidated or Cemented

APPENDIX C

Summary of USDA Soil Survey of Polk County, Florida

DRAFT

SUMMARY OF USDA SOIL SURVEY							
POLK COUNTY, FLORIDA							
USDA Map Symbol and Soil Name	Depth (in)	Soil Classification		Permeability (in/hr)	pH	Seasonal High Water Table	
		USCS	AASHTO			Depth (feet)	Months
(2) Apopka	0-7	SP, SP-SM	A-3	6.0-20.0	4.5-6.0	>6	Jan-Dec
	7-50	SP, SP-SM	A-3	6.0-20.0	4.5-6.0		
	50-67	SC-SM, SC	A-2-6, A-4, A-6	0.6-2.0	4.5-6.0		
	67-80	SC-SM, SC	A-4, A-2-4, A-2-6, A-6	0.2-2.0	4.5-6.0		
(3) Candler	0-6	SP, SP-SM	A-3	6.0-50.0	4.5-6.0	>6	Jan-Dec
	6-63	SP, SP-SM	A-3, A-2-4	6.0-50.0	4.5-6.0		
	63-80	SP-SM	A-2-4, A-3	6.0-20.0	4.5-6.3		
(7) Pomona, non-hydric	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.5 - 1.5	Jun-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SM, SC-SM, SC	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
	73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	Pomona, hydric	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	
6-21		SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
21-26		SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
26-48		SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
48-73		SM, SC-SM, SC	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5			
(8) Hydraquents, clayey	0-80	CH	A-7	0.0-0.1	7.9-8.4	+2.0 - 0.0	Jan-Dec
(11) Arents	0-80	SP, SP-SM	A-3	20.0-50.0	3.5-6.5	---	Jan-Dec
Water	---	---	---	---	---		
(12) Neilhurst	0-3	SP, SP-SM	A-2-4, A-3	20.0-50.0	5.1-6.5	>6	Jan-Dec
	3-80	SP, SP-SM	A-2-4, A-3	20.0-50.0	5.1-6.5		
(13) Samsula	0-24	PT	A-8	6.0-20.0	3.5-4.4	+2.0 - 0.0	Jan-Dec
	24-32	PT	A-8	6.0-20.0	3.5-4.4		
	32-35	SM, SP-SM	A-3, A-2-4	6.0-20.0	3.5-6.0		
	35-44	SP-SM, SM	A-2-4, A-3	6.0-20.0	3.5-6.0		
	44-80	SM, SP-SM	A-2-4, A-3	6.0-20.0	3.5-6.0		
(15) Tavares	0-5	SP, SP-SM	A-3, A-2-4	6.0-20.0	4.5-6.0	3.5 - 6.0	Jun-Nov
	5-80	SP, SP-SM, SM	A-3, A-2-4	6.0-20.0	4.5-6.0		
(22) Pomello	0-5	SP, SP-SM	A-3	20.0-50.0	4.5-6.0	2.0 - 3.5	Jul-Nov
	5-48	SP, SP-SM	A-3	20.0-50.0	4.5-6.0		
	48-63	SM, SP-SM	A-2-4, A-3	2.0-6.0	4.5-6.0		
	63-80	SP, SP-SM	A-3	6.0-20.0	4.5-6.0		
(23) Ona, non-hydric	0-9	SM, SP-SM	A-2-4	6.0-20.0	3.5-6.0	0.5 - 1.5	Jan-Dec
	9-16	SM, SP-SM	A-2-4	0.6-2.0	3.5-6.0		
	16-80	SP-SM, SM	A-2-4, A-3	6.0-20.0	3.5-6.0		
Ona, hydric	0-9	SM, SP-SM	A-2-4	6.0-20.0	3.5-6.0	0.0 - 1.5	Jul-Sep
	9-16	SM, SP-SM	A-2-4	0.6-2.0	3.5-6.0		
	16-80	SP-SM, SM	A-2-4, A-3	6.0-20.0	3.5-6.0		
(25) Placid, depressional	0-18	SM, SP, SP-SM	A-3, A-2-4	6.0-20.0	3.5-5.5	+2.0 - 0.0	Jan-Mar, Jun-Dec
	18-80	SP-SM, SM, SP	A-2-4, A-3	6.0-20.0	3.5-5.5		
Myakka, depressional	0-3	SP, SP-SM	A-3	6.0-20.0	3.5-6.5	+2.0 - 0.0	Jan-Feb, Jun-Dec
	3-25	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	25-35	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-6.5		
	35-80	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
(35) Hontoon	0-75	PT	A-8	6.0-20.0	3.5-4.5	+2.0 - 0.0	Jan-Dec
	75-80	SC, SM	A-2-6, A-2-4, A-6	6.0-20.0	3.3-5.0		
(37) Placid	0-18	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.0 - 0.5	Jan-Feb, Jun-Dec
	18-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
(57) Haplaquents, clayey	0-80	CH	A-7	0.0-0.1	5.6-7.3	+1.0 - 0.0	Jan-Dec
(58) Udorthents, excavated	---	---	---	---	---	---	---
(68) Arents	0-80	SP, SP-SM	A-3	20.0-50.0	3.5-6.5	2.0 - 4.0	Jan, Jun-Dec
(99) Water	---	---	---	---	---	---	---

APPENDIX D

Summary of Laboratory Test Results

DRAFT

Summary Of Laboratory Test Results
Central Polk Parkway PD&E
Polk County, FL
FPID: 440897-4-24-01
Tierra Project No.: 6511-17-181-002

Boring Name	Sample Depth (ft)			Stratum	AASHTO Symbol	Sieve Analyses (% Passing)					Atterberg Limits			Organic Content (%)	Moisture Content (%)
						#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
AB-1392A1	0.0	-	4.5	1	A-3	-	-	-	-	1	-	-	-	-	-
AB-1428A1	0.0	-	5.8	1	A-3	-	-	-	-	9	-	-	-	-	-
AB-1395A1	4.0	-	10.0	2	A-2-4	-	-	-	-	20	-	-	-	-	-
AB-1400A1	0.0	-	2.0	2	A-2-4	-	-	-	-	22	NP	NP	NP	-	15
B - 1357L	68.5	-	70	3	A-2-6					31	36	25	11	---	34
B - 1361L	43.5	-	45.0	3	A-2-7					31	26	15	11	---	15
AB-1406A1	6.0	-	10.0	3	A-2-6	-	-	-	-	30	27	15	12	-	13
AB-1410A1	5.5	-	10.0	3	A-2-6	-	-	-	-	34	28	14	14	-	13
B-1380A1	33.5	-	35.0	3	A-2-7	-	-	-	-	26	44	29	15	-	47
AB-1438A1	0.0	-	2.0	4	A-4	-	-	-	-	37	24	15	9	-	26
AB-1435A1	0.0	-	1.5	6	A-8	-	-	-	-	31	-	-	-	34	53
AB-1438A1	2.0	-	3.0	6	A-8	-	-	-	-	20	-	-	-	50	120
B-1339L2	2.0	-	4.0	9	A-3	-	-	-	-	4	-	-	-	-	-
B-1341R2	4.0	-	6.0	9	A-3	100	86	55	13	2	-	-	-	-	-
B-1344R2	6.0	-	8.0	9	A-3	-	-	-	-	2	-	-	-	-	-
B-1344R2	18.0	-	20.0	9	A-3	-	-	-	-	2	-	-	-	-	-
B-1350R2	6.0	-	8.0	9	A-3	-	-	-	-	1	-	-	-	-	-
B-1351L	6.0	-	8.0	9	A-3	100	75	33	4	2	-	-	-	-	-
B-1353R2	4.0	-	8.0	9	A-3	-	-	-	-	3	-	-	-	-	-
B-1354L2	6.0	-	8.0	9	A-3	100	93	56	23	9	-	-	-	-	-
B-1354L2	18.0	-	20.0	9	A-3	-	-	-	-	5	-	-	-	-	-
B-1356L	4.0	-	6.0	9	A-3	100	89	54	7	2	-	-	-	-	-
B-1356R	6.0	-	8.0	9	A-3	100	83	43	12	4	-	-	-	-	-
B-1357R	8.0	-	10.0	9	A-3	100	89	53	12	2	-	-	-	-	-

Summary Of Laboratory Test Results
Central Polk Parkway PD&E
Polk County, FL
FPID: 440897-4-24-01
Tierra Project No.: 6511-17-181-002

Boring Name	Sample Depth (ft)			Stratum	AASHTO Symbol	Sieve Analyses (% Passing)					Atterberg Limits			Organic Content (%)	Moisture Content (%)
						#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-1358L	6.0	-	8.0	9	A-3	100	86	55	8	2	-	-	-	-	-
B-1360LA3	6.0	-	8.0	9	A-3	100	81	44	10	3	-	-	-	-	-
B-1361L	8.0	-	10.0	9	A-3	100	88	54	12	3	-	-	-	-	-
B-1361L	28.5	-	30.0	9	A-3	100	94	63	20	7	-	-	-	-	-
B-1361R	8.0	-	10.0	9	A-3	100	95	68	22	3	-	-	-	-	-
B-1361R	23.5	-	25.0	9	A-3	100	93	61	15	4	-	-	-	-	-
B-1362R	4.0	-	6.0	9	A-3	100	86	46	10	2	-	-	-	-	-
B-1362R	18.5	-	20.0	9	A-3	100	92	57	16	4	-	-	-	-	-
B-1362A1	23.0	-	25.0	9	A-3	100	89	50	14	3	-	-	-	-	-
B-1364A1	6.0	-	10.0	9	A-3	-	-	-	-	2	-	-	-	-	-
B-1366A1	18.0	-	20.0	9	A-3	-	-	-	-	4	-	-	-	-	-
B-1368A1	4.0	-	8.0	9	A-3	100	89	54	14	2	-	-	-	-	-
B-1370A1	23.0	-	25.0	9	A-3	-	-	-	-	1	-	-	-	-	-
B-1375A2	23.5	-	25.0	9	A-3	-	-	-	-	8	-	-	-	-	-
B-1380A2	0.0	-	2.0	9	A-3	-	-	-	-	4	-	-	-	-	-
B-1394A2	4.0	-	6.0	9	A-3	-	-	-	-	7	-	-	-	-	-
AB-1427A2	0.0	-	10.0	9	A-3	100	71	24	5	2	-	-	-	-	-
B-1433A2	18.0	-	20.0	9	A-3	-	-	-	-	5	-	-	-	-	-
AB-1445	0.0	-	8.0	9	A-3	-	-	-	-	6	-	-	-	-	-
B-1444A2	8.0	-	10.0	9	A-3	-	-	-	-	5	-	-	-	-	-
B-1391A1	6.0	-	8.0	9	A-3	100	93	60	18	6	-	-	-	-	-
AB4-ALT4	0.0	-	5.0	9	A-3					4					
B-1444A2	4.0	-	6.0	10	A-2-4	-	-	-	-	12	-	-	-	-	-
B-1348	33.0	-	35.0	10	A-2-4	-	-	-	-	13	-	-	-	-	-

Summary Of Laboratory Test Results
Central Polk Parkway PD&E
Polk County, FL
FPID: 440897-4-24-01
Tierra Project No.: 6511-17-181-002

Boring Name	Sample Depth (ft)			Stratum	AASHTO Symbol	Sieve Analyses (% Passing)					Atterberg Limits			Organic Content (%)	Moisture Content (%)
						#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-1350L2	23.0	-	25.0	10	A-2-4	-	-	-	-	13	NP	NP	NP	-	22
B-1350R2	2.0	-	4.0	10	A-2-4	100	95	75	41	17	-	-	-	-	-
B-1366A1	33.0	-	35.0	10	A-2-4	-	-	-	-	26	-	-	-	-	-
B-1440A2	13.0	-	15.0	10	A-2-4	-	-	-	-	11	NP	NP	NP	-	29
B-1372A1	6.0	-	8.0	10	A-2-4	-	-	-	-	26	NP	NP	NP	-	22
B-1372A1	8.0	-	10.0	10	A-2-4	-	-	-	-	23	NP	NP	NP	-	22
B-1375A2	13.5	-	15.0	10	A-2-4	-	-	-	-	19	-	-	-	-	-
B-1380A1	2.0	-	4.0	10	A-2-4	-	-	-	-	18	NP	NP	NP	-	11
B-1380A1	13.5	-	15.0	10	A-2-4	100	99	96	70	21	-	-	-	-	-
B-1380A2	8.0	-	10.0	10	A-2-4	-	-	-	-	19	-	-	-	-	-
B-1380A2	13.0	-	15.0	10	A-2-4	-	-	-	-	20	-	-	-	-	26
B-1382A1	28.5	-	30.0	10	A-2-4	100	77	57	16	11	-	-	-	-	-
B-1414A2	18.0	-	20.0	10	A-2-4	-	-	-	-	21	-	-	-	-	-
B-1414A2	38.0	-	40.0	10	A-2-4	-	-	-	-	15	-	-	-	-	-
B-1444A2	28.0	-	30.0	10	A-2-4	-	-	-	-	11	-	-	-	-	-
B-1444A2	33.0	-	35.0	10	A-2-4	-	-	-	-	16	-	-	-	-	31
B-1339L2	8.0	-	10.0	11	A-6	-	-	-	-	36	27	16	11	-	15
B-1339L2	23.0	-	25.0	11	A-2-6	-	-	-	-	36	36	20	16	-	22
B-1341R2	23.5	-	25.0	11	A-7-6	-	-	-	-	61	46	15	31	-	24
B-1341L2	6.0	-	8.0	11	A-6	-	-	-	-	36	32	15	17	-	13
B-1341L2	28.5	-	30.0	11	A-6	-	-	-	-	42	33	23	10	-	44
B-1341L2	33.0	-	35.0	11	A-2-7	-	-	-	-	34	48	32	16	-	48
B-1344R2	23.0	-	25.0	11	A-7-6	-	-	-	-	61	48	21	27	-	26

Summary Of Laboratory Test Results
Central Polk Parkway PD&E
Polk County, FL
FPID: 440897-4-24-01
Tierra Project No.: 6511-17-181-002

Boring Name	Sample Depth (ft)			Stratum	AASHTO Symbol	Sieve Analyses (% Passing)					Atterberg Limits			Organic Content (%)	Moisture Content (%)
						#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-1348	0.0	-	4.0	11	A-2-5	-	-	-	-	27	44	36	8	-	40
B-1348	4.0	-	6.0	11	A-6	-	-	-	-	53	22	18	4	-	18
B-1348	13.0	-	15.0	11	A-2-6	-	-	-	-	23	25	14	11	-	16
B-1350L2	13.0	-	15.0	11	A-2-6	-	-	-	-	21	24	13	11	-	15
B-1354L2	23.0	-	25.0	11	A-7-6	-	-	-	-	41	37	17	20	-	16
B-1368A1	28.0	-	30.0	11	A-2-6	-	-	-	-	31	36	13	23	-	14
B-1369A2	13.0	-	15.0	11	A-2-6	-	-	-	-	22	26	14	12	-	22
B-1369A2	33.5	-	35.0	11	A-2-6	-	-	-	-	29	27	15	12	-	25
B-1400A2	28.5	-	30.0	11	A-4	-	-	-	-	63	-	-	-	-	105
B-1370A1	4.0	-	6.0	11	A-2-6	-	-	-	-	35	37	20	17	-	27
B-1370A1	33.0	-	35.0	11	A-4	-	-	-	-	40	21	20	1	-	29
AB-1371A1	0.0	-	3.0	11	A-2-6	-	-	-	-	32	27	15	12	-	14
AB-1371A1	7.0	-	10.0	11	A-2-6	-	-	-	-	33	35	16	19	-	21
B-1372A1	28.5	-	30.0	11	A-7-6	-	-	-	-	37	46	22	24	-	44
AB-1374A1	0.0	-	5.0	11	A-2-6	-	-	-	-	25	27	14	13	-	22
B-1382A3	4.0	-	6.0	11	A-7-6	-	-	-	-	46	39	23	16	-	38
B-1391A1	18.5	-	20.0	11	A-7-6	-	-	-	-	37	42	21	21	-	40
B-1442A2	23.0	-	25.0	11	A-6	-	-	-	-	45	37	17	20	-	33
B-1444A2	23.0	-	25.0	11	A-6	-	-	-	-	48	29	17	12	-	45
B-1360LA3	18.0	-	20.0	12	A-7-5	-	-	-	-	93	88	42	46	-	136
B-1341L2	13.5	-	15.0	12	A-7-5	-	-	-	-	72	54	35	19	-	37
B-1386A1	38.5	-	40.0	12	A-7-5	-	-	-	-	38	94	52	42	-	57
B-1380A2	4.0	-	6.0	12	A-7-5	-	-	-	-	99	114	31	83	-	85
AB-1382	0.0	-	6.0	12	A-7-5	-	-	-	-	96	169	39	130	-	90

Summary Of Laboratory Test Results
Central Polk Parkway PD&E
Polk County, FL
FPID: 440897-4-24-01
Tierra Project No.: 6511-17-181-002

Boring Name	Sample Depth (ft)	Stratum	AASHTO Symbol	Sieve Analyses (% Passing)					Atterberg Limits			Organic Content (%)	Moisture Content (%)
				#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-1382A1	13.5 - 15.0	12	A-7-6	-	-	-	-	64	75	27	48	-	69
B-1396A2	33.0 - 35.0	12	A-7-5					40	77	49	28	-	60
B-1400A2	0.0 - 2.0	12	A-7-6					63	58	25	33		41
B-1400A2	13.5 - 15.0	12	A-7-5					96	114	39	75		77
B-1414A2	48.0 - 50.0	12	A-7-5	-	-	-	-	49	72	31	41	-	63
B-1440A2	0.0 - 2.0	12	A-7-6	-	-	-	-	79	74	26	48	-	50
B-1440A2	23.0 - 25.0	12	A-7-6	-	-	-	-	36	61	18	43	-	53
B-1396A2	4.0 - 6.0	12	A-7-5	-	-	-	-	99	88	35	53	-	54
B-1396A2	13.0 - 15.0	12	A-7-5	-	-	-	-	99	119	39	80	-	96
B-1396A2	18.0 - 20.0	12	A-7-5	-	-	-	-	77	106	36	70	-	79
AB-1397A2	0.0 - 5.0	12	A-7-5	-	-	-	-	89	129	50	79	-	77
B-1414A2	2.0 - 4.0	12	A-7-5	-	-	-	-	81	132	41	91	-	67
B-1414A2	6.0 - 8.0	12	A-7-5	-	-	-	-	68	72	35	37	-	51
B-1440RA2	8.0 - 10.0	12	A-7-5	-	-	-	-	97	89	34	55	-	49
B-1442A2	4.0 - 6.0	12	A-7-5	-	-	-	-	98	189	61	128	-	94
B-1442A2	13.0 - 15.0	12	A-7-5	-	-	-	-	90	89	35	54	-	55
P2-ALT4	0.0 - 1.5	12	A-7-6					66	65	29	36		54
AB1 ALT4	1.5 - 2.5	12	A-7-6					93	73	29	44		44
B-1368A1	18.0 - 20.0	13	A-8	-	-	-	-	9	-	-	-	8	42
B-1440RA2	13.0 - 18.0	13	A-8	-	-	-	-	13	-	-	-	11	47
P2-ALT4	2 - 3	13	A-8					19				8	
B-1348	23.0 - 25.0	14	A-2-4	-	-	-	-	17	22	17	5	-	15
B-1350L2	4.0 - 6.0	14	A-2-4	-	-	-	-	13	18	17	1	-	28
B-1353R2	28.0 - 30.0	14	A-2-4	-	-	-	-	17	16	14	2	-	15

Summary Of Laboratory Test Results
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Boring Name	Sample Depth (ft)			Stratum	AASHTO Symbol	Sieve Analyses (% Passing)					Atterberg Limits			Organic Content (%)	Moisture Content (%)
						#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-1372A2	6.0	-	8.0	14	A-2-4	-	-	-	-	19	19	15	4	-	18
B-1372A2	23.5	-	25.0	14	A-2-4	-	-	-	-	23	20	14	6	-	18
B-1400A2	4.0	-	5.0	14	A-2-4					34	34	28	6		38
B-1386A1	4.0	-	6.0	14	A-2-4	-	-	-	-	30	26	19	7	-	22
B-1368A1	13.0	-	15.0	14	A-2-4	-	-	-	-	17	19	14	5	1	16
B-1380A2	28.5	-	30.0	16	A-2-7	-	-	-	-	34	115	54	61	-	70
B-1386A1	13.5	-	15.0	16	A-2-7	-	-	-	-	34	55	23	32	-	34
B-1386A1	23.5	-	25.0	16	A-2-7	-	-	-	-	30	76	38	38	-	81
B-1386A1	28.5	-	30.0	16	A-2-7	-	-	-	-	28	60	33	27	-	75
B-1391A1	33.5	-	35.0	16	A-2-7	-	-	-	-	34	112	45	67	-	81
B-1433A2	6.0	-	8.0	16	A-2-7	-	-	-	-	34	58	16	42	-	23